

MARKET BASED INSTRUMENTS FOR SHIP AIR EMISSIONS

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Background

Emissions from commercial shipping are currently the subject of intense scrutiny by the world shipping community and society at large. According to the Kyoto protocol to the United Nations Framework Convention on Climate Change -UNFCCC (1997), definite measures to reduce CO₂ emissions are necessary in order to curb the projected growth of greenhouse gases (GHGs) worldwide. Shipping has thus far escaped being included in the Kyoto global emissions reduction target for CO₂ and other GHGs. But it is clear that the time of non-regulation is rapidly approaching its end, and measures to curb future CO₂ growth are being sought with a high sense of urgency. CO₂ is the most prevalent of these GHGs, and it is therefore clear that any set of measures to reduce the latter should primarily focus on CO₂. In parallel, the broader analysis of other greenhouse gases (such as CH₄ and N₂O) and other, non-greenhouse gases, such as SO₂, NO_x and others is already very high on the International Maritime Organization's (IMO) agenda. Various analyses of many aspects of the problem have been and are being carried out and a spectrum of measures are being contemplated. Some of these measures are technical (e.g, making ships engines emit less), and others are operational (e.g., reduce speed). Alongside them, Market-Based Instruments (or MBIs) are also being discussed.

At the latest meeting of IMO's Marine Environment Protection Committee (MEPC 58), held in London in October 2008, progress as regards air pollution from ships was mixed. On the positive side, the IMO unanimously adopted amendments to the MARPOL Annex VI regulations. The main changes will see a progressive reduction in sulphur oxide (SO_x) emissions from ships, with the global sulphur cap reduced initially to 3.50%, effective 1 January 2012; then progressively to 0.50%, effective 1 January 2020.

At the same meeting, the report of Phase 1 of the update the 2000 IMO GHG Study was presented, which was conducted by an international consortium led by Marintek, Norway. The objectives of Phase 1 have been as follows: (1) to undertake an assessment of present day CO₂ emissions from international shipping; (2) to estimate future shipping emissions towards 2050; (3) to compare shipping emissions with other transportation modes; and (4) to assess climate impacts from shipping. Phase 1 is followed by Phase 2 which also addresses GHGs other than CO₂ and possibilities and mechanisms for emissions reductions.

On the negative side, it became clear at MEPC 58 that the stated objective to establish a mandatory Energy Efficiency Design Index of the environmental performance of new ships by MEPC 59 in July 2009 will not be reached. In fact, MEPC 58 failed to reach a consensus on GHG emissions and deferred further action for an intersessional meeting in the spring of 2009. Due to procedural reasons, this delay means that the IMO will not be in a position to have reached a decision by MEPC 59, and, in turn, a clear position at the UN Climate Change Conference in Copenhagen in late 2009, when a new climate agreement is expected to be reached. Much of the discussion thus far has centered on the definition and proposed amendments of an Energy Efficiency Design Index for new ships, and there seems to be a clear split between industrialized member states, such as Japan, Denmark and other Northern European countries and a group of developing countries including China, India and Brazil, on how to proceed. The latter spoke in favor of the principle of 'Common but differentiated responsibility' (CBDR) under the UNFCCC. In their view, any mandatory regime aiming to

reduce GHG emissions from ships engaged in international trade should be applicable exclusively to the countries listed in Annex I to the UNFCCC.

It is also interesting to point out that the European Commission is following IMO developments very closely, and has stated very clearly its intention to act alone if IMO's procedures take longer than previously anticipated. As regards GHGs, the anticipated approach of the Commission is to formulate an Emissions Trading Scheme (ETS), similar to that used in other industries (see also below). However, industry circles have voiced concerns that such an approach would be difficult or impossible to implement.

The IMO has endorsed nine fundamental principles for future regulations on GHG emissions from ships. According to these, future regulations should be:

- (1) effective in contributing to the reduction of total global greenhouse gas emissions,
- (2) binding and equally applicable to all flag States in order to avoid evasion,
- (3) cost-effective,
- (4) able to limit, or at least, effectively minimize competitive distortion,
- (5) based on sustainable environmental development without penalizing global trade and growth,
- (6) based on a goal-based approach and not prescribe specific methods,
- (7) supportive of promoting and facilitating technical innovation and R&D in the entire shipping sector,
- (8) accommodating to leading technologies in the field of energy efficiency; and
- (9) practical, transparent, fraud free and easy to administer.

Global vs Regional

Any regional approach, that is, applying a set of measures only to a certain geographical area, or to a subset of flags, will be by definition non-conformant with the approved set of nine principles listed earlier. For instance, among other things, it will not have global application, hence it will violate IMO principle No. 1, it will not be equally applicable to all flag states, hence it will violate IMO principle No. 2, it will lead to competitive distortion, as it will bind some operators but not others, hence it will violate IMO principle No. 4, it will not promote technical innovation in the entire shipping sector, hence it will violate IMO principle No. 7, and it may also violate other IMO principles, such as for instance No. 5 and/or 9.

To that effect, we note Australia's position in IMO doc. MEPC 58/4/23, in that *“Given the vast majority of world tonnage is registered in non-Annex I countries, effective international action on shipping emissions requires all countries to make a concerted effort to mitigate emissions and all ships in international trade should be covered. Any other approach risks the distortion of international shipping markets, could promote leakage to shipping sectors not covered, and/or could promote modal shifts, thereby creating perverse environmental outcomes.”*

Emissions Trading Schemes (ETS)

Emissions Trading Schemes (ETS) is one of the MBIs that are contemplated for international shipping. ETSs are already in place in other settings. Perhaps the most important example is the European Union Emissions Trading Scheme (EU ETS). This scheme began operation on 1/1/2005 and now covers more than 10,000 installations and approximately half of the EU's CO₂ emissions, being the world's largest company-level “cap-and-trade” system for trading in emissions of CO₂. All 27 EU Member States participate fully in the scheme as well as Norway, Iceland and Liechtenstein. The system currently covers CO₂ emissions from large emitters in the power and heat generation industries and in selected energy-intensive industrial sectors.

