UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Ad hoc Working Group on Further Commitment for Annex I Parties under the Kyoto Protocol (AWG-KP)

First part of the Fifth session – 31 March to 4 April 2008
Bangkok, Thailand

Information on the work on greenhouse gas emissions from ships being carried out by the International Maritime Organization (IMO)

Main events in IMO's GHG work

1 Work on the prevention of air pollution from international shipping started within IMO as long ago as the late 1980s. Annex VI to the MARPOL Convention, dealing specifically with that issue, was adopted at a Diplomatic Conference in September 1997. It entered into force on 19 May 2005 and set limits on nitrogen oxide (NOx) and sulphur oxide (SOx) emissions from ship exhausts, as well as prohibiting installation and deliberate emissions of ozone depleting substances.

2 Since the adoption of the air pollution regulations, IMO has engaged in further discussion on ways to reduce emissions of climate change gases from international shipping, including CO_2. In May 2000, the Organization decided to prohibit the use of perfluorocarbons (PFCs) onboard ships. Although no mandatory instrument has yet been adopted by IMO to cover the emission of GHGs from ships, IMO has given full consideration to the matter at every session of the Marine Environment Protection Committee (MEPC) following the 1997 MARPOL Conference.

3 The 1997 MARPOL Conference convened by IMO adopted **Resolution 8 on "CO_2 emissions from ships",** inviting:

.1 the IMO co-operate with UNFCCC in the exchange of information on GHG issue;

.2 the IMO to undertake a study of GHG emissions from ships; and

.3 the MEPC to consider feasible GHG emissions reduction strategies.

4 As a follow-up to the above resolution, the **IMO Study on Greenhouse Gas Emissions from Ships** was completed and presented to MEPC 45 in June 2000 as document MEPC 45/8. This is the most comprehensive assessment to date of the contribution made by international shipping to climate change, the study established that ships contributed 1.8 % of the world's total CO_2 emissions (for 1996) and also states that there is no other mode of transport that has a better record according to the transport work carried out. Nevertheless, it also identified a number of areas in which there was considerable potential for the further reduction of CO_2 emissions from ships, such as optimisation of hull shape, hull maintenance, propeller design and maintenance, fuel choices, machinery monitoring, ship-routeing considerations including speed reduction, and optimising vessel trim, engine performance, propeller pitch and rudder angles. The study cautioned, however, that if none of the measures are applied, the projected annual growth in fleet

size could lead to an increase in fuel consumption of some 72 percent between the years 2000 and 2020.

5 Assembly adopted, in December 2003, **Resolution A.963(23) on "IMO Policies and Practices related to the Reduction of Greenhouse Gas Emissions from Ships"**, which urges MEPC to identify and develop the mechanism or mechanisms needed to achieve the limitation or reduction of GHG emissions from international shipping and to consider the methodological aspects related to reporting, and to develop a work plan with a timetable. It requests the IMO Secretariat to continue co-operating with the Secretariats of UNFCCC and the International Civil Aviation Organization.

6 There has been ongoing **co-operation between the Secretariats of IMO and UNFCCC** on the work of GHG emissions from ships concerning the use of bunker fuel oils, in recognition of the Kyoto Protocol requirements. A comprehensive report about IMO's work on GHG emissions from ships was brought to the attention of SBSTA 25 in 2006. Since then the issue of GHG emission has been considered by each session of the MEPC.

7 MEPC 53 (July 2005) approved **IMO's "Interim Guidelines for Voluntary Ship CO_2 Emission Indexing for Use in Trials" (MEPC/Circ.471).** The objective of the Interim Guidelines is to establish a common approach for trials on voluntary CO_2 emission indexing, which will enable shipowners to evaluate the performance of their fleet with regard to CO_2 emissions.

8 MEPC 54 (March 2006) received the **first results from CO_2 indexing trials** and MEPC 55 (October 2006) received further information on trials. The guidelines state that they should be updated at or after MEPC 58 (October 2008). MEPC has received results from hundreds of trials conducted over several years. A huge volume of CO_2 indexing data exists and MEPC 56 decided to establish a central database to make the data accessible for comparison and further studies by member States and the shipping industry. MEPC had observed that identical ships in seemingly similar trades produce different results; the difference may result from different weather conditions or from operational differences concerning the specific utilization of individual ships involved in the trials; issues such as the length of time spent waiting in port areas, the length of ballast voyages, whether the ship is fully laden or not, can all make a difference. The **central data base is now established as a GHG module in IMO's Global Integrated Ship Information System (GISIS)** and the IMO Secretariat is entering the data that has already been received. Member States will be able to enter new data from early 2008 and the module will be opened for public use in the first part of 2008.

9 During discussions on GHG within IMO at MEPC 55, in October 2006, further follow-up to resolution A.963(23) was considered. **MEPC 55 decided to update the IMO GHG Study** to give a better foundation for future decisions and to help in the follow-up to resolution A.963(23).

