



**WORKING PAPER**

**COUNCIL — 196TH SESSION**

**Subject No. 50: Questions relating to the environment**

**MARKET-BASED MEASURES (MBMs)**

(Presented by the Secretary General)

**EXECUTIVE SUMMARY**

At the 195th Session of the Council in March 2012, the Ad-hoc Working Group on Market-based Measures (MBMs) presented four options for a global MBM scheme for international aviation, as well as the evaluation criteria which are underpinned by the 15 guiding principles adopted by the 37th Session of the Assembly (C-WP/13828). The Council requested the continuation of further work, as a matter of priority, on the evaluation of the options, and noted the evaluation criteria with an amendment to include a new criterion (34 evaluation criteria in total) for the further evaluation of the options. It also requested further work on the development of a framework for MBMs (C-DEC 195/9).

A large amount of work was undertaken with the support of 20 Experts (Australia, Brazil (2), Canada, European Commission (2), IATA (2), India, the International Coalition for Sustainable Aviation (ICSA), Japan, Mexico, Nigeria, Republic of Korea, Singapore, Switzerland, UAE, United States (3)) to support the Secretariat in advising the Ad-hoc Working Group.

This paper reports on further progress on the evaluation of the options for a global MBM scheme and the development of the framework for MBMs. Progress relating to a global MBM scheme includes: the identification of common design features and specific differences between the options (Appendix A); the conclusion of the Experts that no further consideration of Option 4 (Global Emissions Trading (Baseline & Credit System)) is required (Appendix B); and the recommendation by the Experts on the choices of some design features for the remaining three options (Appendix C). The Secretariat has developed, with the assistance of the Experts provided by States and international organizations, a concept document describing an ICAO framework for MBMs (Appendix D).

**Action:** The Council is invited to:

- a) request the Secretary General, in close collaboration with Member States and international organizations, to continue further work on the framework for MBMs and the exploration of the feasibility of a global MBM scheme in line with Operative Clauses 13 and 18 of Resolution A37-19;
- b) agree that no further consideration of Option 4 (Global Emissions Trading (Baseline & Credit System)) for a global MBM scheme is required, as concluded by the Experts in Appendix B;
- c) agree that no further consideration of establishing an emissions price for revenue mechanism in Option 2 is required, as recommended by the Experts in Appendix C, paragraph 4.3;
- d) note the progress to date on the framework for MBMs; and
- e) request the Secretary General to report to the Council during its 197th Session on the results of the evaluation of the three options for a global MBM scheme and further work on the framework for MBMs.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objective C – Environmental Protection and Sustainable Development of Air Transport.
<i>Financial implications:</i>	Actions will be funded by the Regular Programme Budget and/or through voluntary contributions.

<i>References:</i>	Doc 9958, <i>Assembly Resolutions in Force</i> (as at 8 October 2010) (A37-19) C-WP/13828 C-DEC 195/9 AT-SD/196-1 GIACC Report dated 1 June 2009
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## 1. A GLOBAL MBM SCHEME

1.1 Since the 195th Session of the Council, the Experts have held four face-to-face meetings and four teleconferences, and progress on the evaluation of the following four options for a global market-based measures (MBM) scheme was presented to the Ad-hoc Working Group on MBMs for its consideration:

- Global Mandatory Offsetting (Option 1);
- Global Mandatory Offsetting complemented by a revenue generation mechanism (Option 2);
- Global Emissions Trading (Cap & Trade System) (Option 3); and
- Global Emissions Trading (Baseline & Credit System) (Option 4).

1.2 In order to start the evaluation of the four options against the 34 evaluation criteria which are underpinned by the 15 guiding principles, a matrix approach was undertaken by listing each of the four options (vertically down the columns of the matrix) against the evaluation criteria (listed horizontally across the rows of the matrix). During a preliminary assessment of the four options, the Experts agreed to develop the detailed design features of the options, which would allow for their robust evaluation.

1.3 Individual Experts were assigned to track one or two of the 34 evaluation criteria, in order to ensure the continued consideration of the guiding principles while the detailed design features of the options were being further developed. This should facilitate the comparison of the options across the evaluation criteria and any assumptions in the comparison process should be identified and addressed.

1.4 The Experts developed the detailed design features of the options, based upon input documents provided by the Experts. With a view to facilitating the future comparison of the options, the Experts identified the common design features and specific differences between the options. As described in **Appendix A**, some design features are common to all Options. There are other design features that are common to offsetting (Options 1 and 2) but different from emissions trading (Option 3). Furthermore, some design features are related to possible generation of revenue (common to Options 2 and 3) and they are not applicable to Option 1.

1.5 As requested at the 196th Session of the Air Transport Committee, an informal Council briefing on 14 June 2012 provided information pertaining to the work undertaken by the Experts on the evaluation of the options for a global MBM scheme in order to ensure a common understanding among Council members of the options.

1.6 The Experts recognized that, in order to achieve specific emissions reduction goals (e.g. carbon neutral growth from 2020), Option 4 (Global Emissions Trading (Baseline & Credit System)) would require extensive use of offsetting; and thus, it had little difference to Option 1 (Global Mandatory Offsetting). Therefore, the Experts recommended no further consideration of Option 4 as described in

**Appendix B.** The Ad-hoc Working Group agreed on the recommendation by the Experts and requested that they continue working on the remaining three options until a decision on the treatment of Option 4 would be taken by the Council.

1.7 The Experts recognized that there were various choices for some design features of the remaining three options and reducing the number of such choices would facilitate the application of evaluation criteria and comparison of the options. In this regard, the Experts identified the initial implications of such choices for the following design features:

- a) Participants (paragraphs 2.1 for Options 1, 2 and 3 in **Appendix A**, and paragraph 1 in **Appendix C**);
- b) Distribution of the Global Baseline / Cap (paragraphs 2.3 for Options 1, 2 and 3 in **Appendix A**, and paragraph 2 in **Appendix C**);
- c) De minimis (paragraphs 2.9 for Options 1, 2 and 3 in **Appendix A**, and paragraph 3 in **Appendix C**);
- d) Revenue Mechanism (paragraph 2.10 for Option 2 in **Appendix A**, and paragraph 4 in **Appendix C**), with a recommendation that no further consideration of establishing an emissions price for revenue mechanism in Option 2 is required; and
- e) Possible Uses of Revenue (paragraphs 2.11 for Options 2 and 3 in **Appendix A**, and paragraph 5 in **Appendix C**).

1.8 The Experts recognized that inter-linkages exist among the various design features. Initial analysis of individual design features was therefore insufficient to enable the narrowing of choices within each design feature. The Experts also recognized that there are choices for several design features that are beyond the scope of purely technical analysis and will require policy guidance at a later stage. These may include: choice of participants with compliance obligations; approach for distribution of a global baseline or cap; objectives and application of *de minimis* approaches; and revenue generation.

1.9 As a next step, the Experts intend to continue the evaluation of the remaining three options for a global MBM scheme. Further identification of the implications of various choices for design features and recommendations will be presented for consideration by the 197th Session of the Council.

## 2. ICAO FRAMEWORK FOR MBMS

2.1 Operative Clause 13 of Assembly Resolution A37-19 requests the Council with the support of Member States to develop a framework for market-based measures in international aviation, including further elaboration of the guiding principles listed in the Annex, for consideration by the 38th Session of the ICAO Assembly.

2.2 The term “framework for market-based measures” derives from the work of the Group on International Aviation and Climate Change (GIACC) and is captured in the GIACC Report of June 2009.

