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**CONSIDERATION OF CONCRETE PROPOSALS FOR MID AND LONG-TERM
MEASURES AND ASSOCIATED IMPACT ASSESSMENTS IN THE CONTEXT OF
PHASE I OF THE WORK PLAN AS WELL AS THE PROPOSAL TO ESTABLISH AN
INTERNATIONAL MARITIME RESEARCH BOARD**

**Strategic Role and Architectural Considerations in Developing a
Global Market-Based Measure**

Submitted by the World Shipping Council

SUMMARY

Executive summary: The IMO GHG Working Group and MEPC are expected to consider what role and form a market-based measure (MBM) may play in IMO's revised GHG Strategy. This paper offers views on some of the key architectural issues to be considered in an MBM. These include: purpose, the foundational unit of the MBM, determining the "carbon price," mechanisms to set the relevant price, "buy-down" programmes, payment mechanism, costs to trade and related equity considerations, use of MBM funds, and out-of-sector offsets.

Strategic direction, if applicable: 3

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Action to be taken: Paragraph 32

Related documents: MEPC 78/7, MEPC 78/7/3, ISWG-GHG 12/INF.2, ISWG-GHG 11/2/2.

Introduction

1 The Organization is currently embarking on an effort to identify mid and long-term measures that will be critical to implement IMO's GHG Strategy. These discussions will certainly consider what role a market-based measure (MBM) may serve and what architecture a market-based measure should take should the parties proceed to develop an MBM.

2 Specific MBM proposals have been made already to the Organization and additional proposals are likely to be forthcoming as discussions move forward in the Organization. In support of an effective and comprehensive MBM, we identify several key architectural issues which we believe will advance discussions and help build a bridge among competing proposals. Bearing this objective in mind, we have organized the paper to address a series of topics we believe are critical to developing an effective MBM. These topics are also aligned with the discussion found in MEPC 78/7.

Purpose

3 Our fundamental aim is to effectively eliminate GHG emissions from the world's commercial fleet. As noted in MEPC 78/7, an effort of this magnitude will require a number of actions that have broader market impacts. In this context, an MBM may be developed to catalyse a series of needed economic actions. At IMO, discussions have typically divided into familiar camps where some advocate an approach using a uniform levy, others advocating emissions trading, and those focused on distributional equity and how obligations should apply to Member States with different development profiles.

4 A market-based measure is at its heart a measure that is designed to influence and catalyse commercial decisions that drive a movement to low and zero GHG energy use through some form of market price.¹ In the commercial maritime sector, this effectively requires agreement on a regulatory structure that enables ships using low and zero GHG fuels to compete with ships using conventional fossil-based fuels. Implementing an MBM also presents a challenge as the system needs to raise the effective price of conventional fossil-based fuels to match or exceed the real-world cost differential in the price of a given low or zero GHG fuel.

5 There are a wide range of low and zero GHG fuels under consideration. These fuels vary in life cycle GHG reduction potentials, price ranges, and may be produced via a wide range of production processes. These differences influence which fuels make the most sense as long-term investments and those investment decisions need to be informed by i) economic assessment of fuel production and supply in a life cycle context, and ii) consider pre-market barriers to initiating a major fuel transition that may require additional market interventions such as explicit buy-down programmes. The role of buy-down programmes is briefly addressed further in paragraphs 17- 20 of this paper.

Foundational Unit of the MBM

6 Most market-based measures assign a cost or "price" per ton of carbon emitted. This of course, can include other GHG gases defined by the IPCC as a cost or "price" per ton of GHG_e emitted. When representing a GHG price in terms of fuel mass or energy content, the conversion to a cost or "price" per tonne of fuel or per MJ is straightforward albeit incomplete where capital costs for technology and infrastructure are excluded or poorly estimated. In any case, the foundational unit for an MBM to achieve GHG reductions should be tons of carbon or GHG_e emitted. We outline in paragraphs 7 – 12 why we believe the foundational unit should be tons of carbon or GHG_e emitted, and why an effective MBM for reducing GHG emissions should not be tied to an intensity ratio or transport-work ratio.

¹ Other non-market mechanisms (e.g., direct regulation of GHG emissions, fuel requirements, and other direct regulatory approaches) can be employed, but this paper focuses on market-based measures.

7 The imperative facing shipping, along with society and all other industrial sectors, is to reduce GHG emissions and to do so in a compressed timeframe. Climate change is a consequence of aggregated GHG emissions and their accumulation in the atmosphere. An MBM which is based on tons of carbon or GHG_e emitted directly addresses the need to reduce emissions.

