ANALYZING THE SCOPE OF FORCING MARKET BASED MEASURES TO ADDRESS SHIPPING CO₂ EMISSIONS

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ABSTRACT

Regulating shipping emissions through Market Based Measures has caused several debates in the last decade as shipping and aviation were the only industries excepted from the GHG mitigating measures. The IMO was nominated to address these issues and is currently working to establish GHG regulations for international Shipping. Current discussions at MEPC and under the UNFCCC process show that no consensus can be reached on an economic mechanism in order to mitigate shipping CO₂ emissions. The adoption of the EEDI in IMO is an important step forward and the significance of the Ship Energy Efficiency Management Plan (SEEMP) should not be overlooked. However at the MEPC, opinions among states vary significantly due to several disagreements on core issues. Aim of this policy analysis paper is to provide in-depth information regarding the proposed Market Based Measures as well as the advances in the regulating procedure. The paper focuses on the conflict areas in order to provide a more clear understanding of countries views, their principles and their underlying scopes. Key issues that will be analyzed are how much shipping should be expected to reduce its emissions compared with other sectors, as well as how the reduction should be achieved, for example through sector-specific regulations. Moreover allocation of emissions options to individual countries or other stakeholders will be analyzed. Finally special focus will be provided on the core principles of the measures in order to highlight the reasons which cause the conflicts.

Keywords: Maritime industry, Shipping emissions, EEDI, SEEMP

1. INTRODUCTION

In recent years there have been many debates about the necessity to reduce CO₂ emissions and stabilize global mean temperature rise below 2°C relative to pre-industrial levels. The maritime industry recognized the necessity to contribute to these efforts and joined the legislation process by mandating the International Maritime Organization (IMO) to lead the discussions. After several meetings the Marine Environmental Protection Committee regulated obligatory measures based on energy efficiency. These consist of the Energy Efficiency Design Index (EEDI) which is currently mandatory for all new ships and the Ship Energy Efficiency Management Plan (SEEMP).

Specifically EEDI is an index referring to the ship’s efficiency, based on her fuel consumption and her transport work. To put it simply, EEDI accounts the amount of CO₂ generated per tonne-mile of cargo carried. As a rule, high EEDI indicates that the ship is not energy efficient (by design). The SEEMP, is a ship-specific plan of actions, targets and responsibilities aiming to improve the operational energy efficiency.

Studies conducted by the IMO demonstrate that if these measures apply together, they can achieve reductions of at least 25% of BAU (Buhaug et al. 2009). However in MEPC some countries advocate that there should be more efforts to achieve CO₂ reductions. Based on their findings, the best way to achieve the desirable results is to introduce an
an economic instrument, or what is called a Market Based Measure. Currently MBM proposals range from a contribution or levy on all CO2 emissions to schemes based on a ship’s actual efficiency, both by design and operation. Policy makers’ attitude changed somewhat in the course of the ongoing procedures in the MEPC as there are several disagreements from Member States. In particular developing countries are of the view that MBM would create extra cost for consumers. This accounts for all Non Annex I countries but even more for SIDS which are in a rather disadvantaged position, since their needs are totally covered through world trade. Despite this, Market Based Measures are still under consideration and will be addressed in the next MEPC session. Aim of this policy paper is to analyze the necessity of introducing such a Market based measure, given that the existing measures may perform more effectively. Apparently implementing a MBM for a highly complex sector such as the shipping industry is very challenging task. What makes it significantly more difficult is the fact that Member States and other stakeholders have many different interests (Hackmann 2012). In the light of this, some Member States in the MEPC have reconsider the necessity of a MBM highlighting that shipping is an environmentally friendly mean of transport which can achieve the desired emission reductions through EEDI and SEEMP. Moreover, although only briefly, a number of legal and ethical aspects are being addressed in this paper, in order to stress out some negative effects of MBM in world trade and in developing countries.

2. BRIEF DESCRIPTION OF MARKET BASED MEASURES (MBM)

In the MEPC meetings, several different proposals for market-based instruments to regulate GHG emissions from international shipping have been discussed. Currently some of these proposals have been merged and currently, compose seven different mechanisms.

