Tackling climate change through a differentiated levy on marine haulage/shipping fuels

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Executive Summary

1 An **international agreement to reduce maritime emissions can be achieved**, providing that the proposed emission reduction scheme differentiates responsibilities

2 A traditional cap-and-trade regime is inappropriate for complex maritime emissions in the short-term, but **a cap with emission charge/levy (cap-and-charge) could provide the solution**

In the proposed cap-and-charge approach, CO2 emissions from international maritime transport form one emission bubble rather than being allocated to countries. An emission reduction goal (cap) is established and **applies to all destinations with emission reduction commitments** (currently Annex I countries of the UNFCCC). The emission charge/levy is linked to the cap and the prevailing forward carbon price. Aggregated funds are used to both stimulate innovations and cost-effectively mitigate growth of maritime emissions. Furthermore, **$billions of gains generated** through the aggregated approach are directed to climate change adaptation in developing countries.

Providing common but differentiated rules

1 Recent discussions confirm that the biggest challenge in negotiating a solution to reduce emissions in shipping is how to provide global maritime rules while delivering on the principle of common but differentiated responsibilities and respective capabilities of developed and developing countries (CBDR) embodied in the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.

2 Differentiation in an economic instrument can be defined at the points of collection and distribution of revenue. Agreeing differentiation at the distribution point seems achievable; all the delegations that recently spoke in the International Maritime Organization (IMO) on the issue supported the notion that revenues aggregated through any economic instrument should mainly be used for mitigation and adaptation measures in *developing countries*. However, developing countries argue that this does not fully respect the CBDR principle.

3 **Differentiation at the point of collection** is challenging, as ships often transport goods to variety of countries. However, contrary to first impressions, differentiation **is also feasible** here, providing it does not distort competition. The following approach is proposed by the author. On certain voyages, emissions are exempted from charges or subject to a multiplier. Under the current regime, ships transporting goods to:

.1 Annex I countries pay 100% of emission charges;

.2 **Non-Annex I countries pay zero**;

.3 Both types of countries pay on average 60% of emission charges (variable multiplier).

4 The variable multiplier is the ship's share of volume of goods unloaded in Annex I countries, in a given month or year (marine haulage).[2] The average value for the multiplier has been derived from the developed countries' share of world import freights costs, as well as share of unloaded goods, both of which are approximately 60%.

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[2] To cover trans-shipments the unloaded data refers to goods "destined for" Annex I, thereby ensuring all attributable emissions are included. The destinations subject to the regime may be defined differently. Once data becomes available, a more precise multiplier may be used such as the share of transport work to those destinations (e.g. share of ton-miles rather than share of tons unloaded).

5 The International Maritime Emission Reduction Scheme (IMERS) is a hybrid scheme for three reasons. It combines in a single scheme:

.1 A quantitative goal (cap) with a price instrument (charges): a "cap-and-charge";

.2 Emission mitigation, adaptation to climate change and technology action; and

.3 Differentiated responsibilities and capabilities, of countries and individuals.

6 Over the last year the scheme has gained significant traction[3] and is seen as one of the most promising proposals to fill the gap in adaptation financing.[4]

7 The instrument is based on an emission charge to be applied to the entire international shipping community, or several of its segments. Emission charges are to be collected through a supra-national body. This is made easier due to the legal precedent that exists in shipping for bypassing national charges, called International Oil Pollution Compensation Funds.

8 A unit emission charge is calculated based on the prevailing forward market price for CO2 and a negotiated emission reduction goal. This makes it an alternative to cap-and-trade. The unit emission charge is therefore a calculated, differentiated levy rather than a tax set at some arbitrary level. The goal (cap) together with the market (via the market price for carbon) dictates the level of the unit charge (levy), rather than a single body that may be subject to outside influence. Furthermore, the charge may be applied in a differentiated manner to different voyages and ship types, such as containers.

9 The emission charges are aggregated and used to acquire emission credits from other sectors and projects to mitigate emissions in the most cost-effective manner. Furthermore, the aggregation of demand for emission credits would provide access to cheaper emission credits on primary emission markets (including CDM/JI), and through government forestry schemes (REDD). This would generate gains which are utilized to address adaptation issues. Additionally, part of the emission charge is raised to invest in technology transfer and to stimulate longer term technology transformation.

