

**Note by the International Maritime Organization to the fiftieth session of the  
Subsidiary Body for Scientific and Technological Advice (SBSTA 50)  
Bonn, Germany, 17 to 27 June 2019**

**Agenda item 8(e)**

**“Methodological issues under the Convention: emissions from fuel used for  
international aviation and maritime transport”**

**UPDATE ON IMO’S WORK TO ADDRESS GHG EMISSIONS FROM FUEL USED FOR  
INTERNATIONAL SHIPPING**

**SUMMARY**

IMO’s Marine Environment Protection Committee (MEPC) has for some time now been addressing greenhouse gas (GHG) emissions from ships engaged in international trade. It met for its seventy-fourth session (MEPC 74) from 13 to 17 May 2019, at IMO Headquarters in London, with the participation of Member States, Associate Members, United Nations bodies including UNFCCC, intergovernmental organizations and non-governmental organizations.

After adoption of the *Initial IMO Strategy on reduction of GHG emissions from ships* (the Initial Strategy) in April 2018, while two countries reserved their position, MEPC 73 in October 2018 approved its programme of follow-up actions up to 2023, and MEPC 74 made good progress in:

- finalizing a procedure for assessing impacts on States of a candidate measure;
- initiating the Fourth IMO GHG Study in order to provide updated estimates of emissions and projections for the sector, with report to be considered in autumn 2020;
- establishing a voluntary multi-donor trust fund (“GHG-TC-Trust Fund”) to sustain IMO’s technical cooperation and capacity-building activities to support the implementation of the Initial Strategy;
- adopting resolution MEPC.323(74) on *Invitation to Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships*;
- approving draft amendments to MARPOL Annex VI to significantly strengthen the energy efficiency requirements for several types of new ship from 2022;
- considering various concrete proposals of short-, mid- and long-term measures in order to achieve the levels of ambition identified in the Initial Strategy; and
- approving terms of reference for the sixth and seventh intersessional meetings of the Working Group on Reduction of GHG emissions from ships, to be held in November 2019 and March 2020, respectively.

**Context**

1 International shipping plays an essential role in the facilitation of global commerce as the most cost-effective and energy-efficient mode of mass cargo transport, making a vital contribution to international trade and being a key pillar of the development of a sustainable

global economy. UNCTAD<sup>1</sup> has identified that in 2017 seaborne trade volumes grew by 4% to a total of 10.7 billion tonnes.

2 The International Maritime Organization (IMO) was established in 1948 by States Parties to the Convention on the International Maritime Organization as a specialized United Nations agency to provide the machinery for intergovernmental cooperation in the field of regulation of ships engaged in international trade. IMO is responsible for the global regulation of all aspects of international shipping and has a key role in ensuring that lives at sea are not put at risk, including security of shipping, 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.**

3 This document provides information on IMO's activities on GHG reduction from ships and an update of previous submissions by IMO to SBSTA.

### **IMO's work on control of GHG emissions from international shipping**

4 In 2011, measures to improve energy efficiency of international shipping were adopted by Parties to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL) that entered into force on 1 January 2013. The *Regulations for energy efficiency of ships* apply to internationally trading ships of 400 gross tonnage and above, and make mandatory the:

- .1 Energy Efficiency Design Index (EEDI) for new ships; and
- .2 Ship Energy Efficiency Management Plan (SEEMP) for new and existing ships.

5 The EEDI is a non-prescriptive, performance-based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. So long as the required energy-efficiency level is attained, ship designers and builders are free to use the most cost-efficient solutions for the ship to comply with the regulations.

6 Each ship of 400 gross tonnage and above engaged in international trade is required to keep on board a ship-specific SEEMP which establishes a mechanism for operators to improve the energy efficiency of the ship. This should be achieved by monitoring the energy efficiency performance of a ship's transportation work and at regular intervals considering new technologies and practices to improve energy efficiency.

