

Note by the International Maritime Organization to the first meeting of the Transitional Committee for the design of the Green Climate Fund

MARKET-BASED MEASURES FOR INTERNATIONAL SHIPPING

24 May 2011

Introduction: Control of GHG emissions from ships

1 Although international shipping is the most energy efficient mode of mass transport and only a modest contributor to overall CO₂ emissions, a global approach to further improve its energy efficiency and effective emission control is needed as sea transport will continue growing apace with world trade.

2 With regards to the International Maritime Organization (IMO)'s effort to control greenhouse gas (GHG) emissions from ships, IMO's Marine Environment Protection Committee (MEPC) has been working on the development of a comprehensive regulatory framework of mandatory measures. The regulatory regime consists of voluntary technical and operation measures that are currently being considered for possible mandatory application and of potential market-based measures that are presently being examined in detail.

Market-Based Measures

Purpose of a Market-Based Measure

3 A market-based measure (MBM) would place a price on GHG emissions from international maritime transport. A MBM could thereby serve two main purposes: off-setting (in other sectors) of growing ship emissions and being an incentive for the industry to invest in more fuel efficient ships and to operate them more energy efficiently. In addition, MBMs could generate considerable funds that could be used for mitigation and adaptation actions in developing countries.

Proposed Market-Based Measures

4 It was agreed by majority at MEPC's 59th session that a MBM is needed as part of a comprehensive package of measures for the effective regulation of GHG emissions from international shipping. Thereafter, member states, associate members and observer organisations were invited by MEPC to propose possible MBMs.

5 The MBM proposals currently under review range from proposals for contribution schemes for all CO₂ emissions from international shipping (to be collected by fuel oil suppliers and transferred to a global fund), or only emissions from ships not meeting the EEDI requirement, via emission trading systems, to schemes based on the actual ship's

efficiency both by design and operation. Among the measures are also proposals for rebate mechanisms and other ways to accommodate the difference in socioeconomic capability between developing and developed states, as well as other suggestions on how the special needs and circumstances of developing countries can be taken account of. Some of the proposed schemes would reward efficient ships and ship operators by recycling parts of the financial contribution to the most efficient ones based on benchmarking. Other schemes would drive investments in more energy efficient technologies and improvements in operations by setting compulsory efficiency standards for all vessels (new and existing) and the trading of efficiency credits. Several of the proposed mechanisms, the contributions schemes (levy) inherently and the trading schemes through auctioning; would generate funds the greater part of which would be used for climate change purposes in developing countries. For a further description of the proposed measures, refer to a summary of the proposals currently under review in Annex 1.

Potential to Generate Funds for Climate Financing

6 One of the milestones reached at the Cancun Conference relates to long-term financing, with developed countries having committed to the goal of jointly mobilizing USD 100 billion per year by 2020 to address the needs of developing countries. A significant share of the new multilateral funding is to flow through the Green Climate Fund. Whilst the funding sources are not yet identified, it has been recognized that these funds will have to come from a wide variety of sources, including alternative sources, and note has been taken of the report of the High-level Advisory Group on Climate Change Financing, which considered the option of generating revenue through, *inter alia*, the application of market-based measures to international maritime transport.

7 The IMO Secretariat endorses the view (of Mr. Ban Ki-moon) that making funds available to developing countries for mitigation and adaptation purposes is an urgent matter to support actions on climate change. Mobilizing funds for such purposes may also facilitate enhanced progress in the UNFCCC negotiations.

8 The IMO Secretariat also fully supports the finding of the High-Level Advisory Group on Climate Change Financing, which identifies in its report carbon pricing of international transport as an important potential source for climate financing (and mitigation) that could contribute substantially towards mobilizing US\$100 per year by 2020.

9 As is apparent from the table below, which was prepared for the MEPC by an Expert Group, the majority of the proposed MBMs currently under review have the potential to generate proceeds. These funds could be used to co-finance mitigation and adaptation actions and could, amongst others, be one potential source for the Green Climate Fund to address the needs for climate change actions in developing countries.

Potential of MBM Proposal to generate funds

	GHG Fund	Leveraged Incentive Scheme (LIS)	Port State Levy (PSL)	Ship Efficiency and Credit Trading (SECT)	Vessels Efficiency System (VES)	Emission Trading Scheme (ETS) (Norway, France)	Emission Trading Scheme (ETS) (UK)	Bahamas	Rebate Mechanism (RM)
Remaining proceeds (\$billion)	\$4-14	\$10-87	\$40-118	\$0	\$5-18	\$28-87	\$0 ⁵	0	\$17-23 ⁶

10 In fact, MEPC already noted at its 59th session that a general preference prevailed within the Committee that a greater part of the revenues generated by a MBM under the auspices of IMO should be used for climate change purposes in developing countries through existing or new funding mechanisms under the UNFCCC or other international organization.

11 However, in any attempt to raise climate financing, the shipping industry should not become liable to “double taxation” (once through the UNFCCC efforts and once through IMO efforts) and that international shipping should only be asked to contribute in proportion to its degree of responsibility, which, according to IMO’s Second Greenhouse Gas Study of 2009, represents 2.7% of global anthropogenic GHG emissions.

