



REVIEW PRACTICE GUIDANCE

**Overview of the relevant International Civil
Aviation Organization (ICAO) and International
Maritime Organization (IMO) decisions
related to the limitation or reduction
of greenhouse gas emissions**

Background Paper for the 3rd Lead Reviewers Meeting, 3–4 March 2016, Bonn, Germany

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I. Background

1. According to Article 2, paragraph 2, of the Kyoto Protocol, the Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO), respectively.
2. In accordance with Article 7, paragraph 2, of the Kyoto Protocol, each Party included in Annex I shall incorporate in its national communication (NC), submitted under Article 12 of the United Nations Framework Convention on Climate Change (UNFCCC), the supplementary information necessary to demonstrate compliance with its commitments under this Protocol.
3. Decision 22/CP.7 Guidance for the preparation of the information required under Article 7 of the Kyoto Protocol in its Annex II. Reporting of supplementary information under Article 7, paragraph 2, part G. Policies and measures in accordance with Article 2 states that with respect to aviation and marine bunker fuels, each Party included in Annex I shall, in pursuit of Article 2, paragraph 2, of the Kyoto Protocol, identify the steps it has taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or reduce emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels.
4. With respect to experience and practice in reviewing the supplementary information under the Kyoto Protocol and other NC-related elements, the lead reviewers (LRs), at their 2nd meeting in March 2015, requested the secretariat to compile information on the relevant decisions by the ICAO and the IMO and to provide it to the ERTs.¹

II. Purpose and scope

5. The purpose of this background paper is to provide an overview of the decisions relevant to NC reporting and the pertaining actions by the ICAO and the IMO related to the limitation or reduction of GHG emissions, which could facilitate the ERT's better understanding of the supplementary information under Article 7, paragraph 2 of the Kyoto Protocol, as reported in the NCs.
6. The background paper is based on publicly available official documents and reports published by the ICAO, the IMO and the UNFCCC, as well as on information obtained through direct communication between the secretariat and the IMO.
7. Sections I and II introduce the subject, purpose and scope of this paper. Section III elaborates the key decisions and actions enforced by the ICAO and the IMO in order to limit or reduce GHG emissions by its members. Annex I contains full text of the ICAO's resolution A38-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change adopted in 2013 which represent a key legal document which enshrines policies and measures in the international aviation sector to limit or reduce greenhouse gas emissions. Annex II contains list of relevant IMO's resolutions related to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), which deals with air pollution, energy efficiency and GHG emissions.

¹ "Conclusions and recommendations. Second meeting of lead reviewers for the review of biennial reports and national communications". Available at http://unfccc.int/files/national_reports/biennial_reports_and_iar/application/pdf/lr2_draft_conclusions_final_edited_final_11_march.pdf.

III. Overview of the ICAO and the IMO decisions and actions related to limitation or reduction of greenhouse gases emissions

A. The International Civil Aviation Organization

8. The ICAO is a specialized agency of the United Nations created in 1944, with the signing of the Convention on International Civil Aviation, to promote the safe and orderly development of international civil aviation throughout the world. It sets standards and regulations necessary for aviation safety, security, efficiency, capacity and environmental protection. The organization serves as the forum for cooperation in all fields of civil aviation. The Environment Branch, of the ICAO Air Transport Bureau (ATB) is in charge of progressing the work of the organization in this field. It is also responsible for providing support and managing the activities of the ICAO Committee on Aviation Environmental Protection (CAEP).

9. CAEP is a technical committee of the ICAO Council and undertakes most of the work of the organization for the development of Standards and Recommended Practices (SARPs) in this area. It is an international forum that involves close to 400 experts for the study and development of measures to minimize the impact of aviation on the environment. Every technical proposal developed by CAEP is analysed according to four criteria: technical feasibility, environmental benefit, economic reasonableness, and the interrelationship among measures.

10. The ICAO Council reviews and adopts the CAEP recommendations and considers other relevant matters in this area. It then reports to the ICAO Assembly, the highest body of the organization, where the main policies on aviation environmental protection are adopted and translated into Assembly Resolutions. The organization also produces studies, reports, manuals, and circulars on the subject of aviation and environment. More information on ICAO's activities in this area can be found at: www.icao.int/environment.

11. In regard to limitation or reduction of the impact of aviation greenhouse gas emissions on the global climate, which is one of the established ICAO's environmental goals, the ICAO Assembly adopted resolution A38-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change (2013). It provides the basis for additional concrete steps as ICAO moves forward in demonstrating how it intends to realize the ultimate vision of fully sustainable international aviation. Annex I to this report contains full text of resolution A38-18.