It is perhaps too early to tell how well the EU ETS is moving towards its objectives. For the countries for which data was available (all 27 member states minus Romania, Bulgaria and

Malta), emissions increased by 1.9% between 2005 and 2007. Moreover, the jury is still out on the long term prospects. Be that as it may, one might wonder whether and to what extent a scheme like this, that is claimed (at least by some) to have worked for the specific industries listed above, might also work for international shipping, that is, might satisfy the nine fundamental principles outlined earlier.

The structure, economics, legal regime and role of the industries covered by the EU ETS are very different from the equivalent attributes of international shipping. A coke oven, a steel plant or a paper mill cannot change flag and relocate if they do not like the stipulations of the ETS (or for any commercial reason, for that matter). The concept of cross-trading, very much prevalent in international shipping, is nowhere to be seen in the sectors covered by the EU ETS. That alone might render any allocation scheme unfair and subject to misuse. It is fair to say that the differences among the two sets of sectors are much more than any of the conceivable similarities.

Given the above, it is perhaps not surprising that one common characteristic of all ETSs for international shipping that we are aware of is the almost universal lack of specificity on how such schemes might work. That fact alone may render any decision to adopt such a scheme, even in principle, premature and unwise to say the least. In fact, key elements of how such a scheme might be implemented are currently wide open. IMO doc. GHG-WG 1/5/3, by the European Commission, outlines eleven (11) key design elements of designing a cap-and-trade ETS for GHG. These are the following: (a) responsible entity, (b) scope, (c) setting a cap on emissions, (d) introduction of allowances, (e) use of auction revenues, (f) open or closed scheme, (g) use of Kyoto Protocol Joint Implementation / Clean Development Mechanism credits, (h) monitoring and reporting requirements, (i) surrender of emissions allowances, (j) enforcement, and (k) central register. However, discussion on any of the above elements is non-trivial, and so are the issues behind them, as shown below (points raised are only a sample of points that can be made):

For instance, as regards element (a), who is the **responsible entity**, it is indeed necessary to decide which entity has to monitor and report emissions as well as surrender allowances. The ship, the ship operator, or the ship owner have been cited as the most relevant responsible entities all too often. But it should be realized that there is practically no 'say' from the part of the ship owner on the design and on the basic specifications of the vessels that are being built today. Increasing the size of ships will reduce GHG emissions per tonne-km, subject to the requirements of charterers and to the existence of the necessary port infrastructure. The vast majority of the ship owners engaged in international trade already use the best operational measures and maintenance. It is the charterers who decide upon the size, speed and trading route of the ships that they will charter and use in their trade. Yet, to our knowledge, charterers have not been included in any discussions regarding market-based instruments for GHGs. The issue whether this is an **open or closed scheme** (element (f)) is also a very important one to address, but it is also currently unresolved.

We note IMO doc. MEPC 57/INF.3 by Sweden, which provides, among other things, a comprehensive economic analysis of consequences of an ETS applied to the transport sector, including shipping, an analysis of design elements, and a discussion of pros and cons of various options, with a view to integrating the transport sectors within the ETS of other industrial sectors. Among the conclusions of this document are that there will be significant changes in the distribution of emissions across industries and that the difficulty to assess dynamic and structural effects makes full integration a high risk alternative. The alternative of a semi-closed system in which shipping is grouped with aviation is found to offer low gains in effectiveness since the linked sectors are relatively small. Moreover, it is difficult to assess the impacts of an integration since there are great uncertainties in the estimated abatement costs for aviation relative to shipping. The document by Sweden also finds that the current UNCLOS formulation seems to prevent any other policy instrument than a voluntary trading scheme for the shipping industry.

Some people believe that the 'grandfathering' provisions that are necessary to set a baseline for

caps will make the scheme's effectiveness very questionable. To that effect, we cite IMO doc. GHG-WG 1/5/7 by Germany, stating that *'the current lack of reliable bunker fuel sales statistics needs to be solved'* and that *'one way of acquiring the data needed for setting a cap could make all ships present emission reports for a period of several years before the introduction of the system'*. This would mean that in order to have an ETS in shipping one would first have to spend several years to set up a system that collects reliable bunker sales data, a prospect at best very difficult.

Bunker levy schemes

IMO doc. MEPC 59/4/5 by Denmark describes an alternative MBI for GHGs. Even though the most recently adopted name is 'international GHG fund scheme', the scheme is essentially a levy on bunker fuel, collected at the source and paid for by the party buying the fuel. This scheme would be straightforward to apply and seems to be compatible with shipping's legal framework. A bunker levy would internalize the external cost of CO₂-induced climate change to the source, that is the fossil fuel used. As such it would be clearly identifiable. Thus, the carbon footprint of the imported cargo would be known and the importer could make a better comparison of the available choices. A levy scheme would remove many of the disadvantages, outlined above, in relation to an ETS.

Conclusions

Market based instruments (MBIs) are only one of the possible tools that have been proposed to reduce GHG emissions. It is still not clear which among the MBIs will be selected, if any. The next forum for discussion is the 59th session of IMO's MEPC, 13-17 July 2009. However, and in spite of the urgency surrounding this matter, it seems unlikely that a decision on MBIs will be made then, or any time soon.