2.3 The Secretariat, with the assistance and advice provided by Experts nominated by States and international organizations, developed the concept document at **Appendix D** that is provided to the Council as a progress report. The bracketed text in paragraphs 2.2 and 2.3 of Appendix D reflects some divergent views by Experts necessitating further work to be performed over the 2012 summer period.

2.4 The 15 principles listed in the Annex to A37-19 were mapped into the concept document. The concept document also contains a brief description of each of the objectives, which is intended to establish a common understanding of the elements to comprise a more fully developed framework for MBMs.

2.5 It is important to recognize that the framework for MBMs is intended to provide structure and consistency to MBM schemes. It is not in itself a MBM scheme, nor is it a linking mechanism to bring various MBM schemes together. The framework for MBMs is intended to develop common building blocks to progress the work of ICAO in developing a global MBM scheme.

2.6 Further work on the ICAO framework for MBMs is planned to continue over the 2012 summer period with the intention to report back to the 197th Session of the ICAO Council with a more fully developed proposal for consideration by the Council. This version will treat the framework objectives in much greater detail than what is provided in the concept document at Appendix D.

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## APPENDIX A

### DESIGN FEATURES OF OPTIONS FOR A GLOBAL MBM SCHEME

Environmental Objective: Options 1, 2 and 3 could be designed to achieve the same environmental outcome.

The implications of the choices for some design features are provided in Appendix C.

#### Option No. 1 (Global Mandatory Offsetting)

##### 1. GENERAL DESCRIPTION

1.1 Under a global mandatory offsetting scheme, participants (either States or operators) acquire “emissions units”<sup>1</sup> (meeting an agreed set of eligibility criteria) to offset emissions from international aviation above an agreed baseline.

##### 2. SPECIFIC DESIGN ELEMENTS

2.1 **Participants (common feature for all Options):** A participant is the entity that has the compliance obligation to quantify emissions and surrender the necessary emissions units. There are two possibilities for participants: States or operators.

**Scenario A:** States are the participants in the scheme. In this scenario, all individual States:

- a) cover emissions from international flights departing from that State (data from operators reporting to that State or from fuel sales); or
- b) cover emissions from international flights of operators registered in that State (data from operators reporting to that State).

**Scenario B:** Operators are the participants in the scheme. In this scenario, all individual operators cover emissions from their international flights.

- a) Operators report data to central entity; or
- b) Operators report data to States (registered or departing States).

The implications of the Scenarios above are provided in Appendix C, paragraph 1.

##### 2.2 Environmental Objective – Level of Offsetting – Global Baseline (common feature to Options Nos. 1 and 2)

- a) Up to 100 per cent of total annual emissions from international aviation; or

<sup>1</sup> For the purposes of this paper, the compliance instrument is generically called an “emissions unit” and includes existing market-based instruments generally referred to as allowances, offsets or credits. One emissions unit equals one tonne of CO<sub>2</sub>.

- b) All emissions from international aviation above a baseline level (e.g. emissions in 2020).

2.2.1 There will need to be a commonality of legislation across States in order to safeguard the integrity of the global scheme.

### 2.3 **Distribution of the Global Baseline (common feature to Options Nos. 1 and 2):**

2.3.1 In order to allocate the global baseline among individual participants three main approaches may be taken:

- a) “Grandfathering” where a participant’s future offsetting requirements are calculated based on the participant’s own historical emissions (e.g. average emissions between year x to year z);
- b) “Benchmarking” uses an efficiency metric to establish participant’s future offsetting requirements (e.g. emissions per Revenue Tonne Kilometer (RTK)). The benchmark could be based on average or top industry performance; or
- c) “Percentage of Emissions” where the same percentage of each participant’s emissions are offset to cover all participants’ future offsetting requirements.

2.3.2 Early Action – In the case of grandfathering, an adjustment to individual baselines can be made for early action.

2.3.3 Fast Growth – A mechanism to adjust a participant’s baseline allocation under any allocation approach can be used to reflect fast growth, particularly if growing from a small base or to accommodate demand in a high growth region of the world. This adjustment could be reviewed on a periodic basis.

2.3.4 In order to accommodate future new entrants to the scheme a reserve may need to be created within the global baseline.

The implications of the choices above are provided in Appendix C, paragraph 2.
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### 2.4 **Emissions Units (common feature to Options Nos. 1 and 2)**

2.4.1 Assumption: Under Options Nos. 1 and 2, it is assumed that participants will acquire emissions units from other existing carbon market systems (i.e. no new aviation-specific emissions allowances are created).

2.4.2 A wide range of emissions unit types exist and may potentially be acquired to satisfy a participant’s compliance obligation under a Global Mandatory Offsetting Scheme. Existing emissions units include:

- a) legislatively approved units (e.g. Kyoto Units, such as Assigned Amount Units and Certified Emissions Reductions, national and regional units);
- b) non-legislative units, such as Voluntary Emissions Reductions (VERs).

2.4.3 Given the wide range of emissions units available, the type of units that can be used to satisfy the compliance obligation needs to be determined, such as:

- a) Development of Eligibility Criteria to take into account quality (permanence, additionality, etc.) and ensure that an appropriate level of quality is met.
- b) Supply: Consideration of emissions unit availability to determine whether there is sufficient supply to meet the current and future demand of an aviation offsetting scheme. Initial analysis suggests that sufficient quantity of emissions units at an appropriate level of quality will be available to meet the future demand of an aviation offsetting scheme.
- c) Ability to access other carbon markets: For most existing emissions units, there are legal and technical questions regarding acquisition and use.

## 2.5 **Compliance Period (common feature to all Options)**

The compliance period is the period within which the parameters of the scheme are fixed (e.g. emission target, trading rules, level of offsetting). Within the compliance period, there could be separate intervals established for meeting obligations under the scheme (e.g. the “true-up” period for surrendering emission units or allowances).

## 2.6 **MRV (Monitoring, Reporting and Verification)** to determine compliance obligation in terms of actual volume of emissions (**common feature to all Options**)

### 2.6.1 In accordance with a consistent and agreed methodology:

- a) Participants are required to quantify emissions and compliance obligations annually;
- b) Participants are required to report emissions and compliance obligations to pertinent authority (States or central entity); and
- c) Verification of reported emissions and compliance obligations is required to be undertaken by pertinent authority or by an independent verifier.

## 2.7 **Compliance Assurance (common feature to Options Nos. 1 and 2)**

### 2.7.1 An electronic registry system is required for accounting purposes. The system:

- a) Records emissions and compliance obligations of participants; and
- b) Tracks transactions of emissions units by participants, including transfers and cancellations.

2.7.2 There are existing registry systems that could be relevant for the global MBM scheme for international aviation.

2.7.3 Compliance determination: Based on information in the registry a compliance determination is made to ensure that sufficient units are surrendered and cancelled in order to satisfy each participant’s compliance obligation.

## 2.8 **Enforcement (common feature to all Options)**

An enforcement mechanism is necessary, and its design depends on whether States or operators are the MBM participant and an appropriate legal framework may need to be established.

### 2.8.1 If States are the participants, an internationally-agreed mechanism needs to be established.

2.8.2 If operators are the participants, an enforcement mechanism by States needs to be established.

## 2.9 **De minimis (common feature to all Options)**

2.9.1 Possible exemption on the basis of administrative burden:

- a) activity levels of participants (e.g. the number of flights, total RTK or total emissions)
- b) aircraft sizes/types (e.g. jet aircraft, aircraft over a specified maximum takeoff weight, specified passenger or freight capacity)
- c) types of operations (e.g. fire-fighting, rescue) (e.g. humanitarian and relief flights, fire-fighting, air ambulance, medical flights, State aircraft)

2.9.2 Possible exemption or phase-in to accommodate special circumstances and respective capabilities of States based upon:

- a) departing flights from all States below a certain threshold
- b) operators registered in all States below a certain threshold
- c) specific air routes to and/or from States according to an agreed criterion

The implications of the choices above are provided in Appendix C, paragraph 3.

