

**Note by the International Maritime Organization to the forty-third session of the  
Subsidiary Body for Scientific and Technological Advice (SBSTA 43)  
Paris, France, 1 to 4 December 2015**

**Agenda item 10(c)**

**Emissions from fuel used for international aviation and maritime transport**

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

**SUMMARY**

IMO's Marine Environment Protection Committee (MEPC) has for some time now been considering, as an integral part of its agenda, actions to address greenhouse gas (GHG) emission from ships engaged in international trade. It met for its 68th session (MEPC 68) from 11 to 15 May 2015, at IMO Headquarters in London, with the participation of 99 Member States, 1 United Nations body, 5 intergovernmental organizations and 52 non-governmental organizations.

MEPC 68 continued its work on further developing guidelines to support the uniform implementation of the regulations on energy-efficiency for ships that entered into force on 1 January 2013 under MARPOL Annex VI. Furthermore, progress was made, at MEPC 68 and an intersessional working group meeting held in September 2015, on the development of a data collection system for fuel consumption of ships.

IMO is also continuing its efforts with regard to technical co-operation and capacity-building to ensure effective implementation and enforcement of the aforementioned new regulations worldwide and, importantly, activities to support the implementation of resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*.

**Introduction**

1 International shipping plays an essential role in the facilitation of world trade 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.

2 The International Maritime Organization (IMO) was established by Governments as a specialized agency under the United Nations 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 The mandatory energy efficiency requirements for international shipping have now been in force for almost three years. Data presented to MEPC 68 clearly identifies the improvements made, significant in many cases, in the energy efficiency of ships being designed and delivered today. This is a significant success story and once again demonstrates the IMO's important role as the global standard setter for international shipping. However, the complexity of optimizing the energy efficiency of existing ships requires that any future action is taken so following the analysis of robust data.

4 This document provides an update of previous submissions by IMO to SBSTA, including document FCCC/SBSTA/2015/MISC.4.

### **Work on control of GHG emissions from international shipping**

5 Measures to improve the energy efficiency of international shipping were adopted by Parties to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL) at MEPC 62 in July 2011 and 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 all ships.

6 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. As long as the required energy-efficiency level is attained, ship designers and builders are free to use the most cost-efficient solutions for a ship to comply with the regulations.

7 All ships of 400 gross tonnage and above engaged in international trade are required to implement and maintain a SEEMP which establishes a mechanism for operators to improve the energy efficiency of ships. This should be achieved by monitoring the energy efficiency performance of a ship's transportation work and by considering new technologies and practices to improve energy efficiency at regular intervals.

8 MEPC 68 continued its work on further developing guidelines to support the uniform implementation of the regulations on energy efficiency for ships and took the following actions:

- .1 adopted amendments to the *2014 Guidelines on survey and certification of the EEDI*, updating the previous version to include, for example, the latest ISO standard regarding sea trial speed analysis;
- .2 adopted amendments to the *2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions*, as amended, to revise the level 1 power lines calculation assessment; and
- .3 endorsed the progress report of the correspondence group established to review the status of technological developments relevant to implementing phase 2 of the EEDI regulatory framework that starts on 1 January 2020. Regulation 21.6 of MARPOL Annex VI requires IMO, at the beginning of phase 1, "review the status of technological developments and, if proven necessary, amend the time periods, the EEDI reference line parameters for relevant ship types and reduction rates set out in this regulation".

### **Third IMO GHG Study 2014**

9 MEPC 67 approved the Third IMO GHG Study 2014, providing updated estimates for GHG emissions from ships. According to current estimates presented in this study, international shipping emitted 796 million tonnes of CO<sub>2</sub> in 2012, which accounts for no more than about 2.2% of the total emission volume for that year. By contrast, in 2007, before the global economic downturn, international shipping was estimated to have emitted 885 million tonnes of CO<sub>2</sub> which represented 2.8% of the global emissions of CO<sub>2</sub> for that year. These percentages are all the more significant when considering that shipping is the principal carrier of world trade, carrying as much as 90% by volume and therefore providing a vital service to global economic development and prosperity.

