



MARINE ENVIRONMENT PROTECTION
COMMITTEE
58th session
Agenda item 4

MEPC 58/4/21
14 August 2008
Original: ENGLISH

PREVENTION OF AIR POLLUTION FROM SHIPS

CO₂ emissions from shipping – a framework for assessment of potential market based and regulatory control options

Submitted by the Institute of Marine Engineering Science and Technology (IMarEst)

SUMMARY

Executive summary:	The annex to this document is a paper which discusses and proposes a framework for the assessment of the potential regulatory control and market based measures being considered for control of GHG emissions from ships.
Strategic direction:	7.3
High-level action:	7.3.1
Planned output:	7.3.1.3
Action to be taken:	Paragraph 3
Related documents:	MEPC 58/4 and MEPC 57/21

1 This document is submitted in accordance with paragraph 4.10.5 of the Guidelines on the organization and method of work of the Committees and their subsidiary bodies (MSC-MEPC.1/Circ.2) and comments on the discussions at the 1st Intersessional Meeting of the Working Group on GHG Emissions from Ships (MEPC 58/4).

2 Progress at the 1st Intersessional Meeting of the Working Group on GHG Emissions from Ships in objectively considering the various potential regulatory or market based options for controlling GHG emissions from shipping was limited. In order to facilitate discussion, a possible framework for considering the merits and suitability of the various options is proposed. This may assist objective assessment of the GHG control options which have already been proposed or which have yet to emerge.

Action requested of the Committee

3 The Committee is invited to consider the comments and information provided in the annex and take action as appropriate.

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ANNEX

CO₂ EMISSIONS FROM SHIPPING – FRAMEWORK FOR ASSESSMENT OF POTENTIAL MARKET BASED AND REGULATORY CONTROL OPTIONS

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Introduction

Shipping is one of the essential industries supporting global trade but shipping is expected to bear its share of the burden when it comes to reducing carbon emissions. If global trade is to continue in a way that meets the needs of the present without compromising the needs of future generations then shipping will need to demonstrate that it is making a contribution to carbon reduction. This concept will not be palatable to many but it is something the industry has to be aware of and prepare for. The shipping industry, like all industries, faces the challenge of what to do and how to ensure any solution encourages innovation and allows maritime trade to continue.

Technical and operational measures will contribute to emissions reduction at the ship or fleet level but they will not necessarily drive stabilisation or reduction of emissions from the world fleet. If a stabilisation or reduction of overall emissions is to be achieved, it is likely that regulatory control mechanisms will be required.

In this paper we look at a possible framework for considering the merits and suitability of the various options. These should not be considered as the only options available, but form a useful starting point.

Before looking at the possible framework it is useful to examine the scale of CO₂ emissions from shipping. Typically they can be seen as:

- Annual CO₂ emissions from world fleet = 1,120 million tonnes ^[1]
- Equivalent to 2-4% of global CO₂ emissions

Regulatory control measures – options for assessment

This paper does not advocate any one particular regulatory control measure. However, it does stress the importance for the shipping industry to remain regulated by the IMO and those who understand the industry and have the ability to realise its full potential for the benefit of society as a whole. Any regulatory control would have to dovetail with other measures to ensure that GHG emissions related to maritime transport are not transferred to a more inefficient land based transport mode in terms of CO₂ per tonne-km, which may result in higher net CO₂ emissions. The capacity of any measure to help to achieve the 50-85% reduction in GHG emissions proposed in the IPCC fourth assessment report must also be considered.

In order to progress the debate, it is proposed that the various regulatory control options are analysed against the principles agreed at MEPC 57 for considering measures to control GHG emissions ^[2] as well as a set of 'golden rules' developed in 1999 by UK industry as a means of helping to clarify the merits and challenges of the different emission control options then being considered for land based installations. There are clear similarities between some of the IMO's principles and the 'golden rules'. However it is considered that some of the additional criteria contained in the 'golden rules' may be a useful contribution to the analysis.

Potential regulatory controls which could be considered are:

- CO₂ design index
- Port tax based on absolute carbon emissions or CO₂ index
- Marine fuel sales based levy
- Emission Trading Scheme (ETS)

However, these are not the only regulatory control options and the criteria in the principles and rules could equally be applied to other options which may emerge.

A table for rating the various options in terms of whether or not they achieve compliance with the IMO principles and the UK industry 'golden rules' has been prepared (Appendix 1). This could be used to analyse objectively the options for controlling CO₂ emissions. Measures could be rated i.e. from A – Achieves to D – Fails to achieve. Further criteria may be added or additional regulatory or market based measures considered.

An objective analysis will not be a straightforward process and some assumptions would have to be made. For example, in terms of cost effectiveness and economic rationale, each of the options will have merits and be more or less suitable for the shipping industry. Benefits and disadvantages would need to be identified and evaluated. Regarding economic rationale specifically, any option should ensure that the money raised is recycled back into climate change improvement – as, for example, in plans for the EU ETS for aviation. The economic rationale and the cost effectiveness rationale raises challenges associated with who would impose the charge and who would benefit. Certainty is also a critical issue because any option must provide certainty to operators and owners to allow planning for the future as well as providing certainty that GHG emission reduction will be achieved.

Way forward

There have been a number of papers submitted to MEPC proposing or examining possible regulatory or market based control measures. This paper attempts to provide a flexible but objective mechanism to analyse the various options being proposed against each other and against agreed criteria in order to facilitate comparison, discussion and negotiation. However, further work will be required to understand the interaction of the design and constraint of potential control options, their impact on the shipping industry and how they could contribute to the challenge of substantially reducing overall GHG emissions from shipping.

Appendix I: Framework for analysing potential GHG control measures against the IMO principles and UK industry ‘golden rules’

IMO principle (as per MEPC 57/21)	UK industry ‘golden rule’	Control measure & ranking			
Effective in contributing to the reduction of total GHG	Environmental rationale – Achieves a valid objective – in this case absolute GHG emission reductions				
Binding and equally applicable to all ships in order to avoid evasion	Equity – Equally applicable to all ships & not providing benefit to some ships but not others As inclusive as possible in the long term to all ships				
Cost effective	Economic rationale – Must be seen as a cost-effective way of achieving absolute GHG reductions				
Able to limit or effectively minimize competitive distortion					
Environmentally sustainable without penalizing global trade & growth					
Goal based approach					
Promotes innovation & R&D					
Accommodates leading energy efficiency technologies					
Practical, transparent, fraud free and easy to administer	Simplicity – A simple and pragmatic solution Transparency – National and international confidence in the system.				
	Credible to stakeholders & able to demonstrate compliance with climate change goals, including monitoring				
	Credit for actions already taken which have already resulted in GHG reductions				
	Certainty – High degree of certainty so that business can invest with confidence				