8 The agreed Initial IMO GHG Strategy already calls for a phase out of GHG emissions in the world's fleet. This goal is clearly articulated to achieve absolute emission reduction which suggests that we are well served by basing a market measure on tons of carbon or GHG_e emitted. Bearing this in mind, we should not undermine the need for absolute emissions by building a market-based measure on the back of an intensity-based metric that would add multiple layers of complexity that we are now encountering in the CII Framework.

9 The IMO GHG Strategy effectively requires the maritime sector to undertake a major energy transition that is not tethered to imperfect and complicated measures of transport work. Transport work serving future economic needs could increase for many decades, but our goal requires that shipping dramatically reduce and largely eliminate GHG emissions even with increasing trade volumes. Put another way, we need to move the sector's mindset from mere reductions in GHG emissions to a major transition to low and zero GHG fuels.

10 Transport work trends can be uncorrelated to aggregate emissions reductions since they quantify the rate of emission relative to an estimated measure of work. Simply put, an MBM normalized to transport work would allow GHG emissions to increase while indicating a relative reduction in GHGs per an estimated measure of transport work. The price signal itself would be prone to distortion because some ships reducing GHGs could face a higher relative carbon price per transport work than other ships that fail to achieve GHG reductions. Such an outcome would not contribute to aggregate emissions reduction or be sensible. An MBM must incentivize reduced aggregate emissions for the simple reason that combating climate change requires that we reduce aggregate emissions.

11 Building an MBM on tons of CO₂ or GHG_e emitted is simpler and directly addresses the problem of climate change. As a general rule, regulations which are simple and easy to both implement and verify are more effective and consistently implemented. Those ships which emit the most would pay the most, a fair and equitable outcome. All ships within the scope of the Convention would pay, with no arguments about whether they are engaged in providing transport work or whether the relevant metric is flawed or inequitable. Verification would be straight forward, with the IMO DCS providing what is needed provided appropriate carbon factors are agreed for fuels used. Linking the MBM to total emissions would provide a greater incentive to invest in alternative fuels, thereby accelerating the transition.

12 The preceding paragraphs indicate that use of transport work as the foundation of an MBM would add complexity, require extensive work, risk introducing perverse incentives, exclude a significant number of ships not involved in providing transport work, and would not directly address emissions. An MBM based on tons emitted would be far simpler, be inclusive, address the cause of climate change directly, and would promote genuine emissions reduction across the world's fleet. Bearing these factors in mind, the arguments in favour of this approach are significant.

Determining the Level of the Market Signal or “Carbon Price”

13 The market signal or cost to be assigned to a ton of carbon or GHG_e emitted is a critically important calculation. The quantum of the cost applied needs to address multiple issues that are fundamental to reaching agreement across a diverse set of governments. The assigned or agreed cost needs to take into consideration at least four factors. Of course, additional factors could be included here, but for purposes of simplicity we briefly touch upon four factors below:

- i. The cost (price) needs to enable a level-playing field that enables ships using low and zero GHG_e fuels to compete with other ships using conventional fossil-based fuels that would otherwise render sustainable operation of these ships impractical. This needs to consider the interaction of critical pathways discussed in MEPC 78/7, such as the importance of well-to-wake LCA calculations and integrated supply and production of fuels, both of which are critical factors in determining the appropriate quantum of the relevant carbon price to be applied. Otherwise, we simply risk shifting emissions out of our sector but not reducing aggregate emissions;
- ii. The increased cost is likely to have notable implications on trade for both developed and developing countries. Consequently, an agreement needs to include provisions to anticipate these trade consequences and define what actions may need to be taken to address issues unique to a given trade. ‘Green Corridor’ investments that may be tailored to a given trade route may offer one mechanism to address such matters;
- iii. Many governments and commercial stakeholders have identified “volatility” as a concern, noting the need to explore means to suppress the range and frequency of volatility while maintaining the ability to periodically adjust carbon prices as technology, fuel prices, and markets change; and
- iv. The cost differential and GHG reduction potential for using different alternative fuels will vary considerably if a given fuel is produced by ‘green’ processes using 100% renewable energy. Hence, the critical importance of thorough well-to-wake LCA as noted in MEPC 78/7. Moreover, these cost differentials will change as production processes evolve and grow over time. Consequently, there is unlikely to be one single ‘price’ that addresses the level playing field issue highlighted in item i. above. This suggests that some other intervention such as explicit “buy-down programmes” may be necessary.

14 Noting the considerations identified in paragraph 13 above, we believe three issues require further examination: 1) what mechanism(s) may be used to determine the appropriate level of the GHG price, 2) what options do we have to address volatility, and 3) how does one address the increased cost to trade and related equity issues that accompany a major energy transition. We offer some thoughts on these three issues and other matters for consideration as Members try to navigate this challenge.

