



MARINE ENVIRONMENT PROTECTION  
COMMITTEE  
58th session  
Agenda item 4

MEPC 58/4/2  
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## PREVENTION OF AIR POLLUTION FROM SHIPS

### Updating of the 2000 IMO GHG Study – Progress report from the Steering Committee

#### Note by the Secretariat

#### SUMMARY

<b><i>Executive summary:</i></b>	This document provides a progress report on the updating of the 2000 IMO Greenhouse Gas Study
<b><i>Strategic direction:</i></b>	7.1
<b><i>High-level action:</i></b>	7.1.1
<b><i>Planned output:</i></b>	7.3.1.3
<b><i>Action to be taken:</i></b>	Paragraph 17
<b><i>Related documents:</i></b>	MEPC 45/8; MEPC 55/23; MEPC 56/23; MEPC 57/4/18 and Add.1, MEPC 57/21; MEPC 58/4/4 and MEPC 58/INF.6

#### Background

1 The Committee, at its fifty-sixth session, approved Terms of Reference for the update of the 2000 IMO GHG Study and requested the Secretariat to initiate the update including the establishment of a Steering Committee. The updating has been divided into two Phases:

- .1 Phase 1, covering a CO<sub>2</sub> emission inventory from international shipping and future emission scenarios, will be reported at MEPC 58; and
- .2 Phase 2, covering greenhouse gases other than CO<sub>2</sub> 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 MEPC 59.

2 The Steering Committee was established in 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.

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3 The Committee will recall that a progress report in two parts (MEPC 57/4/18 and MEPC 57/4/18/Add.1) was presented to MEPC 57. The progress reports provided information about the establishment of the Steering Committee, the outcome of the tendering process, a description of the Consortium that was awarded the contract and provided information that, due to lack of funding, the contract had had to be divided into two parts: a Contract for Phase 1 and a Letter of Intent for Phase 2. MEPC 57 noted the progress reports and requested that a further status report be submitted to MEPC 58 (paragraphs 4.102 to 4.104 of document MEPC 57/21).

### **Report on Phase 1**

4 At the request of MEPC 57 (paragraph 4.116.2 of document MEPC 57/21), the Consortium gave a presentation to the intersessional meeting of the Working Group on Greenhouse Gas Emissions from Ships (GHG-WG 1), held in Oslo, Norway, from 23 to 27 June 2008, on the preliminary results of the update (paragraphs 4.14 to 4.16 of document MEPC 58/4).

5 The preliminary report on Phase 1 was submitted by the Consortium to the Secretariat on 30 June 2008 and forwarded to the members of the Steering Committee for technical and editorial review.

6 The Steering Committee met on 23 July 2008 at the IMO Headquarters and considered the preliminary report and whether or not it complied with the Terms of Reference. The Steering Committee agreed that the preliminary report met the Terms of Reference and unanimously accepted it, recognizing that the responsibility for the scientific content of the updated study would rest with the authors.

7 The Steering Committee noted that the updated study would be a critical document and an important reference point in developing the IMO strategy to limit and reduce GHG emissions from international shipping. In light of the significance of the report and the fact that it would be used not only by IMO but also by other international organizations, it was important that the final report provided a detailed and cogent analysis of the relevant issues. In the same manner, as the 2000 IMO GHG Study has been the most comprehensive and authoritative assessment on the contribution made by international shipping to climate change, so would the updated Study be in the future. Based on this background, the Steering Committee, when considering the preliminary report, agreed on several comments to make the final Phase 1 report more readable for policymakers and to link it closer to the 2000 IMO GHG Study and to other scientific reports on the issue.

8 The comments and input by the Steering Committee were submitted to the Consortium on 25 July 2008, for preparation of the final report on Phase 1 and is attached as the annex to this document.

9 The final Phase 1 report will be submitted to the Committee in accordance with the relaxed deadline of 1 September 2008, as agreed by MEPC 57. The Executive Summary of the Phase 1 report will be submitted as document MEPC 58/4/4 and the final Phase 1 report will be submitted as information document MEPC 58/INF.6.

### **Funding**

10 The total payable cost of updating the 2000 IMO GHG Study has been estimated to about US\$500,000, to be collected through voluntary contributions. This amount includes the payable cost of US\$399,960 for the update itself and also follow-up activities such as further impact assessments of proposed measures or other activities as agreed by the Committee or initiated by

the Steering Committee itself. Including the balance from the Scientific Group of Experts, established by the Secretary-General in connection with the revision of MARPOL Annex VI, a total of US\$407,308.99 has been donated to date. The following Member States have contributed: Australia, Canada, Denmark, Germany, the Marshall Islands, the Netherlands, Norway, Sweden and the United Kingdom.

11 The Steering Committee recommends that MEPC 58 urges Member States and Observers that have not yet contributed financially towards the update of the Study to do so without further delay to enable the exercise to proceed as expected by the Committee.

### **Scientific reports and other input to the Consortium**

12 In accordance with the Terms of Reference as adopted by MEPC 56, the Consortium is expected to consult a broad range of reputable organizations, institutions and resources with relevant experience and/or expertise within the areas of the terms of reference. While taking into account relevant new information, the Consortium should not duplicate existing studies that have already been completed. The Consortium is instructed to validate the credibility of the information obtained.

13 The Consortium has, for Phase 1, gratefully received inputs and comments from the International Energy Agency (IEA), BIMCO and INTERTANKO.

14 For Phase 2, the Government of Greece has provided several relevant scientific studies and input on methodology has been provided by the Government of Australia.

15 The Steering Committee recommends that MEPC 58 invites Member States and Observers that have applicable scientific studies or want to provide other relevant input to the Consortium to do so using the IMO Secretariat as the focal point<sup>1</sup>.

