COMPARATIVE ANALYSIS OF CANDIDATE MID-TERM MEASURES

Fact sheet

Name of the candidate measure:	The feebate mechanism, or Zero-Emission Shipping Incentive Scheme (ZESIS)
Reference document(s):	MEPC 78/7/5, ISWG-GHG 15/3, ISWG-GHG 14/3/1, ISWG-GHG 13/4/6 and ISWG-GHG 12/3/17

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1 Feasibility of the proposed candidate measure

1.1 Scope and compliance options	
1.1.1 Substances covered (GHG/CO_2)	Mandatory contribution covers GHG (CO_2, CH_4 and N_2O) emissions. Scope of reward is decided to incentivize use of fuels with low- or zero- WtW GHG emissions, not only focusing on CO_2 emissions. (Documents ISWG-GHG 14/3/1 (Japan) (paragraph .9 & 11), ISWG-GHG 15/3 (Japan) (annex Reg. 33.2.1 and Reg. 33.3)).
1.1.2 Phases of GHG emissions covered (WtT / TtW / WtW)	The measure basically aims at incentivizing use of zero-emission fuels with low- (or zero-) WtW GHG emissions. Scope of reward is decided to incentivize use of fuels with low- or zero-WtW GHG emissions. (Documents ISWG-GHG 14/3/1 (paragraph 11) and ISWG-GHG 13/4/6 (Japan) (paragraph 4)).
1.1.3 Acceptable approaches for compliance (e.g. in-sector/out-of-sector offsetting, CCS, etc.)	Ships are required make contribution based on GHG emissions to comply. Therefore, it is a goal-based measure that accepts any approach including onboard CCS and CH_4/N_2O reduction catalysts that would help reduce GHG emissions. Offsetting as an approach for compliance is not considered. (Documents ISWG-GHG 15/3 annex Reg.33.2, 35.1).
1.2 Likeliness to achieve a consistent implementation of the measure	
1.2.1 Provisions to ensure global availability of alternative fuels and technologies	Mandatory contribution and disbursement of reward will stimulate demand of zero-emission fuels and technologies, which will lead to technical improvement, cost reduction and diffusion of such fuels and technologies. Part of revenues is used to support projects in the maritime sector in developing countries, such as projects for capacity-building, development of infrastructures to produce and supply zero- or near-zero GHG fuels, and research and development. (Documents ISWG-GHG 13/4/6 (paragraph 3), ISWG-GHG 14/3/1 (paragraph 17 to 18), and ISWG-GHG 15/3 (annex Reg.33.2.3)).
1.2.2 Provisions to limit administrative burden for ships and Administrations	A ship will make contribution or receive rewards through an electronic ship account, which will be managed by the Organization. The ZES Fund established and managed by the Organization will confirm payment of contributions and issue statements, which will be utilized by the Administration to determine whether ships have made contribution in accordance with the regulation. The ZES Fund will also disburse rewards. The data reported under the data collection system for fuel oil consumption of ships (IMO DCS) - refined as necessary - will be utilized by the ZES Fund and the Administration to implement the measure. (Documents ISWG-GHG 13/4/6 (paragraph 24, ISWG-GHG 15/3/ (annex Reg.35.1, Reg.35.2 and Reg.36.2)).
1.3 Compatibility and consistency with existing regimes/regulations	
1.3.1 Consistency with UNFCCC and the Paris Agreement	The measure aims to ensure a reduction pathway consistent with the Paris Agreement temperature goals while ensuring sustainable development of international shipping. (Document MEPC 78/7/5 by Japan, paragraph 4).
1.3.2 Coordination / overlap with other international, regional and national initiatives	N/A

1.3.3 Compatibility with other IMO regulations	The measure will complement the short-term measure by adding incentives for the uptake of fuels with low- or zero- WtW GHG emissions. It is also compatible with the short-term measure as reduction of carbon intensity by the Energy Efficiency Design Index (EEDI), Energy Efficiency Existing Ship Index (EEXI) or carbon intensity indicator (CII) would directly reduce the amount of contributions required for payment.

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2 Effectiveness of the proposed candidate measure