7 Following the entry into force on 1 March 2018 of amendments to MARPOL Annex VI, mandatory collection and reporting of ship fuel oil consumption has begun. Since 1 January 2019, ships of 5,000 gross tonnage and above (representing approximately 85% of the total CO<sub>2</sub> emissions from international shipping) are required to collect consumption data for each type of fuel oil they use, as well as additional specified data including proxies for "transport work". The data primarily collected by the flag States is subsequently transferred to the IMO Ship Fuel Oil Consumption Database. The first report analysing and summarizing the data collected in 2019 will be presented at MEPC 77, in spring 2021. This mechanism is expected to provide robust data on international shipping fuel consumption and GHG emissions and inform the Committee.

### **Initial IMO Strategy on Reduction of GHG emissions from ships**

8 In April 2018, MEPC 72 adopted resolution MEPC.304(72) on the *Initial IMO Strategy on reduction of GHG emissions from ships* (the Initial Strategy) as previously reported to SBSTA 48. This important agreement represents the framework for further action of the Committee, setting out the future vision for international shipping. The Initial Strategy

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<sup>1</sup> *Review of maritime transport, 2018.* UNCTAD

envisages for the first time a reduction in total GHG emissions from international shipping which, it says, should peak as soon as possible and to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008, while, at the same time, pursuing efforts towards phasing them out entirely. IMO Member States agreed to keep this Strategy under review, including adoption of a Revised Strategy in 2023.

### **Programme of follow-up actions of the Initial Strategy up to 2023**

9 As reported to SBSTA 49, MEPC 73 in October 2018 approved a *Programme of follow-up actions of the Initial IMO Strategy on reduction of GHG emissions from ships up to 2023*, as set out in annex 1 to the IMO submission to SBSTA 49. This document constitutes a planning tool on the work for IMO in meeting the timelines identified in the Initial Strategy, and includes expected timeframes.

10 The programme of follow-up actions identifies eight streams of activity and their detailed timelines up to 2023, as follows:

- .1 candidate short-term measures (Group A) that can be considered and addressed under existing IMO instruments;
- .2 candidate short-term measures (Group B) that are not work in progress and are subject to data analysis;
- .3 candidate short-term measures (Group C) that are not work in progress and are not subject to data analysis;
- .4 candidate mid-/long-term measures and action to address the identified barriers;
- .5 impacts on States;
- .6 Fourth IMO GHG Study;
- .7 capacity-building, technical cooperation, research and development; and
- .8 follow-up actions towards the development of the revised Strategy.

### **Outcome of MEPC 74**

11 MEPC 74 made good progress in executing the *Initial IMO Strategy on reduction of GHG emissions from ships* and its programme of follow-up actions up to 2023.

### ***Procedure for assessing the impacts on States of candidate measures***

12 The Initial Strategy identifies that “the specification for and agreement on the procedure for assessing and taking into account the impacts of measures related to international shipping on States should be undertaken as a matter of urgency as part of the follow-up actions”. Further, the *Programme of follow-up actions of the Initial Strategy up to 2023* foresaw the finalization of a procedure for assessing the impacts on States of a measure at MEPC 74.

13 Based on the progress made by the Working Group on Reduction of GHG Emissions from Ships, MEPC 74 approved MEPC.1/Circ.855 on *Procedure for assessing the impacts on States of candidate measures*. The text of the procedure is set out in the annex for information.

- 14 This procedure identifies four steps for the impact assessment:
- .1 Step 1: initial impact assessment, to be submitted as part of the initial proposal to the Committee for candidate measures;
  - .2 Step 2: submission of commenting document(s), if any;
  - .3 Step 3: comprehensive response, if requested by commenting document(s); and
  - .4 Step 4: comprehensive impact assessment, if required by the Committee.

15 The procedure provides further detail on the content and methodologies of the initial and comprehensive impact assessments. The duration of the impact assessment may range from one to four meetings depending on the level of assessment required and consideration of a measure by the Committee before approval.

#### ***Fourth IMO GHG Study***

16 Based on the recommendations from an Expert Workshop held in March 2019, MEPC 74 approved the terms of reference of the Fourth IMO GHG Study and the call for tenders was issued on the IMO website on 29 May. It is intended that the work could begin in Autumn 2019, with a view to the final report of the Study being submitted to MEPC 76, to be held in Autumn 2020.

