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PREVENTION OF AIR POLLUTION FROM SHIPS

Impact Assessment of an Emissions Trading Scheme with a particular view on developing countries

Submitted by Germany

SUMMARY

Executive summary:	This document comments on document MEPC 60/4/22 by Norway. Germany herewith transmits various detailed results of a scientific study on impact assessment of a Global Emissions Trading Scheme for International Shipping (METS) as proposed by France, Germany and Norway (MEPC 59/4/25). The Study found that an Emissions Trading Scheme (ETS) would not lead to any significant increase in product prices with a price increase of less than 1% on average.
Strategic direction:	7.3
High-level action:	7.3.1
Planned output:	7.3.1.1 and 7.3.1.3
Action to be taken:	Paragraph 15
Related documents:	GHG-WG 1/5/3, GHG-WG 1/5/5, GHG-WG 1/5/6, GHG-WG 1/5/7, MEPC 58/4/25, MEPC 58/23; MEPC 59/4/25, MEPC 59/4/26, MEPC 59/24/Add.1 and MEPC 60/4/22

Introduction

1 This document is submitted in accordance with paragraph 4.10.5 of MSC-MEPC.1/Circ.2 Guidelines on the organization and method of work and comments on document MEPC 60/4/22 (Norway), which presents a detailed proposal of a Global Maritime Emissions Trading System (METS) for International Shipping and provides further information.

2 With this document, Germany transmits recent scientific results of an impact assessment of a worldwide METS to the attention of the Committee in order to enhance the discussion and the scientific debate on the impacts of market-based instructments and to facilitate a decision at MEPC 61. The information presented herein is a summary of the study titled "A Global Maritime Emissions Trading System – Design and Impacts on the Shipping Sector and on Countries and

Regions" by CE Delft, DLR and Fearnley Consultants. Special attention was given in that Study to developing countries. It should be underlined that the Study is based on exemplary assumptions – based on the METS as proposed in documents MEPC 59/4/25 and MEPC 59/4/26 – on how the system may be designed to provide an illustration of scale and implications.

3 Germany herewith transmits various detailed results of a scientific study on impact assessment of a Global Emissions Trading Scheme for International Shipping (METS) as proposed by France, Germany and Norway (MEPC 59/4/25). The impacts of a METS would be below 1% as per cent of GDP for different groups of countries. The Study found that an Emissions Trading Scheme (ETS) would not lead to any significant increase in product prices with a price increase of less than 1% in average assuming a CO_2 allowance price of US$15. The Study states that revenues from the auctioning of allowances can be used to compensate for undesired impacts. Furthermore, the absolute price of allowances is significantly lower than the price of fuel per tonne, while the volatility would be similar.

Key design elements of an emissions trading scheme for international shipping

4 An emission cap and a target period would be established. Individual ships as the legally responsible entity would have to surrender allowances that they can acquire within or outside the sector. Flag States would enforce compliance of ships flying their flags and the principle of port State control shall apply.

Impact on the shipping sector

5 The Study identified that there are no severe economic impacts on the shipping industry by introducing a worldwide emissions trading scheme in general. In a worldwide system and under most market conditions a major share of the cost increase can be passed on to consumers. When demand for maritime transport is lower than supply, prices are set by marginal costs and costs are passed on to the shipper and ultimately to the consumer. On the other hand, when demand is higher than supply, prices are not cost-related but are set by marginal demand and the profit margins are high. In that case, the introduction of additional costs will not affect the price as the costs will be borne partly by the shipowner.

6 According to the outline of a METS, some of the actors in the sector will be more, others less, affected. Owners and operators of ships, the ship manager, the charterer or the ship disponent owner would have to bear the direct cost impacts since one out of this group would have to pay directly for the emission allowances. Shippers, cargo owners, buyers and sellers and ultimately the consumer, would face indirect cost impacts since the costs would be passed on to them. Some positive economic aspects would result for shipbuilders, engine manufacturers and classification societies/recognized organizations due to a stimulation of demand of emission reduction technologies.