Determining Price - Mechanisms to Be Considered

15 Under a levy-based system a singular ‘price’ is established based on a ton of emissions and calculated by the tonnes of fuel consumed. This has the advantage of simplicity, but it also requires political agreement on the price to be assigned to a ton of emissions. Political agreement on such matters is inherently difficult. An emissions trading

system utilizes commercial markets to set prices that vary from day to day and may be subject to a high degree of volatility. Neither approach inherently or fully addresses the four issues identified in paragraph 13 above.

16 To determine price, we might consider drawing from ideas developed by authors of a levy-based system as well as emissions trading. In this scenario, the 'price' of a ton of GHG_e emitted (calculated through tonnes of fuel consumed) could be determined in three steps:

Step 1: Examine the average market price of carbon that exists in a defined set of emissions trading systems worldwide;

Step 2: Through an expert group, examine the cost and availability of commercially available low and zero-GHG fuels using a full well-to-wake lifecycle analysis (LCA) to determine what additive 'price' is necessary for the base GHG price and what may be necessary through complementary 'buy-down' programmes for the higher cost of zero GHG fuels produced through renewable green energy production; and

Step 3: The value of the required payment per ton of GHG_e emitted would be set for a [12] month period and remain fixed for the next 12 months when a new value would be calculated following steps 1 and 2.

Fuel Buy-Down Programmes

17 If we determine an appropriate GHG price through the above process or an alternative mechanism, we will likely face a situation where the GHG price does not level the playing field for those ships using zero GHG fuels produced through renewable energy. These cost differentials are likely to be common at the beginning of the energy transition when fuel production is not "at scale" and the relevant capital costs are higher than later periods where the scale of production is higher and costs level out due to scale and improved efficiency in production and distribution. Recognizing this, various experts have stressed the need for 'buy-down' programmes for ships and the first-movers that take the commercial risk to deploy these ships and take on the considerable costs of the fuels needed to achieve near-zero emissions.

18 To consider a buy-down programme we must consider and agree upon what is the appropriate source of funding. For example, do buy-down resources derive from a centralized global fund, and if yes, is it populated by revenues received through an MBM? If central funding is considered politically difficult or improbable, can we expect individual governments to offer buy-down funds as part of a coordinated effort in a given trade corridor – namely green corridors with specific programmes designed to make low and zero GHG fuels available to the maritime sector? If we think the answer is no to both options noted above, we need to answer how we expect these higher cost fuels to be used in a manner that is commercially plausible.

19 Do we think the more efficient pathway is a low GHG fuel standard that requires all ships to meet a given standard? If yes, that will require all ships to be subject to the standard to avoid a situation where ships using higher-GHG fuels undermine the competitive sustainability of ships using higher cost, low GHG fuels. This also requires large-scale investments in new fuel production and distribution as described in MEPC 78/7. In short, we need to define what system and what regulations will set in motion the conditions where transitioning to low and zero GHG fuels is commercially feasible.

20 If we believe buy-down programmes are feasible, we need to consider the magnitude and range of a given buy-down programme and how long a programme would remain in effect. This is especially relevant given that cost differentials are expected to vary widely across different alternative fuels. To help support early transition and first-mover participation, 'buy-down programmes' could be targeted to a suite of fuels determined to have the greatest long-term reduction potential and which will become available through renewable energy sources. As a fiscal matter, the programme could be limited to a period of years and terminated once the energy transition becomes mature, e.g., reaches a scale where the MBM signal is competitive. Conditions for buy-down phase out could include stabilized fuel availability and cost, globally or within a given trade corridor.

Mechanism for Payment

21 Past discussions within the Organization concerning MBM payment models largely focused on two models. The first model was payment of a levy through marine bunker suppliers. The second model was auctioning of emission allowances by national governments. Payment and collection of funds through marine bunker suppliers raised numerous accounting, transfer, and enforcement concerns. Auctioning of allowances through national governments raised sensitive political issues concerning use of funds as well as political considerations surrounding the allocation of allowances across a multitude of Member States.

22 Bearing in mind the considerations and difficulties noted in paragraph 15, we believe there is merit in considering the direct payment of funds following the structure and mechanism outlined for the International Maritime Research Fund (IMRF).

Costs to Trade and Related Equity Considerations

23 Impacts to trade and Member State economies is by definition, a major issue. Maritime shipping is also the primary conduit of international trade. International trade and the growing number of nations that produce manufactured goods and other materials that are used worldwide is among one of the most significant factors that has contributed to improving the standard of living for millions of people across the world and reducing the number of people living in extreme poverty. The ability for countries to trade goods and services across the world is a high priority matter for any nation and the well-being of its people.

