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**Comparison of a GHG contribution for a climate fund and an
Emissions Trading Scheme in the shipping sector**

DISCUSSION PAPER

by

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Summary

The International Maritime Organization (IMO) has endorsed a number of technical and operational measures in order to reduce the greenhouse gas (GHG) emissions from international shipping. The Marine Environment Protection Committee (MEPC) agreed at its 59th meeting in July 2009 that those measures alone would not be sufficient to reduce emissions in the growing shipping sector and that a market-based mechanism is needed. Of the several options for market-based mechanisms proposed by different parties two are presented and compared in this paper: an Emissions Trading Scheme (ETS) and a GHG fund generated by a GHG contribution on bunker fuels. Many details of the proposed schemes, for instance the target line/cap for shipping emissions, still remain to be defined; the comparison draws therefore on generic differences.

The goal of the ETS proposal is to set a price on each ton of carbon emitted by international shipping. A cap on emissions would be defined and an amount of emission rights (allowances) equal to the cap sold/auctioned. The revenues generated by selling/auctioning the allowances are to be spent in line with priorities established under the United Nations Framework Convention on Climate Change (UNFCCC) for adaptation, mitigation, capacity building, technology development and transfer, as well as for research and development in the shipping sector. At the end of each compliance period the ship owner would have to report his emissions and surrender a corresponding number of allowances, either shipping allowances or units from linked schemes such as the Clean Development Mechanism (CDM).

The GHG contribution would be charged on bunker fuel sales and generate revenues for a GHG fund. The tariff of the GHG contribution would be set in a way to enable the fund to offset the emissions of the shipping sector above (and only above) an agreed target line. Other potential uses of revenues are adaptation, research and development, technical cooperation within the IMO framework and administrative costs of the fund administrator. These uses would have to be reflected in the determination of the tariff of the GHG contribution.

The authors find that both proposals are similar in many aspects, such as coverage, equal treatment of all ships, eligibility to receive funding from the revenues generated only to Parties of the scheme, administrative efforts and the need to define quality requirements for offset credits. A major difference, though, is the amount of revenues generated and their envisaged uses. The amount of revenues generated by the GHG contribution is substantially lower than the revenues generated by the ETS. As long as the funding of offset projects is the predominant use of the GHG fund, the principle of “common but differentiated responsibilities” (CBDR) cannot be addressed. In the ETS case, private parties (ship owners) are additionally expected to purchase an amount of offsets which is comparable to the one to be acquired by the GHG fund, while the revenues generated through selling/auctioning can be spent in a way reflecting the CBDR principle. Furthermore the incentives to reduce emissions in the international shipping sector itself are higher in the ETS case as the price per ton of CO₂ is envisaged to be higher than the tariff per ton of CO₂ under the GHG contribution enabling offsets of emissions above the target line only.

Zusammenfassung

Die Internationale Seeschiffahrts-Organisation (International Maritime Organization – IMO) hat eine Reihe technischer und betrieblicher Maßnahmen eingeführt, um die Treibhausgasemissionen der internationalen Seeschiffahrt zu reduzieren. Das Meeres-Umweltschutzkomitee (Marine Environment Protection Committee – MEPC) hat bei seiner 59. Sitzung im Juli 2009 beschlossen, dass zusätzlich eine marktbasierende Maßnahme (MBM) nötig ist, um die Emissionen im Wachstumssektor Schiffsverkehr zu reduzieren. Hierzu wurden verschiedene marktbasierende Maßnahmen vorgeschlagen, zwei werden im vorliegenden Papier vorgestellt und verglichen: ein Emissionshandelssystem (EHS) und ein Treibhausgasfond, der durch eine Abgabe auf Schiffstreibstoffe gespeist wird. Viele Einzelheiten der vorgeschlagenen Maßnahmen müssen noch definiert werden, zum Beispiel die Emissionsziellinie/das Cap für durch den Schiffsverkehr verursachte Emissionen. Der Vergleich basiert auf den grundlegenden Unterschieden.

