

MARINE ENVIRONMENT PROTECTION  
COMMITTEE  
71st session  
Agenda item 7

MEPC 71/7/4  
28 April 2017  
Original: ENGLISH

## REDUCTION OF GHG EMISSIONS FROM SHIPS

### A proposal to consider in developing the IMO GHG strategy

Submitted by BIMCO, IPTA and WSC

#### SUMMARY

*Executive summary:* This document proposes substantive programmes and obligations designed to improve the near-term and long-term efficiency of international shipping in furtherance of the IMO GHG strategy

*Strategic direction:* 7.3

*High-level action:* 7.3.2

*Output:* 7.3.2.1

*Action to be taken:* Paragraph 21

*Related documents:* MEPC 70/7/3, MEPC 70/7/4, MEPC 70/7/5, MEPC 70/7/6, MEPC 70/7/7, MEPC 70/7/8, MEPC 70/7/9, MEPC 70/7/11, MEPC 70/7/12, MEPC 70/7/14, MEPC 70/18 and MEPC 71/7

#### Introduction

1 At MEPC 70, the Committee agreed to develop a comprehensive GHG strategy with a view to agreeing on an initial GHG strategy in 2018. The initial strategy would be subject to further development and refinement after analysis of data collected through the recently adopted IMO Ship Fuel Oil Consumption Database (SFOCD). To support development of the Organization's GHG strategy, the co-sponsors propose: 1) a set of ambitious objectives to be included in the GHG strategy, 2) establishment of a maritime research and development programme to develop new technologies to significantly reduce the carbon footprint of the sector (both in the long term and in the near term), and 3) an investment programme designed to stimulate energy efficiency improvements across the existing fleet.

#### Context and concept of the proposal

2 Governments agreed under the Paris Agreement to take steps to limit the average global temperature rise to below 2°C. The Paris Agreement represents a serious statement and commitment to action that will be translated into action by individual countries, and IMO should act to identify actions that will enable the maritime sector to move forward with specific

programmes that can be expected to deliver the in sector reductions that will be necessary to achieve a low-carbon future.

3 Recent discussion within the Committee has, in some cases, been divided into objectives or targets on the one hand and the means of meeting those objectives on the other hand. As a theoretical matter, it may be possible to separate objectives from the means used to reach those objectives, but as a practical matter the co-sponsors believe that it is necessary to consider objectives and means of meeting those objectives together in order to identify a course of action that is both environmentally effective and feasible. The co-sponsors of document MEPC 70/7/5, in paragraphs 4 and 5, spoke of this issue directly:

"Many Member States have argued that IMO must establish a quantitative greenhouse gas reduction target for international shipping. We share the view that IMO should provide a long-term vision for the sector on how to reduce greenhouse gas emissions, but question whether IMO should solely focus its efforts on defining a target.

Rather, the co-sponsors propose that IMO develop a long-term strategy to address greenhouse gas emissions from international shipping (long-term strategy). The process of developing a long-term strategy would include discussions of a long-term target, **but its primary focus would be to provide tangible outputs to guide near- and long-term action and investments throughout the sector.**" (emphasis added)

4 The co-sponsors agree with the above assessment. In sector reductions must be achieved if IMO is to meet the ambition of the Paris Agreement. If we expect to make substantial reductions in the fleet's carbon footprint, it will be critical to establish a significant and sustained research and development effort to identify what technology advances can be made in the maritime sector. It will also be important to apply known and effective technologies in the immediate future. The short- and long-term results can be impressive, but they will only be impressive if we focus on the means to get there.

#### **Objectives to be achieved/level of ambition**

5 An effective strategy must be clear in what it seeks to achieve. To this end, the co-sponsors invite the Committee to consider the following objectives:

- .1 the overarching objective of IMO's GHG strategy should be to facilitate emission reductions in the maritime sector, moving towards a decarbonized future while maintaining transport services that support sustainable economic development across the world;
- .2 discover and develop for commercial application the most carbon- and cost-efficient technologies for marine transportation;
- .3 pursue substantive and continuous reductions in CO<sub>2</sub> emissions consistent with the introduction of new technologies and fuels; and
- .4 while the primary objective of the IMO GHG strategy is to pursue significant reductions in fleet GHG emissions, efforts are expected to produce parallel reductions of SO<sub>x</sub>, NO<sub>x</sub>, and PM.