### **Status of Phase 2 Contract**

16 The contract for Phase 2 was signed in July 2008 and the Consortium is now well underway towards finalizing its task.

### **Action requested of the Committee**

17 The Committee is invited to consider the information provided and take action as appropriate.

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## ANNEX

### INPUT AND COMMENTS BY THE STEERING COMMITTEE ON THE PRELIMINARY PHASE 1 REPORT

The Steering Committee agreed that the Preliminary Phase 1 report complied with the Terms of Reference and agreed on the following comments:

#### **1 General**

1.1 A closer link should be made to the initial 2000 IMO GHG Study as the current study is providing an update.

1.2 Consistency in terminology should be sought throughout the report: e.g., intercontinental/international, short-sea/regional.

1.3 The report should provide correction factors wherever ton-miles or ton-kilometre is used.

#### **2 Current emission inventories (ToR paragraphs 1.1 and 1.2)**

2.1 A comparative analysis of methodology and findings should be given on the differing result from other IMO studies such as 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 (IMO document BLG 12/6/1). Also an explanation of why the results of this study are deemed to be more realistic and to demonstrate their accuracy and reliability should be included in the final report.

2.2 The preliminary report provides an excellent baseline for 2007 and final results in Figure 12 for 1990 – 2007 considering both “top down” and “bottom up” methodologies. However, a more detailed description of the results between 1990 and 2007 should be given or an explanation of why these data are not included should be provided.

2.3 The preliminary report cites “bottom up” methodology as more reliable than “top down” and goes into great detail on how this was done for 2007 but does not give any indication of how this “bottom up” methodology was applied to previous years back to 1990. For example, was 2007 and AIS used to determine “days at sea”, etc., a model that was then somehow applied to previous years?

2.4 In order for IMO and other international organizations to use the study as a reliable estimate of CO<sub>2</sub> emissions from shipping it would benefit from a more rigorous analysis of bunker fuel sales and ship activity data (pp. 19-54), and a discussion of the results to demonstrate their accuracy and reliability. For example, verify ship activity data with historical figures.

2.5 Including comments describing significance and meanings of graphs and charts would be useful, as the methodology used to develop the charts and graphs are not always immediately clear and thereby fully transparent for the reader.

2.6 The report should provide a more detailed discussion on the use of different types of fuel and their wider implications (p. 22), including an explanation on the Carbon to CO<sub>2</sub> factors used.

2.7 The report should clarify in more detail the assumptions made in the methodology to enable the reader to accept the level of CO<sub>2</sub> emissions with a high degree of confidence. For example, the basis upon which the average engine load has been determined (p. 27).

2.8 A clarification of the fuel type in Table 14 (p 31) is needed, e.g., the table indicates that all container vessels are using MDO.

2.9 The report should explain terms such as ‘unique’ in regard to AIS count (p. 26 and table 14, pp. 30-32).

2.10 The report should use ‘certainty’ to explain ME and AE fuel consumption calculation in tables 15 and 16 (pp. 33-34) and give a percentages of reliability instead of ‘uncertainty’ and the somewhat vague categories of ‘low’, ‘medium’ and ‘high’.

### **3 Future emission scenarios (ToR paragraph 1.3)**

3.1 The report would benefit from a more in-depth explanation on how the projected figures have been reached. A more detailed explanation of the IPCC scenarios would be beneficial for readers not familiar with the SRES.

3.2 It is felt that a clarification is needed in the report as the meaning of “different regulatory scenarios” in the ToR (paragraph 1.3) may be ambiguous. The report should explain how this has been interpreted by the authors.

3.3 The report should explain how the discussion of ton-mile projections is of assistance in understanding the different projections illustrated in figure 19 (p. 60).

3.4 The report should provide a more comprehensive discussion of freight markets.

3.5 The report should provide some comments on the reasons why the authors have consistently lower estimates than Fairplay in projections of world fleet trends (scenario fleets in appendix).

3.6 Continue transport efficiency graphs (figures 31 and 32; pp. 89-90) based on estimated technology improvements as given in table 37 (p. 66).

3.7 The report would benefit from inclusion of future trends in all transport modes/sectors.

### **4 Climate impacts of international shipping (ToR paragraph 2)**

4.1 The authors should limit the discussion in Phase 1 to Radiative Forcing of CO<sub>2</sub> emissions (as indicated in the proposal) (pp. 97-98).

4.2 The report should clarify the role of shipping in climate stabilization. Although there is no legend for the orange/red/blue lines at the bottom of the graph (figure 27, p. 99), they seem to suggest that current trends in shipping alone will be above recommended levels for the world by the end of the 21<sup>st</sup> century.

4.3 It is recommended that the scenarios presented in Figure 36 be clearly rearticulated and that additional explanation be provided for the methodology and conclusions of the analysis presented in Figure 37.

## **5 Comparison of CO<sub>2</sub> emissions (ToR paragraph 3)**

5.1 For the figures for road and rail, the assumptions used and how they are calculated should be explained in more detail. Missing from this section is aviation (Figure 30 p 88).

5.2 It is unclear why IEA data is reliable for other transport modes but not for shipping.

5.3 While Table 8 of the preliminary report indicates BSFOC reduction over time, this issue is not clearly discussed in the preliminary report or its executive summary as to why it has occurred or otherwise identified productive options. In the report preface, the last paragraph references the objectives of the study. It does not include this question specifically in Phase 1 but indicates that Phase 2 will address GHG other than CO<sub>2</sub> and possibilities and mechanisms for future reductions.

5.4 The report should specify in Figure 34 (p. 91) the transport segment (road/rail). It is unclear if 'other sectors' relate to transport? (as it is set between 'transport' and 'international aviation').

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