



MARINE ENVIRONMENT PROTECTION
COMMITTEE
57th session
Agenda item 4

MEPC 57/4/18
25 January 2008
Original: ENGLISH

PREVENTION OF AIR POLLUTION FROM SHIPS

Updating of the 2000 IMO GHG Study – preliminary progress report

Note by the Secretariat

SUMMARY

<i>Executive summary:</i>	This document provides a preliminary progress report on the updating of the 2000 IMO Greenhouse Gas Study
<i>Strategic direction:</i>	7.1
<i>High-level action:</i>	7.1.1
<i>Planned output:</i>	7.3.1.3
<i>Action to be taken:</i>	Paragraph 12
<i>Related documents:</i>	MEPC 45/8; MEPC 55/23; MEPC 56/4/2, MEPC 56/4/5, MEPC 56/4/12, MEPC 56/23 and MEPC 57/4/7

Background

1 The Committee, at its fifty-sixth session in July 2007, recalled the decision by MEPC 55 that the 2000 IMO GHG Study should be updated and tasked the Working Group on Air Pollution to develop draft Terms of Reference for the update based on submitted documents and comments made in Plenary. MEPC 56 noted that the figures on the contribution by international shipping to climate change as presented in documents submitted to the Committee differed significantly and agreed that IMO needed factual information when taking decisions that would affect a large industry for decades.

2 MEPC 56 approved the Terms of Reference for the update of the Study (MEPC 56/23, annex 9) and instructed the Secretariat to initiate the update in accordance with the Terms of Reference, including the establishment of a Steering Committee to assist the Secretariat.

3 MEPC 56 encouraged Member States and observers to contribute towards the funding of the Study's update.

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

Funding

4 The total cost of the updating of the 2000 IMO GHG Study has been estimated at between \$400,000 and \$500,000, to be collected through voluntary contributions. In October 2007, the Secretary-General wrote to the IMO Member States included in Annex 1 to the United Nations Framework Convention on Climate Change (UNFCCC) as well as a number of other Member States inviting them to contribute financially towards the funding of the updated study. The European Commission and several non-governmental organizations in consultative status with IMO were also approached in order to seek financial contributions to enable the exercise to proceed expeditiously.

5 As at 25 January 2008, a total of approximately US\$ 236,310 had been pledged by seven Member States (Denmark, Germany, the Marshall Islands, the Netherlands, Norway, Sweden and the United Kingdom).

Steering Committee

6 The Secretary-General, in October, 2007, invited 19 Member States to accept membership of the Steering Committee and to designate representatives.

7 The Steering Committee was established at a meeting held at IMO's temporary Headquarters on Monday, 17 December 2007 under the Chairmanship of Ms. Petra Bethge (Germany), with Mr. Bin Okamura (Japan) as Vice-Chairman and with representatives from the following Member States: Australia, Canada, China, Denmark, Greece, India, Iran (Islamic Republic of), the Marshall Islands, Nigeria, Panama, the Philippines, the Republic of Korea, the Russian Federation, South Africa, the United Kingdom, the United States and Vanuatu.

Tendering

8 In the above-mentioned letters, the Secretary-General also invited Member States to convey information on the tendering to relevant national research institutes and universities that could be interested to bid for the update. In pursuance of the Committee's request and based on feedback from Member States or the institutes directly, the Secretariat invited 12 research institutes with relevant experience and expertise to tender for the updating of the Study.

9 In order to facilitate the Committee's considerations and in line with the Secretary-General's initiative, contained in document MEPC 57/4/7, to strengthen and expedite the Organization's GHG work, the updating of the 2000 IMO GHG Study has been divided into two phases. Phase one, covering a CO₂ emission inventory from international shipping and future emission scenarios, will be reported to IMO by August 2008 for consideration by MEPC 58 in October 2008. Phase two, also covering GHGs other than CO₂ and other relevant substances in accordance with the methodology adopted by UNFCCC, as well as the identification and consideration of future reduction potentials by technical, operational and market-based measures, will be submitted to IMO by February 2009 for consideration by MEPC 59 in July 2009. An excerpt of the tendering letter is attached as annex to this document.

10 The tendering invitation was issued on 6 December 2007 with a deadline of 15 January 2008. Following concerns expressed by the Steering Committee at its first meeting, that none of the 12 invited institutes were based in developing countries, the Secretariat sent an e-mail on 21 December 2007, to the invited institutes, informing them that involvement of institutes or individual experts from developing countries will be taken into account in its

recommendation to the Secretary-General on which consortium to award the contract for the update. Only one proposal was received within the deadline. The proposal is submitted by an international consortium of nine institutes comprising six of the 12 invited institutes. At the time of writing, the Steering Committee is also expected to consider the proposal at its second meeting on 3 February 2008. The Steering Committee is expected to determine if the proposal is in line with the Terms of Reference adopted by MEPC 56 and with the criteria to award the contract for the update of the Study agreed by the Steering Committee and recommend to the Secretariat if the contract should be awarded.

11 The outcome of the second meeting of the Steering Committee and the final outcome of the tendering process, as well as updated information on the funding, will be submitted to the Committee as an addendum to this document.