Das Ziel des Emissionshandelsvorschlages ist es, jeder Tonne CO₂-Emissionen der internationalen Seeschiffahrt einen Preis zu geben. Eine Obergrenze für die Emissionen (das Cap) würde festgelegt und eine Anzahl von Emissionsberechtigungen, die dem Cap entsprechen, verkauft oder auktioniert. Die Einnahmen daraus sollen gemäß den Prioritäten der Klimarahmenkonvention (United Nations Framework Convention on Climate Change – UNFCCC) für Anpassung an den Klimawandel, Vermeidung von Emissionen, Weiterbildung, Technologieentwicklung und -transfer sowie für Forschung und Entwicklung im Schiffssektor ausgegeben werden. Am Ende jeder Verpflichtungsperiode müsste der Schiffseigner seine Emissionen berichten und eine entsprechende Anzahl von Emissionsberechtigungen abgeben. Dies könnten entweder Emissionsberechtigungen des Schiffssektors oder von verbundenen Programmen wie des Mechanismus für umweltverträgliche Entwicklung (Clean Development Mechanism – CDM) sein.

Die Abgabe würde auf Treibstoffverkäufe erhoben und so Einkünfte für einen Treibhausgasfond generieren. Ihre Höhe würde so gewählt, dass Emissionen der internationalen Schiffahrt, die oberhalb ihres Treibhausgaszieles liegen, durch Emissionseinsparungen in anderen Sektoren ausgeglichen werden. Als weitere Verwendungszwecke des Fonds wurden Anpassung, Forschung und Entwicklung, technische Zusammenarbeit unter dem Dach der IMO und Verwaltungskosten für den Fond genannt. Diese Ziele müssten ebenfalls in die Ermittlung der Höhe der Abgabe einfließen.

Die Vorschläge ähneln sich in vielen Aspekten wie dem Anwendungsbereich, die Gleichbehandlung aller Schiffe, Verwaltungsaufwand, der Notwendigkeit Qualitätskriterien für Kompensationsgeschäfte zu definieren und dass nur Unterzeichnerländer der Konvention Mittel aus den jeweiligen Fonds beantragen können. Ein wesentlicher Unterschied ist jedoch, dass im Fall des Treibhausgasfonds wesentlich weniger Einnahmen erzielt werden als beim Emissionshandel. Solange die Finanzierung von Kompensationsgeschäften für die Emissionen oberhalb der Ziellinie das Hauptziel des Fonds ist, kann das Prinzip der „gemeinsamen aber unterschiedlichen Verantwortlichkeiten“ (CBDR) nicht erfüllt werden. Im Emissionshandel kann davon ausgegangen werden, dass die Schiffseigner eine vergleichbare Anzahl an Kompensationsgeschäften tätigen werden und die Einnahmen durch den Verkauf/die Auktion der Emissionsberechtigungen gemäß dem CBDR-Prinzip erfolgen können. Zudem sind die Anreize im Schiffssektor, selber Emissionen zu mindern, im Falle des Emissionshandels höher, da der Preis pro Tonne CO₂ höher sein wird als im Falle eines Treibhausgasfonds, der lediglich zur Finanzierung von Kompensationsgeschäften der Emissionen oberhalb der Ziellinie vorgesehen ist.

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1 Introduction

The International Maritime Organization (IMO) has endorsed a number of technical and operational measures in order to reduce the greenhouse gas (GHG) emissions from international shipping. In July 2011 a new chapter on energy efficiency was added to MARPOL Annex VI and is expected to enter into force in 2013. The Energy Efficiency Design Index (EEDI) was made mandatory for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for all ships in operation (IMO 2011).

The Marine Environment Protection Committee (MEPC) had already agreed at its 59th meeting in July 2009 that technical and operational measures alone would not be sufficient to reduce emissions in the growing shipping sector and that a market-based mechanism (MBM) is needed.¹ Two main purposes shall be reached by putting a price on GHG emissions:

1. To reduce emissions from international shipping by providing the maritime industries with an economic incentive to reduce its fuel consumption (both by investing in more fuel efficient technologies and by improved operation); and
2. To offset growing emissions from international shipping by reduction in other sectors.

Furthermore, market-based mechanisms can generate funds for climate-related purposes, e.g. for adaption or technology transfer.