GHG Fund (Cyprus, Denmark, the Marshall Islands, and Nigeria, MEPC 60/4/8). This proposal establishes a global reduction target and a levy which would be paid by ships on every tonne of bunker fuel purchased (collected through bunker fuel suppliers or via direct payment from ships). The revenues of the Fund will be controlled by a new body, under the IMO auspices and will be used to purchase offset credits to match the projected gap between industry emissions and the target.

Efficiency Incentive Scheme (Japan- World Shipping Council, GHG WG 3/3/2). The objective of the EIS is to achieve in-sector carbon reductions by stimulating the adoption of energy efficient marine technologies. This system would establish mandatory efficiency standards for both new and existing ships. The EIS is a MBM that is institutionally similar to the International GHG Fund, but different in that fees are assessed only to those ships failing to meet a specific efficiency standard.

Port State arrangements (Jamaica, MEPC 60/4/40). Under this scheme, Member States would levy a uniform emissions charge on all vessels calling at their respective ports based on the amount of fuel consumed by the vessel on its voyage to that port. The Port State Levy would be structured to achieve the global reduction targets for GHGs specified by IMO. Revenues raised will be used to climate finance.

Ship Efficiency and Credit Trading SECT (United States, MEPC 60/4/12). According to this proposal, new and existing ships would be subject to respective energy efficiency standards, which would ramp up over time in line with what is achievable with state of the art technologies. Ships that fall short of the standard will have to purchase credits from others that are able to go beyond the standard. The scheme is not designed to raise revenues and is exclusively focused on energy efficiency.
Global ETS with full auctioning (France, Germany, United Kingdom, and Norway, MEPC 61/4/22). This instrument is a global cap-and-trade system to control maritime emissions with allowances sold in a global auction. The revenues would be used for R&D into clean technologies within the maritime sector (as well as climate finance), and purchase of emissions offsets is also included as a cost-containing measure.

The Bahamas Proposal (MEPC 60/4/10). This proposal suggests that technical and operational measures as the only direct and effective means to deliver cuts in CO2 emissions. Reductions will be achieved after a 3 to 5 year period, through a combination of design measures, technical solutions, carbon capture techniques, operational measures or if reductions are not achievable, through a mechanism to be developed by the Organization

Rebate Mechanism (RM) proposal by IUCN (MEPC 60/4/55). Through the mechanism developing countries can be rebated the cost or impact of a maritime MBM on their development. The maritime MBM is defined here as any Market-Based Instrument or Measure (MBM) for international maritime transport. The rebate mechanism can apply, in principle, to any maritime MBM, which generates revenue, such as a contribution/levy on fuel or an emission trading scheme.

3. ASSESSING SHIPPING REDUCTIONS

Having thus identified the subject under discussion, we should take a closer look to EEDI and SEEMP. As mentioned before these measures aim at the reductions of CO2 emissions through technical and operational means accordingly (Corbett et al. 2010). Specifically lower EEDI can be achieved by the implementation of some technological improvements such as the optimization of hull dimensions and form, the optimization of propeller-hull interface as well as through engine efficiency improvements. Other state of the art technologies such as wind power or solar power can also improve ship’s results. Accordingly the SEEMP includes actions such as engine tuning and monitoring, weather routing, advanced hull coating and propeller upgrade. According to the study carried out by Bazari and Longva (2011) the implementation of SEEMP-related energy efficiency measures are generally cost effective although they might need some investment stimulation.

In order to evaluate the results of EEDI and SEEMP the study was based on some scenarios. These results are presented in figure 1, were A1B (1-4) and B2 (1-4) are different growth scenario as they were assumed by the IPCC. In a first step it should be clear that the higher the growth, the higher the emissions created. However as the EEDI becomes stricter over the next decades, and given the fleet renovation and the technological advances, there are significant reductions by the implementation of EEDI.
It is also interest to have a look at the results of the proposed Market Based Measures, as they were evaluated by the Expert Group of IMO. In Figure 2 Five different MBM are presented according to their results in 24 scenarios up to 2030. These scenarios are based to IPCC modeling (1999) and they are taking into consideration several parameters such global growth, technological advances, fuel and carbon price as well as a medium EEDI stringency. Three of these measures, namely the GHG Fund, ETS and RM have both in sector and out of sector reductions and here we present these results. As we can see in some cases their results are lower than the EEDI and SEEMP results for 2030.
When looking more closely at these results someone might wonder: What is the scope of implementing a MBM, especially when these are increasingly perceived as causing bureaucracy and substantial financial costs? Apparently if it was for the environmental protection a stricter EEDI could also have the same or even better results. Most importantly, though, technical measures or Control and Command measures, are generally more practical to implement as they include the establishment of law, regulations or some other kind of institutional framework and well-designed control mechanisms. Following this line of reasoning, there is no question why IMO took preference towards these measures.