Action requested of the Committee

12 The Committee is invited to note the information provided and take action as deemed appropriate.

ANNEX

UPDATE OF THE 2000 IMO GHG STUDY

Dear Sirs, *[to suppliers recommended by Member States]*

The International Maritime Organization (IMO), a specialized agency of the United Nations, invites [you] [research institutes] to submit a tender to undertake an update of the 2000 IMO greenhouse (GHG) Study regarding greenhouse gas emissions from ships engaged in international trade.

IMO is a specialized agency of the United Nations and is covered by the provisions of the Convention on the Privileges and Immunities of the Specialized Agencies of the United Nations 1947, including its Annex XII. IMO is responsible for regulating and promoting maritime safety and the prevention, reduction and control of marine environment degradation from sea-based activities, including dumping of wastes at sea.

As part of IMO's efforts to maintain its leading position as the global regulator for the shipping industry, and recognizing IMO's responsibility with regard to greenhouse gas emissions from the maritime sector, the fifty-sixth session of the Marine Environment Protection Committee (MEPC) decided to undertake an update of the 2000 IMO Study on Greenhouse Gas Emissions from Ships.

It is recognized that CO₂ is the most significant GHG emitted by ships. The updated study should be transparent, not policy prescriptive and should be conducted in two phases. Phase one, covering a CO₂ emission inventory from international shipping and future emission scenarios, should be the first phase and the report should be submitted to IMO by August 2008 for consideration by the 58th session of the MEPC. Phase two, also covering GHGs other than CO₂ and other relevant substances in accordance with the methodology adopted by UNFCCC (United Nation's Framework Convention on Climate Change), as well as the identification and consideration of future reduction potentials by technical, operational and market-based measures, should be the second phase of the study update, and should be submitted to IMO by February 2009 for consideration by the 59th session of the MEPC.

The update should be undertaken by an international consortium of research institutes with relevant experience and expertise within the scope of the update and with one of the institutes serving as the co-ordinator providing a project leader. While taking the first study as a good starting point and taking into account relevant new information, the authors should not duplicate existing studies that have already been completed. The report of the informal Cross Government/Industry Scientific Group of Experts, established to evaluate the effects of the different fuel options proposed under the revision of MARPOL Annex VI, will be published by mid-December 2007 and should be taken into account.

Expertise and experience

The involved research institutes should have adequate experience and knowledge covering the scope of the study including relevant research and development work such as:

- ship design and technology (hydrodynamics, engine and propulsion system efficiency);
- ship operations (logistic and economy);

- energy efficiency and logistics in the transport sector;
- emission reduction technologies, marine fuels and alternative fuels;
- ship emissions inventories;
- impact of emissions on climate change, environment and public health;
- greenhouse gas emission policy instruments, policies and practices; and
- projection of future scenarios related to the above.

The proposal should include a description of the aggregate expertise and the experience within the involved research institutes.

Personnel

The project leader should preferably have a PhD in a relevant discipline and minimum 10 years' experience. The main scientist involved in the work, should have minimum five years experience. The proposal should include relevant research work undertaken by the involved scientists over the last two years.

Reporting progress

A Steering Committee will be established by the IMO Secretariat in accordance with instructions agreed by the 56th session of the MEPC. The Steering Committee will, *inter alia*, monitor the progress of the study and report to the MEPC, in order to do so; progress reports in accordance with the final agreed work plan will be required, in addition to the scientific reports, at appropriate intervals not exceeding two months.

Proposals

Bidders are requested to submit a detailed proposal including an outline of the study capturing key points and issues in accordance with the Terms of Reference; this should include the following points:

- the involved research institutes and/or individual scientists;
- experience and expertise within the consortium related to similar work or work that may be of relevance;
- CVs of the main staff involved in the study update;
- a detailed draft work plan with description of methodology where the ToR do not provide detailed guidance, including identification of milestones and progress reporting;
- a breakdown of the tasks and the allocation of resources for each task, including: the number of workdays and daily rates for the scientific work, administration costs, any travel costs if relevant, costs associated with collection or provision of data; and
- a draft timetable.

Your proposal must be within the budgetary limit of US\$400,000. The study will be managed by a Steering Committee consisting of IMO Member States coordinated by the IMO Secretariat. The contract shall be a fixed price and the conditions shall be the IMO General Terms and Conditions of Contract.

PHASE ONE – CO₂ INVENTORIES AND SCENARIOS

Current inventories and future scenarios of CO₂ emissions from international shipping

1 Phase one of the study should include current global inventories of CO₂ emitted from ships engaged in international transport, any methodological aspects and future emission scenarios, described as follows:

- .1 The inventories should include the annual emission series from 1990 to the year as far as statistical data are available;
- .2 CO₂ inventories should take into account the work by the Informal Cross Government/Industry Scientific Group of Experts that was established by the IMO Secretary-General in July 2007 to evaluate the effects of the different fuel options proposed under the revision of MARPOL Annex VI (IMO document BLG 12/6/1). The CO₂ inventories should be estimated both by top down method and by bottom up method subject to data availability. Top down method is based on the statistical data on fuel delivered to international shipping and bottom up method is based on the transport activity such as fuel consumption by individual ships*. These two inventories should be compared and analyzed for QA/QC and transparency of these data; and
- .3 Estimations of future shipping emission scenarios should be performed in base-case (business as usual) and in different regulatory and technology development scenarios for the years 2020 and 2050. Possible introduction of regional and global regulatory regimes as well as future economic growth, expected efficiency improvements and increased transportation amounts, should be considered for the different scenarios.