Way Ahead

12 IMO, as a United Nations observer organization holds a special position in the UNFCCC process being, together with ICAO, the only United Nations organizations to be specifically referred to in the Kyoto Protocol and the draft negotiation texts under both negotiation tracks. In the light of IMO’s special position in the UNFCCC process, its well-advanced mitigation work, and in particular, the potential of generating revenues for climate change finance through a MBM for international shipping, it is of uttermost importance that IMO can attend all relevant UNFCCC-negotiations, including the meetings of the Transitional Committee for the design of the Green Climate Fund and its workstreams. Proper coordination and communication, also with the Technical Support Unit of the Green Climate Fund, are essential to avoid duplication of work and would be mutually advantageous.

13 In the light of common goal of IMO and UNFCCC of identifying potential and appropriate climate finance sources, IMO would like to offer its full cooperation and services to the extent possible to the Transitional Committee, its workstreams and the Technical Support Unit. Amongst others, IMO would like to offer hosting meetings of the Transitional Committee in the IMO’s headquarters in London.

Overview of the Market Based Measures Proposals

In recent sessions, the Marine Environment Protection Committee has been considering proposals from governments and observer organizations for market-based measures (MBM). The MBM proposals continue to be further developed by their proponents and some proposals have been merged with others. Appendix 1 to Annex 1 provides a brief overview of the ten MBM proposals analyzed by the Expert Group on Feasibility Study and Impact Assessment of possible Market-based Measures (MBM-EG), whereas Appendix 2 to Annex 1 sets out the summaries of the presentations of the MBM proposals from which IMO's Working Group on Greenhouse Gas Emissions from Ships benefitted in March 2011.

Proposals for Market-Based Measures Examined by the Expert Group

1 An International Fund for Greenhouse Gas emissions from ships (GHG Fund) proposed by Cyprus, Denmark, the Marshall Islands, Nigeria and IPTA (MEPC 60/4/8) – would establish a global reduction target for international shipping, set by either UNFCCC or IMO. Emissions above the target line would be offset largely by purchasing approved emission reduction credits. The offsetting activities would be financed by a contribution paid by ships on every tonne of bunker fuel purchased. It is envisaged that contributions would be collected through bunker fuel suppliers or via direct payment from shipowners. The contribution rate would be adjusted at regular intervals to ensure that sufficient funds are available to purchase project credits to achieve the agreed target line. Any additional funds remaining would be available for adaptation and mitigation activities via the UNFCCC and R&D and technical co-operation within the IMO framework.

2 Leveraged Incentive Scheme (LIS) to improve the energy efficiency of ships based on the International GHG Fund proposed by Japan (MEPC 60/4/37) – is designed to target "direct" reduction of CO₂ emission primarily from the shipping sector. The concept of the Leveraged Incentive Scheme is that a part of the GHG Fund contributions, which are collected on marine bunker is refunded to ships meeting or exceeding agreed efficiency benchmarks and labeled as "good performance ships".

3 Achieving reduction in greenhouse gas emissions from ships through Port State arrangements utilizing the ship traffic, energy and environment model, STEEM (PSL) proposal by Jamaica (MEPC 60/4/40) – an IMO global agreement, Member States participate in levying a uniform emissions charge on all vessels calling at their respective ports based on the amount of fuel consumed by the respective vessel on its voyage to that port (not bunker suppliers). The proposal is directly aimed at reducing maritime emissions of CO₂ without regard to design, operations, or energy source. The Port State Levy would be structured to achieve the global reduction targets for GHG and could be leveraged in a manner as proposed by Japan to reward vessels exceeding efficiency targets.

4 The United States proposal to reduce greenhouse gas emissions from international shipping, the Ship Efficiency and Credit Trading (SECT) (MEPC 60/4/12) – is designed to focus emission reduction activities just in the shipping sector. Under SECT, all ships, including those in the existing fleet, would be subject to mandatory energy efficiency standards, rather than a cap on emissions or a surcharge on fuel. As one means of complying with the standard, SECT would establish an efficiency-credit trading programme. The stringency level of these efficiency standards would be based on energy efficiency technology and methods available to ships in the fleet. These standards would become more stringent over time, as new technology and methods are introduced. Similar to the EEDI, these efficiency standards would be based on a reduction from an established baseline and would establish efficiency standards for both new and existing ships. The SECT is designed to achieve relative GHG reductions, i.e. reductions in emissions per tonne mile and not to set an overall target for the sector.

5 Vessel Efficiency System (VES) proposal by World Shipping Council (MEPC 60/4/39) – would establish mandatory efficiency standards for both new and existing ships. Each vessel would be judged against a requirement to improve its efficiency by X% below the average efficiency (the baseline) for the specific vessel class and size. Standards would be tiered over time with increasing stringency. Both new build and existing ships would be covered. New builds must meet the specified standards or they may not operate. New builds, once completed, are not defined as existing ships. The system applicable to existing ships sunsets when today's fleet turns over. Existing ships may comply by improving their efficiency scores through technical modifications that have been inspected and certified by the Administration or recognized organizations. Existing ships failing to meet the required standard through technical modifications would be subject to a fee applied to each tonne of fuel consumed. The total fee applied (non-compliant ships only) would vary depending upon how far the vessel's efficiency (as measured by the EEDI) falls short of the applicable

standard. A more efficient ship would pay a smaller penalty than a less efficient ship that falls short of the standard by a wide margin.