## **Option No. 2 (Global Mandatory Offsetting complemented by a Revenue Generation Mechanism)**

### 1. **GENERAL DESCRIPTION**

1.1 Option 2 is a Global Mandatory Offsetting scheme with an additional mechanism for generating revenue to be used for agreed purposes, e.g. climate change mitigation/adaptation.

### 2. **SPECIFIC DESIGN ELEMENTS**

2.1 **Participants (common feature for all Options):** A participant is the entity that has the compliance obligation to quantify emissions and surrender the necessary emissions units. There are two possibilities for participants: States or operators.

**Scenario A:** States are the participants in the scheme. In this scenario, all individual States:

- a) cover emissions from international flights departing from that State (data from operators reporting to that State or from fuel sales); or
- b) cover emissions from international flights of operators registered in that State (data from operators reporting to that State).

**Scenario B:** Operators are the participants in the scheme. In this scenario, all individual operators cover emissions from their international flights.

- a) Operators report data to central entity; or
- b) Operators report data to States (registered or departing States).

The implications of the Scenarios above are provided in Appendix C, paragraph 1.



## 2.2 Environmental Objective – Level of Offsetting – Global Baseline (common feature to Options Nos. 1 and 2)

- a) Up to 100 per cent of total annual emissions from international aviation; or
- b) All emissions from international aviation above a baseline level (e.g. emissions in 2020).

2.2.1 There will need to be a commonality of legislation across States in order to safeguard the integrity of the global scheme.

## 2.3 Distribution of the Global Baseline (common feature to Options Nos. 1 and 2)

2.3.1 In order to allocate the global baseline among individual participants three main approaches may be taken:

- a) “Grandfathering” where a participant’s future offsetting requirements are calculated based on the participant’s own historical emissions (e.g. average emissions between year x to year z);
- b) “Benchmarking” uses an efficiency metric to establish participant’s future offsetting requirements (e.g. emissions per Revenue Tonne Kilometer (RTK)). The benchmark could be based on average or top industry performance; or
- c) “Percentage of Emissions” where the same percentage of each participant’s emissions are offset to cover all participants’ future offsetting requirements.

2.3.2 Early Action – In the case of grandfathering, an adjustment to individual baselines can be made for early action.

2.3.3 Fast Growth – A mechanism to adjust a participant’s baseline allocation under any allocation approach can be used to reflect fast growth, particularly if growing from a small base or to accommodate demand in a high growth region of the world. This adjustment could be reviewed on a periodic basis.

2.3.4 In order to accommodate future new entrants to the scheme a reserve may need to be created within the global baseline.

The implications of the choices above are provided in Appendix C, paragraph 2.
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## 2.4 Emissions Units (common feature to Options Nos. 1 and 2)

2.4.1 Assumption: Under Options Nos. 1 and 2, it is assumed that participants will acquire emissions units from other existing carbon market systems (i.e. no new aviation-specific emissions allowances are created).

2.4.2 A wide range of emissions unit types exist and may potentially be acquired to satisfy a participant’s compliance obligation under a Global Mandatory Offsetting Scheme. Existing emissions units include:

- a) legislatively approved units (e.g. Kyoto Units, such as Assigned Amount Units and Certified Emissions Reductions, national and regional units)
- b) Non-legislative units, such as Voluntary Emissions Reductions (VERs)

2.4.3 Given the wide range of emissions units available, the type of units that can be used to satisfy the compliance obligation needs to be determined, such as:

- a) Development of Eligibility criteria to take into account quality (permanence, additionality, etc.) and ensure that an appropriate level of quality is met.
- b) Supply: Consideration of emissions unit availability to determine whether there is sufficient supply to meet the current and future demand of an aviation offsetting scheme. Initial analysis suggests that sufficient quantity of emissions units at an appropriate level of quality will be available to meet the future demand of an aviation offsetting scheme.
- c) Ability to access other carbon markets: For most existing emissions units, there are legal and technical questions regarding acquisition and use.

## 2.5 **Compliance Period (common feature to all Options)**

The compliance period is the period within which the parameters of the scheme are fixed (e.g. emission target, trading rules, level of offsetting). Within the compliance period, there could be separate intervals established for meeting obligations under the scheme (e.g. the “true-up” period for surrendering emission units or allowances).

2.6 **MRV (Monitoring, Reporting and Verification)** to determine compliance obligation in terms of actual volume of emissions (**common feature to all Options**)

2.6.1 In accordance with a consistent and agreed methodology:

- a) Participants are required to quantify emissions and compliance obligations annually;
- b) Participants are required to report emissions and compliance obligations to pertinent authority (States or central entity); and
- c) Verification of reported emissions and compliance obligations is required to be undertaken by pertinent authority or by an independent verifier.

## 2.7 **Compliance Assurance (common feature to Options Nos. 1 and 2)**

2.7.1 An electronic registry system is required for accounting purposes. The system:

- a) Records emissions and compliance obligations of participants; and
- b) Tracks transactions of emissions units by participants, including transfers and cancellations.

2.7.2 There are existing registry systems that could be relevant for the global MBM scheme for international aviation.

2.7.3 Compliance determination: Based on information in the registry a compliance determination is made to ensure that sufficient units are surrendered and cancelled in order to satisfy each participant’s compliance obligation.

## 2.8 **Enforcement (common feature to all Options)**

An enforcement mechanism is necessary, and its design depends on whether States or operators are the MBM participant and an appropriate legal framework may need to be established.

2.8.1 If States are the participants, an internationally-agreed mechanism needs to be established.

2.8.2 If operators are the participants, an enforcement mechanism by States needs to be established.

## 2.9 **De minimis (common feature to all Options)**

2.9.1 Possible exemption on the basis of administrative burden:

- a) activity levels of participants (e.g. the number of flights, total RTK or total emissions);
- b) aircraft sizes/types (e.g. jet aircraft, aircraft over a specified maximum takeoff weight, specified passenger or freight capacity);
- c) types of operations (e.g. fire-fighting, rescue) (e.g. humanitarian and relief flights, fire-fighting, air ambulance, medical flights, State aircraft).

2.9.2 Possible exemption or phase-in to accommodate special circumstances and respective capabilities of States based upon:

- a) departing flights from all States below a certain threshold;
- b) operators registered in all States below a certain threshold;
- c) specific air routes to and/or from States according to an agreed criterion.

The implications of the choices above are provided in Appendix C, paragraph 3.

## 2.10 **Revenue Mechanism**

2.10.1 There are two mechanisms by which revenue may be generated:

- a) **Transaction Fee:** Apply a transaction fee for each emissions unit surrendered. The fee could be either:
  - a flat fee; or
  - a percentage of the price per emissions unit.
- b) **Emissions Price:** Establish an emissions price. Participants would be required to pay the emissions price for each tonne of emissions to be offset. The emissions price would be established by applying a multiplier to the average emissions unit price. This would be *de facto* imposing a levy to raise revenue for purchasing emissions units and other agreed purposes.

2.10.2 The transaction fee/emissions price needs to be fixed for the compliance period (e.g. annual, every three years). It may or may not be fixed on the basis of an agreed revenue generation goal. The raised revenue can be administered by States or a central entity.