12. The key elements of resolution A38-18 are as follows:

(a) Reaffirmation of collective global aspirational goals for the international aviation sector namely improving fuel efficiency by 2 per cent per year and keeping net CO₂ emissions at the same levels from 2020 onward;

(b) Further work to explore the feasibility of a long-term global aspirational goal for international aviation;

(c) Maintenance and enhancement of appropriate standard, methodologies and a mechanism to measure/estimate, monitor and verify global greenhouse gas (GHG) emissions from international aviation;

(d) Development of a global CO₂ Emissions Standard for aircraft, aiming for adoption by the ICAO Council in 2016;

(e) Maintenance and update of guidance on air traffic management (ATM) improvements and other operational measures to reduce international aviation emissions and continued development of tools to assess their benefits;

(f) Development of coordinated national policy actions to accelerate the appropriate development, deployment, and use of sustainable alternative fuels for aviation with measures to ensure the sustainability of alternative fuels for aviation;

(g) Development of a global MBM scheme for international aviation, which addresses key design elements, including a means to take into account the special circumstances and respective capabilities of States, in particular developing States, as well as the implementation mechanisms from 2020, for decision by the 39th Assembly in 2016;

(h) Voluntary preparation and update of States' action plans on CO₂ emissions reduction activities, for submission to ICAO by June 2015, and to be made publically available;

(i) Enhancement of ICAO's strategy for capacity building and assistance, including support for the development and update of States' action plans, as well as the mechanisms to facilitate access to financial resources.

13. The paragraphs from 14 to 21 below provide a summary of the key areas where the current and future work by ICAO is being undertaken.

14. **Global Aspirational Goals:** The ICAO Assembly considered the present and future global CO₂ trends assessment, which reflected the consensus agreement of the CAEP and estimated the contribution of various categories of mitigation measures to reduce aviation CO₂ emissions (i.e. new technologies, operational improvements, and alternative fuels). Subsequently, the ICAO Assembly resolved that ICAO's member States and relevant organizations will work together to strive to achieve a collective medium term global aspirational goal of keeping the global net carbon emissions from international aviation from 2020 at the same level. This medium term goal, together with the 2% annual fuel efficiency goal up to the year 2050, would not attribute specific obligations to individual States.

15. **Data reporting:** The ICAO Assembly recognized the need to monitor and report the potential impacts of climate change on international aviation operations and related infrastructure and encouraged States to support the work of the ICAO on measuring progress through the reporting of annual data on traffic, fuel consumption, and CO₂ emissions. The ICAO Assembly is also requesting the ICAO to regularly report CO₂ emissions from international aviation to the UNFCCC, as part of its contribution to assessing progress made in implementation actions in the sector, based on information approved by its Member States.

16. **State Action Plans:** The ICAO Assembly praised the positive outcome of the initiatives undertaken by the organization, which enabled the submission of State Action Plans representing over 80 per cent of international traffic during the last triennium. Resolution A38-18 encourages States to submit their voluntary action plans outlining their respective policies and actions on CO₂ emissions reductions, and to annually report their international aviation CO₂ emissions to the ICAO. It also invites those States that choose to prepare or update their action plans to submit them to the ICAO as soon as possible, preferably by the end of June 2015, and once every three years thereafter. The Resolution also highlights that the action plans should include information on the expected environmental benefits to be accrued from the implementation of the measures selected from the basket, as well as information on any specific assistance needs. It further encourages States that have already submitted their action plans, to share that information and to build partnerships with other Member

States in order to support those States that have not yet prepared their action plans. States were also encouraged to make their action plans publically available, taking into consideration the commercial sensitivity of information contained in State action plans.

17. **Assistance to States:** The ICAO Assembly requested the ICAO Council to continue to play a key role in providing assistance to States through the dissemination of the latest information on best practices, and the provision of guidance and other technical assistance to enhance capacity building and technology transfer. The ICAO Assembly also requests the ICAO Council to consolidate and build on the partnerships with other international organizations to meet the assistance needs of ICAO Member States, including through their action plans, and to continue to initiate specific measures to assist developing States, as well as to facilitate access to financial resources, technology transfer and capacity building.

18. **Market-based Measures (MBM):** Potential options regarding the feasibility of a global MBM scheme were reviewed by the ICAO Council, and in June 2012 three were chosen for further elaboration of their design elements and impact analysis. In November 2012, the Council recognized that the results of the qualitative and quantitative analysis of the three options demonstrated that they were technically feasible. The analysis was further refined in early 2013, using updated traffic forecasts and CO₂ trends assessment from the CAEP. Work on the development of a framework for MBMs was undertaken in parallel with the work on a global scheme, and focused on key issues including: the purpose of the framework, geographical coverage of MBMs, and how to accommodate States' special circumstances and respective capabilities. The ICAO Assembly also agreed that the ICAO Council, with support of Member States, would recommend a proposal for a global MBM scheme for decision by the 39th Assembly in 2016. Major efforts will be needed in order to address key design elements, including a means to take into account the special circumstances and respective capabilities of States, in particular developing States, as well as the mechanisms required for implementation of the scheme from 2020 onward.