6 The Global Emission Trading System (ETS) for international shipping proposal by Norway (MEPC 61/4/22) – would set a sector-wide cap on net emissions from international shipping and establish a trading mechanism to facilitate the necessary emission reductions, be they in-sector or out-of-sector. The use of out-of-sector credits allows for further growth of the shipping sector beyond the cap. In addition the auction revenue would be used to provide for adaptation and mitigation (additional emission reductions) through UNFCCC processes and R&D of clean technologies within the maritime sector. A number of allowances (Ship Emission Units) corresponding to the cap would be released into the market each year. It is proposed that the units would be released via a global auctioning process. Ships would be required to surrender one Ship Emission Unit, or one recognized out-of-sector allowance or one recognized out-of-sector project credit, for each tonne of CO₂ they emit. The Norwegian ETS would apply to all CO₂ emissions from the use of fossil fuels by ships engaged in international trade above a certain size threshold. The proposal also indicates that limited exemptions could be provided for specific voyages to Small Island Developing States.

7 Global Emissions Trading System (ETS) for international shipping proposal by the United Kingdom (MEPC 60/4/26) – is very similar in most respects to the global ETS proposal by Norway. Two aspects of the UK proposal that differ from the Norwegian ETS proposal are the method of allocating emissions allowances and the approach for setting the emissions cap. The UK proposal suggests that allowances could be allocated to national governments for auctioning. It also suggests the net emission cap would be set with a long term declining trajectory with discrete phases (for example, five to eight years) with an initial introductory or transitional phase of one to two years.

8 Further elements for the development of an Emissions Trading System (ETS) for International Shipping proposal by France (MEPC 60/4/41) – sets out additional detail on auction design under a shipping ETS. In all other aspect the proposal is similar to the Norwegian proposal for an international ETS.

9 Market-Based Instruments: a penalty on trade and development proposal by the Bahamas (MEPC 60/4/10) – does not set explicit standards or reductions to be achieved in the shipping sector or out-of-sector for GHG reductions. The proposal clearly sets forth that the imposition of any costs should be proportionate to the contribution by international shipping to global CO₂ emissions. Bahamas' Focal Point has indicated that it is assuming that mandatory technical and operational measures would be implemented such as the EEDI. The proposal would apply to all ships engaged in both domestic and international maritime transport as fuel prices impact all market segments and trades.

10 A Rebate Mechanism (RM) for a market-based instrument for international shipping proposal by IUCN (MEPC 60/4/55) – focuses on a Rebate Mechanism to compensate developing countries for the financial impact of a MBM. A developing country's rebate would be calculated on the basis of their share of global costs of the MBM, using readily available data on a developing country's share of global imports by value as a proxy for that share (or another metric such as value-distance if data becomes available). The proposal indicates that, in principle, the Rebate Mechanism could be applied to any maritime MBM which generates revenue such as a levy or an ETS. In order to evaluate the proposal, the Rebate Mechanism has been assessed integrated with a MBM (see MEPC 60/4/55).

Market-Based Measures Proposals Presented at the Working Group on Greenhouse Gas Emissions from Ships in March 2011

Summary of the Bahamas proposal (MEPC 60/4/10, GHG-WG 3/2)

1 With the islands of The Bahamas being at particular risk from climate change we are keen to see reductions in global emissions. As international shipping is a source of emissions, we propose a practical solution to reduce these emissions set by Member States but implemented by the shipping industry. This proposal would only apply to the emissions of individual ships and not to the emissions of Member States.

2 In the paper, The Bahamas builds on our existing position (MEPC60/4/10) and explores how it is only through operational and technical measures that CO₂ emissions can be directly cut. So The Bahamas proposes that the international community sets a mandatory reduction target to be met by all ships, as below:

Age	New Ship	0-15	15+ to 20	20+ to 25	25+
% CO ₂ reduction	25%	20%	15%	10%	5%

3 The reductions in CO₂ emissions would be based upon a ship's actual operational emissions. Data on these emissions would be collected over a 3 year period. Reductions could then be achieved through a combination of design measures, technical solutions, carbon capture techniques, operational measures or if reductions are not achievable, through a mechanism to be developed by the Organization. Through this process shipowners will be free to apply the most effective measure that they know works for their ship and their trade. This will also allow innovation in reduction technology to thrive. The proposal would then be implemented in four stages:

Year of adoption to year 3	Year 3 to Year 5	Year 5	Year 7
Data collection	Voluntary CO ₂ reduction	Mandatory CO ₂ reduction	Review process starts

4 In summary:

- .1 The reductions will apply to individual ships and not Member States.
- .2 Owners are presented with the incentive to invest in technical and operational measures.
- .3 Owners have the flexibility to achieve significant, real and verifiable emission reductions.
- .4 Real, quantifiable reductions will be achieved in a short period without the creation of an expensive bureaucracy.
- .5 Developing States will not be faced with a penalty upon trade and development.

5 Through this we can deliver the emission reductions that are required to assist in combating climate change without them hurting developing countries. In addition, no Member State would need to sign up to emission reductions, as the reductions apply to the ship and not the State.

Summary of the International GHG Fund proposal by Denmark, Cyprus, the Marshall Islands, Nigeria and IPTA (MEPC 59/4/5, MEPC 60/4/8, GHG-WG 3/2/1, GHG-WG 3/3/4)

Aim

6 The aim of the International GHG Fund is to ensure that the shipping sector can continue to grow, whilst making a contribution towards the reduction of global GHG emissions, through a financial incentive to increase fuel efficiency and by offsetting some of the sector's GHG emissions.

