The submitted and presented Market-Based Measures Proposals for the MBM-EG are summarised in the appendices as follows:

Appendix 1  Proposal submitted by Cyprus, Denmark, the Marshall Islands, Nigeria and the International Parcel Tankers Association (IPTA) for an International Fund for Greenhouse Gas emissions from ships (MEPC 60/4/8);

Appendix 2  Proposal submitted by Japan for Consideration of a market-based mechanism: Leveraged Incentive Scheme to improve the energy efficiency of ships based on the International GHG Fund (MEPC 60/4/37);

Appendix 3  Proposal submitted by United States for Further details on the United States proposal to reduce greenhouse gas emissions from international shipping (MEPC 60/4/12);

Appendix 4  Proposal submitted by World Shipping Council (WSC) for a Proposal to Establish a Vessel Efficiency System (VES) (MEPC 60/4/39);

Appendix 5  Proposal submitted by Norway for a Further outline of a Global Emission Trading System (ETS) for International Shipping (MEPC 60/4/22);

Appendix 6  Proposal submitted by United Kingdom for a Global emissions trading system for greenhouse gas emissions from international shipping (MEPC 60/4/26);

Appendix 7  Proposal submitted by France for Further elements for the development of an Emissions Trading System for International Shipping (MEPC 60/4/41);

Appendix 8  Proposal submitted by Bahamas for Market-Based Instruments: a penalty on trade and development (MEPC 60/4/10); and

Appendix 9  Proposal submitted by IUCN for a Rebate mechanism for a market-based instrument for international shipping (MEPC 60/4/55).

Appendix 10 Proposal submitted by Jamaica for Achieving reduction in greenhouse gas emissions from ships through Port State arrangements utilizing the ship traffic, energy and environmental model, STEEM (MEPC 60/4/40).

Appendix 11 Proposal submitted by Germany for Impact Assessment of an Emissions Trading Scheme with a particular view on developing countries (MEPC 60/4/54).

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Appendix 1

Summary of the proposal submitted by Cyprus, Denmark, the Marshall Islands, Nigeria and the International Parcel Tankers Association (IPTA) to MEPC 60 on an International Fund for Greenhouse Gas emissions from ships (MEPC 60/4/8)

Aim

1. The aim of the International GHG Fund is to ensure that shipping makes a contribution towards the reduction of global GHG emissions through offsetting. 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.

Scope of the application

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

3. 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, or alternatively the ship owner.

4. 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.

Implementation

5. Party ships will be obliged to purchase fuel from registered bunker fuel suppliers. 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.

6. The 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 GHG global emission reduction effort.

Allocation of Revenues

7. 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.

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Appendix 2

Summary of the proposal submitted by Japan to MEPC 60 on Consideration of a market-based mechanism: Leveraged Incentive Scheme to improve the energy efficiency of ships based on the International GHG Fund (MEPC 60/4/37)

Outline of Leveraged Incentive Scheme (“dual” incentive by refund)

1 Leveraged Incentive Scheme is purposely designed to target “direct” reduction of CO₂ emission from shipping sector primarily. The concept of Leveraged Incentive Scheme is that a part of the GHG contributions which are collected on marine bunker is refunded to ships labelled as “good performance ships”. Leveraged Incentive Scheme provides stronger incentives to improve efficiency of their ships. This is because it has a “dual” incentive structure. The first incentive is that shipping companies would have an incentive to reduce their fuel consumption as the amount of contributions is in proportion to the fuel consumption. The second incentive is that a part of the paid contributions would be refunded to those “good performance ships”.

What criteria should be used for the performance appraisal and labeling of “good performance ships”

2 The way to achieve the highest possible energy efficiency is to 1) firstly procure and use a good hardware (to be reflected in EEDI), and 2) then operate such hardware “wisely” (to be reflected in EEOI). Therefore, it is considered appropriate to use dual criteria for performance appraisal: one is the performance of hardware based on EEDI (criteria No.1), and the other is the performance of operation based on the EEOI (criteria No.2).

How the Leveraged Incentive Schemes work

3 Step 1: Contribution is collected from all ships (possibly with an exclusion of small ships) in a mandatory manner, with a fixed amount per ton of purchased fuel.