The implications of the choices above are provided in Appendix C, paragraph 4.

## 2.11 **Possible Uses of Revenue (common feature to Options Nos. 2 and 3)**

2.11.1 Revenue generated by the scheme could be used for the following purposes:

- a) Purchase of emissions units to achieve additional climate mitigation.

- b) Contribution to mitigating the environmental impact of aviation emissions, including those identified in States' action plans.
- c) Contribution to mitigation and adaptation, as well as assistance to and support for developing States.

2.11.2 Consideration should be given on how to ensure that the uses of revenue would not cause market distortions for international aviation.

The implications of the choices above are provided in Appendix C, paragraph 5.

## 2.12 Revenue Distribution Mechanism (common feature for Option Nos. 2 and 3)

The distribution mechanism needed will depend on whether the raised revenue would be administered by States or a central entity.

2.12.1 If the revenue is collected by States, States can administer the distribution of the raised revenue with reporting to a central entity.

2.12.2 If the revenue is collected by a central entity, there needs to be an internationally-agreed rule on the distribution of the raised revenue.

## 2.13 Compliance for Uses of Revenue (common feature for Option Nos. 2 and 3)

A mechanism may be required to monitor that revenue is used for agreed purposes by States or a central entity.

## Option No. 3 (Global Emissions Trading (Cap & Trade System))

### 1. GENERAL DESCRIPTION

1.1 Total international aviation emissions are capped at an agreed level for a specified compliance period. "Aviation allowances" (one allowance equivalent to one tonne of CO<sub>2</sub>) are created for all the emissions under the cap and are distributed to participants (either States or operators). At the end of each compliance period, participants must surrender sufficient aviation allowances or other emissions units to cover all their emissions during that period and meet their compliance obligations. Aviation allowances can be bought and sold, and participants can acquire additional emissions units from other carbon markets. The need to create aviation allowances is the major difference from Option Nos. 1 and 2.

### 2. SPECIFIC DESIGN ELEMENTS

2.1 **Participants (common feature for all Options):** A participant is the entity that has the compliance obligation to quantify emissions and surrender the necessary emissions units. There are two possibilities for participants: States or operators.

**Scenario A:** States are the participants in the scheme. In this scenario, all individual States:

- a) cover emissions from international flights departing from that State (data from operators reporting to that State or from fuel sales); or

- b) cover emissions from international flights of operators registered in that State (data from operators reporting to that State).

**Scenario B:** Operators are the participants in the scheme. In this scenario, all individual operators cover emissions from their international flights.

- a) Operators report data to central entity; or
- b) Operators report data to States (registered or departing States).

The implications of the Scenarios above are provided in Appendix C, paragraph 1.

## 2.2 Environmental Objective - Level of Cap

- Cap is set at an absolute level of emissions (e.g. emissions in 2020 or average annual emissions between years x and y)
- Aviation allowances are created for all emissions under the cap (one allowance equivalent to one tonne of CO<sub>2</sub>).

2.2.1 There will need to be a commonality of legislation across States in order to safeguard the integrity of the global scheme.

## 2.3 Distribution of the Cap

2.3.1 In order to allocate allowances under the cap among individual participants three main approaches may be taken:

- a) “Free allocation (grandfathering)” where a participant’s free allocation of allowances is calculated based on the participant’s own historical emissions (e.g. average emissions between year x to year z);
- b) “Free allocation (benchmarking)” uses an efficiency metric to establish participant’s free allocation of allowances (e.g. emissions per Revenue Tonne Kilometer (RTK)). The benchmark could be based on average or top industry performance;
- c) “Auctioning” where allowances are auctioned; or
- d) Combination of free allocation and auctioning.

2.3.2 Early Action – In the case of grandfathering, an adjustment to individual allocation can be made for early action.

2.3.3 Fast Growth – A mechanism to adjust a participant’s cap allocation under any allocation approach can be used to reflect fast growth, particularly if growing from a small base or to accommodate demand in a high growth region of the world. This adjustment could be reviewed on a periodic basis.

2.3.4 In order to accommodate future new entrants to the scheme a reserve may need to be created under the cap.

The implications of the choices above are provided in Appendix C, paragraph 2.

## 2.4 Compliance Units

2.4.1 Both aviation allowances and other emissions units can be used for compliance.

2.4.2 A wide range of emissions unit types exist and may potentially be acquired to satisfy a participant's compliance obligation. Existing emissions units include:

- a) legislatively approved units (e.g. Kyoto Units, such as Assigned Amount Units and Certified Emissions Reductions, national and regional units)
- b) Non-legislative units, such as Voluntary Emissions Reductions (VERs)

2.4.3 Given the wide range of emissions units available, the type of units that can be used to satisfy the compliance obligation needs to be determined, such as:

- a) Development of Eligibility Criteria to take into account quality (permanence, additionality, etc.) and ensure that an appropriate level of quality is met.
- b) Supply: Consideration of emissions unit availability to determine whether there is sufficient supply to meet the current and future demand of an aviation emissions trading system. Initial analysis suggests that sufficient quantity of emissions units at an appropriate level of quality will be available to meet the future demand of an aviation emissions trading system.
- c) Ability to access other carbon markets: For most existing emissions units, there are legal and technical questions regarding acquisition and use.

2.4.4 Possible quantity limits on different types of units may need to be considered (e.g. for linking purposes).

2.4.5 Possibility for participants to bank and borrow allowances, for which rules need to be established

## 2.5 Compliance Period (common feature to all Options)

The compliance period is the period within which the parameters of the scheme are fixed (e.g. emission target, trading rules, level of offsetting). Within the compliance period, there could be separate intervals established for meeting obligations under the scheme (e.g. the "true-up" period for surrendering emission units or allowances).

2.6 **MRV (Monitoring, Reporting and Verification)** to determine compliance obligation in terms of actual volume of emissions (**common feature to all Options**)

2.6.1 In accordance with a consistent and agreed methodology:

- a) Participants are required to quantify emissions and compliance obligations annually;
- b) Participants are required to report emissions and compliance obligations to pertinent authority (States or central entity); and
- c) Verification of reported emissions and compliance obligations is required to be undertaken by pertinent authority or by an independent verifier.

## 2.7 Compliance Assurance

2.7.1 An electronic registry system is required for accounting purposes. The system:

- a) Records emissions and compliance obligations of participants; and
- b) Tracks transactions of units by participants, including creation of allowances, allocation (free/auctioning), transfers, surrender and cancellations.

2.7.2 There are existing registry systems that could be relevant for the global MBM scheme for international aviation.

2.7.3 Compliance determination: Based on information in the registry a compliance determination is made to ensure that sufficient units are surrendered and cancelled in order to satisfy each participant's compliance obligation.

## 2.8 Enforcement (common feature to all Options)

An enforcement mechanism is necessary, and its design depends on whether States or operators are the MBM participant and an appropriate legal framework may need to be established.

2.8.1 If States are the participants, an internationally-agreed mechanism needs to be established.

2.8.2 If operators are the participants, an enforcement mechanism by States needs to be established.

## 2.9 De minimis (common feature to all Options)

2.9.1 Possible exemption on the basis of administrative burden:

- a) activity levels of participants (e.g. the number of flights, total RTK or total emissions);
- b) aircraft sizes/types (e.g. jet aircraft, aircraft over a specified maximum takeoff weight, specified passenger or freight capacity);
- c) types of operations (e.g. fire-fighting, rescue) (e.g. humanitarian and relief flights, fire-fighting, air ambulance, medical flights, State aircraft).

