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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Subsidiary Body for Scientific and Technological Advice
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Bonn, 6–16 June 2011

Item 9 (a) of the provisional agenda
Methodological issues under the Convention
Emissions from fuel used for international aviation and maritime transport

Information relevant to emissions from fuel used for international aviation and maritime transport

Submissions from international organizations

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its thirty-third session, invited the secretariats of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to report, at future sessions of the SBSTA, on relevant work on emissions from fuel used for international aviation and maritime transport (FCCC/SBSTA/2010/13, para. 64).

2. The secretariat has received submissions from ICAO and IMO containing information on emissions from fuel used for international aviation and maritime transport. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the language in which they were received and without formal editing.

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

The thirty-fourth Session of the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA34)
(6 to 16 June 2011 – Bonn, Germany)

Agenda Item 9 (a)
Emissions from fuel used for international aviation and maritime transport

ASSEMBLY RESOLUTION ON INTERNATIONAL AVIATION AND CLIMATE CHANGE AND NEXT STEPS

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

This submission describes the main outcome from the 37th Session of the ICAO Assembly on international aviation and climate change, and further progress being achieved on actions requested by the Assembly in four key areas: 1) States' action plans and assistance to States, 2) sustainable alternative fuels for aviation, 3) market-based measures, and 4) global aspirational goals. ICAO's positions and perspectives to the work related to Green Climate Fund are also presented.

1. ASSEMBLY RESOLUTION ON INTERNATIONAL AVIATION AND CLIMATE CHANGE (A37-19)

1.1 The 37th Session of the International Civil Aviation Organization (ICAO) Assembly in October 2010 adopted Resolution A37-19: *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change*. The full text of the Resolution is included in Appendix A.

1.2 The Resolution provides a solid framework towards the achievement of an environmentally sustainable future for international aviation. It makes international aviation the first sector with global aspirational goals of improving 2 per cent annual fuel efficiency and stabilizing CO_2 emissions at the 2020 levels. The Assembly also agreed on the guiding principles for market-based measures and decided to explore a global scheme for international aviation. A global CO_2 certification Standard for aircraft will be developed by 2013. Sustainable alternative fuels for aviation offer one of the most promising opportunities to reduce aviation CO_2 emissions, and it was agreed that the Organization would continue to be at the forefront of facilitating the development and deployment of such fuels on a global basis. The agreement on the voluntary submission of action plans from States to ICAO will lead to a dynamic shift of the Organization from "Standard policy setting" to "implementation" mode.

1.3 The Assembly also decided that the Council should undertake further work in order to make progress on a number of issues contained in Resolution A37-19, where States expressed concerns, such as the implementation of the medium term global aspirational goal and market-based measures.

2. NEXT STEPS

2.1 ICAO is taking the necessary steps to make further progress on actions requested by the 37th Assembly, focusing on four key areas: 1) States' action plans and assistance to States, 2) sustainable alternative fuels for aviation, 3) market-based measures, and 4) global aspirational goals.

States' Action Plans

2.2 The voluntary submission of States' action plans to ICAO will allow States to identify their measures to address CO_2 emissions from international aviation as well as any assistance needs to implement such measures. This will enable ICAO to assess the progress towards the achievement of global aspirational goals and address specific assistance needs of States. In this connection, ICAO has developed guidance material and a web-based interface, and it is holding the following five regional workshops from May to July 2011, to assist its member States in preparing and submitting their action plans to ICAO by June 2012.

- 2 to 4 May 2011 – Mexico City, Mexico (for North, Central and South American and Caribbean member States);
- 25 to 27 May 2011 – Bangkok, Thailand (for Asia Pacific member States);
- 14 to 16 June 2011 – Dubai, UAE (for Middle East member States);
- 4 to 6 July 2011 – Nairobi, Kenya (for African member States); and
- 11 to 13 July 2011 – Paris, France (for European member States).