Climate impacts of international shipping

2 The study should include an assessment of the contribution and impact of CO₂ emissions from shipping on climate change.

3 A comparison of CO₂ emissions from various modes of transport, based on tonnes-miles of cargo transported, should be included in the study. In this respect, consideration should also be given to different types of ships and should take into account the progress made to date in reducing fuel consumption as described in paragraph 2 above.

* For example, the top down method should rely on existing statistical sources of fuel delivery data regarding marine uses of fossil fuels, such as international surveys (e.g., IEA) and national statistics on fuel deliveries for marine uses. The bottom-up method could investigate fuel deliveries and ship manifest logs at ports.

Organizational matters

4 While taking into account relevant new information, the authors should not duplicate existing studies that have already been completed. Therefore, in conducting the study, the authors may consult a broad range of reputable organizations, institutions and resources with relevant experience and/or expertise within areas of the terms of reference. Authors should validate the credibility of information obtained. The responsibility for the content of the updated study would rest with the authors.

Report

5 The report should be submitted in two parts, the report itself and an executive summary followed by the main conclusions from the study. The Main report should be accompanied by a summary of each chapter or a summary of each chapter should be embedded in the report.

6 A preliminary report on phase one should be submitted to IMO for consideration by the Steering Committee by 1 July 2008. The Steering Committee will provide its comments and input by 1 August 2008. The final report covering phase one should be submitted to IMO by 1 September 2008.

PHASE TWO – CO₂, GHGs AND OTHER RELEVANT SUBSTANCES

Current inventories and future scenarios of emissions of GHGs and other relevant substances from international shipping, future CO₂ emission reduction potential

1 The study should include current global inventories of GHGs (other than CO₂) and relevant substances emitted from ships engaged in international transport, any methodological aspects and future emission scenarios, described as follows:

- .1 GHGs (other than CO₂) should be defined as the gases considered under the UNFCCC process: methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆);
- .2 Other relevant substances that may contribute to climate change include: nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOC), carbon monoxide (CO), particulate matter (PM) and sulphur oxides (SO_x); and
- .3 The inventories should include the annual emission series from 1990 to the year as far as statistical data are available.

Future CO₂ emission reduction potential

2 The study should identify available options for further reductions based on current technologies and practices. The study should assess what balances and potential trade-offs that are involved in reducing CO₂ emissions from ships including consideration of the voluntary IMO CO₂ indexing scheme.

3 The study should identify possible future measures to reduce CO₂ emissions and related potential for reductions, such as options for technological change, fuel switching, the use of alternative power, changes in operational and commercial practices, market-based measures and other possible actions (e.g., labelling and certification).

4 From MEPC 57 (31 March to 4 April 2008) and onwards, MEPC will consider technical, operational and market-based methods for dealing with GHG emissions, provided MEPC reaches conclusions on the subjects, also this work should, as far as practical and possible, be taken into account by the authors. Effects of amendments to MARPOL Annex VI should also be taken into account.

5 The study should, as far as possible, undertake a cost benefit analysis of the options for current and future reductions in CO₂ emissions from international shipping identified in paragraphs 2 to 4 above.

Current and future emission reduction potential of GHGs and other relevant substances

6 The study should identify progress made to date in reducing GHGs emissions (other than CO₂) and other substances, including, for example, which options are available for further reductions based on current technologies and practices? What balances and potential trade-offs are involved in reducing GHGs and other relevant substances?

7 The study should identify possible future measures to reduce emissions of GHGs (other than CO₂) and other relevant substances and related potential for reductions, such as options for technological change, fuel switching, alternative power, changes in operational practices, market-based measures and other actions (e.g., labelling and certification).

8 The study should undertake a cost benefit analysis, including environmental and public health impacts, of options for current and future reductions in GHGs emissions (other than CO₂) and other relevant substances from international shipping.

Climate impacts of international shipping

9 The study should include an identification of the impacts of emissions from shipping on climate change; taking into account the GHGs (other than CO₂) considered by the UNFCCC processes and other relevant substances as identified above in paragraphs 1.1 and 1.2.

Report

10 The report should be submitted in two parts, the report itself and an executive summary followed by the main conclusions from the study. The Main report should be accompanied by a summary of each chapter or a summary of each chapter should be part of the report itself.

11 A preliminary report on phase two should be submitted to IMO for consideration by the Steering Committee by the end of December 2008. The Steering Committee will provide its comments and input by 1 February 2009.

12 The final report covering both phases one and two should be submitted to IMO by 1 March 2009.

13 The main authors are expected to present the Study at two special sessions; one prior to or during MEPC 58 (October 2008) and one prior to or during MEPC 59 (July 2009).