- 17 The Study will include:
- .1 an inventory of current global emissions of GHGs and relevant substances emitted from ships of 100 GT and above engaged in international voyages from 2012 to 2018, or as far as statistical data are available. GHGs are defined as the six gases initially considered under the UNFCCC process: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>). The inventory should also include other relevant substances that may contribute to climate change, including Black Carbon (BC);
  - .2 estimates of carbon intensity (estimates of world fleet's CO<sub>2</sub> emissions per transport work, from 2012 to 2018, or as far as statistical data are available);
  - .3 possible estimates of carbon intensity of international shipping for the year 2008 (the baseline year for the levels of ambition identified in the Initial Strategy); and
  - .4 scenarios for future international shipping emissions 2018-2050.

18 A Steering Committee of Member States will be established to act as a focal point for MEPC, to review and monitor progress and confirm that the Study meets its terms of reference.

#### ***Multi-donor trust fund for reduction of GHG emissions from ships***

19 MEPC 74 established the "GHG TC-Trust Fund" – a voluntary multi-donor trust fund to provide a dedicated source of financial support to sustain the Organization's technical cooperation and capacity-building activities to support the implementation of the Initial Strategy.

### ***Cooperation with ports to reduce GHG emissions from shipping***

20 MEPC 74 adopted resolution MEPC.323(74) on *Invitation to Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships*.

21 This resolution encourages to the port sector to engage in the efforts to reduce GHG emissions from ships. It identifies in particular four possible areas of interest:

- .1 development of Onshore Power Supply facilities (preferably from renewable sources);
- .2 provision of safe bunkering of alternative low-carbon and zero-carbon fuels;
- .3 promotion of port incentives schemes; and
- .4 optimization of port calls, including facilitation of Just-in-Time arrival of ships.

### ***Strengthening energy efficiency rules – draft amendments approved***

22 MEPC 74 approved, for adoption at the next session in April 2020, draft amendments to MARPOL Annex VI to significantly strengthen the EEDI phase 3 requirements. The draft amendments bring forward the entry into effect date of phase 3 to 2022, from 2025, for several ship types, including gas carriers, general cargo ships and LNG carriers. This means that new ships built from that date must be significantly more energy efficient than the baseline. Furthermore, for a containership of 200,000 deadweight tonnage and above, the EEDI reduction rate is expected to be set at 50% from 2022, instead of 30% from 2025.

23 The Committee also agreed terms of reference for a correspondence group to look into the introduction of a possible EEDI phase 4.

### ***Consideration of various concrete proposals of short-, mid- and long-term measures***

24 MEPC 74 discussed various candidate short-term measures, including strengthening the energy efficiency requirements for existing ships based on the SEEMP, speed and other technical and operational measures. In view of the vast number of proposals, the working group focused on how to consider, organize and streamline proposals on candidate short-term measures.

### ***Future steps***

25 MEPC 74 approved the terms of reference for the sixth and seventh intersessional meetings of the Working Group on Reduction of GHG Emissions from Ships, to be held, respectively, 11 to 15 November 2019 and back to back with MEPC 75 (30 March to 3 April 2020), subject to endorsement by the IMO Council (C122, 15-19 July).

26 The intersessional working group will:

- .1 further consider concrete proposals to improve the operational energy efficiency of existing ships, with a view to developing draft amendments to chapter 4 of MARPOL Annex VI and associated guidelines, as appropriate;
- .2 further consider concrete proposals to reduce methane slip and emissions of Volatile Organic Compounds (VOCs);
- .3 consider a draft MEPC resolution urging Member States to develop and update a voluntary National Action Plan (NAP) with a view to contributing to

reducing GHG emissions from international shipping, and develop associated guidelines, as appropriate;

- .4 further consider concrete proposals to encourage the uptake of alternative low-carbon and zero-carbon fuels, including the development of lifecycle GHG/carbon intensity guidelines for all relevant types of fuels and incentive schemes, as appropriate;
- .5 consider the development of further actions on capacity-building, technical cooperation, research and development, including support for assessment of impacts and support for implementation of measures;
- .6 consider other concrete proposals for candidate measures; and
- .7 submit a written report to MEPC 75.