19. **Alternative Fuels for Aviation:** The ICAO Assembly strongly endorsed ICAO's continuing work to facilitate the wider implementation of sustainable alternative fuels. It requested that the ICAO continue to encourage Member States and invite industry, financial institutions and other international organizations to actively participate in exchanging information and best practices, and in undertaking further work through the ICAO on sustainable alternative fuels for aviation. Furthermore the ICAO is requested to continue to maintain the ICAO Global Framework for Aviation Alternative Fuels (GFAAF) and to collect information on the progress of alternative fuels in aviation, including through State action plans, in order to attain a global view of the future use of alternative jet fuels, and to account for changes in life-cycle GHG emissions to assess progress toward achieving global aspirational goals.

20. **Technological and Operational Measures:** The ICAO Assembly recognized the work of the CAEP and requested the ICAO to continue its work in facilitating the further development of Standards, Recommended Practices and Procedures and/or guidance material on aircraft noise and engine emissions. In addition, the ICAO Assembly requested that a global CO₂ Emissions Standard for aircraft be developed, aiming to finalize analyses by late 2015, and adoption by the Council in 2016.

21. **Cooperation with other UN Bodies:** The ICAO Assembly requested the ICAO Council to continue to cooperate with other international organizations involved in policy making in this field, notably with the UNFCCC. On the issue of climate financing, the ICAO Assembly urged the ICAO and its Member States to clearly express their concerns, through the UNFCCC process, about the use of international aviation as a potential source for the mobilization of revenue for climate financing of

other sectors, in order to ensure that international aviation would not be targeted as a source of such revenue in a disproportionate manner.

B. International Maritime Organization

22. International Maritime Organization is a specialized agency of the United Nations created in 1948 with responsibility for the safety and security of shipping and the prevention of marine pollution by ships. The Organization consists of an Assembly, as the highest Governing Body of the Organization, a Council and five main Committees: the Maritime Safety Committee; the Marine Environment Protection Committee; the Legal Committee; the Technical Cooperation Committee and the Facilitation Committee and a number of Sub-Committees support the work of the main technical committees.

23. The Marine Environment Protection Committee (MEPC) was established by the Assembly in November 1973. It is responsible for coordinating the organization's activities in the prevention and control of pollution of the environment from ships. In particular it is concerned with the adoption and amendment of conventions and other regulations and measures to ensure their enforcement.

24. In 1973, the IMO adopted the International Convention for the Prevention of Pollution from Ships (MARPOL), which has been amended by a series of Protocols and kept updated through other relevant amendments. The MARPOL Convention addresses pollution from ships by oil; by noxious liquid substances carried in bulk, harmful substances carried by sea in packaged form; sewage; garbage; and the prevention of air pollution from ships, including greenhouse gas emissions.

25. The Conference of Parties to MARPOL held in 1997, by its resolution 8. on CO₂ emissions from ships invited the MEPC to undertake a study of CO₂ emissions from ships for the purposes of establishing the amount and relative percentage of emissions from ships as part of the global CO₂ inventory. So far, the IMO has published three studies related to greenhouse gas emissions from ships.² The resolution also invited the MEPC to consider what CO₂ reduction strategies might be feasible in light of the relationship between CO₂ and other atmospheric and marine pollutants.

26. The IMO Assembly during its 23rd session in 2003 adopted resolution A.963(23) IMO Policies and practices related to the reduction of greenhouse gas emissions from ships which sets out that the IMO should take the lead in developing GHG limitation and reduction strategies and mechanisms for international shipping and that, in doing so, it should co-operate with the Conference of the Parties to the UNFCCC.

27. The IMO and its MEPC has been considering, as an integral part of its agenda, concrete actions to address greenhouse gas emission from ships engaged in international trade. The MEPC on its 62nd session in 2011 adopted, under resolution MEPC.203(62), a new chapter 4. "Regulations for energy efficiency of ships" to the MARPOL Annex VI, that includes a package of mandatory technical and operational measures to reduce greenhouse gas emissions from international shipping, with the aim of improving the energy efficiency for new ships through improved design and propulsion technologies and for all ships, both new and existing, primarily through improved operational practices. The measures entered into force on 1 January 2013.

28. The Regulations for energy efficiency of ships apply to internationally trading ships of 400 gross tonnage and above, and make mandatory the:

² Available at:

<<http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/IMO-Publications.aspx>>

(a) **Energy Efficiency Design Index (EEDI)** for new ships, which is a non-prescriptive, performance-based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. As long as the required energy-efficiency level is attained, ship designers and builders are free to use the most cost-efficient solutions for a ship to comply with the regulations; and

(b) **Ship Energy Efficiency Management Plan (SEEMP)** for all ships, which establishes a mechanism for operators to improve the energy efficiency of ships. This should be achieved by monitoring the energy efficiency performance of a ship's transportation work and by considering new technologies and practices to improve energy efficiency at regular intervals.