24 An MBM (as well as many other regulations) would result in an increase in the cost of trade and maritime transportation. To be clear, any regulation – even non-market-based measures, that drive an energy transition to low and zero GHG fuels will invariably lead to increased costs to maritime trade. It is also clear that this energy transition is not optional if we are to avoid catastrophic environmental and economic consequences in coming decades. Consequently, the challenge becomes how we introduce and handle higher costs to maritime trade in a manner that is efficient and equitable.

25 Any effective IMO GHG strategy will involve significant costs to maritime trade. As carriers of ocean cargo, we have an intimate understanding of how costs increase and change over time. Maritime transport is subject to dramatic swings and cycles where costs surge and fall in an on-going cycle that is largely driven by disparities in supply and demand. The transition to cleaner, zero GHG fuels will be a major economic event for the world. Our challenge is how to set this change in motion as quickly as possible and in a manner that is economically efficient and equitable.

26 If we agree that the above challenge is correct, we need to address some fundamental issues as we move forward with our strategy and our thinking on MBMs. We briefly highlight two of the important questions below:

- Does addressing increasing trade costs to transition the fleet to low and zero GHG fuels necessitate a central fund-populated by an MBM to address equity and development issues? If yes, use of those funds is a critical matter. If no, what is the alternative pathway to address the concerns with increasing costs and equity?
- In MEPC 78/7 we point out that it is unrealistic to think that low and zero-GHG fuels will become available and in sufficient quantity across the world at the same point in time. If that is a reasonable observation, green corridors may play a central role in the transition and we should think through what this means as we consider an MBM or a low-GHG fuel standard.

Use of MBM Funds

27 The use of funds generated in a market-based system is a central question that has significant political, economic, and environmental policy ramifications. One school of thought places considerable emphasis and importance on the use of funds. A second school of thought is not concerned with how these funds are used, instead looking at the principal objective here is establish a GHG price and that how the money is used is not critical.

28 The World Shipping Council considers that the use of funds in an MBM is a critical issue. First, the cost of a major energy transition in the maritime sector and other areas of the world's economy will cost trillions in dollars. Moreover, this transition will also present major economic opportunities, including energy production opportunities in the developing world. If we impose a market signal or GHG cost to help facilitate this transition, it seems completely reasonable that we should want these funds to be used in a manner that facilitates the major investments required, and helps address the many capital investments that will be required in developing and developed countries as the energy transition unfolds across the globe. In short, higher transportation costs, R&D, and infrastructure investments require substantial funds. Bearing in mind the magnitude of the investments needed, it seems strikingly odd to take the view that we do not care how MBM funds generated from maritime trade are spent.

29 If we accept that how and to what purpose MBM funds are used is a critically important matter, these funds should be devoted to supporting and accelerating the transition to the use of low and zero GHG fuels and the technologies necessary to use these fuels. To this end, we offer specific suggestions on how MBM monies should be used:

- a) Technical assistance funds to SIDs and LDCs that are specifically devoted to developing new fuel infrastructure critical to commercial maritime transportation;
- b) Support for applied research and development focused on obtaining Technology Readiness Level (TRL) values 8-9 for promising fuel / technology options applicable to a broad range of ship types; and
- c) A central funding pool for a low and zero-GHG fuel buy-down programme to be established for the first decade and renewed until the fuel transition is complete - or

until the Parties determine the programme is unnecessary or funds are no longer available.

Other Considerations (Out of Sector Offsets)

30 The question of off-setting often arises in GHG policies and market-based measures. Offsets as a general policy matter can provide opportunities for identifying least-cost reductions, however out-of-sector offsets in an international system devoted to phasing out GHG emissions in a specific sector present a number of challenges that can undermine an effective IMO GHG Strategy. Challenges with out-of-sector offsets include:

- a) Extreme difficulty in determining whether a given off-set is real versus a well-intentioned action that offers paper credits for emission offsets that never materialize or are temporal in nature, and
- b) Out-of-sector offsets dilute and undermine commercial incentives to proceed with the necessary fuel and technology investments in the sector.

31 In light of the above considerations we suggest that offsets for regulatory purposes should be limited to “insetting” considerations when evaluating well-to-wake LCA emissions, and actions taken within the operational control of a shipowner or operator. Finally, we suggest that out-of-sector offsets should not be used for IMO regulatory compliance purposes and that off-setting actions undertaken by a company should be limited to actions that a given company may take independent of IMO regulatory purposes

Action Requested of the Working Group

32 The working group is invited to consider the above comments and suggestions and take action as appropriate.