7 It is proposed to be achieved via a new IMO convention which will provide a level playing field for all potential Party States and the global shipping community.

Mechanism

8 All party ships engaged in international trade and all marine fuels are included in the scheme.

9 Currently there are two options for channelling the GHG Contribution to the International GHG Fund:

- .1 Option A: The convention will mandate the registration of bunker fuel suppliers located within the territory of a state party. Bunker fuel suppliers located in a non-state party will be able to be registered on a voluntary basis. When taking bunkers a GHG Contribution is due. The contribution should be made to the International GHG Fund by the registered bunker fuel supplier. Under this option ships must take bunkers from registered bunker fuel suppliers.
- .2 Option B: The ship owner will be responsible for the payment of the GHG Contribution to the International GHG Fund.

10 Suppliers will provide a Bunker Delivery Note which should be kept on board for future inspections. Port State Control may request such documentation and take appropriate steps in cases of suspected non-compliance. Further, Party Flag States have an obligation to monitor and enforce convention obligations.

11 The Fund Administrator will receive the contributions, all necessary records, and monitor the information for the benefit of the Parties. It will allocate the revenues according to the Parties' decisions and keep a ship-specific registry or account. It will maintain a global list of all registered bunker suppliers and submit an annual report.

Reduction target

12 A global reduction target could be set either by UNFCCC or IMO. The target will be essential for the Parties to decide upon the size of the GHG Contribution. The industry will be rewarded for its increased fuel efficiency since the GHG Contribution should be adjusted at regular intervals to ensure that emissions above (and only above) the target line are offset. Shipping will be a partner in the global GHG emission reduction effort.

Allocation of revenues

13 Revenues should be allocated consistent with the UNFCCC objectives and be compatible with any future global climate change agreement. Allocation of revenues should ensure that emissions above the target line are offset. The shipping industry should be recognized for its contributions towards mitigation and adaptation purposes with emphasis on

LDCs and SIDS. The revenues will also cover administration cost of the Fund Administrator as well as Research and Development activities, and for Technical Cooperation within the existing IMO framework.

Summary of the Port State Levy (PSL) proposal by Jamaica (MEPC 60/4/40)

14 Jamaica's proposal (MEPC 60/4/40) to Member States sets out an option for consideration that builds upon previous submissions aimed at reducing greenhouse gas emissions from ships. Environmental economists have proven that in situations where a pollutant exhibits constant marginal damage and where the marginal abatement cost is unknown, a price control mechanism such as an emission levy may be advantageous to a quantity control mechanism e.g. a cap and trade scheme. Such a situation exists with the

CO₂ emissions from shipping. Recently produced reports show marginal abatement cost

curves for shipping generated CO₂ that are far from definitive - and need to be assessed by

the Group of Experts proposed by the Chairman. Moreover, recent studies, such as Second

IMO GHG Study (2009) are only able to estimate CO₂ inventories with a 20% margin of error

that would create opportunities for leakages through any cap that is based on those inventories. Therefore, as expanded in our submission, Jamaica concludes that economic policy conditions exist that makes an emission levy more feasible than a cap and trade system.

15 Jamaica proposes in its submission that through an IMO global agreement, member States participate in levying a uniform emissions charge on all vessels calling at their respective ports based on the amount of fuel consumed by the respective vessel on that voyage (not bunker suppliers). The submission is directly aimed at reducing maritime emissions of CO₂ without regard to design, operations, or energy source. The amount of fuel consumed onboard ships is routinely monitored and recorded. Larger vessels have fuel flow meters that can record fuel consumption with an accuracy of $\pm 0.2\%$ with other vessels relying on sounding tanks with a lower level of accuracy. Jamaica's proposal would be a refinement of previous international compensation fund proposals in other MEPC submissions (MEPC 56/4/9, MEPC 57/4/4, MEPC 57/INF.13, GHG-WG1/5/1; MEPC 58/4/22). We also endorse the plan to use the funds raised for mitigation and adaptation measures to aid countries such as SIDS.

16 The fee would be structured to achieve the global reduction targets for greenhouse gases and could be leveraged in a manner as proposed by Japan to reward vessels exceeding efficiency targets. Jamaica's proposal is particularly well suited to address the multi-jurisdictional nature of shipping that would be problematic for an emission-trading scheme. The Ship itself would be targeted with an emission levy as it arrives in port, irrespective of the owner, operator or charterer, and Jamaica proposes an easily administered institutional mechanism.

17 Such a mechanism has the advantages of charging each unit of pollution, being universally applicable in all countries and ports, uniform in its fee structure, flexible adjustment mechanism, trade-related, and allow benefits to be accrued in the areas where the damage occurs. Even though the principle of common but differentiated responsibilities is not strictly applied, its tenets are captured because as a result of the majority shipping being beneficially controlled by developed countries and most of world trade taking place between developed countries, they would bear the costs in direct proportion to their emissions.

18 Additionally, technology exists that is able to audit the fuel consumption that each ship would be asked to declare at the end of every voyage and thereby the amount of CO₂ emitted during the relevant voyage may be determined by applying emission conversion factors (see MEPC 60/WP.6) for bunker fuels. Data captured in this way may possibly form the basis of an accurate target level for some future ETS.

19 Voyage models, such as the Ship Traffic Energy and Emission Model (STEEM), could audit fuel consumption and efficiency improvements declared by vessels. Such an auditing mechanism would support the EEDI and EEOI efforts.

