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**FURTHER CONSIDERATION OF THE DEVELOPMENT OF
CANDIDATE MID-TERM MEASURE(S)**

**Study on port climate adaptation and decarbonization
investment requirements of developing nations**

Submitted by IAPH

SUMMARY

Executive summary: This document from IAPH presents the findings of a study commissioned to Maritime & Transport Business Solutions (MTBS) on port climate adaptation and decarbonization investment needs of developing nations. It further highlights the important role of ports in the energy transition and advocates for the strategic allocation of revenues generated from a carbon pricing mechanism to port-related climate adaptation and mitigation measures to support a just and equitable transition.

Strategic direction, if applicable: 3

Output: 3.2

Action to be taken: Paragraph 26

Related documents: Resolutions MEPC.366(79) and MEPC.377(80); MEPC 77/7/28; MEPC 79/7/19 and MEPC 80/7/2

Introduction

1 MEPC 80 adopted the *2023 IMO Strategy on Reduction of GHG emissions from Ships* (2023 IMO GHG Strategy), as laid out in resolution MEPC.377(80). The 2023 IMO GHG Strategy states that a basket of candidate measure(s), delivering on the reduction targets, should be developed and finalized comprising of both a technical element, namely a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity, and an economic element on the basis of a maritime GHG emissions pricing mechanism.

2 All remaining proposals for a basket of mid-term measures contain a mechanism that will allow for the collection of payments and generation of revenues. Throughout the process of the Organization's GHG discussions, it is clear that the key challenge to overcome in order for the Organization to deliver on its ambition is to ensure a just and equitable transition.

3 In document MEPC 77/7/28 (IAPH), IAPH expressed its support for a global market-based measure and advocated that targeted allocation of generated revenues to port-related investments for low- and zero-carbon fuels is essential to drive the decarbonization of the maritime industry. More recently, IAPH reiterated in document MEPC 79/7/19 (IAPH) its support for a market-based measure (MBM), adding that for any measure under consideration, particular attention should be paid to the needs of developing countries, especially small island developing states (SIDS) and least developed countries (LDCs).

4 IAPH further submitted a document to MEPC 80 (MEPC 80/72) outlining the progress of world ports in delivering on the key areas identified in resolution MEPC.366(79) on the *Invitation to Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships*, commonly referred to as the "Ports Resolution", as initiated by IAPH and the Government of Canada. This submission referenced additional actions that ports can consider for facilitating the decarbonization of shipping, whilst outlining the remaining challenges and key recommendations for ports.

5 The following sections of this document discuss the important role of ports in the energy transition and the investment needs of ports based on a study commissioned by IAPH to Maritime & Transport Business Solutions (MTBS). The study explored the current state of port infrastructure in developing nations with case study examples from Brazil, India, Indonesia, Kenya and the Solomon Islands.

6 It further recommends that a proportion of the revenues generated by a global GHG pricing mechanism is allocated to developing countries to support the investment in port infrastructure. A preliminary version of the study is available through this [link](#) and the final version will be presented at ISWG-GHG 17.

The impact of climate change on port infrastructure

7 The importance and added value of ports is beyond any doubt. Where ports in developed nations are economic engines and industrial clusters, ports in developing nations are also lifelines for local communities. In addition, they often have less access to funds and capital for further development of traditional and climate-related infrastructure.

8 Port infrastructure is affected by slow and fast-moving drivers, such as demographic, geopolitical or technological change. However, climate change is an exception amongst these drivers since it has the ability to impact ports both instantly and gradually overtime.

9 Ports are particularly vulnerable as they are often located in areas where the impacts of climate change are more prominent, including heavier storm surges, severe flooding, higher winds and sea level rise. Traditionally, port infrastructure is designed to deal with these events based on a 100-year time horizon, but it is now evident that such weather events are happening more frequently, putting significant pressure on the infrastructure.

10 Tackling climate change in the maritime industry means adopting adaptation and mitigation measures in ports. Adaptation is focused on keeping the ports trading and making sure they are protected against the onslaught of extreme weather disruptions. Mitigation entails investing in infrastructure improvements to reach net-zero GHG emissions as soon as possible. Only through a combination of both actions can ports build resilience and secure their future.

11 However, it is developing nations that are often more vulnerable to the effects of climate change than their more developed counterparts. This is not only due to their location, but also having fewer in-house resources for climate adaptation management, less developed infrastructure, limited capital to invest in new developments, and other competing priorities.