### **Capacity-building and technical cooperation activities**

27 To ensure effective implementation and enforcement of the energy efficiency regulations, IMO has maintained efforts on technical cooperation and capacity building. In 2018, under the Integrated Technical Co-operation Programme (ITCP) of IMO, 14 regional and national workshops on implementation of the measures to address emissions from international shipping have been organized, in every continent.

28 In addition to the usual ITCP activities, IMO has set up five Maritime Technology Cooperation Centres (MTCCs) in Latin America, the Caribbean, Pacific, Asia and Africa, with financial assistance from the European Union. These five MTCCs constitute the Global MTCC Network (GMN), which is implementing the IMO project titled “Capacity Building for Climate Mitigation in the Maritime Shipping Industry”<sup>2</sup>. This Network promotes the uptake of low-carbon technologies and operations in maritime transport in developing countries with a view to limiting GHG emissions from their shipping sectors through technical assistance and capacity building.

29 Furthermore, with financial support from the Global Environment Facility (GEF), UNDP and IMO are cooperating in a global effort to transform the shipping industry towards a lower carbon future, through the Global Maritime Energy Efficiency Partnerships Project (GloMEEP Project)<sup>3</sup>, launched in 2015. The overall goal of GloMEEP is to strengthen the national capabilities for countries to become Party to and effectively implement MARPOL Annex VI, through legal, policy and institutional reforms, awareness raising and capacity-building activities and establishment of public-private partnerships to support innovation and low carbon shipping. This project involves ten Lead Pilot Countries (Argentina, China, Georgia, India, Jamaica, Malaysia, Morocco, Panama, Philippines and South Africa) and several private sector stakeholders through the participation of the “Global Industry Alliance to support low-carbon shipping” (GIA), a partnership to develop innovative solutions to address common barriers to the uptake and implementation of energy efficiency technologies and operational measures.

30 MEPC 74 noted with appreciation an update on the GMN and GloMEEP projects. During MEPC 74, a new major international project to support the Initial Strategy has been launched. Entitled GreenVoyage-2050, the project will initiate and promote global efforts to demonstrate and test technical solutions for reducing GHG emissions, as well as enhancing knowledge and information sharing to support the Initial Strategy. GreenVoyage-2050 is a collaboration between IMO and the Government of Norway and will run for an initial two-year period. More than 50 countries in 14 sub-regions across the globe are expected to participate

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<sup>2</sup> Project website: <http://gmn.imo.org/>

<sup>3</sup> Project website: <https://glomeep.imo.org/>

in the Project, including strategic partners from the private sector, who will contribute expertise and experience.

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## ANNEX

### PROCEDURE FOR ASSESSING IMPACTS ON STATES OF CANDIDATE MEASURES

#### Background and objectives

1 In April 2018, MEPC 72 adopted resolution MEPC.304(72) on the *Initial IMO Strategy on reduction of GHG emissions from ships* (the Initial Strategy). The Initial Strategy lists a series of candidate short-, mid- and long-term measures. As outlined in the Initial Strategy, the impacts on States of a measure should be assessed and taken into account as appropriate before adoption of the measure. Particular attention should be paid to the needs of developing countries, especially Small Island Developing States (SIDS) and Least Developed Countries (LDCs). Disproportionately negative impacts should be assessed and addressed, as appropriate.

2 This procedure for assessing impacts on States of candidate measures identifies steps, specifies what should be included in the different steps in the procedure, and the respective roles of the proponent of a measure and of the Committee, without prejudging the substance of any future impact assessment.

3 The duration of the impact assessment procedure may range from one to four meetings depending on the level of assessment required and consideration of a measure by the Committee before approval.

4 The Committee should review this procedure by 2023, in conjunction with the adoption of the Revised Strategy.

#### Procedure

5 Impact assessment should be simple, inclusive, transparent, flexible, evidence-based and measure-specific. The comprehensiveness of any impact assessment should be commensurate to the complexity and nature of the proposed measure. Impact assessment should be undertaken in parallel with the consideration and development of a candidate measure. There are up to four steps in the procedure:

- .1 Step 1: initial impact assessment, to be submitted as part of the initial proposal to the Committee for candidate measures\*;
- .2 Step 2: submission of commenting document(s), if any;
- .3 Step 3: comprehensive response, if requested by commenting document(s);  
and
- .4 Step 4: comprehensive impact assessment, if required by the Committee.