Summary of the Global Emissions Trading System (ETS) proposal by Norway, the United Kingdom, France and Germany (MEPC 60/4/22, MEPC 60/4/26, MEPC 60/4/41, MEPC 60/4/54, GHG-WG 3/3/5, GHG-WG 3/3/6, GHG-WG 3/3/8)

Introduction

20 The Global Emission Trading System (ETS) for international shipping responds to the need for **precise emission control** through the establishment of a cap on total emissions from the sector, and at the same time provides for access to the most **cost effective emission reduction measures to meet the cap**. Hence, more emission reductions can be achieved with the invested capital. The global system meets the principles of the IMO, as well as it provides for **a Fund** which will **assist developing countries** to address their needs in their response to Climate Change. **No allocation of emissions** to Parties, or to individual ships is needed. The proposal will allow shipping to continue to provide energy efficient services for the growing world trade.

Brief outline of the proposal

21 It is proposed that States develop the global ETS for international shipping in a **new legal mechanism under the auspices of the IMO**. A Cap on the total emissions of the sector will be part of the system, as well as a target year (commitment period.) **Ships**, to which the system applies, will get **clear and simple requirements**. They need to register and have an account in an international ETS registry and **acquire emission allowances to be periodically surrendered**. The amount of allowances will have to correspond to their CO₂ emissions. Hence an annual emission report needs to be submitted to the Administration/RO for approval.

22 The system follows the **traditional and robust way of regulating shipping**. Through a survey and certification regime the Flag Administration/RO will ensure that the ships comply at the time when the ship is required to be in a balance. The ships need to **keep record of their bunker consumption**. Port State Control will be able to control both of these elements according to well established procedures.

23 The emission allowances will be auctioned (sold), and put on the market by an international entity established in the instrument. **Ships will have easy access to the emission allowances at a market place**. They will in addition have access to other UN emission credits such as those of other sectors and to CDM projects in developing countries.

Hence, shipping will always have access to emission allowances. At the same time the system ensures that the requirements for ships can be met through the cheapest reduction measures. While the shipping sector can contribute effectively to combat climate change with a tool that provides for control of the emissions it can still further grow and take advantage of the most cost effective measures.

24 The system includes an **exemption clause** which can be used to exempt voyages to **some developing countries** such as SIDS/LDCs. Such exemption must be approved by the Organization and not lead to carbon leakage.

25 **A Fund** will be established by the auctioning of emission allowances. Since the quotas will be put on the market by an international entity, revenues will go directly to that entity. The Fund will be administered by the International entity which is under the control of the Parties to the system. The Fund can be used for **climate change mitigation and adaption purposes in developing countries** as well as technical cooperation activities under the IMO, but the proposal acknowledge that this topic will need be thoroughly discussed among all states at the IMO.

Summary of the Efficiency Incentive Scheme (EIS) proposal by Japan and WSC (MEPC 60/4/37, MEPC 60/4/39, GHG-WG 3/3/2)

Introduction

26 Japan and World Shipping Council (WSC) discussed the common elements between the Leveraged Incentive Scheme (LIS) as proposed by Japan in MEPC 59/4/34 and MEPC 60/4/37, and the Vessel Efficiency System (VES) as proposed by the World Shipping Council in MEPC 60/4/39, and explored the possibilities of consolidating the two proposals. Japan and WSC subsequently agreed to develop and present the consolidated proposal, referred to here as the “Efficiency Incentive Scheme” or EIS.

Objective of the EIS

27 The objective of the EIS is to achieve in-sector carbon reductions by stimulating the adoption of energy efficient marine technologies. The EIS would also serve to accelerate the rate of technology adoption in the fleet, thereby reducing fleet emissions faster than we would see in most other market-based proposals.

Type and general character of EIS as MBM

28 The EIS is a MBM that is institutionally similar to the International GHG Fund, but different in that fees are assessed only to those ships failing to meet a specific efficiency standard. For this reason, an important feature of the EIS is that it provides an opportunity for the vessel owner / operator to avoid any fees if the ship satisfies the applicable standard. For ships that do not meet the required standard, fees are assessed in proportion to the amount of the bunker fuel consumed (or purchased) and the degree to which the vessel’s efficiency falls short of a specific standard. Funds collected go to an independent international fund (the International GHG Fund) established under a new legal instrument, which is developed in IMO.

29 The EIS does not include a figurative cap on the total amount of CO₂ emission from international shipping. The EIS does allow for the possibility of funding projects outside the sector, but it should be noted that the proposal is not designed to rely on “offsets” to achieve its purpose as the primary objective of the EIS is to achieve and accelerate emission reductions within the sector itself. The EIS directly encourages investment in energy-efficient marine technologies as these investments allow the owner and operator to achieve a return

on investment. The return on investment produces lower operating costs through substantial improvements in fuel efficiency and lower emissions from the fleet.

30 Unlike most other MBM proposals, the standards and applicable costs in the EIS are known in advance. For this reason, the EIS provides a high level of cost predictability as well as regulatory stability.

