Note by the International Maritime Organization to the forty-fifth session of the Subsidiary Body for Scientific and Technological Advice (SBSTA 45)
Marrakesh, Morocco, 7 to 14 November 2016

Agenda item 10(b)
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 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 seventieth session (MEPC 70) from 24 to 28 October 2016, at IMO Headquarters in London, with the participation of 96 Member States, two associate members, two United Nations bodies, four intergovernmental organizations and 44 non-governmental organizations.

The Committee, at its sixty-ninth session (MEPC 69), welcomed the Paris Agreement on Climate Change and recognized it as a major achievement by the international community. It also unanimously recognized IMO’s own role in mitigating the impact of GHG emissions from international shipping and acknowledged the current efforts and the measures already introduced by IMO to enhance the energy efficiency of ships.

MEPC 70 continued to demonstrate the Organization’s commitment to climate change mitigation by adopting amendments to chapter 4 of MARPOL Annex VI, requiring ships to record and report their fuel oil consumption and additional data on proxies for the “transport work” undertaken by the ship. This requirement is expected to enter into force in early 2018. The establishment of the IMO Ship Fuel Oil Consumption Database is the first in a three-step approach in which analysis of the data collected (second step) would provide the basis for an objective, transparent and inclusive policy debate in the MEPC (third step). MEPC 70 also approved a roadmap for developing a “Comprehensive IMO strategy on reduction of GHG emissions from 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 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 over three years. Data presented to MEPC 70 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/2016/MISC.2.

**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 70 considered a report of its correspondence group reviewing the status of technological developments relevant to implementing Phase 2 of the EEDI regulations. MEPC 70 agreed to retain the EEDI requirements for Phase 2 (except for ro-ro cargo ships and passenger ships that are to be considered further at MEPC 71) and on the need for a thorough review of EEDI Phase 3 (1 January 2025 and onwards) requirements, including discussion on its earlier implementation and the possibility of establishing a Phase 4. Currently, Phase 3 requirements provide that new ships be built to be 30% more energy efficient compared to the baseline.
Third IMO GHG Study 2014

9 MEPC 67 (October 2014) 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$_2$ 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$_2$ which represented 2.8% of the global emissions of CO$_2$ 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$_2$ 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 (May 2015) 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. This approach was re-affirmed by MEPC 69 (April 2016).

13 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. 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. MEPC 69 further agreed that confidentiality of data is crucial and no third-party access to the data should be permitted.

14 MEPC 70 adopted mandatory MARPOL Annex VI requirements for ships to record and report their fuel oil consumption. Under the amendments, ships of 5,000 gross tonnage and above (representing approximately 85% of the total CO$_2$ emissions from international shipping) will be required to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for “transport work”. The aggregated data will be reported to the flag State after the end of each calendar year and the flag State, having determined that the data has been reported in accordance with the requirements, will issue a Statement of Compliance to the ship. Flag States will be required to subsequently transfer this data to an IMO Ship Fuel Oil Consumption Database. IMO will be required to produce an annual report to the MEPC, summarizing the data collected.
Reduction of GHG emissions from ships

15 MEPC 69 welcomed the Paris Climate Agreement and acknowledged the major achievement of the international community in concluding the agreement. It also unanimously recognized IMO’s own role in mitigating the impact of GHG emissions from international shipping and acknowledged the current efforts and the measures already introduced by IMO to enhance the energy efficiency of ships.

16 MEPC 70, having considered several submissions and established the Working Group on the Reduction of GHG emissions from international shipping, approved a Roadmap for developing a Comprehensive IMO strategy on reduction of GHG emissions from ships, which foresees an initial GHG reduction strategy to be adopted in 2018. The Roadmap contains a list of activities, including further IMO GHG studies and significant intersessional work, with relevant timelines and provides for alignment of those new activities with the ongoing work on the aforementioned three-step approach to ship energy efficiency improvements. This alignment provides a way forward to the adoption of a revised strategy in 2023 to include short-, mid-, and long-term further measures, as required, including implementation schedules.