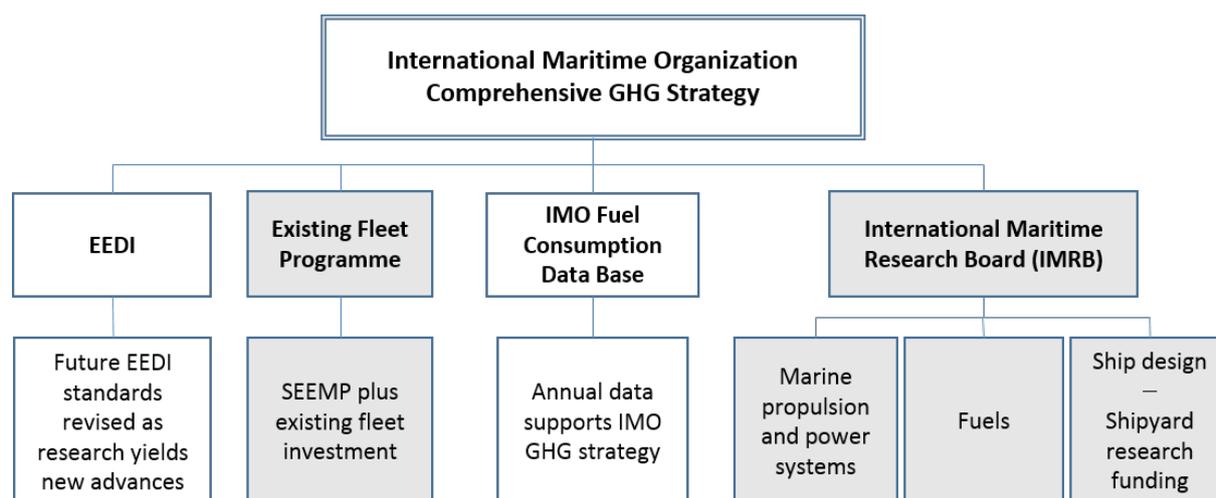
6 Consistent with the preceding discussion, the co-sponsors believe that the most important task for the Organization is to identify appropriate mechanisms to help achieve the stated objectives. In this context, three specific mechanisms are outlined below that should be considered as part of IMO's GHG strategy. Paragraphs 8 to 18 provide further detail.

- .1 establish an International Maritime Research Board with a mandate to direct and fund research and development of new and improved marine propulsion systems, electric generation plants, fuels, and ship design;
- .2 periodically review and modify EEDI standards to promote the introduction of increasingly carbon-efficient tonnage in the maritime fleet; and
- .3 reduce air emissions from the existing fleet through investments in efficiency-enhancing technology.

7 The objectives and the strategy should be subject to a comprehensive review ten years after its final adoption. The IMO review in 2033 would take full account of progress made in the development of low carbon fuels, propulsion technology and other relevant technology as well as developments in maritime trade.

### Principal components of the proposal

8 The proposal includes two principal components: establishment of an international maritime research board and a programme dedicated to improving the existing fleet. A short description of the two programmes follows. In addition, figure 1 provides a schematic showing how the two programmes would become part of IMO's GHG strategy.



*The proposed Existing Fleet Programme and International Maritime Research Board (both highlighted in grey) would become integral parts of IMO's GHG strategy.*

**Figure 1: Schematic showing how the two proposed programmes would become part of IMO's GHG strategy**

### ***International Maritime Research Board***

9 Discussions within and outside of IMO often assume or anticipate that very significant improvements in ship design and new fuels and propulsion technologies will be introduced that will dramatically alter the carbon footprint of the world's maritime fleet. Such advances will not occur by themselves. Encouraging and accelerating such technological advances will require a coordinated maritime research programme devoted to discovering and commercializing new propulsion systems, fuels, electrical power systems, and ship designs. To provide a dedicated structure and funding mechanism to initiate and sustain aggressive technological research, this document calls for establishment of an international maritime research and development programme whose work would be governed by an international board established for this purpose.

10 The International Maritime Research Board (IMRB) would define and oversee a research and development effort to significantly reduce CO<sub>2</sub> emissions over time. The co-sponsors propose that the R&D programme should focus on three pillars of research:

- .1 marine propulsion and power generation systems;
- .2 fuels; and
- .3 ship design.

11 The IMRB would be established as a central component of the GHG strategy adopted by IMO, but it is proposed that the IMRB would function as an independent international board with explicit responsibilities, subject to oversight by the Parties. Under its charter, the IMRB would define research and development priorities, and would manage and distribute grant funding to research and development institutions (both public and private) across the world. By way of example, the research supported by the IMRB could include propulsion systems, hull form improvements, surface friction work, alternative fuels, and dedicated funding for demonstration projects and trials. The IMRB would also work in cooperation with IMO's GloMEEP Project to promote the uptake of new, energy-efficient technologies. The Board would operate under principles of transparency, accountability, competitive grant-making and open publication of research results. The IMRB would also decide how research funds are awarded and how results are evaluated and disseminated.