Sustainable Alternative Fuels for Aviation

2.3 Building upon the achievements of the ICAO Workshop and Conference on sustainable alternative fuels for aviation held in 2009 and the results of the 37th Assembly in 2010, ICAO will hold another workshop on this subject from 18 to 20 October 2011 in Montreal (www.icao.int/sustaf). This workshop will provide a forum for the exchange of information on the state of worldwide activities on sustainable alternative fuels for aviation. Discussions will revolve around the latest developments and future challenges related to the global harmonization of life cycle analysis methodologies, sustainability criteria, and legal and regulatory frameworks to ensure the availability of sustainable alternative fuels for aviation. This workshop will also address the role of sustainable alternative fuels as part of the measures available to States for inclusion in their action plans.

Market-based Measures / Global Aspirational Goals

2.4 The 37th Assembly agreed on the guiding principles for market-based measures, and decided to explore a global scheme for international aviation. It also agreed to review the medium-term global aspirational goal adopted by the Assembly and to explore a long-term global aspirational goal for international aviation. The Secretariat is coordinating technical studies in these areas, which will serve as the basis for further policy discussions within ICAO and in other UN bodies.

3. GREEN CLIMATE FUND

3.1 One of the milestones reached at COP16 in Cancun is related to long-term financing, establishing a Green Climate Fund to be designed by a Transitional Committee with a goal of mobilizing 100

billion USD annually by 2020. It was agreed that such financing would come from a wide variety of sources, including alternative sources, and COP16 took note of the report of the High-level Advisory Group on Climate Change Financing (AGF). One of the options presented in the AGF report relates to potential generation of revenue through the application of market-based measures to international aviation. ICAO is concerned with the possible political, legal and practical implications of the AGF's work on ICAO's existing policies and practices, including the Resolution adopted by the 37th Assembly.

3.2 The international aviation sector should not be singled out as a source of revenues for all other sectors. This is likely to result in a shortage of resources to facilitate mitigation activities by the international aviation sector itself, and in a disproportionate contribution of resources from this sector as compared to other economic sectors. Furthermore, such action could hinder further progress of the activities requested by the ICAO Assembly.

3.3 It should be noted that the ICAO Assembly adopted the guiding principles for design and implementation of market-based measures for international aviation (Annex to Appendix A). One of the principles clearly stipulates that "*market-based measures should ensure the fair treatment of the international aviation sector in relation to other sectors*". The Assembly also "*strongly recommended that, where revenues are generated from market-based measures, they should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions*". In this context, any market-based measure involving international aviation should be designed to mitigate the impact of international aviation GHG emissions, aimed at achieving the global aspirational goals of the sector adopted by the ICAO Assembly.

3.4 The involvement of all the relevant stakeholders with their expertise and cooperation is paramount to facilitate world-wide discussions for the comprehensive climate change deal. Any discussion related to international aviation, including that in the above-mentioned Transitional Committee, should therefore be undertaken in strict coordination with ICAO.

4. CONCLUSIONS

4.1 As a specialized UN agency responsible for international aviation matters, ICAO has been working actively towards developing global solutions to address GHG emissions from international aviation. The ICAO Assembly Resolution A37-19 is a clear demonstration of the willingness of ICAO and its member States to take concrete steps towards addressing CO_2 emissions from international aviation. It represents a big challenge, but provides an array of opportunities as ICAO moves forward in demonstrating to the world how it intends to achieve the ultimate objective of environmentally sustainable international aviation.

4.2 ICAO will continue to exercise its leadership in all matters related to international aviation, including the limitation or reduction of GHG emissions, which shall be addressed under the globally harmonized framework outlined in Resolution A37-19, with all member States and the air transport industry working further through ICAO.

