

**Note by the International Maritime Organization to the thirty-ninth session of the
Subsidiary Body for Scientific and Technological Advice (SBSTA 39)
Warsaw, Poland, 11 to 16 November 2013**

Agenda item 11(f)

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 has been considering as an important part of its agenda actions to address greenhouse gas (GHG) emission from ships engaged in international trade. It met for its 65th session from 13 to 17 May 2013 (MEPC 65), at IMO Headquarters in London and had the participation of more than 800 delegates, 106 Member States, 4 United Nations bodies, 8 intergovernmental organizations and 48 non-governmental organizations.

MEPC 65 continued its work on further developing technical and operational measures relating to energy-efficiency measures for ships, following the entry into force, on 1 January 2013, of the new chapter 4 of MARPOL Annex VI, which includes requirements mandating the Energy Efficiency Design Index (EEDI), for new ships, and the Ship Energy Efficiency Management Plan (SEEMP), for all ships.

MEPC 65, in noting the importance of enhancing energy efficiency and reducing fuel consumption with subsequent reductions of CO₂ emissions and other pollutants emitted to air from ships, considered further measures. These include the use of a phased approach to implementation, with the focus of initial work being on data collection, as a basis for future technical work.

IMO is also focusing its efforts on technical co-operation and capacity building to ensure smooth and effective implementation and enforcement of the new regulations worldwide. In this regard, MEPC adopted an MEPC Resolution on *Promotion of Technical Co-operation and Transfer of Technology relating to the Improvement of Energy Efficiency of Ships*.

Introduction

1 International shipping plays a vital role in the facilitation of world trade as the most cost-effective and energy-efficient mode of mass transport, making a significant contribution to global prosperity in both developing and developed countries.

2 IMO was established by governments as a specialized agency under the United Nations to provide machinery for intergovernmental cooperation in the field of regulation of ships engaged in international trade. IMO is responsible for the global regulation of all facets pertaining to 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 global character of shipping has resulted in the adoption of global regulation that applies universally to all ships irrespective of the country of ship registration, in line with the basic principle of non-discrimination set out in IMO's constitutive Convention. The global nature of shipping is demonstrated with the following table which identifies the fleet statistics for annex 1 and non-annex 1 countries. In accordance with IHS Fairplay's database¹, as per 1 July 2013, the distribution by flag of the world merchant fleet of ships above 100 gross tonnage was as follows:

	Number of ships	GT	DW
Annex I flag States	16,662 (30.2%)	262,453,006 (25.3%)	360,764,991 (23.1%)
Non-Annex I flag States	38,441 (69.8%)	773,990,084 (74.7%)	1,197,750,560 (76.9%)
Total	55,103	1,036,443,090	1,558,515,551

Work on control of GHG emissions from international shipping

4 Measures to improve energy efficiency of international shipping were adopted by Parties to Annex VI of the Convention on 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:

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

These mandatory measures address ship types responsible for 70% of GHG emissions from international shipping. For comprehensive information on the breakthrough adoption of mandatory technical and operational measures, please refer to IMO's submission to SBSTA 35 (FCCC/SBSTA/2011/MISC.9), as well as IMO's website: www.imo.org.

¹ Calculating conditions:

- As a general rules, non-propelled ships, ships of less than 100 gross tonnage, pleasure craft, naval auxiliaries, the US Reserve Fleet, and ships restricted to harbour service or river/canal service are not included in the IHSF's world fleet statistics.
- Merchant fleets – cargo carrying ships, in the world fleet statistics published by IHSF were used in the above calculation. Cargo carrying ships include gas carriers, oil and chemical tankers, bulk carriers, general cargo ships, container ships, refrigerated cargo carriers, ro-ro cargo ships, and passenger ships.
- Merchant fleets – ships of miscellaneous activities, in the world fleet statistics published by IHSF were excluded. Ships of miscellaneous activities include fishing vessels, offshore supply vessels, research vessels, towing/pushing vessels, dredging vessels, and other miscellaneous purpose 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 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 at regular intervals considering new technologies and practices to improve energy efficiency.

7 Four important guidelines intended to assist in the implementation of the mandatory regulations on Energy Efficiency for Ships in MARPOL Annex VI have been adopted as follows:

- .1 *resolution MEPC.212(63) – 2012 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships, as amended;*
- .2 *resolution MEPC.213(63) – 2012 Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP);*
- .3 *resolution MEPC.214(63) – 2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI), as amended; and*
- .4 *resolution MEPC.231(65) – 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI).*

8 At MEPC 65 several additional ship types were included in the EEDI framework, furthermore additional guidance was agreed or amended to support the uniform implementation of the energy efficiency regulations and action was taken as follows:

- .1 approved draft amendments to MARPOL Annex VI, with a view to adoption at MEPC 66, to extend the application of EEDI to ro-ro cargo ships (vehicle carrier), LNG carriers, cruise passenger ships having non-conventional propulsion, ro-ro cargo ships and ro-ro passenger ships²; and to exempt ships not propelled by mechanical means, and platforms including FPSOs and FSUs and drilling rigs, regardless of their propulsion; as well as cargo ships having independent ice-breaking capability;
- .2 adopted amendments to update *Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI)*, to include ro-ro cargo ships (vehicle carrier), ro-ro cargo ships and ro-ro passenger ships, and LNG carriers;
- .3 noted, with a view to adoption at MEPC 66, the finalized amendments to resolution MEPC.212(63) *2012 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*;

² With inclusion of these additional ship types, regulations on energy efficiency for ships will embrace approximately 85 % of emissions from international shipping.