2.9.2 Possible exemption or phase-in to accommodate special circumstances and respective capabilities of States based upon:

- a) departing flights from all States below a certain threshold;
- b) operators registered in all States below a certain threshold;
- c) specific air routes to and/or from States according to an agreed criterion.

The implications of the choices above are provided in Appendix C, paragraph 3.

## 2.10 Revenue Mechanism

2.10.1 If there is auctioning of allowances by States or a central entity, revenue would be raised. The raised revenue can be administered by States or a central entity.

2.10.2 If auctioning is an agreed methodology for allocating allowances, this could be done either through a central platform or at individual State level. In the latter case, individual auctioning platforms and a set of common auctioning rules and standards may need to be agreed and created to secure the integrity of the global scheme.

## 2.11 Possible Uses of Revenue (common feature to Options Nos. 2 and 3)

2.11.1 Revenue generated by the scheme could be used for the following purposes:

- a) Purchase of emissions units to achieve additional climate mitigation;
- b) Contribution to mitigating the environmental impact of aviation emissions, including those identified in States' action plans;
- c) Contribution to mitigation and adaptation, as well as assistance to and support for developing States.

2.11.2 Consideration should be given on how to ensure that the uses of revenue would not cause market distortions for international aviation.

The implications of the choices above are provided in Appendix C, paragraph 5.
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## 2.12 Revenue Distribution Mechanism (common feature for Option Nos. 2 and 3)

The distribution mechanism needed will depend on whether the raised revenue would be administered by States or a central entity.

2.12.1 If the revenue is collected by States, States can administer the distribution of the raised revenue with reporting to a central entity.

2.12.2 If the revenue is collected by a central entity, there needs to be an internationally-agreed rule on the distribution of the raised revenue.

## 2.13 Compliance for Uses of Revenue (common feature for Option Nos. 2 and 3)

A mechanism may be required to monitor that revenue is used for agreed purposes by States or a central entity.

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## APPENDIX B

### OPTION NO. 4 (GLOBAL EMISSIONS TRADING (BASELINE & CREDIT SYSTEM))

#### 1. OPTION 4-A: AN ABSOLUTE BASELINE AND CREDIT SYSTEM

1.1 In this option, an absolute emissions baseline would be set. If a participant emits below the baseline, the participant would earn tradable credits, which could either be banked for use in a future compliance year or sold to another participant that was in a deficit position. If a participant emitted above its baseline in a given year, the participant would have to buy emission credits from a participant with surplus credits and surrender them for compliance.

1.2 Because of forecast aviation growth along with ongoing efforts to improve fuel efficiency, it is unlikely that any participant would be in a surplus position. Therefore, the liquidity of the credit market would be limited as credits would be issued only for the gap between actual emissions and the baseline. For this reason, it is expected that there would be little trading, and if there was trading, the price of the credit would be very high, reflecting the limited additional opportunity for emissions reduction in the international aviation sector.

1.3 In order to allow compliance at a reasonable cost, emissions units from other systems would need to be permitted for compliance. As a result, the absolute baseline and credit option effectively becomes an offsetting scheme. Therefore, considering this result, separate and further consideration of an Absolute Baseline and Credit System is not necessary.

#### 2. OPTION 4-B: AN EFFICIENCY-BASED BASELINE AND CREDIT SYSTEM

2.1 Under an Efficiency-based Baseline and Credit System, participants would have to meet a fuel efficiency target. In this case, participants could generate tradable credits if their fuel efficiency is greater than the benchmark performance level, and would be required to submit credits if their fuel efficiency was below the level.

2.2 The challenge with an efficiency-based system is that the level of efficiency improvement required to meet an absolute emissions reduction goal (e.g. carbon neutral growth from 2020) is not realistically achievable. Similar to the Absolute Baseline and Credit System to achieve such a goal, emissions units from outside the sector would be required. If these units were allowed to be used by the participants for compliance purposes, this Option would effectively be the same as an offsetting option (e.g. Option No. 1).

#### 3. CONCLUSION

3.1 Due to limited opportunity for sufficient cost-effective in-sector reductions, both an Absolute Baseline and Credit System and an Efficiency-based Baseline and Credit System would require the extensive use of emissions units from outside the sector. As a result, Option No. 4 would effectively be the same as an offsetting option (e.g. Option No. 1), but with added complexity. The Experts recommend no further consideration of Option No. 4, due to the similarity to Option No. 1 without any apparent additional benefit.

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## APPENDIX C

### SPECIFIC DESIGN FEATURES IMPLICATIONS

#### 1. Participants (paragraphs 2.1 for Options 1, 2 and 3 in Appendix A)

A key choice in the design of a global MBM system is which entity – a State or individual operator should take on the compliance obligations and is the participant in the MBM. The implications of the two scenarios are presented below.

##### 1.1 Scenario A: States as the participants.

In this scenario State will be the entity that has a compliance obligation to quantify emissions and to purchase and cancel necessary emissions units (Options 1 and 2) or surrender aviation allowances (in case of Option 3).

#### Implications:

- The number of participants would be limited and well defined.
- ICAO has mandate/experience to directly interact with its Member States.
- Distribution of global baseline or cap: Methodologies for distribution of global baseline or cap are described in Appendix A. However, this would imply that States would take on a specific binding emissions goal for a part of their economy and a requirement to offset emissions growth. Historically, this has been a politically sensitive exercise.
- A central entity at a global level needs to be established or designated to administer the global scheme (e.g. to set the baseline or cap, to distribute obligations, ensure compliance, enforcement, etc). This role could be given to an existing institution like ICAO or a new entity could be established.
- Covering the Cost of Compliance: There is a range of ways that States would fulfil compliance obligations, such as acquisition of emissions units or allowances, monitoring and reporting. States may choose to use general tax revenue to cover the cost of compliance, or seek to pass on the cost of compliance to individual entities (e.g. passengers/shippers, aircraft operators or fuel suppliers). However, if each State decides individually on whether and how the cost of compliance is transferred to individual entities, there could be a wide range of different national mechanisms developed. Common rules on whether and how the cost of compliance is transferred could be agreed on a global level to ensure consistent application and to avoid potential market distortions and multiple reporting requirements.
- Revenue generation: States may not agree with purchasing allowances through a global auctioning system under the emissions trading option. Opportunities for revenue generation may therefore be restricted to the offsetting options.

- Enforcement: It is not clear how an effective enforcement mechanism on States for non-surrender or cancellation of emissions units to meet their obligations, could be implemented. Further legal analysis is needed.

## 1.2 Scenario B: Individual Operators as the participants.

In this scenario individual operator will be the entity that has a compliance obligation to quantify emissions and to purchase and cancel necessary emissions units (Options 1 and 2) or surrender aviation allowances (in case of Option 3).

### Implications:

- Potentially a large number of participants in the system. Identification of all the participants and keeping track of compliance creates more administrative complexity. The Experts could give consideration to the evaluation of an upstream system which could involve fewer participants.
- ICAO has no mandate to directly interact with operators.
- Distribution of global baseline or cap: Methodologies for distribution of global baseline or cap are described in Appendix A. However, this would need to be implemented in a consistent manner across all operators.
- If administration of the system takes place at the global level through a central entity, either ICAO or a new entity would be designated. If, as is more likely, administration takes place at the national level, it would need to be done based on commonly agreed rules (e.g. to set the global baseline or cap, ensure compliance, enforcement, etc). There may be the need for certain parameters to be centrally agreed. It may be potentially simpler to ensure equal treatment of individual aircraft operators, when there are global rules agreed on distribution of global baseline or cap, MRV, etc.
- Administration of operator: A decision would need to be made on how each operator would be administered. If each operator is administered by their State of registration, the administrative burden is significantly reduced on the operator (operators avoid multiple compliance obligations); however, there could be potential distortions if all States do not implement the system in the same manner. If the system is administered based on point of departure, operators would have multiple compliance obligations; but, operators on competing routes would be treated consistently. If the system is administered by a single central entity, the operators avoid multiple compliance obligations, system distortions are minimized and all international routes would be covered, but legal and implementation challenges may exist.
- Revenue generation: If operators are the participants, generation of revenue is possible either by offsetting or auctioning of allowances in emissions trading. Commonly agreed rules would need to be established to avoid potential market distortions.
- Enforcement: States would be responsible for enforcement on the operators it administers, however, it is not clear how to ensure that States consistently apply and enforce the system. Further legal analysis is needed.