APPENDIX A

ICAO Assembly Resolution A37-19: 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 CO_2 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;

Noting that, consistent with Assembly Resolution A36-22, the High-level Meeting on International Aviation and Climate Change in October 2009 (HLM-ENV/09) endorsed the Programme of Action on International Aviation and Climate Change which included global aspirational goals in the form of fuel efficiency, a basket of measures and the means to measure progress;

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 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;

Noting that the HLM-ENV/09 declared that ICAO would establish a process to develop a framework for market based measures in international aviation, taking into account the conclusions of the HLM-ENV/9 and outcome of the UNFCCC COP 15 and bearing in mind relevant ICAO Assembly resolutions and the appendices with a view to complete this process expeditiously;

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);

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;

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), and International Coordinating Council of Aerospace Industries Associations (ICCAIA) on behalf of the international air transport industry to continuously improve CO_2 efficiency by an average of 1.5 per cent per annum from 2009 until 2020, to achieve carbon neutral growth from 2020 and reducing 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;

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 A37-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection - General provisions, noise and local air quality, supersede Resolution A36-22 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;

3. *Reiterates* that:

   a) 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

   b) 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. *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;

5. *Agrees* that the goals mentioned in paragraph 4 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;

6. *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:

   a) the special circumstances and respective capabilities of developing countries;

b) that the different circumstances, respective capabilities and contribution of States to the concentration of aviation GHG emissions in the atmosphere will determine how each State may contribute to achieving the global aspirational goals;

c) that some States may take more ambitious actions prior to 2020, which may offset an increase in emissions from the growth of air transport in developing States;

d) the maturity of aviation markets;

e) the sustainable growth of the international aviation industry; and

f) 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;

7. *Agrees* to review, at its 38th Session, the goal mentioned in paragraph 6 above in light of progress towards the goal, new studies regarding the feasibility of achieving the goal, and relevant information from States;

8. *Requests* the Council 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 38th 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.

9. *Encourages* States to submit their action plans outlining their respective policies and actions, and annual reporting on international aviation CO_2 emissions to ICAO;

10. *Invites* those States that choose to prepare their action plans to submit them to ICAO as soon as possible preferably by the end of June 2012 in order that ICAO can 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, and information on any specific assistance needs;

11. *Requests* the Council to facilitate the dissemination of economic and technical studies and best practices related to aspirational goals and to provide guidance and other technical assistance for the preparation of States' action plans prior to the end of June 2012, in order for States to conduct their necessary studies and to voluntarily submit their action plans to ICAO;

12. *Resolves* that a *de minimis* threshold of international aviation activity of 1 per cent of total revenue ton kilometres should apply to the submission of States' action plans as follows:

a) States below the threshold are not expected to submit action plans towards achieving the global goals; and

b) States below the threshold but that otherwise have agreed to voluntarily contribute to achieving the global goals are expected to submit action plans;

13. *Requests* 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, for consideration by the 38th Session of the ICAO Assembly;

14. *Urges* States to respect the guiding principles listed in the Annex, when designing new and implementing existing MBMs for international aviation, and to engage in constructive bilateral and/or multilateral consultations and negotiations with other States to reach an agreement;

15. *Resolves* on a *de minimis* threshold of international aviation activity, consistent with the guiding principles in the Annex, of 1 per cent of total revenue ton kilometres to MBMs as follows:

a) commercial aircraft operators of States below the threshold should qualify for exemption for application of MBMs that are established on national, regional and global levels; and

b) States and regions implementing MBMs may wish to also consider an exemption for other small aircraft operators;

16. *Requests* the Council to review the *de minimis* threshold to MBMs in paragraph 15, taking into account specific circumstances of States and potential impacts on the aviation industry and markets, and with regard to the guiding principles listed in the Annex, by the end of 2011;

17. *Urges* States to review existing and planned MBMs for international aviation to ensure their consistency with the guiding principles listed in the Annex and the provisions in paragraphs 15 and 16 above;

18. *Requests* the Council, with the support of member States and international organizations, to continue to explore the feasibility of a global MBM scheme by undertaking further studies on the technical aspects, environmental benefits, economic impacts and the modalities of such a scheme, taking into account the outcome of the negotiations under the UNFCCC and other international developments, as appropriate, and report the progress for consideration by the 38th Session of the ICAO Assembly;

19. *Recognizes* that in the short term voluntary carbon offsetting schemes constitute a practical way to offset CO_2 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;

20. *Requests* the Council to collect information on the volume of carbon offsets purchased in relation to air transport, 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;

21. *Requests* the Council to regularly report CO_2 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;