29. Four important guidelines documents intended to assist in the implementation of energy efficiency of ships, as stipulated by the resolution MEPC.203(62) have been adopted as follows:

(a) 2012 Guidelines on the method of calculation of the attained Energy Efficiency Design Index for new ships (resolution MEPC.212(63), as amended);

(b) 2012 Guidelines for the development of a Ship Energy Efficiency Management Plan (resolution MEPC.213(63));

(c) 2012 Guidelines on survey and certification of the Energy Efficiency Design Index (resolution MEPC.214(63));

(d) Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (resolution MEPC.215(63)).

30. The MEPC, by its resolution MEPC.229(65) on "Promotion of Technical Co-operation and Transfer of Technology relating to the Improvement of Energy Efficiency of Ships" from 2013, has:

(a) requested the IMO, through its various programmes, to provide technical assistance to Member States to enable cooperation in the transfer of energy-efficiency technologies to developing countries in particular; and further assist in the sourcing of funding for capacity building and support to States, in particular developing States, which have requested technology transfer; and

(b) established the Ad Hoc Expert Working Group on Facilitation of Transfer of Technology for Ships (TT-EG) which has been tasked to:

(i) assess the potential implications and impacts of the implementation of the energy efficiency regulations in chapter 4 of MARPOL Annex VI, in particular on developing States, as a means to identify their technology transfer and financial needs;

(ii) identify and create an inventory of energy efficiency technologies for ships;

(iii) identify barriers to transfer of technology, in particular to developing States, including associated costs, and possible sources of funding; and

(iv) make recommendations, including the development of a model agreement enabling the transfer of financial and technological resources and capacity building between Parties, for the implementation of the energy efficiency regulations.

31. The MEPC on its 68th session in 2015 (MEPC 68) continued its work on further developing guidelines to support the uniform implementation of the regulations on energy-efficiency, particularly related to data collection system for fuel consumption with the main purpose to analyze energy efficiency of the ships. In this regard, MEPC 68 agreed that the development of a data collection system for ships should follow a

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three-step approach: data collection, data analysis, followed by decision-making on what further measures, if any, are required. Whether data collection system should be applied voluntary or mandatory has not been decided yet.

Annex I

Resolution A38-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change

Whereas ICAO and its member States recognize the critical importance of providing continuous leadership to international civil aviation in limiting or reducing its emissions that contribute to global climate change;

Reemphasizing the vital role which international aviation plays in global economic and social development and the need to ensure that international aviation continues to develop in a sustainable manner;

Whereas the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) is to achieve stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system;

Whereas the Kyoto Protocol, which was adopted by the Conference of the Parties to the UNFCCC in December 1997 and entered into force on 16 February 2005, calls for developed countries (Annex I Parties) to pursue limitation or reduction of greenhouse gases from “aviation bunker fuels” (international aviation) working through ICAO (Article 2.2);

Acknowledging that international aviation emissions, currently accounting for less than 2 per cent of total global CO₂ emissions, are projected to grow as a result of the continued development of the sector;

Whereas a comprehensive assessment of aviation’s impact on the atmosphere is contained in the special report on *Aviation and the Global Atmosphere*, published in 1999, which was prepared at ICAO’s request by the Intergovernmental Panel on Climate Change (IPCC) in collaboration with the Scientific Assessment Panel to the Montreal Protocol on Substances that Deplete the Ozone Layer;

Whereas the IPCC special report recognized that the effects of some types of aircraft emissions are well understood, it revealed that the effects of others are not, and identified a number of key areas of scientific uncertainty that limit the ability to project aviation’s full impacts on climate and ozone;

Whereas ICAO requested that the IPCC include an update of the main findings of the special report in its Fourth Assessment Report, published in 2007 and its Fifth Assessment Report to be published in 2014;

Noting the scientific view that the increase in global average temperature above pre-industrial levels ought not to exceed 2°C;

Acknowledging the principles and provisions on common but differentiated responsibilities and respective capabilities, and with developed countries taking the lead under the UNFCCC and the Kyoto Protocol;

Also acknowledging the principles of non-discrimination and equal and fair opportunities to develop international aviation set forth in the Chicago Convention;

Recognizing that this Resolution does not set a precedent for or prejudge the outcome of negotiations under the UNFCCC and its Kyoto Protocol nor represent the position of the Parties to the UNFCCC and its Kyoto Protocol;

Recognizing that the aspirational goal of 2 per cent annual fuel efficiency improvement is unlikely to deliver the level of reduction necessary to stabilize and then reduce

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aviation's absolute emissions contribution to climate change, and that goals of more ambition will need to be considered to deliver a sustainable path for aviation;

Noting that, to promote sustainable growth of aviation, a comprehensive approach, consisting of work on technology and standards, and on operational and market-based measures to reduce emissions is necessary;

Acknowledging the significant technological progress made in the aviation sector, with aircraft produced today being about 80 per cent more fuel efficient per passenger kilometre than in the 1960's;

Welcoming the agreement by the Committee on Aviation Environmental Protection (CAEP) of certification requirements for a global CO₂ Standard for aircraft;