4 Step 2: In case of “criteria No.2 of the performance appraisal” (relating to the energy efficiency during the operation), the EEOI values have to be monitored and recorded by each ship. This is NOT mandatory for all ships; only those owners/operators who think that their ship performance is good or improves would conduct the data collection voluntarily, for possible refund of a part of the contribution that they had already made.

5 Step 3: In case of the refund relating to “criteria No.2 of the performance appraisal”, the data collected in Step 2 should be verified by the Administration or the organization recognized by it, and the refund application should be accompanied by the report of such verification. The refund application with “criteria No.1 of the performance appraisal” (superior EEDI values in excess of required EEDI) should be accompanied by relevant international certificate which is to be issued in accordance with the requirements of EEDI, thus not requiring specific verification process.

6 Step 4: This administrative process is carried out by an International GHG Fund to be established. Labeling would be done as an automatic calculation based on the standard template of the submitted data, following the pre-determined criteria of “good performance ships” and corresponding refund rates, avoiding any arbitrary judgment. International GHG Fund would have to predetermine the “budget” for refunding, considering the both level of incentives necessary for investing in improving the efficiency of ships and the allocation of the revenue for other purposes.
Summary of main advantages of the GHG Fund and Leveraged Incentive Scheme

7 Leveraged Incentive Scheme would strengthen the effects of the International GHG Fund by encouraging shipping industries to invest more in procuring highly efficient ships (i.e., with low values of attained EEDI), and, after starting the operation of their ships, to exercise the optimum combination of operational measures. It also has the following merits:

.1 the scheme is designed to attract wider participation as any ships, no matter whether they are new or old, and no matter which route they are engaged in, would have an equal opportunity to be rewarded as “good performance ship” and to benefit from the refund; and

.2 the revenue to be generated from the contribution can be utilised for various purposes including the adaptation and mitigation in developing countries.

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Appendix 3

Summary of the proposal submitted by the United States to MEPC 60 on Further details on the United States proposal to reduce greenhouse gas emissions from international shipping (MEPC 60/4/12)

1 The US 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 costs. 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).

2 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 (10-30 percent in 2020), but significant non-financial barriers exist.

3 Despite the number of no-cost or low-cost efficiency improvements that exist today, not all ships will be able to meet the standards. 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.

4 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.

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Appendix 4

Summary of the submission by World Shipping Council (WSC) to MEPC 60 on a Proposal to Establish a Vessel Efficiency System (VES) (MEPC 60/4/39)

Primary Objectives of the Proposal:

1. reduce carbon emissions from the world’s fleet;
2. focus industry carbon expenditures on improving the efficiency of fleet assets with a return on investment for the life of the vessel;
3. reward investment in efficiency gains and discourage operation of the most inefficient ships; and
4. create a relatively simple system, which is equitable among ship types and will provide a high degree of certainty of reduced ship emissions.

How Does the VES Work?

1. establish mandatory efficiency standards for both new and existing ships;
2. 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;
3. standards are tiered over time with increasing stringency;
4. new builds must meet the specified standards or they may not operate. New builds, once completed, are not defined as existing ships. Hence, the system applicable to existing ships sunsets when today’s fleet turns over;
5. existing ships may comply by improving their efficiency scores through technical modifications that have been inspected and certified by the Administration or recognized organizations;
6. existing ships failing to meet the required standard through technical modifications are 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 pays a smaller penalty than a less-efficient ship that falls short of the standard by a wide margin;
7. the total cost applied is calculated as follows:

For illustration purposes, assume that the standard applicable to a particular ship class and size is 16 grams per ton mile and that a given ship is 25% less efficient than the standard, $50 is the base fee established by the parties, and the vessel consumes 50,000 tonnes of fuel.
The fee would be calculated as follows:

\[
1 - \left( \frac{20 \text{ grams per ton mile}}{16 \text{ grams per ton mile}} \right) \times 50 \times 50,000 = \$625,000
\]

For a vessel that is 50% less efficient than the standard:

\[
1 - \left( \frac{24 \text{ grams per ton mile}}{16 \text{ grams per ton mile}} \right) \times 50 \times 50,000 = \$1,250,000
\]

For a vessel that meets or surpasses the applicable standard - No fees apply.