10 For the sake of simplicity, only minimum implementation details are provided here. The liable entity in the scheme is a ship. Typically it will be the charterers or ship owners that would pay the emission charges. In the proposed scheme, emission charges are based on fuel sold. The emission charges due are calculated from the unit emission charge and amount of fuel delivered, as per the Bunker Delivery Notes. These emission charges are paid directly into each ship account or obtained centrally for a number of ships. The enforcement of the scheme is through Port States Control in Annex I countries. The compliance regime may be augmented by adding the relevant requirements in the periodic ship certification.

Costs and benefits

11 Sample costs and benefits calculations for 2012 are provided. The annual net emissions growth rate used is 2.1% per annum (in nearly all projections the maritime emissions grow at this rate or higher). An illustrative goal is set at an ambitious 20% reduction in emissions by 2020 from its 2005 level. **It applies only to emissions attributable to Annex I countries** (current climate change regime). Total baseline emissions in 2005 are rounded to 1 GtCO2, as per the higher estimates and for ease of scaling. Based on the emission growth and the emission reduction goal, the unit emission charge is calculated as less than 30% of the carbon price in 2012,[5] translating to approximately 5% of the fuel price.

[3] See: www.imers.org/buyin/achieve

[4] See: Grubb, Michael et al., (2008), Climate Strategies, Energy and Climate: Opportunities for the G-8, http://www.climate-strategies.org/uploads/2_ClimateStrategiesG8report.pdf

[5] In 2012, approximately 22% of emissions are above the emission goal. A mark-up for technology and scheme costs brings the ratio to less than 30% of the carbon price. For a carbon price of $30 per ton of CO2, the unit emission charge is therefore $9/tCO2, which is equivalent to $27 per ton of heavy fuel oil (HFO). This is approximately 5% of fuel price (for a price of $500/t HFO). This in turn

12 With the charge set at this level, the scheme would be **approximately three times cheaper than a cap-and-trade scheme that entails full auctioning of emission permits** (full auctioning is one of proposed alternatives for shipping as the emission baseline is highly uncertain). Therefore, the proposed scheme has major cost advantages.

13 The level of the charge would be announced one year in advance, thus providing **cost predictability** and enough time for the shipping industry to pass the charges on to end customers. It is anticipated that the impact of the scheme would only be approximately 0.1% increase in prices of imported goods to Annex I countries, despite the ambitious goal of a 20% reduction in emissions by 2020. This is equivalent to an extra $1 for every $1,000 of imported goods. Therefore, **shipping could contribute to climate stabilization through an ambitious yet achievable goal**.

14 Based on 2.1% annual growth, total emissions in 2012 will be 1.15 GtCO2. Therefore the revenue raised from the charges, applied only to imports to Annex I countries, will be $6bn (1.15 x $9 x 0.6). The revenue will be divided into mitigation, adaptation and technology, as illustrated in Table 1. For instance, the annual contribution to adaptation to climate change in 2012 will be $2.5bn, and may reach $10bn in 2020, depending on the price of carbon.

FUNDS pa*	2012	2020
Adaptation	$2.5bn	$10bn
Mitigation	$2.5bn	$10bn
Technology	$0.8bn	$3bn
* For CO2/t price:	$30	$60

Table 1: Potential net funding generated

15 Least Developed Countries and Small Island Developing States would benefit most from the scheme due to the significant adaptation financing that would become available to them.[6]

16 Developed countries would pay the costs but receive little from the funds. However, they would achieve significant emission reductions and stimulate maritime technology transformation.

17 Some might argue that a global scheme with a uniform emission price applied to all countries would deliver better results. However, the ultimate result of the scheme, namely the environmental effectiveness, depends on the stringency of the agreed emission reduction goal. Consequently, **a uniform charge does not necessarily guarantee a better outcome** as the emission reduction goal may be diluted to make it globally acceptable. For instance, a global maritime scheme driven by a goal to stabilize emissions at 2005 level is practically equivalent to the scheme achieving 20% reduction of maritime emissions attributable to the Annex I countries only, while it is unlikely to be accepted by developing countries.