22. *Requests* the Council to:

a) study, identify and develop processes 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 its progress, including processes and mechanisms developed, results achieved as well as further recommendations, preliminarily by the end of 2012 and at the 38th Session of the Assembly; and

b) initiate specific measures to assist developing States as well as to facilitate access to financial resources, technology transfer and capacity building;

23. *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) accelerate investments on research and development to bring to market even more efficient technology by 2020;

d) accelerate the development and implementation of fuel efficient routings and procedures to reduce aviation emissions;

e) accelerate efforts to achieve environmental benefits through the application of satellite-based technologies that improve the efficiency of air navigation and work with ICAO to bring these benefits to all regions and States;

f) reduce legal, security, economic and other institutional barriers to enable implementation of the new ATM operating concepts for the environmentally efficient use of airspace;

g) develop policy actions to accelerate the appropriate development, deployment and use of sustainable alternative fuels for aviation;

h) work together through ICAO and other relevant international bodies, to exchange information and best practices; and

i) consider measures to support sustainable aviation alternative fuels research and development, investments in new feedstock cultivations and production facilities, as well as incentives to stimulate commercialisation and use of sustainable alternative fuels for aviation to accelerate the reduction of aviation CO_2 emissions;

24. *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 aviation, and conduct further studies with respect to mitigating the impact of 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 CO_2 Standard for aircraft aiming for 2013;

f) further elaborate on relevant fuel efficiency metrics, including for international business aviation, and develop medium and long term technological and operational goals for aircraft fuel burn;

g) encourage member States and invite industry to actively participate in further work on sustainable alternative fuels for aviation;

h) 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;

i) continue to develop the necessary tools to assess the benefits associated with ATM improvements, and intensify its efforts on the development of new guidance on operational measures to reduce international aviation emissions;

j) 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;

k) identify 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 and fuel consumption;

l) request States to continue to support the efforts of ICAO on enhancing the reliability of measuring/estimating global GHG emissions from international aviation;

m) undertake a study on the possible application of CDM of the Kyoto Protocol to international aviation;

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

The guiding principles for the design and implementation of market-based measures (MBMs) for international aviation:

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;

d) MBMs should be transparent and administratively simple;

e) MBMs should be cost-effective;

f) MBMs should not be duplicative and international aviation CO_2 emissions should be accounted for only once;

g) MBMs should minimize carbon leakage and market distortions;

h) MBMs should ensure the fair treatment of the international aviation sector in relation to other sectors;

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

j) MBMs should not impose inappropriate economic burden on international aviation;

k) MBMs should facilitate appropriate access to all carbon markets;

l) MBMs should be assessed in relation to various measures on the basis of performance measured in terms of CO_2 emissions reductions or avoidance, where appropriate;

m) MBMs should include *de minimis* provisions;

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; and

o) where emissions reductions are achieved through MBMs, they should be identified in States' emissions reporting.

Paper no. 2: International Maritime Organization

Note by the International Maritime Organization to the thirty-fourth session of the Subsidiary Body for Scientific and Technical Advice (SBSTA 34)

Agenda item 9(a) - Emissions from fuel used for international aviation and maritime transport

Progress made on technical, operational and Market-Based Measures within the IMO

20 April 2011

SUMMARY

The Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO) has put down a significant amount of work in developing possible strategies and measures to enhance the energy efficiency, and thereby reducing the associated greenhouse gas (GHG) emissions from international shipping. The work is divided in three distinct elements: technical measures which will mainly be relevant for new ships; operational measures which will apply to all ships in operation, newly built or approaching the end of their commercial life; and lastly, the Market-Based Measures (MBMs) which would serve as an incentive by setting a price on the sector's carbon emissions and also may provide for offsetting and climate change financing.

MEPC 61 (September 2010) considered means by which the technical and operational measures could be introduced in the Organization's regulatory regime to make mandatory the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP), both of which have been disseminated for voluntary use since July 2009. Subsequently to the meeting, nine Member Governments formally requested the Secretary-General to circulate draft amendments to MARPOL Annex VI, which will be considered by MEPC 62 (July 2011) for possible adoption.