Mechanism of EIS for energy efficiency improvement

31 “New ships” under the EIS would be those ships of which newbuilding contracts are made on or after the date of entry into force of the new legal instrument to implement the EIS. The EIS assumes that there would be mandatory EEDI requirements, as contained in Circular letter No. 3128 and MEPC 62/6/3, in force: there would be the minimum requirements of EEDI for all new ships, e.g., 10% below the reference line in Phase 1. The contribution would be based on the amount of consumed or purchased bunker fuel:

$$\text{Contribution (\$)} = \text{contribution rate (\$/ fuel ton)} * \text{the amount of fuel (fuel ton)}$$

The contribution rate (Y) would be in proportion to how close the EEDI of a new ship is to the Required EEDI line (10% below the Reference Line in case of Phase 1). At certain pre-set value of deviation (e.g., [5] % more efficient than the Required EEDI line), the contribution rate would become zero, i.e., reaching the exemption point of paying the contribution. This concept is illustrated in Figure 1.

32 For Existing ships, the amount of a given fee is determined by how far (or close) the EEDI of an existing ship is compared against a certain pre-set value of EEDI, i.e., exemption point for payment of the applicable fee. Such pre-set exemption point would be less stringent from the one established for new ships, in view of limited options for technical measures that can be applied to existing ships and the aging degradation of ship performance. The concept is illustrated in Figure 2. Existing ships would have opportunity of renewing their EEDI values by the installation of energy-saving devices or other technical modifications to the vessel.

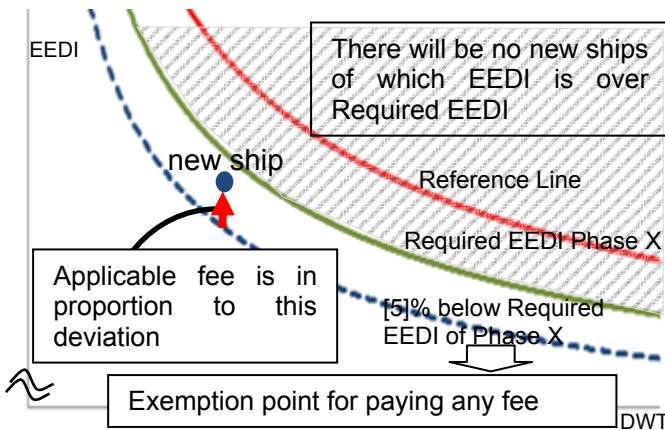


Figure 1: The concept to induce the improvement in energy efficiency for new ships

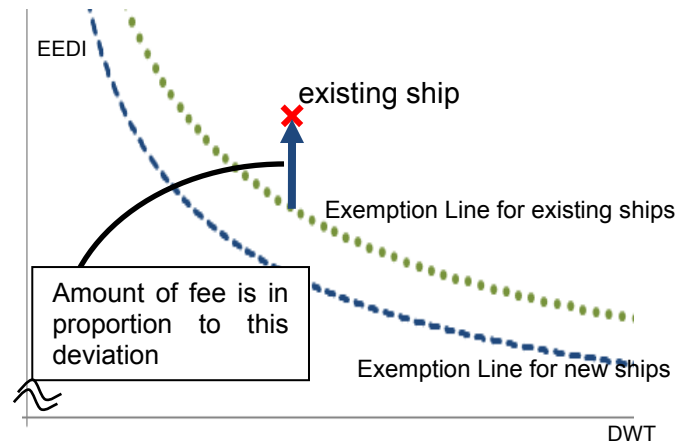


Figure 2: The concept to induce improvement in energy efficiency of existing ships

Assignment of EEDI for all ships and verification

33 The EIS would essentially utilize the EEDI for both new and existing ships as was the case in the original proposal of VES by WSC. The calculation and verification of the EEDI for existing ships under the EIS would basically follow the same procedure as new ships, namely, it would be carried out in accordance with the EEDI Calculation Guidelines and the EEDI Survey and Certification Guidelines. However, there should be some device, in

order to enable the assignment of EEDI for existing ships with reasonable level of accuracy, to cope with technical difficulties inherent in EEDI calculation for existing ships such as the lack of available and verifiable data.

Collection and distribution of the revenue

34 The method of collecting the contributions from ships would follow that of the LIS, i.e., the direct transfer to the IMO International GHG Fund without passing through the bunker fuel suppliers located in the territories of the Parties as well as Non-Parties (MEPC 59/4/34 and MEPC 60/4/37). Each ship would have its own electronic account with the IMO number serving to identify each account in the IMO International GHG Fund. The revenue from GHG contributions will be allocated for: 1) further in-sector emission reductions through research and development projects to develop even higher efficiency in the fleet, and for 2) funding other projects consistent with guidance to be set forth in the new instrument. The allocation of the revenue would be determined by the Parties to the International GHG Fund. The allocation of revenues to be used outside the marine sector should take into account the share of emissions generated by international shipping relative to total global CO₂ emissions.

Summary of the Ship Efficiency and Credit Trading (SECT) proposal by the United States (MEPC 60/4/12, MEPC 61/5/16, MEPC 61/INF.24)

35 The United States proposal for a Ship Efficiency and Credit Trading (SECT) program builds on the traditional strengths of the IMO by employing technical standards to create a simple, pragmatic and cost-effective solution to reduce GHG emissions from existing ships. The world fleet, both new and existing ships, can and should be made more efficient and in many cases the technology already exists to achieve this goal at no net costs, due to associated fuel savings. This proposal focuses on how best to address emissions from existing ships and it complements the current effort within IMO to develop efficiency design standards for new ships through the Energy Efficiency Design Index (EEDI).

