MARINE ENVIRONMENT PROTECTION COMMITTEE  
63rd session  
Agenda item 5  

REDUCTION OF GHG EMISSIONS FROM SHIPS  
Efficiency Incentive Scheme (EIS)  
Submitted by Japan and the World Shipping Council  

SUMMARY  

Executive summary:  This document offers further information concerning the Efficiency Incentive Scheme (EIS) proposed by Japan and the World Shipping Council. The document outlines unique attributes of the EIS, how the system would work in practice, management and use of funds, as well as pros and cons associated with the proposal.  

Strategic direction:  7.3  
High-level action:  7.3.2  
Planned output:  7.3.2.1  
Action to be taken:  Paragraph 34  
Related documents:  GHG-WG 3/3/2 and MEPC 62/5/1  

Introduction  
1 Responding to calls from the IMO Secretariat for further innovation and consolidation of market-based instruments addressing carbon emissions from international shipping, Japan and the World Shipping Council (WSC) proposed development of an Efficiency Incentive Scheme (EIS) to reduce emissions and increase efficiency in the world's maritime fleet. This document serves to provide further information on the proposal, answer frequently asked questions, and offer an assessment of the proposal's strengths and weaknesses relative to other proposals under consideration by the Committee.  

2 The Efficiency Incentive Scheme or EIS is a proposal to stimulate significant improvements in the fuel and carbon efficiency of the world's maritime fleet. The proposal recommends the establishment of explicit efficiency standards for both new and existing ships in the world fleet. Vessel efficiency would be measured using the Energy Efficiency Design Index (EEDI) developed and adopted by the IMO.  

3 Under the proposal, new and existing ships that meet the specified standards would not be subject to any fees, penalties or costs other than those costs associated with the installation of more efficient ship technologies that allow the vessel to meet the standards.
Those ships that fall short of the specific standards would be required to pay a fee (or penalty) that is based on the amount of fuel consumed and how far short of the standard the specific ship falls. As such, the per-unit fee applied per tonne of fuel is adjusted based on the relative efficiency of the vessel. New and existing ships meeting the specified standard would be exempt from any fees.

What is unique about the EIS proposal when compared to other MBMs?

Efficient ships are not subject to recurring, additional costs – a powerful market incentive

4 Several of the "Market-Based Measures" under consideration by the IMO propose the establishment of additional costs on every tonne of fuel purchased or every tonne of carbon dioxide (CO₂) emitted. This approach would certainly raise the cost of transporting goods by water, as fuel costs are the most substantial operating cost of a ship; however, these proposals would have limited effect on the design and construction of more fuel efficient ships and would have only a limited effect on reducing carbon emissions from shipping as the per-unit costs are relatively modest and the approach applies to every tonne of fuel consumed or CO₂ emitted regardless of the ship's efficiency. The EIS, in contrast, would allow a ship to fully avoid additional tonne-unit costs if it made the investments necessary to achieve the stipulated standards to be established in the instrument.

5 This feature is both unique and highly significant, because it provides an option to avoid recurring, additional operational costs that is not available in a system that applies a uniform contribution fee (levy or tax) to all ships and fuel purchases (GHG Fund proposal), or in an Emissions Trading Scheme (ETS) that requires the purchase of emission credits. In those systems, the ship may reduce its costs by improved vessel efficiency or the use of selected technologies, but it cannot avoid these costs, because those proposals would require every tonne of fuel or CO₂ to be taxed equally regardless of the vessel's efficiency. The EIS, in contrast, would allow a ship to fully avoid additional tonne-unit costs if it made the investments necessary to achieve the stipulated standards to be established in the instrument.

6 The ability to fully avoid repetitive per-unit costs under the EIS proposal would drive significant environmental and efficiency improvements within the maritime fleet itself. These improvements would occur because ships would have a much greater incentive to improve vessel efficiency and thereby reduce carbon emissions because by doing so they have the opportunity to fully avoid a per-unit operational cost that is unavoidable in many other market-based proposals.

7 Some shipowner interests, who charter their vessels out to others, understandably favour the uniform fuel levy concept, because they would not have to pay the new charges levied, as these would be paid by the charterer of the vessel who is responsible for purchasing the fuel. But the EIS system, in contrast, would give shipowners a more substantial stake in improving their vessels' efficiency and would lead to reduced operating costs for the ship. This in turn would also create a much greater and much needed incentive for shipyards to design and produce more efficient ships.