.8 fees collected are available for R&D, out-of-sector CO2 reductions, and other purposes as the parties may deem appropriate;

.9 a Fund Administrator must be established to manage and distribute funds received;

.10 port State control is largely limited to verification of certificates, record books, and bunker delivery notes (in the case of an existing ship failing to meet the required standard); and

.11 fees required of ships failing to meet the standard are paid on a regular interval by the fuel supplier or directly by the ship.

Note: Further information is available in MEPC 60/4/39 and the WSC criteria document.
Appendix 5

Summary of the proposal submitted by Norway to MEPC 60 on a Further outline of a Global Emission Trading System (ETS) for International Shipping (MEPC 60/4/22)

Introduction

1. 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

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

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Appendix 6

Summary of the proposal submitted by United Kingdom to MEPC 60 on a Global emissions trading system for GHG emissions from international shipping (MEPC 60/4/26)

1 In MEPC 60/4/26, the UK set out a proposal for a Global Emissions Trading System (ETS) for international shipping. Such an approach has two main benefits:

.1 it defines a clear cap on net emissions from the sector, ensuring that the desired level of emissions from international shipping is achieved; and

.2 it enables emission reductions to take place where the cost of the reduction is lowest, thus lowering the overall costs of combating climate change.

2 The key design elements of the system are set out below:

.1 ship operators would be responsible for complying with the system (they could be the legally responsible entity). The point of obligation would be individual vessels (as identified by their IMO number). Ship operators would be responsible for ensuring that each of their individual ships had a “Greenhouse Gas Certificate” on board at all times;

.2 an overall global cap for international shipping would be agreed and a fixed quantity of emissions allowances (each representing 1tCO$_2$) would be created in line with the overall cap. These allowances would then be auctioned to ship operators;

.3 in order to provide certainty to the shipping industry, the global cap would be set with a long-term declining emissions trajectory. The framework would map out trading phases (of e.g. five or eight years), each of which would comprise a number of shorter compliance periods (equivalent to one year). This structure would give the ETS greater flexibility (through features such as the ability to bank allowances between trading phases) as well as an opportunity for Parties to assess whether the cap had been set correctly and whether progress in reducing emissions was being made;

.4 the first phase could be an introductory or transitional phase to allow for data gathering and the setting of more accurate emissions baselines. This would also allow shipping operators to become accustomed to the various obligations of the new system. This could be a shorter phase (of e.g. one or two years) but should also result in emissions reductions. The cap should be reviewed after this initial phase;

.5 throughout each compliance period, ship operators would monitor their international shipping emissions by keeping records of their fuel purchases using the bunker delivery note mechanism, which is already a feature of MARPOL Annex VI. The ETS would be linked to the global carbon market, so that allowances (and project credits) from other sectors of the economy could be bought in to account for international shipping emissions; and

.6 within a set time after the end of the compliance period (e.g. three months), participants would be required to report their fleet’s independently verified international shipping emissions and surrender enough allowances (and/or project credits) to account for these emissions. This would be a condition for maintaining a valid “Greenhouse Gas Certificate” for the compliance period.
Appendix 7

Summary of the proposal submitted by France to MEPC 60 on Further elements for the development of an Emissions Trading System for International Shipping
(MEPC 60/4/41)

Features common with the Norwegian proposal, not fully described in 60/4/41

1. The ETS will be applicable to all ships above a threshold, regardless of their flags: the threshold could be 400 GT but it is possible to start with a higher threshold.

2. A global cap on the emissions for the sector will be included in the system, without any specific cap to Parties or to individual ships. This cap will determine the number of shipping units that will be auctioned but won’t be a glass ceiling stopping the traffic: the market will be open, that means that ships will be allowed to use units from other carbon markets, in particular CDM credits.

3. An Administrative Body under the control of the Parties will administer the system, and in particular manage the international shipping CO₂ registry, where every ship identified by its IMO Number will have an account.

4. The bunker delivering notes, held on board, will indicate the amount of CO₂ units due by a ship for each bunkering action.