2.1 Expected reductions in GHG emissions	
2.1.1 Levels of GHG reduction with associated timeframe	A basket of measures including the feebate mechanism will accelerate diffusion of zero-emission fuels and technologies, which will help achieve the phase-out of GHG emissions by 2050. An expected energy transition scenario is shown in Figure 4 of Document ISWG-GHG 15/3. (Document ISWG-GHG 15/3 (paragraph 7 to 8)).
2.1.2 Provisions to avoid unintended outcomes that could increase GHG emissions	Scope of reward is decided to incentivize use of fuels with low- or zero- WtW GHG emissions. (Document ISWG-GHG 14/3/1 (paragraph 11)).
2.2 Incentives for first movers	
2.2.1 Provisions for reducing/bridging the price gap between conventional and low-carbon solutions	Mandatory contribution and disbursement of reward will reduce price gap between conventional and low-carbon (zero-emission) solutions. A case study on how the measure could reduce cost difference is provided in document ISWG-GHG 15/3 paragraph 4 to 6. It is proposed that the reward rate should be set at a level to provide sufficient incentives for ships using eligible fuels. (Documents ISWG-GHG 14/3/1 (paragraph 9 and 13.2), ISWG-GHG 15/3 (paragraph 12, and annex Reg. 33.3 and 36.1)).
2.2.2 Provisions to ensure a level playing field	Mandatory contribution and disbursement of reward will reduce price gap between conventional and zero-emission solutions, which will ensure a level-playing field for first movers competing against conventional vessels, while minimizing the negative impacts on trade. It is proposed that the reward mechanism will terminate in 2040 until when the price gap will be narrowed. (Documents ISWG-GHG 15/3 (paragraph 6.3 and Figure 3, Annex Reg. 38.2)).
2.2.3 Provisions to ensure global access to technology	Part of revenues is used to support projects in the maritime sector in developing countries, such as projects for capacity-building, development of infrastructures to produce and supply zero or near-zero GHG fuels, and research and development. (Documents ISWG-GHG 14/3/1 (paragraph 17 and 18) and ISWG-GHG 15/3 (annex Reg.33.2.3)).
2.3 Compatibility of different elements within the basket of measures	
2.3.1 Identification where elements of the measure are complementary to each other without overlap or redundancy	The feebate mechanism (mandatory contribution and disbursement of reward) will provide price signals to invest in zero-emission fuels and technologies. This could be combined with the GHG Fuel Standard (GFS) in a complementary manner to ensure a phase-in of low- and zero-GHG fuels compatible with the trajectory in line with the long-term levels of ambition. (Document ISWG-GHG 15/3 (paragraph 9 to 12)).
2.3.2 Provisions to avoid double accounting, payment, reward or punishment	In case the measure is used in combination with the GFS, such basket of measures should not be construed as enforcement of double payment, because the contribution and the GHG Remedial Unit have different purposes; the former is imposed on all vessels based on GHG emissions, while the latter is used as an optional tool to comply with the GFS (Document ISWG-GHG 15/3 (paragraph 13)).
2.4 Process for development and implementation	

2.4.1 Possible legal framework	Possible draft amendments of MARPOL Annex VI are provided in the Annex of document ISWG-GHG 15/3.
2.4.2 Expected timeframe for development and implementation	The feebate mechanism should be introduced as soon as possible with the legal texts for MARPOL amendments and related guidelines being developed in Phase III of the Work Plan.
2.4.3 Mechanisms of accountability and adjustment	MEPC shall oversee the activities of the Board, which will select and supervise the projects and programmes supported by the ZES Fund. The measure shall be reviewed five years after its implementation and amended if necessary. (Document ISWG-GHG 15/3 (annex Reg.34, 38.1)).

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3 Potential impacts on States of the proposed candidate measure

3.1 Initial impact assessment	
3.1.1 Does the proposal provide a description of impacts on ships and emissions?	Description of impacts of mandatory contribution on maritime transport costs is provided in document ISWG-GHG 13/4/6 paragraph 21 to 23.
3.1.2 8 Impact criteria assessed	Impacts on maritime transport costs are assessed. (Document ISWG-GHG 13/4/6 (paragraph 21 to 23)).
3.1.3 Potential positive and negative impacts	Average percentage increase in maritime transport costs due to mandatory contribution under different contribution rate scenarios (which range from \$25/t CO_2 to \$200/t CO_2) are estimated to fall within the range of 3.8% to 30.5%. The level of increase in maritime transport costs seems to lie within normal volatility of container freight rates, when compared against the change in container freight rates from China to South America from 2010 to 2020. (Document ISWG-GHG 13/4/6 (paragraph 21 to 23)).
3.1.4 Extent of the impacts on States	N/A
3.1.5 Description of methodological tools and data sources used	The fuel cost share of maritime transport costs for each country pair derived from the global logistics intermodal network simulation model was used to assess the impacts of mandatory contribution on maritime transport costs. The model can simulate cargo flows on global intermodal transport network, which includes 5,550 country pairs for container shipping and 646 country pairs for bulk shipping. Data and assumptions on parameters related to navigation costs (e.g., fuel costs, capital costs, operational costs, canal tolls) and transit time (e.g., vessel speed) are provided in the following papers: .1 Shibasaki, R., Katō, H. and Ducruet, C. (2020) Global logistics network modelling and policy: quantification and analysis for international freight. Amsterdam, Netherlands: Elsevier; and .2 Kosuge,. N, Shibasaki, .R, Kawachi, .K, Arai, .H, Nakamura, .T, Liu, .L, (2022) Development of Multicommodity-type Global Logistics Intermodal Network Simulation Model Including Both Containerised and Dry Bulk Cargo. TLOG-22 Conference Paper. Incheon National University. (Document ISWG-GHG 13/4/6 (paragraph 21 to 23)).
3.2 Possible disproportionately negative impacts	
3.2.1 Is the measure likely to result in disproportionately negative impacts on States?	Not at least in the early phase of transition, because the contribution rate could be set at relatively low levels during that phase. An analysis is provided in documents ISWG-GHG 13/4/6 (paragraph 19 to 20) and ISWG-GHG 15/3 (paragraph 4.3 and Figure 2 in this respect).
3.2.2 Description of how these impacts could be addressed (e.g.: avoided, remedied, mitigated), as appropriate	Part of revenues is allocated to support projects or initiatives in developing countries, especially SIDS and LDCs, to mitigate disproportionately negative impacts, as appropriate. (Document ISWG-GHG 15/3 (annex Reg.33.2.3)).