- .4 approved amendments to unified interpretation MEPC.1/Circ.795, to update the circular with regards to requirements for SEEMP, to exclude platforms (including FPSOs and FSUs) and drilling rigs, regardless of their propulsion, and any other ship without means of propulsion;
- .5 adopted the *2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions*, which are intended to assist Administrations and recognized organizations in verifying that ships, complying with the EEDI requirements set out in regulation 21.5 of MARPOL Annex VI, have sufficient installed propulsion power to maintain the manoeuvrability in adverse conditions;
- .6 approved the *2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI*, which are intended to assist manufacturers, shipbuilders, shipowners, verifiers and other interested parties related to the EEDI of ships to treat innovative energy efficiency technologies for calculation and verification of the attained EEDI, addressing systems such as air lubrication, wind propulsion systems; high temperature waste heat recovery systems; and photovoltaic power generation system;
- .7 adopted the *2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for cruise passenger ships having non-conventional propulsion*; and
- .8 adopted amendments to resolution MEPC.214(63) *2012 Guidelines on survey and certification of the energy efficiency design index (EEDI)*, to add references to measuring sea conditions in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 Speed and Power Trials Part 1; 2012 revision 1 or ISO 15016:2002.

9 MEPC 65 also endorsed a work plan to continue the work on development of the EEDI framework for ship types and sizes, and propulsion systems not covered by the current EEDI requirements and to consider guidelines on propulsion power needed to maintain the manoeuvrability of the ship under adverse conditions.

Further measures to enhance the energy efficiency of ships

10 MEPC 65 considered the importance of enhancing energy efficiency and reducing fuel consumption with subsequent reductions of CO₂ emissions and other pollutants emitted to air and noted the need to discuss further relevant proposals submitted to the session. In this regard, the MEPC considered the use of a phased approach to implementation, with the focus of its initial work being on data collection, as a basis for future technical work.

11 MEPC 65 agreed to establish a sub-agenda item under the MEPC's agenda item 4 (Air pollution and energy efficiency), for discussion of further technical and operational measures for enhancing energy efficiency for international shipping, and to establish a working group under this sub-agenda item at MEPC 66. The MEPC invited further submissions to its next session scheduled from 31 March to 4 April 2014.

Update of the GHG emissions estimate for international shipping

12 MEPC 65 approved the Terms of Reference and agreed to initiate a study for an updated GHG emissions estimate for international shipping. This decision by MEPC 65 followed discussion in an Expert Workshop, which took place at IMO Headquarters from

26 February to 1 March 2013. The Expert Workshop, endorsed by MEPC 64 in October 2012 which had agreed, in principle, the outline for an update of the GHG emissions estimate (for further information please refer to IMO's submission to SBSTA 37 (FCCC/SBSTA/2012/MISC.20)), considered and made recommendations for the methodology and assumptions to be used in the Update Study.

13 The new study will focus on updating key figures in the current (second) IMO GHG Study (2009), which estimated that international shipping emitted 870 million tonnes, or about 2.7%, of the global man-made emissions of CO₂ in 2007.

14 The update of the study is considered necessary, in general, to provide a better foundation for future work by IMO to address GHG emissions from international shipping. Sea transport is fuel-efficient and without updated figures it will 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, including other operational measures employed by ships as a consequence of the economic downturn.

15 Following a technical assessment of the tenders by a Member State Steering Committee the Update Study was initiated in October 2013 and is expected to be considered by MEPC 66 in March 2014.

16 With regard to the work on Market-Based Measures (MBMs) for international shipping, MEPC 65, in noting several submissions on this matter, agreed to suspend discussions on Market-Based Measures and related issues to a future session.

Technical co-operation and transfer of technology

17 Regulation 23 of chapter 4 of MARPOL Annex VI on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships* requires Administrations, in co-operation with the Organization 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 exchange of information to States which request technical assistance, particularly developing States.

18 Linked to the implementation of energy efficiency measures, MEPC 65 adopted an MEPC resolution 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 The 63rd session of IMO's Technical Co-operation Committee that met from 10 to 12 July 2013, noting the outcome of MEPC 65, agreed to allocate funding of US\$650,000 in support of the MEPC resolution. The funds for the 2014 to 2015 biennium will be made available for a global programme on "Effective implementation and enforcement of energy efficiency measures for ships".

20 A comprehensive portfolio of training material for capacity building activities on energy efficiency for shipping has been produced under a recently concluded agreement between IMO's Technical Co-operation Programme (ITCP) and the Korean International Cooperation Agency (KOICA) for implementation of a project on "Building Capacities in East Asian countries to address GHG emissions from Ships". A series of capacity building workshops and training courses have been implemented in countries including Bulgaria, Indonesia, Malaysia, Philippines, Republic of Korea, Thailand, Uruguay, and Vietnam and IMO is seeking additional funding from various sources to scale up these activities.

Summary

21 Although international maritime transport is the most energy efficient mode of mass transport and only a modest contributor to worldwide CO₂ emissions (2.7% in 2007), a global approach for further improvements in energy efficiency and emission reduction is considered necessary as sea transport is predicted to continue growing significantly in pace with expected future growth in world trade.

22 IMO has developed and adopted a framework of technical and operational measures that now serves as mandatory performance standards for increased energy efficiency in international shipping. The framework builds on IMO's enforcement and control provisions (flag and port State controls) and provides guidelines for effective implementation including ship management aspects such as monitoring, verification and reporting.

23 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.