4. ENVIRONMENTAL PROTECTION AND THE ENVIRONMENT BUSINESS

Looking at the history of the adoption of measures towards Climate Change there is an obvious preference of Market Based Measures and Climate Finance Solutions. A first example of this tendency was the implementation of the EU – ETS. Many economists have expressed their favor for such economic means because industries can choose a way best suitable for them to cut emissions. After the Kyoto protocol the atmosphere business was a fast growing global industry in the run-up to Copenhagen 2009. In the ground of this tendency the maritime industry was also urged to implement such a MBM. Specifically, apart from the proposal for an ETS mechanism, there was also pressure for the European maritime sector to be included in the EU-ETS. In particular, this last point reflects that many stakeholders had strong interests to include the maritime sector in an emission trade mechanism. In this point it should be mentioned that these measures can generate great gains for the emerging climate business. Projects included in the Clean Development Mechanism (CDM) are still in bloom, despite the financial crisis and the results in carbon markets. Someone might argue that these projects have positive effects in developing countries. However this is not always the case, as these measures do not involve economic or environmental benefits for these countries. The system of offsetting does not actually reduce emissions, but merely moves reductions to where it is cheapest to make them, which normally means a shift from Northern to Southern countries (Rayes 2011).

5. DISCUSSION

Why then are all those Member States in MEPC advocate in favor of an MBM, and in particular for ETS which will include out of sector reductions? The majority of countries in the IMO believe that an MBM would be necessary as it could serve two main purposes: the provision of incentives for the maritime industry and the possibility to offset growing ship emissions. Regarding ETS is true that in figure 2 the environmental results of the ETS are rather impressive. However what cannot be depicted in these figures are the loopholes which are related with ETS systems. According to IMO “It is important to note that the reduction in emissions from the EEDI are not to be attributed to the Norwegian ETS and would only occur if the EEDI is implemented on a mandatory basis”. The same of course goes for all the MBM presented in this figure. It can therefore be assumed that these results contain some caveats since they are mainly related with the implementation of the EEDI.

In considering the main purpose of an MBM for international shipping under IMO, we should mention the first of the nine basic criteria agreed by majority at 57th session of MEPC, namely that any measures should be effective in contributing to the reduction of total global GHG emissions. These total reductions are the MBM in sector and out of sector reductions, and the reductions from the implementation of the EEDI. The results of these mechanisms are subject of a rather complex modeling which it is not clear whether it avoids double counting or not.
Most important though, these data are based in data collected from shipping activities in 2007. Needless it to say, the current shipping industry bears little resemblance with 2007. For this reason IMO has asked for a new study to be carried out. It is expected that shipping emissions will be lower than expected due to higher oil price.

6. CONCLUSIONS
This paper examined the scope of implementing a MBM in Shipping Industry. Firstly, regarding the necessity of a MBM, we point out that despite the fact that the existing measures can perform satisfactorily, today, policy-makers still perceive MBM as an essential ingredient of these efforts. It is our firm belief that the maritime sector should contribute to the global efforts to reduce CO₂ emissions. However when it comes to the mechanisms which are used towards this direction many issues are risen. None proposal can gain “consensus”, as they cannot fully address serious aspects, such as allocation of emissions reductions and the pass of the tax to the consumers. Apart from this the implementation of the EEDI and SEEMP-related energy efficiency measures are generally more cost effective. All these features obviously imply that the necessity of implementing a MBM as a complement mechanism is not clearly indicated.

In the attempt to draw some conclusions from this brief study of the scope of MBM measures, the paper presented some of the weak points and the loopholes related to the issue. However, it is recognised that the political views in MEPC are rather diverse (Heitmann and Khalilian, 2011).and it is not clear whether the international community will eventually agree towards the implementation or any regime.

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