Focus on improved fleet efficiency and emission reductions versus revenue generation

8 Under a uniform fuel levy or ETS, a ship must pay considerable sums of money to an international fund, even if the vessel has been designed or modified to achieve maximum efficiency standards that would be considered state-of-the-art.
9 In contrast, the EIS would establish goals that push higher levels of efficiency across the fleet with a consequent reduction in CO2 emissions. If a ship does all that is reasonably possible and represents the most carbon efficient form of transportation when compared to its peers and other transportation modes, it should not incur an ongoing financial penalty.

10 The ETS and levy approaches result in an increase to the cost of transportation and world trade, because the primary focus of the proposals is considered as revenue generation versus a focus on maximizing improvements in the shipping sector itself. By focusing on defined improvements in fleet efficiency, the EIS proposal would reduce the actual carbon footprint of the industry, and serve the interests of society by increasing the energy efficiency of the industry that transports the majority of global commerce.

**EIS does not impose a cap on ship emissions**

11 Unlike the GHG Fund and ETS proposals, the EIS does not impose a figurative cap on global ship emissions. No Government has yet deemed it appropriate to establish emission caps on the transportation sector. Recognizing that marine transportation is a vital pathway to global trade and is the most carbon efficient form of transportation, establishing caps on maritime emissions does not appear appropriate. Further, as reductions accounted through "offsets" by purchasing emission credits from other sectors (out-of-sector reduction) are subject to considerable uncertainty and unlikely to result in actual reductions in CO2 in many cases, the EIS’s focus on in-sector emission reductions will further reduce the actual carbon footprint of maritime transportation.

**How would the EIS work in practice?**

**Application**

12 The proposed EIS would apply to all ship types and sizes for which the IMO has established an EEDI reference line and requirement. The EEDI regulations developed under the IMO would apply to bulk carriers, gas carriers, tankers, containerships, general cargo ships, refrigerated cargo carriers and combination carriers. Further development of appropriate EEDI reference lines and requirements for passenger ships, specialized Ro-Ro vessels, ferries, and other vessel types are under development at the IMO. Under the EIS, an EEDI value would be calculated for each new and existing ship. In this respect, the IMO should develop Guidelines for the assignment of EEDI for existing ships in order to cope with technical difficulties inherent in the calculation and verification for these ships, such as the lack of available and verifiable data at the stages of designs and tank tests. Minimum size thresholds would be established based on examination of statistical baseline data and policy considerations to ensure adequate coverage of the fleet and those ships responsible for the vast majority of maritime emissions.

**Setting standards**

13 The proposed EIS would include explicit energy efficiency standards for specific vessel classes and sizes consistent with the approach developed under the IMO. Standards would be established not only for new builds, but separate standards would also be agreed upon for the existing fleet. An EIS system is intended to establish aggressive, but realistic, standards applicable to both new and existing ships. New and existing vessels that meet the specified standards would be exempt from any type of fee or charge. Those ships that fail to

---

1 Given the fact that the term "EEDI" is stipulated exclusively for new ships within the MARPOL Annex VI amended by resolution MEPC.203(62), a new wording under the context of EIS proposal for the calculated EEDI value for existing ships should be sought in due course.
meet the specified standards would be required to pay a specific fee applied to each tonne of fuel purchased by the vessel.

**When is a fee applicable and how does one determine the amount applicable to a specific vessel?**

Payment of a fee would be applicable only to ships that fail to meet the standard specified within the EIS.

14 The amount of a given fee would be determined by the degree of variance between the EEDI of a specific ship and the applicable EEDI standard. As the fee is assessed on each tonne of fuel consumed by a given ship, the total fee is proportional to the level of fuel use of the vessel. These two features ensure that the total fee paid has a high degree of equity in its application to different ships. A ship with falls short of the EEDI standard by a small margin would pay less per tonne of fuel consumed than a vessel that falls short of the EEDI standard by a wide margin. Moreover, as the fee is assessed against fuel consumed, the total fees paid by a vessel also reflect the degree of fuel use and the emissions generated by the vessel.

In summary:

**Ship meets or exceeds applicable standard – no fee applies.**

**Fee applied to ships not meeting standard =
Specific fee ($Y/per tonne of fuel) x total tonnes of fuel consumed**

15 Standards for existing ships would be less stringent than those established for new builds in light of the more limited suite of technical measures that can be applied to existing ships. Figure 1 illustrates how the fee is established for new ships, including an incentive to exceed the required EEDI standard.

**Figure 1 Application of Efficiency Standards to New Ships**

- The applicable fee rate is in proportion to this deviation from the exemption point.
- There will be no new ships for which the EEDI exceeds the required EEDI.
- E.g., [5]% more efficient than the required EEDI level
- Required EEDI Phase X
- [5]% below Required EEDI of Phase X
- Exemption point for paying any fee
- Exemption from payment of fee
- Reference Line
- New ship A
- New ship B
- DWT
- EEDI
Figure 2 illustrates how the fee would be established for existing ships failing to meet the required standard.