## 2. Distribution of Global Baseline/Cap (paragraphs 2.3 for Options 1, 2 and 3 in Appendix A)

### 2.1 Distribution of the Global Baseline (for Options 1 and 2)

Three methods for distributing the global baseline have been considered: grandfathering, benchmarking and percentage of emissions

#### **Grandfathering**

This approach reflects the (predominant) business model of a participant (e.g. fleet configuration, long-versus short-haul). However, it does not reflect the relative efficiency of participants or their historical efficiency improvements (i.e. early action). To take into account such early action, some form of adjustment to the baseline allocation could be made (see references to early action adjustment in Appendix A, paragraphs 2.3.2). Provisions for new entrants may need to be considered with this approach.

#### **Benchmarking**

This approach reflects the relative efficiency of participants, but does not reflect the participant's (predominant) business model configuration and could therefore require an additional adjustment factor to prevent distortions. Although the air transport sector has a number of common characteristics, such as the use of a homogeneous fuel type, it provides a wide range of services as reflected in the large variation in business models. For benchmarking to be used successfully as a method for distributing the global baseline, the activity or efficiency parameter would need to avoid unintended distributional effects between different business models as much as possible. Provisions for new entrants may need to be considered with this approach.

#### **Percentage of Emissions**

This would require an estimation of future emissions growth across the sector in order to define an agreed percentage of emissions that all individual participants would be required to offset. This would not necessarily ensure that the given environmental objective is met, and a periodic review and appropriate adjustment of the agreed percentage would be required. This approach shares the responsibility for emissions growth uniformly across all the participants, unlike grandfathering and benchmarking.

It is worth noting that benchmarking and grandfathering approaches do not have the same data requirements. While a grandfathered distribution system would require historic emissions data, a benchmarked distribution system requires the collection of appropriate activity data.

### 2.2 Distribution of the Cap (for Option 3)

Four methods for distributing the cap have been considered: Free allocation with grandfathering, free allocation with benchmarking, auctioning and a combination of free allocation and auctioning.

**Free allocation – Grandfathering:** same as above in paragraph 2.1

**Free allocation - Benchmarking:** same as above in paragraph 2.1

#### **Auctioning**

With full auctioning, the distribution of the cap would be based on the participants' willingness to pay, and should therefore result in a distribution that is economically efficient. Depending on its design, an auctioning system could raise substantial revenues. Auctioning can also be administratively complex with

economic implications, requiring the adoption of auctioning regulations and the designation of entities to act as auctioneers and revenue holders/disbursers.

### **Combination of free allocation and auctioning**

In an effort to combine the advantages of free allocation and auctioning a hybrid approach could also be considered. On the other hand, any combination of free allocation and auctioning would entail additional administrative complexity.

### **Implications:**

- All the above approaches would require decisions on a number of elements in relation to the methodology for distribution.
  - In the case of grandfathering and benchmarking this would include definition of a reference year or period as a basis for calculating the distribution.
  - Benchmarking would also require establishment of an agreed benchmark formula, based on activity or efficiency.
  - Auctioning would require agreement to establish either a single unified auctioning system or a set of rules for the design and conduct of auctions.
- Grandfathering may require the establishment of an adjustment mechanism to account for early action, while benchmarking and auctioning do not.
- Both grandfathering and benchmarking may require the establishment of an adjustment mechanism to account for fast growth, while auctioning does not.
- Participants would be expected to attempt to pass on any allowance costs to consumers as much as possible which may ultimately result in higher fares and a dampening of demand.
- With free allocation, there is a potential for participants to pass on the value of free allowances to consumers and thereby earn windfall profits. There are divergent views as to whether this could happen in the aviation sector. This issue needs further consideration by the Experts.
- By definition, free allocation generates no revenue, while auctioning would do so.
- The timing and frequency of auctions would be an important consideration to facilitate equal opportunities for participants so as to accommodate different business cycles.

### **3. De Minimis (paragraphs 2.9 for Options 1, 2 and 3 in Appendix A)**

Options 1, 2 and 3 can all be designed to include a de minimis provision.

De minimis provisions can be used to exclude certain participants or activities to reduce administrative burden, and can also be used to accommodate special circumstances and respective capabilities of States.

3.1 **Methodologies for de minimis exemptions on the basis of administrative burden** are set out in paragraphs 2.9.1 in Appendix A as follows:

- a) activity levels of participants (e.g. the number of flights, total RTK or total emissions)
- b) aircraft sizes/types (e.g. jet aircraft, aircraft over a specified maximum takeoff weight, specified passenger or freight capacity)
- c) types of operations (e.g. humanitarian and relief flights, fire-fighting, air ambulance, medical flights, State aircraft)

### **Implications:**

A range of de minimis provisions for the purpose of reducing administrative burden should be considered as part of the design features of any system. Careful consideration should be given to setting the level of the threshold applied to avoid potential market distortions.

3.2 **Possible exemption or phase-in to accommodate special circumstances and respective capabilities of States**

Resolution A37-19 includes a provision on a de minimis threshold for States on the basis of 1 per cent international RTK. States below the threshold could benefit from the de minimis through the avoidance of administrative burden, although this would be at the expense of the overall efficacy of the measure and through introducing distortions to the market.

It is estimated that establishment of a 1 per cent de minimis threshold would cover around 80 per cent of total international aviation RTKs (based on ICAO data for 2009 that reported 82.1 per cent of RTKs came from aircraft registered in States above the 1 per cent threshold). With this level of de minimis, it implies that the total cost of the scheme would increase by approximately 25 per cent for active participants to compensate for the contribution foregone by exempting de minimis States. Alternatively, to avoid this additional cost to active participants, a 20 per cent reduction in environmental benefits would occur.

A lower de minimis threshold would lessen these effects but detailed analysis has not yet been conducted to quantify this.

**Implications of using exemptions with the different application methodologies** are listed below:

#### a) **Departing flights from all States below a certain threshold**

This de minimis option may be the most administratively simple for States and have the least potential for market distortion. It does however imply greater administrative burden for operators who could have to monitor emissions on a flight by flight basis.

It allows States below the threshold to avoid the costs and administrative overheads associated with oversight of an MBM. It also avoids the market distortions that might occur where flights occur between a de minimis and non de minimis State. For example where State A is a de minimis State and State B is a non de minimis State, all airlines would report and account for emissions resulting for flights from State B

to State A, but no airlines would participate when flying from State A to State B. The same rules would apply to operators registered in third States operating between the same States.

It would be important that de minimis thresholds were monitored regularly to avoid de minimis States 'locking in' their de minimis classification.

**b) Operators registered in all States below a certain threshold**

This approach would result in market distortions, as operators from non de minimis States competing on routes with operators from de minimis States would be disadvantaged.