7 Additionally, it has been analysed whether and to what extent the prices for different product groups (agriculture, raw materials, crude oil and manufactured goods) would increase. For that purpose the cost structure of six different ship categories (handysize bulker, capsize bulker, handysize product tanker, VLCC, container and ro-ro) were analysed. The calculation assumes an average 2007 fuel price (US$360.5 per tonne) and an allowance price of US$15 per tonne of CO_2. Under these assumptions, the price increase of goods due to an ETS would be below 1%, except for raw materials (ores and coal), the prices of which could increase by up to 1.4 % due to the high relative share of transport costs for this product group.

Table 1: Cost impact on different groups of products

Type of commodity	Ship type used for transport	Average maritime transport costs (US$/t)	Average value of goods (US$/t)	Transport costs as a share of value of imported goods (%)	Increase in shipping costs	Percentage increase in price of goods
Agriculture	Bulker	80.64	740.50	10.89	4% - 6%	0.4% - 0.8%
Raw materials	Bulker	32.59	134.89	24.16	4% - 6%	1.0% -1.4%
Crude oil	Tanker	18.09	448.88	4.03	4% - 5%	0.2%
Manufactures	Container	173.94	3403.91	5.11	4% - 8%	0.2% - 0.4%

Impact on regions and groups of countries

8 In order to assess the impact of a METS on different regions and groups of countries, a detailed calculation of emissions on worldwide shipping routes was undertaken by using Lloyd's MIU data and an algorithm of the German Aerospace Centre (DLR). Based on this analysis and assuming full auctioning, the cost increase of transport was calculated. The underlying scenario assumes that there would be no efficiency improvements of ships, no import substitution and no increase in GDP. Therefore, this scenario is conservative and overestimates the actual impacts. The table below contains the results for a range of carbon prices from US$15 to 30 per tonne of CO_2.

9 In addition, the Study considers possibilities on how to use the revenues that will be generated by auctioning. Full auctioning could deliver from US$15 to 30 billion annually, assuming the range of allowance prices given below. Part of these (e.g., 15%, 25%, 33% or 50%) could be used to compensate uneven distribution of impacts with a particular focus on developing countries. The table below gives examples of 33% and 67% revenues distributed to developing countries. Consequences of climate change on different countries could be considered here.

Table 2: Cost increase of maritime transport to regions and groups of countries

Region of destination	CO_2 emissions on routes to the region of destination in 2006 (Mt CO_2)	First order estimate of cost increase of maritime transport US$ billion (CO_2 US$15 – US$30 per tonne)	First order estimate of cost increase of maritime transport % of GDP (CO_2 US$15 – US$30 per tonne)	Benefits from using 67% and 33 % (as examples) of auction revenues to compensate developing countries based on value of imports [1]	
				33 %	67 %
Region					
North America	120	1.8 - 3.6	0.01% - 0.02%	none [2]	none [2]
Central America and Caribbean	53	0.8 - 1.6	0.01% - 0.01%	0.5 - 0.9	0.9 - 1.8
South America	59	0.9 - 1.8	0.05% - 0.09%	0.4 - 0.7	0.7 - 1.4
Europe	277	4.2 - 8.3	0.02% - 0.05%	none [2]	none [2]
Africa	68	1.0 - 2.0	0.1% - 0.2%	0.4 - 0.7	0.7 - 1.3
Arabian Gulf, Red Sea	62	0.9 - 1.9	0.08% - 0.15%	0.5 - 1.1	1 - 2.1
Indian Subcontinent	24	0.4 - 0.7	0.03% - 0.06%	0.3 - 0.6	0.6 - 1.1
North East Asia	194	2.9 - 5.8	0.03% - 0.06%	2.6 - 5.1 [3]	5.1 - 10.2 [3]
South East Asia	116	1.7 - 3.5	0.17% - 0.35%	0.8 - 1.6	1.5 - 3.1
Australasia	35	0.5 - 1.0	0.06% - 0.13%	None [2]	None [2]
World	1006	15.1 - 30.2	0.03% - 0.06%		
Country groups					
Annex I countries	469	7.0 - 14.1	0.02% - 0.04%	none	none
Non Annex I countries	582	8.7 - 17.5	0.08% - 0.15%	5 - 10	10 - 20
G77	465	7.0 - 13.9	0.07% - 0.14%	3.4 - 6.7	6.7 - 13.4
Least Developed Countries	13	0.2 - 0.4	0.06% - 0.12%	0.2 - 0.3	0.3 - 0.5
Small Islands Developing States	99	1.5 - 3.0	0.45% - 0.89%	0.4 - 0.8	0.7 - 1.5