10 MEPC 55 (October 2006) noted that climate change caused by GHG emissions from burning fossil fuel was a steadily growing concern for most countries, and that scientists had found more and more proof that a connection exists. It **agreed that the threat from global warming was far too serious to be ignored** and the shipping industry, although an already environmentally friendly and fuel efficient mode of transport, must take action. IMO recognized in resolution A.963(23), that the projected adverse effects of climate change and acidification of the world's oceans called for measures to limit or reduce the emissions from international shipping.

11 **MEPC 55 adopted a work plan with timetable** for IMO's future work on reduction of GHG from ships and agreed that IMO should maintain its leading position, to avoid unilateral action either on a global, regional or national level. MEPC should continue to take the lead in developing GHG strategies and mechanisms for international shipping and co-operate closely with other relevant UN bodies.

Recent GHG Work

12 In July 2007, **MEPC 56 confirmed the need to update the 2000 IMO GHG Study**, and agreed a timeframe, scope and terms of reference for that purpose. The study will cover current global inventories of GHGs and relevant substances emitted from ships engaged in international transport, as well as any methodological aspects and future emission scenarios; identify progress made to date in reducing GHG emissions and other substances; identify possible future measures to reduce emissions of GHGs and undertake a cost benefit analysis, including environmental and public health impacts, of options for current and future reductions in GHG emissions and other relevant substances from international shipping. Finally, it will identify the impact of emissions from shipping on climate change.

13 The update is undertaken by an international consortium of research institutes with relevant experience and expertise within the scope of the update. A Steering Committee is established to assist the Secretariat and have input into the process. The Steering Committee will monitor and report progress of the study and confirm that the study meets the terms of reference before submission to the MEPC.

14 Meanwhile, the MEPC established an **Intersessional Correspondence Group on GHG** Related Issues to discuss and compile possible approaches on technical, operational and market based measures to address GHG emissions from ships and present a written report to MEPC 57.

15 In November 2007, **Secretary-General Efthimios E. Mitropoulos** told the 25th meeting of the IMO Assembly that he intended to present to MEPC 57 in March/April 2008 **a proposal to consider accelerating its work programme** on greenhouse gas (GHG) emissions from ships in order that its Marine Environment Protection Committee (MEPC) can expedite its decision-making process on measures to control and reduce such emissions.

16 In particular, it is expected that certain key elements of IMO's revised greenhouse gas study and other parts of the work programme would now be ready in sufficient time for the MEPC to make decisions on this topic at its 58th session, in the latter part of 2008.

17 The Secretary-General spoke of the increasing importance and urgency given by the international community to the control of greenhouse gas emissions worldwide and of the globally expressed wish to act, and act now. He said that IMO and the international maritime community needed to demonstrate their determination to be in the front line of the global campaign to tackle this threat to the global climate without delay.

18 The MEPC is currently working in accordance with its approved work plan and timetable. In addition to the update of the 2000 IMO Study on GHG Emissions from Ships, the work includes development of a CO_2 Emission Indexing Scheme, a CO_2 emission baseline and technical, operational and market-based methods to achieve reduction of greenhouse gas emissions, all of which are currently planned to be finalized by July 2009. Secretary-General Mitropoulos's call for an acceleration of the work plan has been endorsed by the MEPC Chairman, Mr. Andreas Chrysostomou of Cyprus.

CO_2 sequestration in sub-seabed geological formations under the London Protocol

19 Parties to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol) started their discussions on CO_2 sequestration in earnest in 2005, as they were very concerned about the implications for the marine environment of climate change and ocean acidification due to elevated concentrations of CO_2 in the atmosphere. In their view, CO_2 sequestration in sub-seabed geological formations is one of a portfolio of options to reduce levels of atmospheric CO_2 and represents an important interim solution, while every effort should be made to further develop low carbon forms of energy.

20 Since 2005, the following has been achieved in this regard:

.1 Parties adopted, on 2 November 2006, the **"Risk Assessment and Management Framework for CO_2 Sequestration in Sub-Seabed Geological Structures".** This Framework was developed to:

.1.1 ensure compatibility with Annex 2 to the London Protocol;

.1.2 identify relevant gaps in knowledge; and

.1.3 reach a view on the implications of this practice for the marine environment;

.2 Parties adopted, on 2 November 2006, **amendments to Annex 1 to the London Protocol to regulate CO_2 sequestration in sub-seabed geological formations**. These amendments entered into force on 10 February 2007. The rules state that carbon dioxide streams may only be considered for dumping, if:

.2.1 disposal is into a sub-seabed geological formation;

.2.2 they consist overwhelmingly of carbon dioxide (they may contain incidental associated substances derived from the source material and the capture and sequestration processes used); and

.2.3 no waste is added for the purpose of its disposal. *In other words, these rules do not permit CO_2 sequestration in the deep oceans themselves*;

.3 as sub-seabed geological sequestration of CO_2 will now be subject to licensing, Parties also adopted, on 9 November 2007, "**Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations".** These Guidelines advise Parties on how to capture and sequester CO_2 in a manner that meets all the requirements of the Protocol and is safe for the marine environment, over both the short and long terms.