Under Options 2 and 3, the system could be applied equally to operators from de minimis States and the revenue generated from those operators used for agreed purposes as described in Section 5 of this Appendix C.

**c) Specific air routes to and/or from States according to an agreed criterion**

Exempting specific routes could be done on the basis of traffic levels below a specified threshold on a city pair basis. While it would ensure there were no market distortions between individual city pairs, it may have the potential to create distortions in markets by diverting traffic through de minimis routes at the expense of efficiency. It also implies greater administrative burden as emissions would have to be monitored on a flight by flight basis.

**Implications of using phase-in with the different application methodologies:**

The de minimis provisions may be used to phase-in eligible States to full participation in a global MBM system. All the application methodologies could be applied during a phase-in process over specific time periods. The phase-in has the benefit of progressively reducing potential market-distortions through increased coverage of aviation activity.

**4. Revenue Mechanism (paragraph 2.10 for Option 2 in Appendix A)**

The two alternatives under consideration for the revenue collection mechanism in an Offsetting with Revenue scheme are a transaction fee or an emissions price. See Appendix A, Option 2, paragraph 2.10. The purpose of the Offsetting with Revenue Option is to offset emissions from international aviation while also raising revenue for agreed purposes (such as climate change mitigation). It does not serve to reinforce the pricing signal to promote additional carbon abatement as the existing relative cost of energy in the sector is already high. Any mechanism for raising revenue above the price for purchasing emissions units by nature involves the need for States to reach agreement on a target revenue amount or the additional transaction fee to be charged.

**4.1 Transaction Fee**

There are two alternatives for a transaction fee. The transaction fee could be a flat fee or a percentage of the price of the emissions unit.

**Implications of flat fee transaction fee**

- a) A flat transaction fee is simple. With a flat fee, a specific transaction fee is charged for each emissions unit purchased.
- b) A flat transaction fee is predictable as it is not affected by volatility of the emissions unit price. Participants are able to project aggregate costs associated with the transaction fee based on projected emissions. The entity collecting the revenue is able to estimate revenue.

**Implications of percentage-based fee**

- a) With a percentage-based fee, the fee would be proportionate to the emissions unit price.
- b) The amount of revenue generated is tied to prevailing emissions unit price. If the price of emissions units decreases below expectations, less revenue will be generated. If the price of emissions units increases above expectations, excess revenue will be generated, but impact on participants could be significant.
- c) It would be very difficult to predict the amount of revenue raised due to volatility of the emissions unit price.

**Overall implications**

The decision on what level to charge the revenue component is important. The revenue component can be charged just on the offset amount of emissions above the baseline or can be charged across all emissions, including those below the baseline. In the former case, disadvantages can occur for fast growing participants who will be paying for a greater proportion of their overall activity whereas dominant market participants with slow growth would only be charged on a small portion of their activity. Conversely, in the latter case, dominant market participants with no or negative growth would still pay a transaction fee even though they are not required to purchase offsets.

**4.2 Emissions Price**

With an emissions price, participants would be required to pay the emissions price for each tonne of emissions to be offset. The emissions price would cover the cost of an emissions unit and generate additional revenue.

**Implications of an emissions price**

- a) The emissions price would need to be established. This would require an entity to establish the price and revise on a periodic basis to reflect market prices.
- b) The emissions price will lag any fluctuation in the prevailing emissions unit price (due to the need to set the emissions price on a periodic basis). As a result, if emissions unit prices increase above expectations, the emissions price for the scheme may not adequately cover the cost of emissions units. Alternatively, if the emissions unit prices decrease below expectations, the emissions price may result in significant excess revenue.
- c) A mechanism would be needed to collect revenue and acquire sufficient emissions units to offset covered emissions. Excess revenue would have to be directed as agreed.



### 4.3 Recommendation

Although an emission price is an alternative methodology to transaction fee, it does not provide additional value and adds significant complexity. Therefore, the Experts recommend that no further consideration of an emissions price as revenue mechanism for Option 2 is required.

### 5. Possible Uses of Revenue (paragraphs 2.11 for Options 2 and 3 in Appendix A)

Revenues raised either from Option 2 (above what is needed to purchase emission units for offsetting) or Option 3 (if auctioning is used) could be used for several purposes, which should be in line with principle n) of Annex to Resolution A37-19 (*footnote*). In both cases, some of the revenues raised could be used to cover the administrative costs of the system, such as a registry, verification of compliance, and other elements necessary to run the system. In addition, revenues raised could be used to contribute further to the climate goals of the system. The use of such additional revenues could be used for a number of purposes, including the following.

- a) Additional emissions units could be purchased to achieve additional climate mitigation below the global baseline or cap.
- b) The revenues could be used to contribute to further mitigation of the environmental impact of aviation emissions, including measures identified in States' action plans and regional initiatives. Such activities could include:
  - i. Research and development in innovative aviation technology that leads to further increased fuel efficiency; improved air traffic management systems; alternative fuels; other areas that could help reduce either fuel consumption or emissions directly. The funding for such research and development could possibly be distributed through existing mechanisms.
  - ii. Technical assistance to States, especially reflecting the special circumstances and respective capabilities of States, to help them modernize aviation systems to improve fuel efficiency.
- c) The revenues could be used to contribute to broader mitigation and adaptation activities outside the aviation sector.

The additional revenues raised could be used as a way to indirectly implement a de minimis provision whereby the system could be applied equally to operators from de minimis States and the revenue generated from those operators used for agreed purposes.

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## APPENDIX D

### CONCEPT DOCUMENT: ICAO FRAMEWORK FOR MARKET-BASED MEASURES (MBMs)

#### 1. INTRODUCTION

1.1 ICAO Assembly Resolution A37-19 adopted at the 37th Session of the ICAO Assembly requested the Council, with support of Member States, to undertake work to develop a framework for market-based measures (MBMs) in international aviation (Operative Clause 13 of A37-19).

1.2 Consistent with the Council Decision (C-DEC 195/9), the Secretary General developed this concept of a framework for market-based measures with the assistance and advice of experts nominated by Member States and international organizations, the same experts providing advice and assistance to the Secretariat's work on Operative Clause 18 of A37-19.

#### 2. DESCRIPTION OF FRAMEWORK FOR MBMs

2.1 The term “framework for MBMs” derives from the work of the Group on International Aviation and Climate Change (GIACC) comprised of high-level officials from 15 Member States. In preparing a proposed description of a framework for market-based measures, the 2009 Report from the GIACC was used as a reference.

2.2 The framework for MBMs supports [the development of a global MBM scheme as a preferred alternative to] States adopting their own measures independent of one another, which could make coordination more difficult, create risks of distortion of competition, create unnecessary burdens for industry and complicate industry compliance.

2.3 With the assistance of the Experts who participated in the discussion the following description of framework for MBMs was prepared to guide the further work on the framework for MBMs:

*The ICAO framework for MBMs provides a set of agreed norms that elaborates on the guiding principles set out in Annex A to A37-19 for the design and implementation of [compatible] MBMs and constitutes common building blocks that could be used to develop a global MBM scheme.*

#### Key Attributes of the Framework for MBMs

- The ICAO framework for MBMs is intended to describe MBM characteristics at a high level that should be compatible or have the flexibility to adjust so as to develop towards a global system.
- The ICAO framework for MBMs seeks to drive commonality of key aspects of a global MBM scheme [to achieve compatibility]; it is not intended to create a mechanism to formally link existing MBM schemes.
- The ICAO framework for MBMs should be structured to contribute to the ICAO environmental objectives.