Notes: 1) 33 and 67 % as examples, calculated on the basis of import values; share is issue of agreement 2) Comprises mainly but not exclusively of developed countries; 3) comprises mainly but not exclusively of developing countries

10 According to this calculation, the cost increase as a percentage of GDP varies between 0.01 (Central America and Caribbean, North America) and 0.17% (on routes to South East Asia for an allowance price of US$15 per tonne of CO_2). Among the country groups, the results vary for the same allowance price between 0.02% (North America) and 0.45% (Small Island Developing States). Small island developing States would be affected most by any increase of transport costs due to their remote location.

11 To further analyse the potential impact of an METS, different groups of countries were considered.

Comparison of absolute prices and price volatility

12 During the past discussion about which market-based instrument might be preferable for international shipping, it was argued that the variability and the absolute price of emissions allowances might create significant risks for the shipping industry.

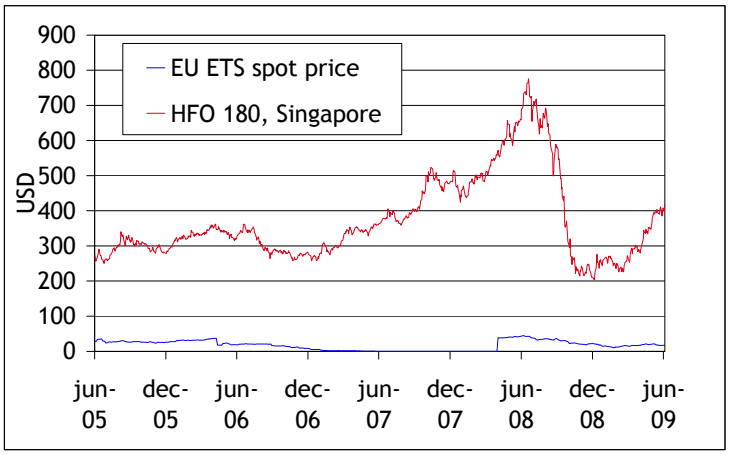

Figure: A comparison of the prices of international bunker fuels in the period April 2005 until July 2009 with the prices of the European Union emission allowance prices at the EU market

13 The figure above contains a comparison of the prices of international bunker fuels in the period April 2005 until July 2009 with the prices of the European Union emission allowance prices at the European Union market. The absolute price of allowances is significantly lower than the price of fuel per tonne, while the volatility over the past two years is the same.

Conclusions

14 Based on the subsequent submissions for an Emissions Trading Scheme for Maritime Transport (METS) work was undertaken in order to analyse the impact of a METS on the shipping sector and different regions and groups of countries. With regard to the economic impacts, the overall impact would be low for the shipping sector as a whole and different regions and groups of countries. The Study states that parts of the revenues from auctioning could be used to compensate disparities and particular needs for developing countries due to global warming. The Study can be downloaded at: http://www.bmu.de/verkehr/schifffahrt_haefen/doc/41893.php.

Action requested of the Committee

15 The Committee is invited to consider this input to its debate on the development of a greenhouse gas market-based reduction mechanism for international maritime transport, and take action as appropriate.