**Figure 2  Application to Existing Ships**

Management and use of EIS Funds

16 An EIS Fund Administrator would be created under the EIS Proposal to manage and oversee collection and use of the fees collected as well as fiduciary responsibilities associated with management, investment, and oversight of the money. Those ships subject to the payment of fees under the EIS would make periodic payments directly to the EIS Fund Administrator consistent with the EEDI rating of the ship and the ship's fuel consumption during the period.

17 Each ship would have an individual electronic account tied to its unique IMO identification number. Money would not need to be collected via bunker fuel suppliers, but would be submitted directly to the designated EIS Fund Administrator. Ships would be required to retain bunker delivery notes and an oil-record book (already required under MARPOL Annexes I and VI) to provide documentation of fuel purchased and consumed in a given period.

18 Fees collected under the EIS would be allocated to support further in-sector reductions through research and development focused on additional efficiency gains and emission reductions in the maritime fleet, and funding other projects consistent with guidance to be set forth by the Parties to the EIS instrument. The actual allocation of revenue generated through the EIS would be determined by the Parties to the EIS instrument.

Frequently asked questions

**Under the proposed EIS, can the EEDI value of an existing ship be improved?**

19 Yes. An existing ship may improve its EEDI value through recognized and certified improvements in the vessel. Example improvements include the addition of flow devices, waste heat recovery systems, de-rating of the engine, and other recognized technical measures for improving efficiency of the vessel.
**How would the improved EEDI value be certified?**

20 The EEDI value would have to be verified by the flag State or recognized organization consistent with guidance developed by the IMO.

**Why would an EIS be expected to result in more significant and accelerated improvements in vessel efficiency when compared to ETS or a fuel levy applied to all ships?**

21 An EIS system would create a powerful market dynamic where shipowners and operators may respond in a manner that allows them to avoid recurring per-unit fuel charges or the ongoing purchase of emission credits. By meeting established efficiency standards, a vessel has the ability to completely avoid these costs. In this scenario, any cost to the vessel is focused on capital investments to improve vessel efficiency, which subsequently provide a return on investment through reduced fuel consumption.

22 Under an ETS or a uniform fuel levy or carbon tax, a vessel does not have the option to avoid these recurring costs. Because the market price of carbon or the cost of the fuel levy would be relatively low when compared to the cost of fuel, and because every vessel in the fleet would have to pay an equivalent amount for every ton of fuel or every ton of carbon, the incentives produced from an ETS, fuel levy or carbon tax proposal to actually change vessel efficiency and reduce maritime carbon emissions would be low.

**In an EIS, who pays the fee?**

23 The payment may be made by the vessel owner, operator, or charterer consistent with the contractual terms agreed upon by the Parties.

**Are older vessels disadvantaged under the EIS proposal?**

24 Age alone is not always a reliable indicator of how efficient or inefficient a given vessel may be. The amount of the fee would be determined by the degree of variance between the EEDI of a specific ship and the applicable EEDI standard.

**Would an EIS system utilize the same EEDI standards adopted at the IMO?**

25 We expect that any standards adopted at the IMO for new builds would remain in effect in the context of the revised MARPOL Annex VI. For the EIS system, the Parties may choose to include more aggressive standards for new builds built well into the future. The IMO would need to identify appropriate standards for existing ships and how to structure those standards relative to the age of a vessel. For example, a ship over 25 years old may be exempted or subject to a less stringent requirement in light of its limited life expectancy.

**Can operational measures such as slow steaming be employed to improve the vessel’s efficiency rating?**

26 The technical measure must be certified and reflected in the EEDI calculation. Considering this, one could de-rate the engine for a lower power setting (coincident with the lower cruising speed) and improve the vessel's EEDI value. Temporal speed changes that are not reflected through de-rating of the engine would not result in any change of the EEDI value.
Under an EIS would a significant number of ships fail to meet the required efficiency standards, choosing to pay the fee instead?

27 How many ships would choose not to make modifications that result in achieving the necessary standard will depend on the technical options available to them, the age of the vessel, and the amount of the base fee used in the scheme. Establishing the proper base fee for application in the EIS is important. If set too low, many ships might choose to pay the fee. As the purpose of the system is to stimulate efficiency improvement in the fleet, Japan and WSC believe that the fee would need to be set at a level that would motivate most shipowners/operators to make the necessary improvements while leaving some flexibility for those business cases where paying the fee may make more sense; for example, in the case of a vessel that is close to retirement.