5. A Fund will be established with auctioning revenues. The Fund will be managed by the Administrative Body. The Fund will be used for climate change mitigation and adaptation purposes in developing countries as well as technical cooperation activities under the IMO.

Monitoring and control: the constant balance option

6. The system is based on the usual IMO rules, with the legally responsible entity being the company as identified in SOLAS, and the control being done by the Flag State and the Port State Authority as for other regulations.

7. Port States Authorities’ control but also implementation by all stakeholders will be facilitated by real time access to information on a ship account: CO₂ units deposits, withdrawals corresponding to bunkering actions, balance. CO₂ units should be transferred to a ship account after each bunkering action. Some delay could be accepted for compliance (eg. 1 month).

Auctioning: complements to the Norwegian proposal

8. To ensure a high efficiency and a uniform price, there will be a single international auctioning platform for the shipping CO₂ units.

9. To facilitate the participation of small ship operators, it is possible to organize non-competitive auction windows where small lots of units, for example 1 tCO₂, are sold at a fixed price, the price paid at the most recent competitive auction.

10. To prevent market manipulation, we will limit the bid size allowed for each auction and organize auctions frequently enough.

11. To avoid speculation while ensuring the liquidity of the market, we will set strict market regulation and restrict the participation in the system to the appropriate actors (to be determined).
Appendix 8

Summary of the proposal submitted by Bahamas to MEPC 60 on Market-Based Instruments: a penalty on trade and development (MEPC 60/4/10)

1 The Bahamas states that any MBM will be a restraint upon the trade and development of States. Money removed by an MBM will be money lost from the development of the State. Operational and technical measures will produce significant savings and oil prices will provide the incentive to apply them. If an MBM were to be in place, then shipping’s contribution must be proportional to the amount of emissions produced by shipping. The second IMO GHG study states that shipping’s contribution is 2.7% and so the financial penalty on shipping should not exceed 2.7% of any global GHG fund. Further, any MBM must be administered in the most efficient and practical manner in order to ensure equitable distribution of any monies raised.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Comment on Bahamas proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Bahamas states that operational and technical measures and improvements, driven by future high oil prices, will achieve significant GHG savings. The second IMO GHG study states that operational and technical measures would reduce GHG emissions by 25-75%. The Bahamas believes that this would be the most effective method for ensuring the minimization of GHG emissions.</td>
</tr>
<tr>
<td>5.2.1</td>
<td>The high price of oil will provide the incentive to adopt technical and operational measures. There is no need to set up an expensive bureaucracy when the invisible hand of the market will do the work for free.</td>
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<tr>
<td>5.2.2</td>
<td>By allowing the fuel price to be the driver for the implementation of operational and technical measures, those that use the most fuel pay the most. Trade would be unaffected as smaller vessels serving LDCs and SIDS would use less fuel. No modal shift would occur as there would be no incentives built into the system to do so.</td>
</tr>
<tr>
<td>5.2.3</td>
<td>No distortion to the market would occur if only using operational and technical measures. MBMs may distort markets, by disadvantaging LDCs and SIDS or incentivising certain trades.</td>
</tr>
<tr>
<td>5.3</td>
<td>As with 5.2.1 the incentive will be the cost of fuel. This is also equitable as those who use the most fuel will have the greatest incentive to change.</td>
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<tr>
<td>5.4</td>
<td>Just using operational and technical measures would not involve any more practical problems. If an MBM were to be developed as a stand alone instrument then this would tie up considerable time which could be better used for other safety and environmental issues.</td>
</tr>
<tr>
<td>5.5</td>
<td>Without an MBM there would be no need for technology transfer to LDCs and SIDS. If an MBM were adopted, then money raised would need to be available to assist the transition in LDCs and SIDS.</td>
</tr>
<tr>
<td>5.6</td>
<td>As The Bahamas proposes that operational and technical means can achieve the reduction in GHG, there would be no interaction with other relevant conventions. However, The Bahamas proposal states that any funds from shipping should be proportional to the ratio between emissions from ships and global emissions and monies raised should be directed to LDCs and SIDS.</td>
</tr>
<tr>
<td>5.7</td>
<td>The Bahamas states that any MBM will create a sizable bureaucracy both within the State as well as internationally. Without an MBM there would be no administrative burden.</td>
</tr>
<tr>
<td>5.8</td>
<td>There would be no additional workload as there would be no international bureaucracy to serve.</td>
</tr>
<tr>
<td>5.9</td>
<td>Not referred to in the Bahamas paper.</td>
</tr>
</tbody>
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Appendix 9

Summary of the proposal submitted by IUCN to MEPC 60 on a Rebate mechanism for a market-based instrument for international shipping (MEPC 60/4/55)

1 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.