36 Under SECT, all ships, including those in the existing fleet, would be subject to mandatory energy efficiency standards, rather than a cap on emissions or a surcharge on fuel. The stringency level of these efficiency standards would be based on energy efficiency technology and methods available to ships in the fleet. These standards would become more stringent over time, as new technology and methods are introduced. Similar to the EEDI, these efficiency standards would be based on a reduction from an established baseline. We believe these efficiency standards are necessary because the updated IMO study notes there is significant potential to reduce emissions, but significant non-financial barriers exist.

37 Despite the number of no-cost or low-cost efficiency improvements that exist today, it may be that not all ships will be able to meet the standards cost-effectively. In order to allow ships to meet the standards at the lowest possible cost, SECT also creates an efficiency credit trading program for ships. Simply put, ships operating more efficiently than required for the compliance period could earn efficiency credits based on current ship efficiency rate and activity, which could be sold for use in the maritime sector. Ships operating less efficiently than required would have the option of purchasing these efficiency credits, as one method of achieving compliance with the efficiency standards. We believe that the trading program can be structured in a way to ensure that there is an appropriate amount of credits to trade.

Advantages of SECT

38 SECT provides incentives, beyond the business as usual case, for ship owners, operators and charterers to maximize the efficiency of their ships. This program is intended

to maximize in-sector efficiency improvements and does not attempt to cap net emissions through the use of offsetting credits from outside the maritime sector. Therefore, the costs associated with this program are directed at technologies and methodologies that would improve the efficiency of the international maritime sector. These efficiency improvements are expected to result in cost savings due to lower fuel consumption, with commensurate decreases in vulnerability to fuel price volatility. In addition to fuel savings, the ability to sell efficiency credits will likely lead to increased value for more efficient ships. The SECT approach also provides a way to build on the political viability of efficiency approaches while avoiding more politically difficult issues, allowing the MEPC to move forward.

39 The SECT proposal was originally put forward in documents MEPC 59/4/48 and MEPC 60/4/12. Further information has more recently been made available in MEPC 61/5/16 and MEPC 61/INF.24. As detailed in these documents and outlined below, SECT is favourable with respect to the nine criteria raised in Circular No. 3121.

- .1 **SECT is environmentally effective.** Analyses conducted with data from the IMO updated GHG study suggests a 10 to 30% direct reduction of greenhouse emissions in 2020 is possible and it could be as high as 40% (below business as usual) by implementing efficiency measures.
- .2 **SECT is cost effective.** SECT would create, for the first time, an incentive for ship-owners to invest in efficiency measures with longer term payback periods. This is because a highly efficient ship will continue to generate efficiency credits for several years, and the value of the future stream of credits can be factored into the price of a ship should the owner decide to sell it. In addition, a focus on efficiency is inherently cost-effective for ship owners because they are lowering operating costs. The impacts on trade are expected to be minimal as there is no cap on growth of the sector and in many cases the overall transport cost would decline due to decreased fuel costs. As such, the impact on LDCS and SIDS is also expected to be minimal.
- .3 **SECT provides incentives for technological change.** By setting efficiency standards and then allowing trading, there is a regulatory and financial incentive to increase ship efficiency. SECT does not prescribe what technologies to use or how to use them; instead it lets ship owners/operators decide what technologies work best for their ships. Given that SECT would be exclusive to the maritime sector; it provides the highest of incentives to employ a variety of efficient technologies.
- .4 **SECT is practical.** SECT would be relatively simple to implement as it builds on the significant work already undertaken by IMO on the EEDI, EEOI, and SEEMP. The administrative systems and procedures for efficiency credit trading would have to be created, but these would be a simplified version of what is needed to implement a full cap and trade system.
- .5 **SECT does not require significant technology transfer.** As the updated IMO GHG study indicates, substantial negative cost efficiency measures are available for the global shipping sector using existing commercialized technologies. By and large, technology transfer required by a developing country ship builder or ship operator can therefore be acquired through commercial means. However, in as much as SECT will require developing country administrations or ship owners to familiarize themselves with credit trading, we believe that support for capacity-building programs would be appropriate and straightforward to arrange.

As for mobilizing climate change finance, we note that the original nine criteria for greenhouse gas measures to be adopted by the IMO (agreed at MEPC 57) did not include raising revenue for external benefit. Accordingly, SECT is designed to reduce emissions within the sector at minimal cost and to the benefit of the sector only. The SECT system is self-contained in that all costs to industry are spent on investments in their own vessel efficiency.

- .6 **SECT would be consistent with international law.**
- .7 **SECT has minimal administrative burden.** SECT creates some additional work for owners, operators, flag states, and port states. However, we believe there is an additional burden for any market-based measure. The additional burden would be comparatively minor and would complement what is currently being undertaken under current Annex VI requirements.
- .8 **SECT has minimal additional work.** SECT would require efficiency gains from ships. Although there would be additional workload to implement the efficiency measures, the efficiency gains would result in cost savings from reduced fuel consumption which would lead to positive market impacts for shipping. The credit trading program results in decreased costs and provides ship owners and operators with flexibility on their compliance approach to the proposed requirements. Implementation of the SECT would present minimal burden for individual ships, and it could bring a positive impact on international trade supported by marine shipping.
- .9 **SECT is compatible with existing enforcement provisions.** SECT is compatible with the existing enforcement and control provisions under the IMO legal framework as it builds on work undertaken in Annex VI.