10 Updated emission estimates are considered necessary, in general, to provide a better foundation for future work by IMO to address GHG emissions from international shipping especially as the Business as Usual scenarios, depending on future economic and energy developments, forecast a growth in CO<sub>2</sub> emissions for international maritime transport of between 50% to 250% in the period up to 2050. Sea transport is fuel-efficient and without these updated figures it would be difficult to provide a meaningful baseline to illustrate the steadily on-going improvement in fuel efficiency due to improved hull design, more effective diesel engines and propulsion systems and more effective utilization of individual ships resulting from the introduction of mandatory technical and operational measures.

11 The executive summary and the full report of the Third IMO GHG Study 2014 in English, as well as the executive summary translated into French and Spanish, have now been published and are available on the IMO website at:  
<http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Greenhouse-Gas-Studies-2014.aspx>

### **Further technical and operational measures to enhance the energy efficiency of ships**

12 MEPC 68 considered work undertaken by its intersessional Correspondence Group on Further technical and operational measures for enhancing energy efficiency of ships. As instructed by MEPC 67 (October 2014), the correspondence group developed a proposed text for the full language of the data collection system for fuel consumption that can be readily used for voluntary or mandatory application of the system.

13 MEPC 68, noting that the full language had to be further developed, did not take a decision at that stage as to whether the data collection system should be voluntary or mandatory and agreed that, when this is decided, the appropriate structure and language will be used.

14 MEPC 68 agreed that the development of a data collection system for ships should follow a three-step approach: data collection, data analysis, followed by decision-making on what further measures, if any, are required.

15 MEPC 68 noted that one purpose of the data collection system was to analyze energy efficiency and that for this analysis to be effective some transport work data needs to be included. Therefore, work at MEPC 68 primarily focused on the development of the full language for a data collection system for fuel consumption and consideration was given to transport work and/or other proxies for inclusion in the system.

16 In this regard, MEPC 68 agreed that data collected by the IMO, particularly that related to transport work, needs to be confidential and not publicly available, and that there is a need to address resulting administrative burdens, impact on industry and the variables that influence energy efficiency.

17 MEPC 68 established a Working Group on Further technical and operational measures for enhancing energy efficiency of ships and instructed it to further develop the full language for the data collection system for fuel consumption, taking into consideration additional issues identified by the correspondence group such as:

- .1 transfer of ship's flag State or ownership;
- .2 data to be submitted to the flag State and by whom;
- .3 whether or not issues like survey and port State control should be included in the text itself or form part of the guidelines; and
- .4 need for clarity on which entity is responsible for reporting the data.

18 MEPC 68 approved the working group's report (MEPC 68/WP.10) in general and, inter alia, agreed on the text as set out in the annex to the report for its further development to be the full language for the data collection system for fuel consumption of ships that can be readily used for voluntary/mandatory application of the system.

19 As agreed by MEPC 68 and subsequently endorsed by the IMO Council in July, the aforementioned Working Group convened intersessionally from 9 to 11 September 2015 at IMO Headquarters, with the object to: further consider transport work and/or proxies for inclusion in the data collection system; further consider the issue of confidentiality; and consider the development of guidelines identified in document MEPC 68/WP.10

20 MEPC 69, to be held in April 2016, will be invited to approve the intersessional working group's report as set out in document MEPC 69/6 and to:

- .1 agree that data forwarded from Administrations to the Organization does not need to be anonymised and that this data, as with the data supplied for the EEDI database, should include the IMO number of a ship to enable the Organization to avoid duplication of data included in to the database;
- .2 agree that there is a need to establish how data could be presented to ensure anonymity to the extent that it satisfies the provisions in the draft text, and that further work is therefore required to determine how data can be presented to ensure the anonymity of individual ships;
- .3 endorse the group's recommendation that the parameter "distance travelled" should be collected and be defined as from "berth to berth" and that further fine tuning in this regard is required;
- .4 endorse the group's recommendation that the parameter "service hours" should be collected and be defined as "hours not at berth" and that further fine tuning is in this regard required;
- .5 endorse the group's recommendation that for ship types which carry cargo, "design DWT" should be used as a proxy of "cargo weight/volume";
- .6 agree that for shipping sectors where cargo is not carried further consideration is required to ascertain operational energy efficiency;
- .7 note that the group invited the delegation of Japan to submit its proposal for amendments to the SEEMP Guidelines (resolution MEPC.213(63)) to MEPC 69 for further consideration;

- .8 note that the group invited delegations to submit proposals for guidelines on transfer of owner/Administration to MEPC 69; and
- .9 agree to amend the draft text of annex 1 to reflect the agreements made.

### **GHG emission reduction target for international shipping**

21 MEPC 68 considered a document by the Marshall Islands (MEPC 68/5/1) providing justification for and requesting the MEPC to undertake the work necessary to establish a GHG emission reduction target for international shipping consistent with keeping global warming below 1.5°C, and to agree the measures necessary to reach that target.

22 In summarizing the views expressed on the proposal and conclusions thereof, MEPC 68:

- .1 expressed gratitude to the Marshall Islands for the submission of the document MEPC 68/5/1 and the information therein, acknowledging and recognizing the importance of the issue raised;
- .2 recognized the measures already adopted by the IMO in relation to the reduction of emissions from ships, also recognizing that more could be done;
- .3 was of the opinion that current work should continue to focus on further reduction of emissions from ships, particularly through the finalization of a data collection system;
- .4 considered the issues raised by the Marshall Islands could be further addressed at a future session of the MEPC, acknowledging the need to move forward cautiously; and
- .5 looked forward to a successful meeting of UNFCCC COP 21 in Paris later this year.

### **Technical co-operation and transfer of technology**

23 Regulation 23 (Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships) of chapter 4 of MARPOL Annex VI requires Administrations, in co-operation with the IMO and other international bodies, to promote and provide, as appropriate, support directly or through IMO to Member States, especially developing States that request technical assistance. It also requires the Administration of a Party to MARPOL Annex VI to co-operate actively with other Parties, subject to its national laws, regulations and policies, to promote the development and transfer of technology and the exchange of information to States which request technical assistance, particularly developing States.

24 Linked to the implementation of energy efficiency measures, MEPC 65 (May 2013) adopted resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*, which, among other things, requests the IMO, through its various programmes, to provide technical assistance to Member States to enable cooperation in the transfer of energy efficient technologies to developing countries in particular; and further assist in the sourcing of funding for capacity building and support to States, in particular developing States, which have requested technology transfer.

25 MEPC 66 (April 2014) discussed the implementation of resolution MEPC.229(65) and established, in accordance with the resolution, an Ad Hoc Expert Working Group on Facilitation of Transfer of Technology for Ships (TT-EG). The TT-EG, during its first meeting, agreed on the methodology for conducting its work, as well as on a work plan which was endorsed by the MEPC.

26 This work plan envisages: 1) assessing the potential implications and impacts of the implementation of the energy efficiency regulations in chapter 4 of MARPOL Annex VI, in particular on developing States, as a means to identify their technology transfer and financial needs; 2) identifying and creating an inventory of energy efficiency technologies for ships; 3) identifying barriers to transfer of technology, in particular to developing States, including associated costs, and possible sources of funding; and 4) making recommendations, including the development of a model agreement enabling the transfer of financial and technological resources and capacity building between Parties, for the implementation of the energy efficiency regulations.

27 MEPC 68 considered document MEPC 68/3/1 (Chairman of the TT-EG), providing a progress report on the work carried out by the TT-EG, and noted that full reports on the first three of the four tasks identified in the group's work plan were provided and that a complete report of all four tasks would be submitted to MEPC 69. Several delegations expressed their appreciation for the progress made to date by the group, noting in particular the usefulness of relevant regional workshops that had taken place, as a means to increase awareness of technology transfer in the context of energy efficiency of ships.