The role of ports in the energy transition

12 Significant reductions in GHG emissions from international shipping require the introduction of alternative low- and zero-carbon fuels. The ports' role, depending on their jurisdiction, can be to facilitate or ensure the safe and efficient bunkering of all alternative fuels that the maritime sector selects on its pathways to net-zero.

13 As mentioned in document MEPC 77/7/28, the lower energy density of low-carbon fuels such as ammonia and hydrogen compared to fossil fuels will likely result in more frequent refuelling and the development of more decentralized zero-carbon bunker fuel hubs. This provides opportunities for ports in developing countries to upgrade their maritime infrastructure and create new business ventures as clearly outlined in resolution MEPC.366(79).

14 In addition to serving the shipping industry with low- and zero-carbon fuel bunkering facilities, there is a wider potential for ports to develop into clean energy marine hubs, therefore, ports may serve as the indispensable link between land-based fuel production and the maritime sector, as well as connecting fuel producers with other industries.

15 The energy transition has also led to the new search for cheaper and reliable production locations for solar and wind energy to meet the significant demand globally. The study highlights this new opportunity for developing nations to produce, use and/or export green energy to high energy demand nations, and identifies some countries, namely Brazil, India and Kenya as some locations that are earmarked to generate the substantial supply of renewable energy required in a cost-effective manner.

Financing a just and equitable transition

16 The costs of financing port climate adaptation and mitigation projects are already challenging today given the requirement to ensure both a positive socio-economic impact for the region and a bankable business case.

17 Following thorough analysis of the impacts on certain regions, this study highlighted that the more vulnerable and smaller the port, the more emphasis is placed on adaptation projects than mitigation strategies associated with reducing emissions. This was particularly true for small island ports in Indonesia and the Solomon Islands.

18 However, the business case for such projects will become even more challenging in the future given the changes in investment risk and payback requirements. This includes adaptive-based measures, such as building storm barriers, where there is no underlying economic business case expect the potential protection from future economic loss as a result of disruption to port activities.

19 Furthermore, after closely examining the costs in these regions, it is clear that climate adaption measures are a magnitude higher than those associated with mitigation, with construction of storm barriers, relocation and adaption of existing ports and soil-related works listed most frequently by ports as the largest costs.

20 Mitigation efforts are also costly, but such investments are rather limited compared to adaptation measures. However, if assuming similar prices to LNG terminals, the transition to low- and zero-carbon fuels has the potential to run up to \$100 million per port for physical terminals or around \$50 million per port for barge solutions. It is also noted that mitigation measures are often business case driven, and appetite from the private market is higher for these types of investments than for adaption measures.

21 Overall, it is evident that investment in port adaptation and decarbonization infrastructure can vary widely depending on port size, location, existing infrastructure, activities, and prior adaptation and mitigation plans. That said, based on estimations, it is predicted that the total investment needs for ports in developing nations lies between \$55 and \$83 trillion.

The distribution of revenues generated from an economic measure

22 IAPH notes the current proposals for the basket of candidate mid and long-term measures on the table and remains neutral as to the choice of instrument, however, is supportive of a carbon pricing mechanism that will provide a strong incentive to invest in the necessary port infrastructure.

23 The current proposals carry promise and risk for developing nations. On the one hand, they would increase transport costs, putting even more pressure on countries which already have lower efficiency infrastructure and are less connected to the global trade network. While on the other hand, the revenue of this tool could be allocated for port-related adaptation and mitigation measures to support a just and equitable transition in developing countries, as well as helping to facilitate the deployment and use of low- and zero-carbon fuels needed for the decarbonization of both international shipping and the global supply chain as a whole.

24 The collection and distribution of generated revenues is an inherent and crucial component of a carbon pricing mechanism. If infrastructure investments in developing nations would be supported through such a measure, it is important that the allocation of the funds is as efficient, just and transparent as possible. This means that decisions need to be made based on the level of dissemination (country, port and project); parameters of viable investments; vulnerability to climate change; dependency on maritime transport; cargo value and type (economic benefit of increased investments); increase in transport costs; food security; adaption vs. mitigation investment; cost-effectiveness (adapt to rebuild); and socio-economic impact and development.

25 Overall, IAPH considers an economic measure to be an essential instrument to meet the ambitious targets of the 2023 IMO GHG Strategy. IAPH further advocates that the strategic allocation of generated revenues to port-related investments, particularly in developing countries, is essential to enable both the commercial viability of low- and zero-carbon fuels and to support a just and equitable transition.

Action requested of the Working Group

26 The Working Group is invited to take into account the key considerations and perspectives outlined in this document when considering proposals for mid- and long-term measures and take action as appropriate.