Recognizing that air traffic management (ATM) measures under the ICAO's Global Air Navigation Plan contribute to enhanced operational efficiency and the reduction of aircraft CO₂ emissions;

Welcoming the adoption of the Aviation System Block Upgrades (ASBUs) strategy at the ICAO Twelfth Air Navigation Conference in November 2012;

Recalling that Assembly Resolution A37-19 requested the Council, with the support of member States, to undertake work to develop a framework for market-based measures (MBMs) in international aviation, including further elaboration of the guiding principles listed in the Annex to A37-19, for consideration by the 38th Session of the ICAO Assembly;

Recognizing the importance of avoiding a multiplicity of approaches for the design and implementation of MBM framework and MBM schemes;

Recalling that Assembly Resolution A37-19 requested the Council to explore the feasibility of a global MBM scheme to address emissions from international aviation;

Noting the decision of the Council on 9 November 2012, which recognized that the results of the qualitative and quantitative analysis of the three options for a global MBM scheme evaluated by the Secretariat with the support of the Experts on MBMs demonstrated that all three options were technically feasible and had the capacity to contribute to achieving ICAO's environmental goals, and that the Council agreed that further quantitative analysis of the three options needed to be undertaken to develop more robust and concrete conclusions;

Recognizing the potential desirability of a global MBM scheme in terms of providing an additional means of promoting achievement of the aspirational global goal referred to in paragraph 7;

Noting the support of the aviation industry for a single global carbon offsetting scheme, as opposed to a patchwork of State and regional MBMs, as a cost effective measure to complement a broader package of measures including technology, operations and infrastructure measures;

Noting that the Conference on Aviation and Alternative Fuels in November 2009 (CAAF/09) endorsed the use of sustainable alternative fuels for aviation, particularly the use of drop-in fuels in the short to mid-term, as an important means of reducing aviation emissions;

Also noting that the CAAF/09 established an ICAO Global Framework for Aviation Alternative Fuels (GFAAF);

Noting the progress achieved in proving the technological feasibility of drop-in sustainable alternative fuels for aviation and that such fuels will require the introduction of appropriate policies and incentives to create a long-term market perspective;

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Acknowledging the need for such fuels to be developed and deployed in an economically feasible, socially and environmentally acceptable manner and the need for increased harmonization of the approaches to sustainability;

Noting that, consistent with Assembly Resolution A37-19, a substantial strategy for capacity building was undertaken by the Organization to assist the preparation and submission of States' action plans, including the holding of hands-on training workshops and the development of guidance material, an interactive web-interface and the ICAO Fuel Savings Estimation Tool (IFSET);

Welcoming that, as of 30 June 2013, 61 member States that represent 78.89 per cent of global international air traffic voluntarily prepared and submitted their action plans to ICAO;

Noting that the ICAO "Assistance for Action – Aviation and Climate Change" Seminar in October 2012 highlighted the active involvement of member States and international organizations in the activities related to States' action plans, explored possible sources of financial support for environmental action and provided an opportunity to share information and build partnerships in order to facilitate assistance identified by States for the preparation and implementation of their action plans;

Recognizing the different circumstances among States in their capacity to respond to the challenges associated with climate change and the need to provide necessary support, in particular to developing countries and States having particular needs;

Affirming that specific measures to assist developing States as well as to facilitate access to financial support, technology transfer and capacity building should be initiated as soon as possible;

Whereas the Kyoto Protocol provides for different flexible instruments (such as the Clean Development Mechanism — CDM) which would benefit projects involving developing States;

Affirming that addressing GHG emissions from international aviation requires the active engagement and cooperation of States and the industry, and *noting* the collective commitments announced by Airports Council International (ACI), Civil Air Navigation Services Organisation (CANSO), International Air Transport Association (IATA), International Business Aviation Council (IBAC) and International Coordinating Council of Aerospace Industries Associations (ICCAIA) on behalf of the international air transport industry, to continuously improve CO₂ efficiency by an average of 1.5 per cent per annum from 2009 until 2020, to achieve carbon neutral growth from 2020 and to reduce its carbon emissions by 50 per cent by 2050 compared to 2005 levels;

Recognizing the need to monitor and report the potential impacts of climate change on international aviation operations and related infrastructure; and

Recognizing the progress made by ICAO in its implementation of the Climate Neutral UN initiative and the significant support provided by ICAO to the initiative, in particular through the development of a common methodology for calculating GHG emissions from air travel;

The Assembly:

1. *Resolves* that this Resolution, together with Resolution A38-17: Consolidated statement of continuing ICAO policies and practices related to environmental protection - General provisions, noise and local air quality, supersede Resolutions A37-18 and A37-19 and constitute the consolidated statement of continuing ICAO policies and practices related to environmental protection;

2. *Requests* the Council to:

- a) Ensure that ICAO exercise continuous leadership on environmental issues relating to international civil aviation, including GHG emissions;
- b) continue to study policy options to limit or reduce the environmental impact of aircraft engine emissions and to develop concrete proposals and provide advice as soon as possible to the Conference of the Parties of the UNFCCC, encompassing technical solutions and market-based measures, and taking into account potential implications of such measures for developing as well as developed countries; and
- c) Continue to cooperate with organizations involved in policy-making in this field, notably with the Conference of the Parties to the UNFCCC;
- d) ICAO should continue to take initiatives to promote information on scientific understanding of aviation's impact and action undertaken to address aviation emissions and continue to provide the forum to facilitate discussions on solutions to address aviation emissions; and
- e) Emphasis should be on those policy options that will reduce aircraft engine emissions without negatively impacting the growth of air transport especially in developing economies;

4. *Reaffirms* that this Resolution does not set a precedent for or prejudge the outcome of negotiations under the UNFCCC and its Kyoto Protocol nor represent the position of the Parties to the UNFCCC and its Kyoto Protocol;

5. *Resolves* that States and relevant organizations will work through ICAO to achieve a global annual average fuel efficiency improvement of 2 per cent until 2020 and an aspirational global fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050, calculated on the basis of volume of fuel used per revenue tonne kilometre performed;

6. *Agrees* that the goals mentioned in paragraph 5 above would not attribute specific obligations to individual States, and the different circumstances, respective capabilities and contribution of developing and developed States to the concentration of aviation GHG emissions in the atmosphere will determine how each State may voluntarily contribute to achieving the global aspirational goals;

7. *Also resolves* that, without any attribution of specific obligations to individual States, ICAO and its member States with relevant organizations will work together to strive to achieve a collective medium term global aspirational goal of keeping the global net carbon emissions from international aviation from 2020 at the same level, taking into account: the special circumstances and respective capabilities of States, in particular developing countries; the maturity of aviation markets; the sustainable growth of the international aviation industry; and that emissions may increase due to the expected growth in international air traffic until lower emitting technologies and fuels and other mitigating measures are developed and deployed;

8. *Recognizes* the many actions that ICAO member States have taken and intend to take in support of the achievement of the collective aspirational goals, including air traffic management modernization, acceleration of the use of fuel-efficient aircraft technologies, and the development and deployment of sustainable alternative fuels, and *encourages* further such efforts;

9. *Agrees* to review, at its 39th Session, the goal mentioned in paragraph 7 above in light of progress towards the goal, studies regarding the feasibility of achieving the goal, and relevant information from States;

10. *Requests* the Council to continue to explore the feasibility of a long term global aspirational goal for international aviation, through conducting detailed studies assessing the attainability and impacts of any goals proposed, including the impact on growth as well as costs in all countries, especially developing countries, for the progress of the work to be presented to the 39th Session of the ICAO Assembly. Assessment of long term goals should include information from member States on their experiences working towards the medium term goal.
11. *Further encourages* States to submit their voluntary action plans outlining their respective policies and actions, and annual reporting on international aviation CO2 emissions to ICAO;
12. *Invites* those States that choose to prepare or update their action plans to submit them to ICAO as soon as possible preferably by the end of June 2015 and once every three years thereafter, in order that ICAO can continue to compile the information in relation to achieving the global aspirational goals, and the action plans should include information on the basket of measures considered by States, reflecting their respective national capacities and circumstances, information on the expected environmental benefits from the implementation of the measures chosen from the basket, and information on any specific assistance needs;
13. *Encourages* States that already submitted their action plans to share information contained in their action plans and build partnerships with other member States in order to support those States that have not prepared their action plans;
14. *Encourages* States to make their action plans available to the public, taking into account the commercial sensitivity of information contained in States' action plans;
15. *Requests* the Council to facilitate the dissemination of economic and technical studies and best practices related to aspirational goals and to continue to provide guidance and other technical assistance for the preparation and update of States' action plans prior to the end of June 2015, in order for States to conduct their necessary studies and to voluntarily submit their action plans to ICAO;
16. *Resolves* that States, when designing new and implementing existing MBMs for international aviation should:
 - a) Engage in constructive bilateral and/or multilateral consultations and negotiations with other States to reach an agreement, and
 - b) Grant exemptions for application of MBMs on routes to and from developing States whose share of international civil aviation activities is below the threshold of 1% of total revenue ton kilometres of international civil aviation activities, until the global scheme is implemented;
17. *Requests* the Council to review the *de minimis*, including the *de minimis* threshold of MBMs mentioned in paragraph 16 b) above, taking into account the specific circumstances of States and potential impacts on the international aviation industry and markets, and with regard to the guiding principles listed in the Annex, to be presented for consideration by the 39th Session of the Assembly in 2016;
18. *Decides* to develop a global MBM scheme for international aviation, taking into account the work called for in paragraph 19;
19. *Requests* the Council, with the support of member States, to:
 - a) Finalize the work on the technical aspects, environmental and economic impacts and modalities of the possible options for a global MBM scheme, including on its feasibility and practicability, taking into account the need for development of international aviation, the proposal of the aviation industry and

other international developments, as appropriate, and without prejudice to the negotiations under the UNFCCC;

b) Organize seminars, workshops on a global scheme for international aviation participated by officials and experts of member States as well as relevant organizations;

c) Identify the major issues and problems, including for member States, and make a recommendation on a global MBM scheme that appropriately addresses them and key design elements, including a means to take into account special circumstances and respective capabilities as provided for in paragraphs 20 to 24 below, and the mechanisms for the implementation of the scheme from 2020 as part of a basket of measures which also include technologies, operational improvements and sustainable alternative fuels to achieve ICAO's global aspirational goals; and

d) Report the results of the work in sub-paragraphs a), b) and c) above, for decision by the 39th Session of the Assembly;