6 A proponent of a measure should submit an initial impact assessment at a minimum. However, the proponent may submit a more detailed impact assessment in the first instance, taking into account the elements listed in paragraph 15.

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\* Proponent(s) of the measure should abide to a 13-week submission deadline, as set out in paragraph 6.12.3 of the Committees' Methods of work (MSC-MEPC.1/Circ.5/Rev.1).



### **Step 1: initial impact assessment**

7 Once the consideration of a measure is initiated, the Committee should consider the initial impact assessment submitted as part of the candidate measure proposal.

8 The initial impact assessment should pay particular attention to the needs of developing countries, especially SIDS and LDCs and, inter alia:

- .1 indicate if the proposal for the measure provides a description of impacts on ships and emissions;
- .2 identify which impacts should be assessed, taking into account, as appropriate, inter alia (1) geographic remoteness of and connectivity to main markets; (2) cargo value and type; (3) transport dependency; (4) transport costs; (5) food security; (6) disaster response; (7) cost-effectiveness; and (8) socio-economic progress and development;
- .3 indicate both positive and negative potential impacts;
- .4 analyse the extent of the impacts (e.g. by quantifying them and relating them to normal variations in transport costs, trade or GDP); and
- .5 assess whether the measure is likely to result in disproportionately negative impacts and, if so, how they could be addressed (e.g. avoided, remedied, mitigated), as appropriate.

9 The initial impact assessment should indicate the methodological tools and data sources used, and may indicate the limitations of the analysis.

### **Step 2: submission of commenting document(s), if any**

10 Member States may comment on the initial impact assessment to request clarification and/or additional information.

11 Commenting document(s) should be submitted at the latest to the meeting following on from the one where a proposal has been made.

12 Any interested Member State or international organization may submit additional information and/or a separate impact assessment, as appropriate, of a proposed measure or group of measures.

### **Step 3: comprehensive response, if requested by commenting document(s)**

13 At the following meeting at the latest, the proponent(s) of the measure or any interested Member State or international organization, should provide a comprehensive response to the commenting document(s).

### **Step 4: comprehensive impact assessment, if required by the Committee**

14 If the Committee so decides, a comprehensive impact assessment should be initiated, taking into account the issues identified in previous steps, including the commenting documents. If no commenting document(s) have been submitted, the Committee should consider the initial impact assessment and determine whether a comprehensive impact assessment is required and, if so, how it would be conducted.

15 The comprehensive impact assessment should pay particular attention to the needs of developing countries, especially SIDS and LDCs and include, inter alia:

- .1 a description of the assumptions and methods used in the analysis;
- .2 a detailed qualitative and/or quantitative assessment of specific negative impacts on States; and
- .3 an assessment of whether the measure is likely to result in disproportionately negative impacts and, if so, recommendations on how they could be addressed (e.g. avoided, remedied, mitigated), as appropriate.

16 The Committee should consider the comprehensive impact assessment, in order to inform further consideration of the proposed measure, and take action as appropriate.

17 Once the impact assessment is completed, and disproportionately negative impacts assessed and addressed, as appropriate, the measure may be considered for adoption.

### **Analysis tools, models and support in undertaking the impact assessment**

18 Impact assessment should be evidence-based and should take into account, as appropriate, analysis tools and models, inter alia, as follows:

- .1 cost-effectiveness analysis tools such as maritime transport cost models, trade flows models, impact on Gross Domestic Product (GDP);
- .2 updated Marginal Abatement Cost Curves (MACCs); and
- .3 economic trade models, transport models and combined trade-transport models.

19 Some Member States such as LDCs and SIDS may require assistance for the collection of data and analysis of potential impacts.

### **Review of the impacts, upon request**

20 Once a measure is adopted and enacted, the Committee should keep its implementation and impacts under review, upon request of Member States, so that any necessary adjustments may be made.

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