MEPC 61 also held an extensive debate on how to progress the development of suitable MBMs for international shipping, following the submission of a comprehensive report by an Expert Group. The Expert Group had carried out a feasibility study and impact assessment of possible MBMs submitted by governments and observer organizations. The work of the Group was intended to enable the MEPC to indicate, preferably at MEPC 61, which MBM to evaluate further. As no majority view prevailed, MEPC 61 agreed that an intersessional meeting of its Working Group on Greenhouse Gas Emissions from Ships should be held in March 2011. The Working Group made steady progress in considering the development of suitable MBMs and formulated advice to MEPC 62. The advice will now assist MEPC 62 to determine in July 2011, which MBMs to bring forward as a possible mandatory IMO instrument, so that MEPC can report progress to the twenty-seventh session of the IMO Assembly.

Introduction

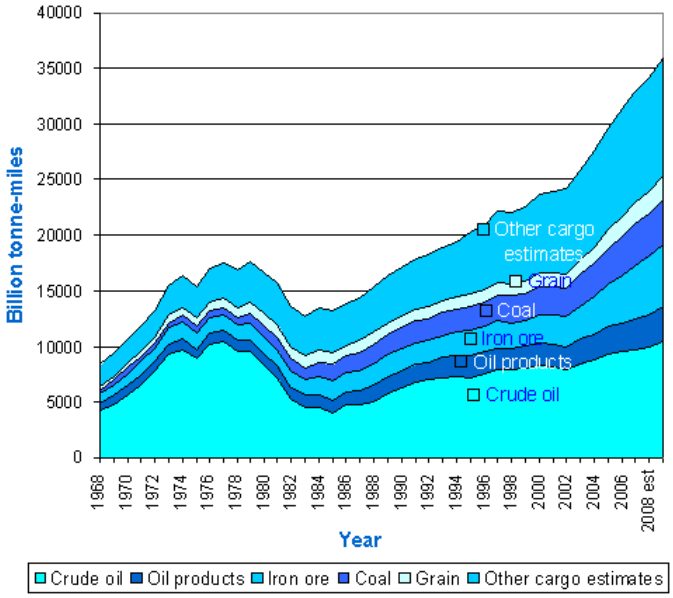
1 Due to its close connection to global commerce, international shipping plays a vital role in the facilitation of world trade as the most cost-effective and energy-efficient mode of mass transport, making a significant contribution to global prosperity in both developing and developed countries.

2 As shipping is a global industry and ships are competing in a single global market, it must be regulated at the global level for any control regime to be effective and to maintain a level playing field for all ships irrespective of flag (nationality) or ownership. In other words, the global character of shipping requires global regulation that applies universally to all ships.

3 The International Maritime Organization (IMO) was established by governments as a specialized agency under the United Nations to provide machinery for intergovernmental cooperation in the field of regulation of ships engaged in international trade. IMO is responsible for the global regulation of all facets pertaining to international shipping and has a key role in ensuring that lives at sea are not put at risk and that the environment is not polluted by ships' operations – as summed up in IMO's mission statement: **Safe, Secure and Efficient Shipping on Clean Oceans**.

4 IMO's role is primarily to develop and enact international legislation, which normally applies to the ship itself, while the Contracting Governments assume the responsibility for implementation and enforcement. When an IMO instrument has entered into force, countries that have ratified it can apply it, not only to ships of their own flag, but also to all other ships as a condition of entering their ports or internal waters, regardless of flag. This is an important principle, commonly referred to as the principle of "no more favourable treatment". Flag States are responsible for implementing and enforcing legislation on ships in their registries.

World Seaborne trade 1668 – 2008



Source: Fearnley's Review 2009

Work on control of greenhouse gas emissions from international shipping

5 International maritime transport is the most energy efficient mode of mass transport and only a modest contributor to global CO_2 emissions (2.7% in 2007) while carrying 90% of world trade by tonne-mile. Nevertheless, a global approach for further improvements in energy efficiency and emission reduction is needed as sea transport is predicted to continue growing significantly in line with world trade. IMO is regarded as the sole competent international organization with a global mandate to regulate the reduction or limitation of greenhouse gas (GHG) emissions from shipping.