12 The Committee would need to define the specific charter and mandate of the IMRB, and one can envision different approaches on how to structure the Board and its responsibilities. By way of example, oversight of the IMRB could be structured in a manner similar to that used for the International Oil Pollution Compensation (IOPC) Fund or other suitable management structure, although the IMRB would have a very different purpose than that of the IOPC Fund. Using the IOPC Fund model, the Parties would provide high-level direction and could establish an Administrative Council and Executive Committee to give more specific operational oversight and direction to the IMRB. The Board itself could be composed of government-appointed R&D professionals, a representative from the IMO Secretariat, representatives from the maritime industry, and appropriate representation from maritime shipbuilding, design professionals, and other NGOs as appropriate. The IMRB would be established with a small staff to oversee administration, grants, payments and reports necessary for the work of the Board.

### ***Existing Fleet Improvement Programme***

13 The Committee has discussed on multiple occasions the need to build upon the SEEMP and to enhance energy efficiency across the existing fleet. As a result, some Parties have suggested that the Committee should develop legally binding operational efficiency standards, while other members of the Committee and industry representatives expressed a view that operational energy efficiency standards are not appropriate. The latter view was grounded in a recognition that it would be extremely difficult if not impossible to develop standards that did not penalize shipowners and operators for variations in fuel consumption that are outside of the ship's control and that are not tied to the ship's inherent design efficiency. The co-sponsors propose development of an Existing Fleet Improvement Programme designed to provide a positive and concrete mechanism to improve efficiency across the existing fleet while avoiding the major shortcomings, inequities, and complexity that operational standards invite.

14 The Existing Fleet Improvement Programme would establish a system of investments designed to improve the efficiency of the existing fleet as a whole. The level of investment

would be calculated based on the total fuel consumed by a given ship in a given period. For example, a ship would invest a specified amount of money (calculated as a function of the total fuel consumed in a given period) to undertake improvements that would be recognized as improving the carbon efficiency of the fleet. Fuel consumption would be obtained and verified using the IMO Ship Fuel Oil Consumption Database (SFOCD). It would be necessary to take into account that there are vastly differing levels of consumption among the different sizes of ships, and that for smaller ships special provisions or more limited improvements may be more appropriate than those that may be undertaken with larger ships.

15 The shipowner would be free to exercise his or her discretion in deciding what specific improvements are most appropriate, so long as the chosen improvements are among a list of recognized mechanisms for improving ship efficiency. By way of example, efficiency improvements could include propeller upgrades, a reconfigured bulbous bow, advanced hull coatings, and improvements to cargo heating and cooling systems, among others. Investments would be verified by the flag State or its representative. The owner would be allowed to implement the improvements over a reasonable time period to accommodate the need to coordinate the work with the ship's dry dock schedule and to allow for improvements to be carried out in advance with credits applied to future operations. Such flexibility provisions would encourage earlier improvements with a subsequent benefit to the environment and to the ship's fuel efficiency.

16 Careful consideration would need to be given to allow flexibility in those circumstances where investment in a given ship does not make commercial or environmental sense (e.g. the ship is close to retirement or the ship is a new ship that has already applied a wide range of innovative, advanced technologies). One option would be to allow the investment to be met through contribution of the ship's designated investment amount to the International Maritime Research Board (IMRB) in support of the IMO research and development programme described in paragraphs 9 to 12 of this document. Another option would be to allow for the transfer of investments among ships, whether under common ownership or not. Such flexibility mechanisms would avoid investments in ships for which investment would be illogical or ineffective. As such, the programme would concentrate on efficiency improvements on ships with higher potential for energy savings over longer periods of time.

### ***Scope and funding***

17 The scope of the existing fleet improvement component and the research and development component would be the subject of further discussion within the Committee. As a starting point, the co-sponsors envision that the research and development effort would be of a scale that can be expected to produce meaningful progress and potential breakthroughs in technology. The effort would be ongoing, engaging several hundred researchers globally, and would support operational trials of new technologies.

18 The level of investment supporting the Existing Fleet Improvement Programme would require careful consideration in the Committee with a view to identifying the level of investment that is appropriate over the life of a ship, based on the emissions reduction potential and cost of available efficiency improvement measures.

### **Relationship to the IMO GHG strategy**

19 The International Maritime Research Board and the Existing Fleet Improvement Programme outlined in this document are intended to operate together with the EEDI requirements, SEEMP, and the IMO Ship Fuel Oil Consumption Database as part of IMO's Comprehensive GHG Strategy. Figure 1 on page 3 of the document provides a short graphic depiction of the different programmes as part of the broader IMO GHG strategy.

20 The EEDI requirements will continue to result in more efficient ship designs, and the Existing Fleet Improvement Programme would serve to promote continuing improvement among existing ships. As the research portion of the proposed programme identifies additional technologies for reduction of emissions, such technologies will be considered under future revisions of the EEDI standards and also incorporated into the list of approved investments that owners may make under the existing fleet improvement programme.

**Action requested of the Committee**

21 The Committee is invited to consider the proposal and views expressed in this document and to take action as appropriate.

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