- 2.4 When a global MBM scheme is adopted, the ICAO framework for MBMs will no longer be needed.
- 2.5 The legal status of the ICAO framework for MBMs should be further considered.

### 3. CONCEPT FOR AN ICAO FRAMEWORK FOR MBMs

3.1 This concept document provides a description of an ICAO framework for MBMs. It is not a fully developed proposal as that will require more work at a finer level of detail. This work will be conducted over the summer of 2012.

3.2 For clarity and ease of reference, this concept is organized in terms of the six key issues identified in the GIACC Report. These key issues are established as objectives of the framework for MBMs and within these objectives, the Principles listed in the Annex to A37-19 are identified and further elaborated.

3.3 Several of the principles could be applied to more than one of the objectives, however, to avoid confusion and for ease of understanding, these principles where possible are mapped to a single objective at this stage. As the proposal is further developed, a more refined application of the principles will result.

3.4 Five of the principles viewed to be of an overarching nature applicable to all aspects of an ICAO framework for MBMs may be thought of as the key high-level outcomes to be delivered by any MBM that is applied to international aviation. They will be further developed in this regard:

- a) MBMs should support sustainable development of the international aviation sector;
- b) MBMs should support the mitigation of GHG emissions from international aviation;
- c) MBMs should contribute towards achieving global aspirational goals;
- h) MBMs should ensure the fair treatment of the international aviation sector in relation to other sectors;
- n) where revenues are generated from MBMs, it is strongly recommended that they should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions, including mitigation and adaptation, as well as assistance to and support for developing States.

3.5 Six potential objectives of the framework for MBMs and the associated principles from the Annex to Assembly Resolution A37-19 are discussed below. As these objectives are further elaborated, additional objectives may be identified.

#### A) Principles of non-discrimination and fair opportunities

The preamble to the Convention on International Civil Aviation (Doc 7300/9) states: “Whereas the future development of international civil aviation can greatly help to create and preserve friendship and understanding among nations and peoples of the world, yet its abuse can become a threat to the general security; and Whereas it is desirable to avoid friction and promote the cooperation between nations and peoples upon which world peace depends; Therefore the undersigned governments having agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international transport services may be established on the basis of equality of opportunity and operated soundly and economically; Have accordingly concluded this Convention to that end.”

The ICAO framework for MBMs should be structured to provide equality of opportunity in participating in carbon markets and related implementation mechanisms and support the operation of international civil aviation in a sound and economic manner. In this regard, certain attributes of MBM schemes require careful consideration and design. These include: the States and/or international airlines that are subject to the scheme, the assignment of duties and obligations to achieve the desired goal, the consistent and equitable treatment of all participants, the objective measurement and fair assessment of performance of participants and the accurate and transparent recording of transactions.

One of the Principles listed in the Annex to A37-19 that is relevant to this framework objective and will be further developed in this regard is:

- i) MBMs should recognize past and future achievements and investments in aviation fuel efficiency and in other measures to reduce aviation emissions.

#### **B) Specific circumstances and different capabilities of each State and Region**

The ICAO framework for MBMs should take into account the varied circumstances and accommodate the different capabilities of the States or Regions. The structure of a MBM scheme must internalize this objective in the design of the scheme. This is relevant to the use of financial instruments and how they are applied to the participants as well as the assignment of obligations to States.

One of the Principles listed in the Annex to A37-19 that is relevant to this framework objective and will be further developed in this regard is:

- m) MBMs should include *de minimis* provisions.

#### **C) The most effective and efficient measures**

ICAO Member States should seek to achieve intended environmental benefit in the most cost effective way. This will ensure the optimal use of resources to address international aviation's climate change impact. Generally, the cost effectiveness of a measure should be expressed as \$/tonne CO<sub>2</sub>, which can be computed from actual figures when the measure is implemented. States should also agree on recognized cost elements, which could include the following:

- Implementation cost: referring to equipment, infrastructure, personnel and services, and financing cost;
- Actual charges: carbon-based charges, cost of allowances and offsets, penalties paid;
- Administrative cost: cost of government enforcement and oversight, cost to industry for compliance reporting and independent certification; and
- Cost to industry: the effect of any reduced demand for aviation services.

There should be a common metric to measure environmental benefit, which could also serve as a benchmark for certain MBMs where emission baselines are established. This can be in the form of the tonnes of CO<sub>2</sub> reduced, mitigated or offset by the parties to the MBM scheme. It can also be reflected in an efficiency metric such as kilograms of CO<sub>2</sub> emitted per Revenue Tonne Kilometre performed (Kg CO<sub>2</sub>/RTK) or litres of fuel consumed per Revenue Tonne Kilometre performed (L fuel/RTK). In each

circumstance, the metric chosen should be equitably applied to all parties covered by the MBM. These could include:

- Tonnes of CO<sub>2</sub> eliminated from the atmosphere by international civil aviation;
- Tonnes of CO<sub>2</sub> offset by actions undertaken by international aviation;
- Improvements in the average in-service fleet fuel efficiency.

Three of the Principles listed in the Annex to A37-19 that are relevant to this framework objective and will be further developed in this regard are:

- e) MBMs should be cost-effective;
- g) MBMs should minimize carbon leakage and market distortions;
- j) MBMs should not impose inappropriate economic burden on international aviation.

#### **D) Facilitate industry compliance**

The respective roles and characteristics of all stakeholders including Member States, airlines, fuel suppliers, air navigation service providers, airports and manufacturers need to be taken into account in the development and implementation of MBMs.

The MBMs should achieve environmentally effective outcomes, be as simple as possible to understand, transparent in their design and application, and should minimize, as much as possible, the economic and administrative burdens on participants.

Two of the Principles listed in the Annex to A37-19 that are relevant to this framework objective and will be further developed in this regard are:

- d) MBMs should be transparent and administratively simple;
- k) MBMs should facilitate appropriate access to all carbon markets.

#### **E) Coordination to assure MBMs are not duplicative**

International aviation CO<sub>2</sub> emissions should be addressed and accounted for once and only once and, therefore, not subject to multiple market-based measures. While all duplication should be avoided, particular attention needs to be given to prevent the application of overlapping measures by more than one State or a group of States, or the layering of measures within a State.

Three of the Principles listed in the Annex to A37-19 that are relevant to this framework objective and will be further developed in this regard are:

- f) MBMs should not be duplicative and international aviation CO<sub>2</sub> emissions should be accounted for only once;
- l) MBMs should be assessed in relation to various measures on the basis of performance measured in terms of CO<sub>2</sub> emissions reductions or avoidance, where appropriate;
- o) where emissions reductions are achieved through MBMs, they should be identified in States' emissions reporting.

**F) Geographic scope of MBMs for international aviation**

A critical component of the framework will be how it addresses the geographic scope issues that are highlighted in the ICAO Guidance on the Use of Emissions Trading for Aviation (Doc 9885). The issue as currently framed relates to the lack of agreement on how States might incorporate emissions from international aviation into national systems in the absence of global measures. While Doc 9885 relates specifically to emissions trading, the approach could equally apply to any national MBMs to address the climate impacts aviation, though further guidance could be necessary.

The framework for MBMs will provide advice on proposed alternative approaches to achieve agreement on geographic scope and the possible ways of addressing the geographic scope issues.

None of the Principles listed in the Annex to A37-19 mapped directly to this objective.

**4. NEXT STEPS**

4.1 The Secretariat will continue to progress the work on the ICAO framework for MBMs over the 2012 summer period. This will include consultations with experts provided by States and international organizations. The objective is to produce a more fully developed ICAO framework for MBMs for consideration by the Council during its 197th Session.

— END —