2 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.

3 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.

4 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 5.1 – 5.9 of the MBM-EG Terms of Reference.

5 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.

6 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.

7 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.
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.

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).

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.
Appendix 10

Summary of the proposal submitted by Jamaica to MEPC 60 on achieving reduction in GHG emissions from ships through Port State arrangements (MEPC 60/4/40)

1 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.

2 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 than can record fuel consumption with an accuracy of ± 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.

3 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.

4 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 were 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.

5 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. 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.

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Appendix 11

Summary of the proposal submitted by Germany to MEPC 60 on Impact Assessment of an Emissions Trading Scheme with a particular view on developing countries (MEPC 60/4/54)

1. As requested by the Committee and based on the Work Plan (MEPC 59/J/10) Germany wants to provide further information on market based instruments and on a worldwide Maritime Emissions Trading System in particular. Germany therefore commissioned CE Delft supported by Fearnley Consultants and the Institute of Atmospheric Physics of the German Aerospace Center to further develop a worldwide emissions trading system and to analyze the impacts of such a scheme with particular consideration of developing countries. The authors could benefit from their participation in the IMO GHG study.

2. The underlying scheme is based on the common proposal by France, Germany and Norway as suggested for MEPC 59. The scheme was further developed in the study and is in its design very similar to the METS proposed by Norway in document MEPC 60/4/22. The study concluded that it is feasible to implement the cap-and-trade scheme for greenhouse gas emissions in the maritime transport sector as suggested. Given that it is an open scheme it can guarantee a reduction in net maritime emissions in the most cost-effective manner. In its central part the study analyzed the impact on the shipping sector, country groups and regions.

3. The size of the impact on the shipping sector depends on vessel type and size, fuel price, allowance price and the proportion of allowances auctioned. Assuming a fuel price of USD 15 per ton of CO₂ the cost increase for six different vessel types ranges from 4 to 8% of total operating costs. In summary the costs of allowances would constitute a small fraction of total vessel operating costs. Disaggregating cargo types, the consultant find that the value of imports of crude oil and manufactured products is least affected, increasing by less than 1%. Ores and coal are most affected, and their import value could increase by a little under 3%. Some positive economic aspects would result for ship builders, the engine manufacturers and classification societies due to a stimulation of demand of emission reduction technologies.

4. Under most market conditions, a major share of the cost increase can be passed on to consumers. Hence, the impact on import values in different groups of countries and regions was calculated. For this, the DLR undertook a very detailed worldwide calculation of shipping emissions based on the Lloyds MUI Database. Based on the emissions the additional costs were calculated assuming prices for a ton of CO₂ between 10 and 50 USD. The consideration revealed that in average the price increase is only between 0.03% and 0.06% (for 15 and 30 USD/ton of CO₂) of the GDP in the different regions. For the five different regions that were separated the price increase is in the range between 0.02% and 0.15% of GDP except for Small Island and Developing States where the range was higher potentially due to one specific country with high CO₂ emissions. While emissions on routes to developing countries are lower than those on routes to developed countries, they are higher relative to GDP. As a result, developing countries face higher costs relative to GDP than developed counties.

5. In summary, the study showed and concluded that the impact of a Maritime Emissions Trading System on the Shipping sector and on different regions and countries is low. In order to consider the particular situation of developing countries the study further developed options to compensate for them. Some ways, such as exempting certain routes, ship types, ship sizes and cargo types, have the disadvantage that they could distort markets and potentially lead to higher emissions. The preferable option would be to use parts of the revenues and to re-distribute them to developing countries in order to mitigate undesired impacts.