6 Work on the prevention of air pollution and control of GHG emissions from ships started within IMO in the late 1980s. The first regulatory steps were out phasing of ozone depleting substances both as refrigerant gases and in fire-fighting systems and later, prevention of air pollution in the form of oil cargo vapours and exhaust gases were targeted by, *inter alia*, adopting limits for nitrogen oxides and sulphur oxides in ship exhaust gases. In recent years the focus has been on improvement in energy efficiency and on control of GHG emissions from ships engaged in international trade.

7 IMO's work on GHG emissions was triggered by the 1997 MARPOL Conference's resolution 8 on "CO_2 emissions from ships" requiring IMO to *inter alia* undertake a study on GHG emissions from ships and to consider feasible GHG emission reduction strategies. The first IMO Study on GHG emissions from ships was presented to MEPC in June 2000. In July 2009, at MEPC 59, the second IMO GHG Study was presented.

8 IMO's GHG work has been further guided by Assembly Resolution A.963(23) on IMO Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships, which was adopted in December 2003. The resolution urges MEPC to identify and develop the mechanisms needed to limit or reduce GHG emissions from international shipping. As requested by the resolution, MEPC in its fifty-fifth session (MEPC 55), approved in October 2006, a work plan with timetable to direct the identification and development of the needed emission reduction mechanisms. The work plan culminated at MEPC 59 in July 2009 and called for the consideration of technical, operational and MBMs for the limitation or reduction of GHG emissions from international shipping as of MEPC 57. A second work plan for the further consideration of MBMs was agreed upon at MEPC 59. This work plan will culminate in July 2011 at MEPC 62.

Technical and operational measures

9 A significant amount of work on technical and operational measures has been carried out in accordance with the first work plan and at MEPC 59 the Committee approved to circulate Interim Guidelines on the Method of Calculation of the Energy Efficiency Design Index for New Ships (EEDI), the Interim Guidelines for Voluntary Verification of Energy Efficiency Design Index, the Guidance for the Development of a Ship Energy Efficiency Management Plan (SEEMP) and the Guidelines for Voluntary Use of the Energy Efficiency Operation Indicator (EEOI). These were initially intended for trial purposes on a voluntary basis.

10 The most important technical measure is the EEDI that will require a minimum energy efficiency level per capacity mile (e.g. tonne mile) for different ship type and size segments. With the level being tightened incrementally every five years, the EEDI will stimulate continued technical development of all the components influencing the fuel efficiency of a ship.

11 On the operational side, the SEEMP has been developed to assist the international shipping industry in achieving cost-effective efficiency improvements in their operations using the EEOI as a monitoring tool and benchmark.

12 Having considered means by which technical and operational measures could be introduced in the Organization's regulatory regime, MEPC 61 noted the desire of some States party to MARPOL Annex VI – *Regulations for the prevention of air pollution from ships,* to request the Secretary-General to circulate proposed amendments to that Annex, to make mandatory, for new ships, EEDI and the SEEMP.

13 Subsequently to MEPC 61, nine Member Governments, all of which are parties to MARPOL Annex VI, representing all regions of the World and both developing and developed countries, formally requested the Secretary General to circulate the draft amendments to MARPOL Annex VI. The draft amendments will be considered by the next MEPC session, in July 2011, with a view to adoption under MARPOL Annex VI. Some States do not support the circulation of the proposed amendments.

14 For a detailed description of the technical and operational energy efficiency measures for ships agreed by MEPC 59, the EEDI, the SEEMP and the EEOI, as well as their purpose, effect and status, please refer to IMO's website (www.imo.org) or refer to a detailed description set out in annex 1 to IMO's submission to SBSTA 33 which can be found in document FCCC/SBSTA/2010/MISC.14.