28 With a view to facilitating its report to MEPC 69, the TT-EG convened a meeting from 26 to 29 October 2015 at IMO Headquarters and finalized:

- .1 a Model Agreement for Enabling the Transfer of Financial and Technological Resources and Capacity-building Between Parties including an introductory text (annex 1, document TT-EG 4/4), which can be used to facilitate technical cooperation activities and relationship building between Parties as they see fit and may be adapted to meet the needs of individual Parties; and
- .2 a set of recommendations (annex 2, document TT-EG 4/4) to guide and assist Member States, industry and other entities within States in implementing regulations in chapter 4 of MARPOL Annex VI. The recommendations take into account work that is already on-going and have been drafted in a user-friendly language to help parties move from the same level of understanding of all the salient elements of the regulations, and the expectations of resolution MEPC.229(65). The recommended tools are meant to inspire innovative ideas on how to implement a particular recommended action and are not meant to be exhaustive. The recommendations acknowledge the need to create, maintain, and at all levels promote a conducive climate enabling the transfer and uptake of technologies related to energy efficiency of ships. They further acknowledge the need to enhance at all levels, and as appropriate, the technical capacity for effective implementation of MARPOL Annex VI.

### ***Technical cooperation activities***

29 To ensure effective implementation and enforcement of the new energy efficiency regulations worldwide, IMO has also been focusing its efforts on technical co-operation and capacity building, and has been undertaking a series of regional and national workshops on implementation of the measures to address emissions from fuel used by international shipping. Under the Integrated Technical Co-operation Programme (ITCP) of IMO, further capacity-building activities are currently planned, in order to sustain the level of technical

cooperation interventions in various regions for the effective implementation and enforcement of energy efficiency measures for ships.

30 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 a project entitled "*Transforming the global maritime transport industry towards a low carbon future through improved energy efficiency*" ([GloMEEP Project](#)). Having received the support and commitment of ten Lead Pilot Countries, this two year global project will assist developing countries in the implementation of the energy efficiency measures adopted by IMO.

31 The GEF-IMO-UNDP GloMEEP Project was officially launched during the Future-Ready Shipping 2015 Conference (<http://future-readyshipping.com>), a joint IMO-Singapore International Conference on Maritime Technology Transfer and Capacity Building, held in Singapore on 28 and 29 September 2015. About 200 maritime leaders and professionals attended the conference, which kick-started a global dialogue on removing barriers to energy-efficiency technologies and measures. Speakers at the conference gave presentations spanning the entire spectrum of technology development, technology transfer and capacity building as well as policy, economic and regulatory developments. The speakers shared views on the creation of enabling environments; the current state of green ship technology and what might be expected in the future; and how to continue to promote and sustain capacity building and technology cooperation.

32 Attending the Future-Ready Shipping 2015 Conference were representatives of the GloMEEP Lead Pilot Countries: Argentina, China, Georgia, India, Jamaica, Malaysia, Morocco, Panama, Philippines and South Africa. These countries will be supported in taking a fast-track approach to pursuing relevant legal, policy and institutional reforms, driving national and regional government action and industry innovation to support the effective implementation of IMO's energy efficiency requirements.

## **Summary**

33 International maritime transport is the most energy efficient mode of mass transport. A global approach to further improvements in energy efficiency and GHG emission reduction is considered necessary as sea transport is predicted to grow significantly in the coming years in line with expected future growth in world trade.

34 IMO continues to develop its adopted framework of technical and operational measures that now serves as a mandatory performance standard for increased energy efficiency in international shipping. The framework builds on IMO's enforcement and control provisions (flag State implementation and port State control), and provides a suite of comprehensive technical guidelines for their effective implementation.

35 IMO, as the global regulator of international shipping, will continue its endeavours to reduce environmental impacts from international maritime transport, a vital industry to world trade and sustainable development, and keep relevant bodies of the UNFCCC informed of its progress.

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