18 In summary, the proposed scheme would cover approximately 60% of total emissions - a big step up from zero coverage under the Kyoto Protocol. Moreover, it could be legally enforced through a limited number of ports in Annex I countries.

19 Conversely, the risk of inaction is twofold: repeat Kyoto's failure to address maritime emissions, and fail to provide financing for adaptation to climate change crucially needed for the most vulnerable.

Comparison of cap-and-trade and cap-and-charge

20 The proposed hybrid scheme (cap-and-charge) sets a cap on maritime emissions and delivers it through emission charges. It is a **very flexible alternative to a cap-and-trade scheme** especially suited to the complex nature of the shipping industry.

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increases operational costs of shipping by circa 2%. As the freight costs comprise approximately 5% of the price of imported goods the impact on end user prices is estimated as 0.1%.

[6] See www.imers.org/climate for detailed example of funds distribution.

21 It totally **eliminates the three central barriers** associated with cap-and-trade:

.1 Emissions baseline: In the proposed scheme, an emissions baseline is not required, removing the need for reliable emissions data as a pre-requisite for scheme operation;

.2 Allocation of emissions: There is no requirement to allocate emissions between countries, which has often been a stumbling block in maritime negotiations;

.3 Distribution of allowances: No allowances need to be distributed to participating ship owners and charterers.

22 The proposed hybrid method **reduces the negative impact** of several key implementation issues:

.1 Impact on competition: The impact on competition of the hybrid scheme will be very low as it is based on a harmonized emission charge that secures a level playing field to all participants transporting goods to a country, small or large;

.2 Cost: The costs to participants, including the set-up and transactional costs are anticipated to be lower under the hybrid scheme than a standard cap-and-trade scheme. The charges in the proposed hybrid method are set only to have enough funding to purchase the relevant number of emission credits, plus additional contributions for technology. There are no costs to acquire emission permits at auctions;

.3 Set up time: Compared to global cap-and-trade, the set up time is reduced from approximately 5-6 years to 2 years as implementation barriers are eliminated and data requirements lowered.

23 Furthermore, in addition to removing barriers and reducing costs, the proposed hybrid scheme **delivers greater value in terms of effectiveness, flexibility and scale**:

.1 Effectiveness: Due to the compliance mechanisms, the coverage of a hybrid scheme can be extended to smaller ships, including ships covered by different registration authorities. This would be difficult and highly costly under a cap-and-trade scheme;

.2 Flexibility: The proposed hybrid scheme is flexible enough to incorporate new ships, and changing accountability of charterers for emissions. Furthermore, it allows differentiating charges to reflect differentiated responsibilities and capabilities;

.3 Scale: The proposed solution is global, superceding the regional basis of a potential extension of the European Union Emission Trading Scheme to shipping.

24 The critical component of the proposed approach is that **resources saved** on barriers eliminated and implementation issues reduced **can be redeployed to raise and create value** elsewhere. The proposed approach moves beyond delivering only emission mitigation benefits to:

.1 Technology benefits, namely near- and long-term improvements;

.2 Adaptation benefits, mainly from contributions to the UNFCCC Adaptation Fund.

25 The short-term and long-term technology improvements are essential to dramatically reduce the rapidly growing emissions from transport. Additionally, the reduction in the huge gap in financing of adaptation to climate change in developing countries is essential as the most vulnerable countries are likely to be hit hardest by the impact of a changing climate. A new global scheme could deliver on these in an affordable manner.

Conclusion

26 The deadlock in addressing CO2 emissions from international maritime transport can be resolved through the proposed global scheme, balancing the interests of all parties. The hybrid instrument described is flexible and avoids emission allocation issues. It is politically compelling, providing a quantitative emission reduction goal, price predictability, and a differentiation of responsibilities. It combines mitigation of emissions, adaptation to climate change and technology development in a single maritime scheme. By being global, the scheme is efficient and cheaper than proposed alternatives. Additional effort and support is however required to generate the necessary momentum to achieve the deal in time for the Copenhagen climate change negotiations in 2009.