Summary of the Rebate Mechanism (RM) proposal by IUCN (MEPC 60/4/55, MEPC 61/5/33)

40 A rebate mechanism, as proposed in MEPC 60/4/55 by IUCN, aims to reconcile the different principles of shipping and climate conventions. Through the mechanism developing countries can be rebated the cost or impact of a maritime MBM on their development. The maritime MBM is defined here as any Market-Based Instrument or Measure (MBM) for international maritime transport. The rebate mechanism can apply, in principle, to any maritime MBM, which generates revenue, such as a contribution/levy on fuel or an emission trading scheme. The mechanism cannot apply to an MBM that does not generate revenue, such as an efficiency-based scheme.

41 The mechanism calculates the rebate in a top-down manner using the global MBM costs and a simple key, country-by-country. The proposed key is a country's share of global imports by value. A developing country could forego its rebate, or part of it, and be internationally credited for such action. Developed countries are automatically credited for the amount of financing raised through the MBM, based on the same key, and are not entitled to any rebates.

42 Consequently, net revenue raised, after rebates have been issued, would come from customers in developed countries only, complying with the principles and provisions of the UNFCCC. The net revenue raised could be split between supporting developing

countries in implementing climate change action, and assisting the global shipping sector to accelerate reductions of its growing emissions through technological advances.

43 This unique rebate mechanism has been integrated with the International Maritime Emission Reduction Scheme (IMERS) in order to:

- .1 illustrate how it can be operationalized; and
- .2 allow the proposal be comprehensively assessed according to the nine criteria of the MBM-EG Terms of Reference.

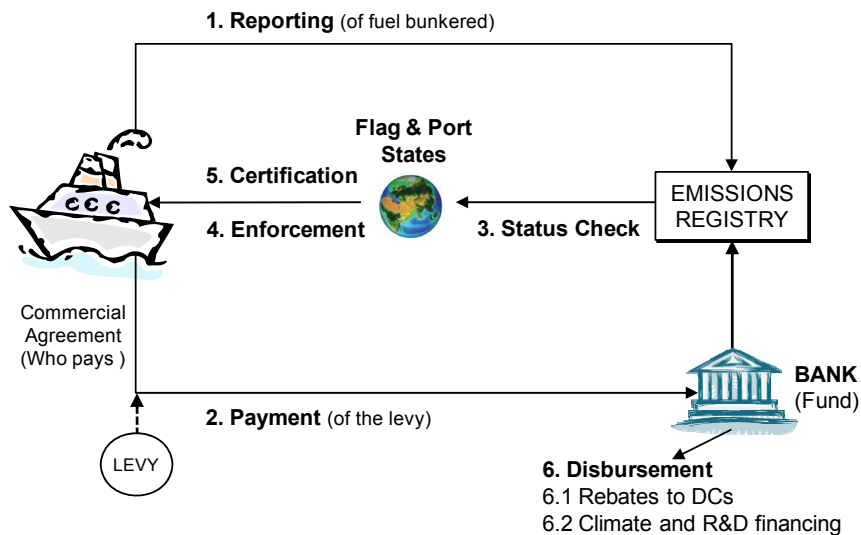
44 Under the IMERS scheme a market-driven levy is established on fuel bunkered, as an alternative for a levy on greenhouse gas emissions. The levy would apply to all ships over a predetermined size, engaged in international maritime transport, irrespective of their flag and nationality of the ship-owner. The liable entity in the scheme is ship, uniquely identified by its IMO number.

45 In order to deliver proportionality of the shipping effort to combating climate change, the levy is linked to a prevailing fee on land transport emissions, or to the rolling average market carbon price, as available. It is set constant for a quarter, at least 30 days in advance of the start of each quarter. In order to increase investment certainty, the levy is bounded by predetermined price floor and ceiling.

46 Fuel bunkered in a given quarter must be electronically reported and is subject to payment of the constant levy for that quarter. The levy is obtained centrally, bypassing national coffers, and aggregated providing gross revenue for the scheme.

47 In order to reduce the burden on the shipping industry, and guarantee a rapid deployment globally, a computer-based system and simple processes are defined. The system is based on a central emissions registry (ER), holding an emission account for each ship, and a predetermined global bank (BK), or banks, providing a payment account for each ship. The scheme operates through six processes:

- .1 Reporting of fuel bunkered, by ship (manager) to ER;
- .2 Payment of the levy, by ship (charterer) to BK, directly;
- .3 Status check of ship's compliance, by Port and Flag State Control (PSC and FSC) with ER;
- .4 Enforcement of compliance, by PSC and FSC;
- .5 Certification of ship compliance, by FSC; and
- .6 Disbursement of revenue raised, by BK and/or predetermined funds.



48 In order to comply with the UNFCCC principles and provisions, including the principle of common but differentiated responsibilities and respective capabilities (CBDR), the rebate mechanism as introduced above applies, and is the first step of the disbursement process (6).

49 In order to maximize environmental effectiveness and cost-efficiency, the entire net revenue raised is to be disbursed through existing institutions for: (a) Adaptation to climate change in developing countries, (b) Reduction of emissions from deforestation and forest degradation (REDD+), and (c) Technology R&D, transfer, and transformation in the shipping sector. It is proposed to reserve a significant pool of adaptation funding to the most vulnerable Small Islands Developing States (SIDS) and Least Developed Countries (LDCs). Furthermore, setting of the ship size threshold higher than 400 GT is proposed for an initial period of time.