Market-Based Measures

15 Development of the technical and operational measures is a very important step in ensuring that the global shipping industry has the necessary mechanisms to reduce its GHG emissions. However, the MEPC has at several sessions, recognized that these measures would not be sufficient to satisfactorily reduce the amount of GHG emissions from international shipping in view of the growth projections of world trade. In July 2009, MEPC 59 agreed by overwhelming majority that an MBM is needed as part of a comprehensive package of measures for the regulation of GHG emissions from international shipping.

16 An MBM would serve two main purposes:

.1 providing an economic incentive for the maritime industry to invest in more fuel-efficient ships and technologies and to operate ships in a more energy-efficient manner (in-sector reductions); and

.2 off-setting in other sectors of growing ship emissions (out-of-sector reduction).

17 In recent sessions, MEPC has been considering a number of MBM proposals from governments and observer organizations. The MBM proposals currently under review range from proposals for contribution schemes for all CO_2 emissions from international shipping (to be collected by fuel oil suppliers and transferred to a global fund), or only emissions from ships not meeting the EEDI requirement, via emission trading systems, to schemes based on the actual ship's efficiency both by design and operation. Among the measures are also proposals for rebate mechanisms and other ways to accommodate the difference in the socioeconomic capability between developing and developed states, as well as other suggestions on how the special needs and circumstances of developing countries can be accommodated. Some of the proposed schemes would reward efficient ships and ship operators by recycling parts of the financial contribution to the most efficient ones based on benchmarking. Other schemes would drive

investments in more energy efficient technologies and improvements in operations by setting compulsory efficiency standards for all vessels (new and existing) and the trading of efficiency credits. Several of the proposed mechanisms, the contributions schemes (levy) inherently and the trading schemes through auctioning; would generate funds the greater part of which would be used for climate change purposes in developing countries. For a further description of the proposed measures, refer to a summary of the proposals set out as in annex 2 to document FCCC/SBSTA/2010/MISC.14.

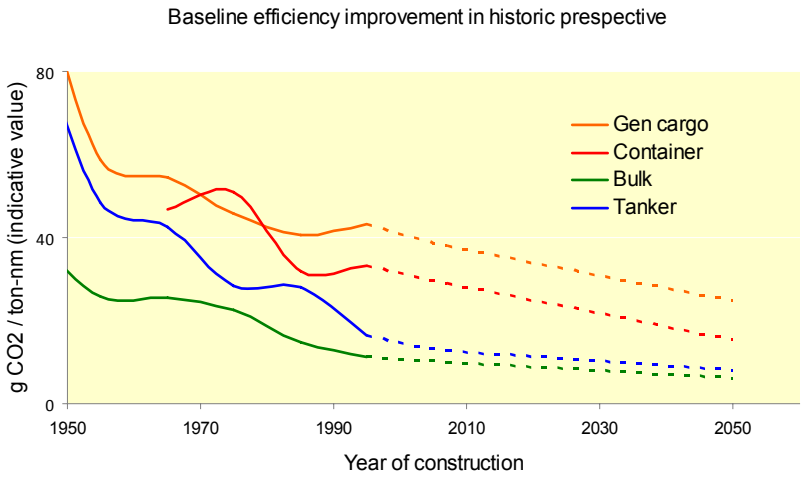
18 MEPC 59 noted that there was a general preference for the greater part of any funds generated by a market-based instrument under the auspices of IMO, to be used for climate change purposes in developing countries through existing or new funding mechanisms under the UNFCCC or other international organizations (such as IMO or organizations established under its auspices).

19 In line with the MEPC 59 work plan, MEPC 60 called for an Expert Group (EG) to undertake a feasibility study and impact assessment of the proposed measures. The EG was tasked to evaluate the various proposals with the aim to assess the extent to which each proposed measure could assist in reducing GHG emissions from international shipping, giving priority to the maritime sectors of developing countries, least developed countries (LDCs) and Small Island Developing States (SIDS).