20. *Resolves* that an MBM should take into account the special circumstances and respective capabilities of States, in particular developing States, while minimizing market distortion;

21. *Also resolves* that special circumstances and respective capabilities of developing States could be accommodated through *de minimis* exemptions from, or phased implementation for, the application of an MBM to particular routes or markets with low levels of international aviation activity, particularly those serving developing States;

22. *Also resolves* that, the administrative burden associated with the implementation of an MBM to States or aircraft operators with very low levels of international aviation activity should not exceed the benefits from their participation in the MBM, and that exemptions from the application of the MBM to such States or aircraft operators should be considered, while maintaining the environmental integrity of the MBM;

23. *Also resolves* that adjustments to MBM requirements for aircraft operators could be on the basis of fast growth, early action to improve fuel efficiency, and provisions for new entrants;

24. *Further resolves* that, to the extent that the implementation of an MBM generates revenues, it should be used in consistency with guiding principle n) in the Annex;

25. *Recognizes* that in the short term voluntary carbon offsetting schemes constitute a practical way to offset CO₂ emissions, and *invites* States to encourage their operators wishing to take early actions to use carbon offsetting, particularly through the use of credits generated from internationally recognized schemes such as the CDM;

26. *Requests* the Council to collect information on the volume of carbon offsets purchased in relation to air transport, including through States' action plans submitted to ICAO, and to continue to develop and disseminate best practices and tools, such as the ICAO Carbon Emissions Calculator, that will help harmonize the implementation of carbon offset programmes;

27. *Requests* the Council to maintain and enhance appropriate standard, methodologies and a mechanism to measure/estimate, monitor and verify global GHG emissions from international aviation, and States support the work of ICAO on measuring progress through the reporting of annual data on traffic, fuel consumption and CO₂ emissions;

28. *Requests* the Council to request States to continue to support the efforts of ICAO on enhancing the reliability of measuring/estimating global GHG emissions from international aviation;

29. *Requests* the Council to regularly report CO₂ emissions from international aviation to the UNFCCC, as part of its contribution to assessing progress made in the implementation actions in the sector based on information approved by its member States;

30. While recognizing that no effort should be spared to obtain means to support the reduction and stabilization of CO₂ emissions from all sources, *urges* that ICAO and its member States express a clear concern, through the UNFCCC process, on the use of international aviation as a potential source for the mobilization of revenue for climate finance to the other sectors, in order to ensure that international aviation would not be targeted as a source of such revenue in a disproportionate manner;

31. *Requests* the Council to:

- a) Continue to play a pivotal role in providing assistance to its member States through the dissemination of the latest information on best practices and the provision of guidance and other technical assistance to enhance capacity building and technology transfer, including through the ICAO Technical Cooperation Programme;
- b) Consolidate and build on the partnership with other international organizations to meet the assistance needs of ICAO's member States, including through their action plans, which will bring about reductions in international aviation emissions;
- c) Initiate work immediately and as a priority in order to develop a process and mechanisms to facilitate the provision of technical and financial assistance, as well as facilitate access to existing and new financial resources, technology transfer and capacity building, to developing countries and report on results achieved as well as further recommendations, preliminarily by the end of 2015 and at the 39th Session of the Assembly; and
- d) Continue to initiate specific measures to assist developing States as well as to facilitate access to financial resources, technology transfer and capacity building;

32. *Requests* States to:

- a) Promote scientific research aimed at continuing to address the uncertainties identified in the IPCC special report on Aviation and the Global Atmosphere and in the Fourth Assessment report;
- b) Ensure that future international assessments of climate change undertaken by IPCC and other relevant United Nations bodies include updated information, if any, on aircraft-induced effects on the atmosphere;
- c) Consider policies to encourage the introduction of more fuel efficient aircraft in the market;
- d) Accelerate investments on research and development to bring to market even more efficient technology by 2020;
- e) Accelerate the development and implementation of fuel efficient routings and procedures to reduce aviation emissions;
- f) Accelerate efforts to achieve environmental benefits through the application of technologies that improve the efficiency of air navigation and work with ICAO to bring these benefits to all regions and States, taking into account the Aviation System Block Upgrades (ASBUs) strategy;
- g) Reduce legal, security, economic and other institutional barriers to enable implementation of the new ATM operating concepts for the environmentally efficient use of airspace;