21 Parties also made specific arrangements to prepare in 2008:

.1 additional guidance in case of using **transboundary** sub-seabed geological formations; and

.2 a specific **CO_2 sequestration reporting format**, as it would be necessary to archive documentation so that future generations would be informed of the existence of the CO_2 reservoir, its history and the assessment process leading to its use.

22 Protection of the oceans, being part of the 'global commons', requires internationally agreed standards. The use of geological formations on land for CO_2 sequestration, on the other hand, is generally subject to national law. In practical terms, there is significant potential for geological storage in formations beneath the oceans. Oil and gas reservoirs and saline aquifers are expected to have the largest potential to accommodate safe, long-term storage. The aim is to retain CO_2 permanently. Because of the various trapping mechanisms, storage may, in some cases, become more secure over time.

Ocean fertilization discussions in 2007 under the London Protocol

23 In June 2007 the Scientific Groups, established under the London Convention and Protocol, considered several submissions relating to large-scale iron fertilization of the oceans to sequester CO_2. This practice is aimed at drawing down an additional amount of surplus CO_2 in the oceans for sequestration purposes. The Scientific Groups developed a "Statement of Concern", **taking the view that knowledge about the effectiveness and potential environmental impacts of ocean iron fertilization currently was insufficient to justify large-scale operations and that this could have negative impacts on the marine environment and human health**. They requested Parties to consider the issue of large-scale ocean fertilization operations with a view to ensuring adequate regulation of such operations, addressing in particular:

.1 the purposes and circumstances of proposed large-scale ocean iron fertilization operations and whether these are compatible with the aims of the Convention and Protocol;

.2 the need, and potential mechanisms, for regulation of such operations; and

.3 the desirability of bringing proposals for such operations to the attention of other international instruments and institutions.

24 After intensive discussions in November 2007, Parties:

.1 **endorsed** the "Statement of Concern" on large-scale ocean fertilization of the Scientific Groups;

.2 **agreed** that the scope of work of the London Convention and Protocol included ocean fertilization, as well as iron fertilization, and that these agreements were competent to address this issue due to their general objective to protect and preserve the marine environment from all sources;

.3 **agreed** that they would further study the issue from the scientific and legal perspectives **with a view to its regulation**; and

.4 recognizing that it was within the purview of each State to consider proposals on a case-by-case basis in accordance with the London Convention and Protocol,

urged States to use the utmost caution when considering proposals for large-scale ocean fertilization operations.

25 Having given this direction towards caution, Parties established a Legal Intersessional Correspondence Group to develop a checklist of legal issues that need to be addressed relevant to whether, and how, the legal framework of the London Convention and Protocol applies to key scenarios on ocean fertilizations. Their advice would inform the debate on technical and scientific issues when the Scientific Groups meet again in May 2008 and, subsequently, the discussion on regulation of this practice when Parties meet again in October 2008.

26 **As at 29 February 2008, there are 33 Parties to the London Protocol and 82 Parties to the London Convention.** For further information, visit www.londonconvention.org.

Maritime transport and sustainable development

27 There is no doubt that shipping **is a clean, green, environmentally-friendly and very energy-efficient mode of transport**. Overall, it is only a small contributor to the total volume of atmospheric emissions. Nevertheless, significant reductions in harmful emissions from ships and increases in fuel efficiency have been achieved over the past decades through enhancements in the efficiency of engine and propulsion systems and improved hull design. Larger ships and a more rational utilization of individual vessels have also contributed significantly to reducing the amount of energy needed to transport a given unit of cargo.

28 What is often overlooked in any discussion about overall levels of GHG emissions from shipping is that the total amount of **shipping activity is not governed by shipping itself, but by global demand for shipborne trade**. And not only is this high, but it continues to grow. The international shipping industry is responsible for the carriage of more than 90 percent of world trade and is the life blood of the global economy. Without shipping, it would simply not be possible to conduct intercontinental trade, the bulk transport of raw materials or the import and export of affordable food and manufactured goods.

29 The forthcoming session of the Marine Environment Protection Committee (MEPC 57) to be held in London from 31 March to 4 April 2008 is expected to make significant progress on matters related to control of greenhouse gases from international shipping with 24 documents to consider on the issue.

30 IMO will continue to work on reducing harmful emissions from shipping, **a transport industry that is vital to world trade and sustainable development**, and will continue to keep UNFCCC and its subsidiary bodies updated on the progress made.

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