20 The results of the EG were presented in a report to MEPC 61 to enable the Committee to indicate, which MBM to evaluate further. The Executive Summary of the EG Report is set out as annex 2 to document FCCC/SBSTA/2010/MISC.14. As no majority view prevailed at MEPC 61, the Committee agreed that an intersessional meeting of IMO's Working Group on Greenhouse Gas Emissions from Ships should be held in March 2011. The Working Group made steady progress in considering the development of suitable MBMs and formulated advice to MEPC 62 in July 2011. The advice will now assist MEPC 62 to determine which MBMs to bring forward as a possible mandatory IMO instrument, so that the MEPC can report progress to the twenty-seventh session of the Assembly.

Efficiency improvements and reduction target for international shipping

21 Parallel to the development of technical, operational and MBMs, MEPC has considered the issue of establishing a reduction target for international shipping. The aim is to conclude the debate on reduction target at MEPC 62. MEPC is considering whether the international maritime sector should be subject to an explicit emission ceiling (cap) or a reduction target comprising the entire world fleet of merchant vessels. The paramount questions are: by which international organization (e.g. IMO or UNFCCC) should such a cap or reduction target be established and on what criteria, the need for reductions or technical capability. Other questions arising in this context are: by which methodology should the cap/target be set and maintained, the relation to other transport modes (e.g. civil international aviation and road transport), how should they be regulated internationally, and how much of future *carbon space* an industry that moves 90% of world trade and underpins the global economy and sustainable development in the entire world should be allocated.



Baseline improvements in efficiency and indicated historic improvements

Source: Second IMO GHG Study 2009

IMO's Integrated Technical Cooperation Programme

22 As previously indicated, IMO adopts international shipping regulations but it is the responsibility of Member Governments to implement those regulations in the world fleet. IMO recognises that not all of its Members have the same capacity to fulfil their obligations as parties to the various conventions, often because they lack resources and expertise. IMO's Integrated Technical Co-operation Programme aims to redress this resource imbalance by assisting governments that lack the resources needed to improve their ability to comply with international rules and standards relating to maritime safety and the prevention and control of marine pollution from ships, giving priority to technical assistance programmes that focus on human resources development and institutional capacity-building.

The way ahead post-COP 17

23 The UNFCCC principle of common but differentiated responsibilities (CBDR) is one agreed for the sharing of burdens between States and to place obligations for reductions in emissions principally on countries with historic responsibility for the current and projected climate effects. However, with most ships registered in developing country registers, historic emission responsibilities have another meaning for the global shipping industry compared with land-based industrial sources of GHG emissions.

24 There is no precedent in any of the fifty-two IMO international treaty instruments currently in existence where measures are applied selectively to ships according to their flag. On the other hand, there are several international environmental treaties which have a differentiated approach, such as the Montreal Protocol (on substances that deplete the ozone layer) and the Basel Convention (on transboundary movement of waste) yet, when IMO successfully dealt with the same issues at the request of the international community, the principle of a differentiated approach (according to flag) was not taken on board.

25 Recognizing the fundamental importance of the principle of CBDR under the UNFCCC regime - consequent with its own philosophy of assisting developing countries - and at the same time conscious of its international obligation, enshrined in its constitutive Convention, to regulate ships without discrimination on account of the flag they fly, IMO and its Member Governments are working hard to address the special needs of developing counties and to satisfy the CBDR principle. Creative and innovative means are under consideration, which would see substantial

funds, obtained from carbon offsetting or trading measures (market-based mechanisms) applied by international shipping, being dedicated to climate change mitigation and adaptation actions in developing countries and may also include other ways to secure that a control regime for international shipping does not have unwanted implications for developing countries.

Conclusions

26 Being fully aware of the ultimate objective of the UNFCCC, which is to achieve stabilization of GHG concentrations at a level that prevents dangerous interference in the global climate system, IMO is seeking a solution where a GHG control regime for international shipping, once enacted, will deliver real emission reductions and, at the same time, will contribute financially towards the wider efforts to combat climate change in developing countries. The interests of mankind and the global climate would be best served if the Parties to the UNFCCC, decided to continue entrusting IMO as the relevant United Nations Specialized Agency, with the development and enacting of the global regulatory regime needed to limit or reduce GHG emissions from international shipping, based on the above premises.