- h) Set a coordinated approach in their national administrations in order to develop policy actions to accelerate the appropriate development, deployment and use of sustainable alternative fuels for aviation, in accordance with their national circumstances;
- i) Consider measures to support research and development as well as processing technology and feedstock production in order to decrease costs and support scale-up of sustainable production pathways up to commercial scale, taking into account the sustainable development of States;
- j) Recognize existing approaches to assess the sustainability of all alternative fuels in general, including those for use in aviation which should:
 - 1) Achieve net GHG emissions reduction on a life cycle basis;
 - 2) Respect the areas of high importance for biodiversity, conservation and benefits for people from ecosystems, in accordance with international and national regulations;
 - 3) Contribute to local social and economic development, and competition with food and water should be avoided;
- k) Adopt measures to ensure the sustainability of alternative fuels for aviation, building on existing approaches or combination of approaches, and monitor, at a national level, the sustainability of the production of alternative fuels for aviation;
- l) Work together through ICAO and other relevant international bodies, to exchange information and best practices, including on the sustainability of alternative fuels for aviation;

33. *Requests* the Council to:

- a) Continue to develop and keep up-to-date the guidance for member States on the application of policies and measures aimed at reducing or limiting the environmental impact of emissions from international aviation, and conduct further studies with respect to mitigating the impact of international aviation on climate change;
- b) Encourage States to cooperate in the development of predictive analytical models for the assessment of aviation impacts;
- c) Continue evaluating the costs and benefits of the various measures, including existing measures, with the goal of addressing aircraft engine emissions in the most cost-effective manner, taking into account the interests of all parties concerned, including potential impacts on developing world;
- d) Provide the necessary guidance and direction to ICAO's Regional Offices to assist member States with studies, evaluations and development of procedures, in collaboration with other States in the region, to limit or reduce GHG emissions on a global basis and work together collaboratively to optimize the environmental benefits that can be achieved through their various programmes;
- e) Develop a global CO₂ Standard for aircraft aiming to finalize analyses by late 2015 and adoption by the Council in 2016;
- f) Further elaborate on relevant fuel efficiency metrics, including for international business aviation, and develop and update medium and long term technological and operational goals for aircraft fuel burn;
- g) Maintain and update guidance on ATM improvements and other operational measures to reduce international aviation emissions;

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- h) Implement an emphasis on increasing fuel efficiency in all aspects of the ICAO's Global Air Navigation Plan, and encourage States and stakeholders to develop air traffic management that optimize environmental benefits and to promote and share best practices applied at airports in reducing the adverse effects of GHG emissions of civil aviation;
- i) Continue to develop and update the necessary tools and guidance to assess the benefits associated with ATM improvements, and assess the environmental benefits associated with the implementation of the Aviation System Block Upgrades (ASBUs) strategy;
- j) Encourage member States and invite industry, financial institutions and other international organizations to actively participate in exchange of information and best practices and in further work under ICAO on sustainable alternative fuels for aviation;
- k) Continue to maintain the ICAO Global Framework for Aviation Alternative Fuels (GFAAF);
- l) Collect information on progress of alternative fuels in aviation, including through States' action plans, to give a global view of the future use of alternative jet fuels and to account for changes in life cycle GHG emissions in order to assess progress toward achieving global aspirational goals;
- m) Work with financial institutions to facilitate access to financing infrastructure development projects dedicated to sustainable aviation alternative fuels and incentives to overcome initial market hurdles;
- n) Monitor and disseminate relevant information on the potential impacts of climate change on international aviation operations and related infrastructure, in cooperation with other relevant international organizations and the industry; and
- o) Continue to cooperate with the Climate Neutral UN initiative, remain at the forefront of developing methods and tools for quantifying aviation's GHG emissions with respect to the initiative, and further develop and implement the strategy for reducing GHG emissions and enhancing in-house sustainability management practices of the Organization.

Annex II

The list of the relevant MEPC Resolutions and Guidelines related to MARPOL Annex VI³

Resolutions

- Amendments to the annex of the protocol of 1997 to amend the international convention for the prevention of pollution from ships, 1973, as modified by the protocol of 1978 relating thereto - Inclusion of regulations on energy efficiency for ships in MARPOL Annex VI (MEPC.203(62))

Guidelines related to the energy efficiency of the ships

- 2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)
- 2013 Interim guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions
- 2014 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships
- 2013 guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for cruise passenger ships having non-conventional propulsion
- 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI)
- Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships
- 2012 Guidelines for the development of a ship energy efficiency management plan (SEEMP)
- 2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI
- Interim Guidelines for the calculation of the coefficient f_w for decrease in ship speed in a representative sea condition for trial use
- Guidelines for voluntary use of the Ship Energy Efficiency Operational Indicator (EEOI)

³ Available at:
<<http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Index-of-MEPC-Resolutions-and-Guidelines-related-to-MARPOL-Annex-VI.aspx>>