Technical co-operation and transfer of technology

17 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.

18 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.

19 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.

20 MEPC 69 noted that a comprehensive update of the Train the Trainer package on “Energy Efficient Ship Operation” had been undertaken to include a new module on the regulatory framework related to the energy efficiency of ships, an EEDI Calculator for training purposes, and other related updated information, such as the findings from the Third IMO GHG Study 2014. Member Governments and other interested delegations were encouraged to make use of it. Details of the course, including training materials such as presentations, can be downloaded from the following website: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/IMO-Train-the-Trainer-Course.aspx
In line with the IMO’s High-level Action Plan and Strategic Direction 9 which identifies that “IMO will pay special attention to the shipping needs of Small Island Developing States (SIDS) and the least developed countries (LDCs)”, the MEPC has noted the need for timely scheduled voyages, in particular to SIDS dependent upon maritime transport, and that such a special need should be carefully considered to ensure SIDS are not penalized by any measures developed and adopted in respect of operational energy efficiency. In this regard, MEPC has also noted that the Organization’s technical cooperation activities would seek to address specific needs of LDCs and SIDS with regard to implementation of ship energy efficiency requirements. MEPC reaffirmed its view at MEPC 70 that SIDS and LDCs have special needs.

MEPC 70 was informed of the establishment of an information portal for energy efficiency technologies for ships which provides users with information on existing energy efficiency technologies and highlights the wide spectrum of ways to potentially reduce ship fuel oil consumption. The portal can be accessed through the following link: http://glomeep.imo.org/resources/energy-efficiency-technologies-information-portal/

**Technical cooperation activities**

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 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.

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 is assisting developing countries in the implementation of the energy efficiency measures adopted by IMO.

The GEF-UNDP-IMO 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.

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. Within the framework of the GloMEEP Project, these countries are currently being 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.
Also, IMO is working to establish a global network of Maritime Technology Cooperation Centres (MTCCs), which seeks to promote the uptake of low-carbon technologies and operations in maritime transport. This four-year project, administered by the IMO with €10 million in funding from the European Union, is designed to help beneficiary countries limit and reduce GHG emissions from their shipping sectors through technical assistance and capacity building, while encouraging the uptake of innovative energy-efficiency technologies among a large number of users through the widespread dissemination of technical information and know-how.

Summary

International maritime transport is the most energy efficient mode of mass cargo transport and indispensable to the world. A global approach to further improvements in energy efficiency and work to address GHG emissions from ships is considered necessary as sea transport is predicted to grow significantly in the coming years in line with expected future growth in world trade.

MEPC 69 welcomed the Paris Agreement on Climate Change and recognized it as a major achievement by the international community. It also unanimously recognized IMO’s own role in mitigating the impact of GHG emissions from international shipping and acknowledged the current efforts and the measures already introduced by IMO to enhance the energy efficiency of ships.

MEPC 70 continued the Organization’s commitment to climate change mitigation by adopting amendments to chapter 4 of MARPOL Annex VI, requiring ships to record and report their fuel consumption, which is expected to come into force in early 2018. The establishment of the IMO Ship Fuel Oil Consumption Database is the first in a three-step approach in which analysis of the data collected (second step) would provide the basis for an objective, transparent and inclusive policy debate by the MEPC (third step).

MEPC 70, having established the Working Group on the Reduction of GHG emissions from international shipping to hold an in-depth discussion and recommend an appropriate way forward, approved a roadmap for developing a “Comprehensive IMO strategy on reduction of GHG emissions from ships”. Under the roadmap, and to provide a long-term vision for the shipping sector, the MEPC has to address a number of important questions, such as what role the international shipping sector should have in supporting the goals of the Paris Agreement.

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.

IMO is advancing its technical cooperation activities to stimulate the uptake of innovative energy-efficiency and low-carbon technologies for international shipping through the widespread dissemination of information and technology transfer.

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.