The Bahamas has recently proposed the adoption of mandatory efficiency standards for both new and existing ships using traditional port and flag State enforcement mechanisms to enforce the standards. Could the EIS be modified to use this approach?

28 Possibly, but the challenge lies in how one could establish a set of flag and port State penalties that would be effective in ensuring compliance with the standards applicable to a specific vessel.

Can the EIS revenues be used to achieve carbon reductions through offsets?

29 Yes, it could be set up to do so, but that is not its present objective. The EIS generates revenue as a result of fees applied in the system. The allocation and use of funds is a decision to be taken by the Parties. As such, the Parties to an EIS may choose to allocate funds to research and development, the funding of offsets, or other purposes as the Parties deem appropriate.

What potential impacts on world trade can be anticipated with adoption of an EIS?

30 An EIS system is designed to stimulate significant improvements in the efficiency of the world's maritime fleet and to reduce CO₂ emissions generated by ships. An EIS can be expected to increase the efficiency of both new and existing ships, and it can also be expected to result in a decrease in the per-unit fuel cost of moving goods by sea. By creating a more efficient maritime fleet and reducing fuel consumption, every nation's exports and imports would benefit from greater efficiency in the transportation of their goods. This contrasts sharply with proposed ETS and proposals to apply a uniform fuel levy that would increase the per-unit cost of moving goods by sea.

Strengths and weaknesses of the EIS proposal

31 The IMO Experts Group on Market-Based Measures (MBMs) attempted to identify the relative strengths and weaknesses of various MBM proposals before the group at that time. The EIS proposal is the product of a collaborative effort between Japan and the WSC and their earlier proposals – the Leveraged Incentive Scheme of Japan and the Vessel Efficiency System proposed by the WSC. Subsequently, the third Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships held in March/April 2011 discussed the respective strengths and weaknesses of the various MBM proposals under consideration, and agreed to produce a matrix identifying and listing these as contained in annex 4 in MEPC 62/5/1. In utilizing this outcome, we have developed a list of strengths and weaknesses associated specifically with the EIS proposal and have attempted to be as objective as possible in developing the following list:
### Strengths:
- Provides an opportunity for a ship to fully avoid recurring added operational costs, which in turn creates a strong competitive incentive to improve vessel efficiency.
- The system focuses on achieving actual improvements and carbon reductions within the fleet.
- Reduces the cost of global maritime transportation versus other MBMs that add cost.
- Utilizes technical tools (EEDI) already developed by IMO.
- Incentives are likely to drive in-fleet emission reductions more quickly than other MBMs.
- Any revenues generated by MBM to be used is used mainly within the shipping sector as determined by the Parties.
- Does not establish an emissions cap (or target line) for shipping sector activity in the future.
- The system is not dependent on offsets that are less reliable as actual "additional" carbon reductions.
- Avoids creating a regime where the shipping industry would be required to pay billions every year into the indefinite future without an ability to meet defined standards that would provide relief.
- Provides a direct incentive for technical innovation.
- Easier investment decision-making process because it is not necessary to predict future carbon price.
- More likely to be acceptable to importers and exporters in trading nations.
- Not reliant upon the outcome of other international climate negotiations.

### Weaknesses:
- Administrative burdens with management of a fund.
- Some countries have objections to creation of an international fund.
- Limits measurement of vessel efficiency to defined technical parameters that can be ascertained by the flag State or recognized organizations.
- Requires new institution/mechanism to be established.
- If one's purpose is to generate significant revenues for out-of-sector offsets, this system would generate less revenues for such purposes when compared to some MBMs.
- Does not establish an emissions cap or target line for shipping sector activity in the future.
- Less efficient vessels are rendered less attractive to own and operate in the commercial market.
Conclusions

32 While maritime transportation is already the most carbon efficient way to transport goods, an Efficiency Incentive Scheme (EIS) would result in a greater reduction in the carbon footprint of the world's fleet, at less cost to the industry and to exporters and importers, than a uniform fuel levy or emissions trading system. As such the system would lead to lower per-unit transportation costs and encourage world trade.

33 Lowering per-unit transportation costs should be favourable to both developing and developed countries because improved efficiency in the marine transportation sector will facilitate trade. Moreover, the IMO's focus of action should be on improving the environmental performance of the maritime sector itself, because effective climate policy over the long-term will require reduced carbon emissions from within the fleet. Focusing on in-sector efficiency improvements will lead to immediate environmental benefits while also establishing the foundation for further advances in the fleet as technologies and fuels change over time.

Action requested of the Committee

34 The Committee is invited to consider the above information and take action as appropriate.