Several options for market-based mechanisms were proposed by different parties; two of them will be assessed further in this discussion paper: an Emissions Trading System (ETS) for international shipping and an international fund for Greenhouse Gas Emissions (GHG fund) from ships. These will be briefly introduced in chapter 2 and compared concerning their expected environmental effectiveness, the amount of revenues to be generated, the incentives for emission reduction in the shipping sector itself, the impact on developing countries and the administrative effort involved in their implementation in chapter 3. In many aspects the two proposals for market-based measures were, at the time of writing, not specified in enough detail to enable a quantitative comparison. Therefore the analysis draws on the generic differences. The conclusions are to be found in chapter 4.

2 Short profiles of the policy options compared

2.1 Global Emissions Trading System for international shipping

A global Emissions Trading Scheme for international shipping was brought forward by Norway, France, Germany and the UK (MEPC 59/4/25, MEPC 59/4/26, MEPC 60/4/22 and MEPC 60/4/26). The cap and trade scheme would cover emissions from all ships engaged in international voyages over a size that is yet to be defined. The threshold chosen should “seek to maximize cov-

¹ IMO homepage on market-based measures accessed on 28th August 2013:
<http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Market-Based-Measures.aspx>.

erage of emissions while minimizing administrative burden” (MEPC 60/4/26). The point of regulation would be individual vessels as identified by their IMO number.

An emission limit, the cap, would be defined and emission rights (allowances) sold/auctioned. At the end of the compliance period every ship owner will have to report his emissions and surrender an amount of allowances equal to these. It is foreseen that credits from other compatible trading schemes and project based credits such as the Clean Development Mechanism (CDM) are eligible without quantitative limit. Ship owners can therefore acquire allowances and credits from within the sector or buy them from other sectors. Therefore, the cap will not install an absolute emission limit on the shipping sector and not limit growth in the shipping sector.

To enable additional flexibility banking and borrowing could be introduced as proposed by proposal MEPC 60/4/22 brought forward by Norway. If emission allowances are not used in a certain year they can be banked and used for compliance in a future year/commitment period and thus cater for unexpected fluctuation in emissions or to enable ship owners to buy allowances for future use, e.g. for reasons of risk management. Ship owners may also borrow allowances from future auctions but would then have to surrender allowances corresponding to a certain amount above the verified emissions to discourage extensive borrowing. A disadvantage of borrowing is that it “raises issues with respect to the liability and credibility of future emission reductions” (ZEW/Fraunhofer ISI 2011). Banking (and borrowing) can act as a price stabilization mechanism and equalize price fluctuation in years with exceptionally low or high emissions and add to cross-sectoral cost-efficiency effect of linking the ETS with other schemes.

The original proposal does not foresee that allowances are allocated for free. It is argued that free allocation would require data which is currently not available, thus give rise to substantial administrative efforts and may in addition cause competitive distortions amongst sector participants. Therefore it is suggested that in an introduction period only a certain percentage of the emissions need to be covered and that this percentage can gradually be stepped up to 100% (MEPC 59/4/25).

The revenues should be used primarily to fund:

1. “projects, programmes, policies and other activities in developing countries related to mitigation including REDD-plus, adaptation, capacity-building, technology development and transfer in line with priorities established for funding mechanisms under the UN-FCCC; and
2. research and development activities within the maritime sector with a view to support the objective of this Convention” (MEPC 60/4/22, p.31).²

The exact uses of revenues are deemed to need further discussion among all states at the IMO. Only countries who are parties to the shipping ETS would be eligible for revenues from the fund.

An exemption clause is foreseen which can be used to cater for voyages to and from small island developing states (SIDS) and least developed countries (LDCs). Exemptions would have to be approved by the IMO on the condition that they do not lead to carbon leakage.

2.2 International fund for GHG emissions from ships (or GHG contribution)

An International Fund for GHG emissions from ships was proposed by Cyprus, Denmark, the Marshall Islands, Nigeria and the International Parcel Tankers Association (IPTA) (MEPC 60/4/8; MEPC 59/4/5). The fund is envisaged to be filled by a GHG contribution to be paid on every ton of bunker fuel purchased by all party ships engaged in international trade. The GHG contribution would either be collected by the bunker fuel supplier or directly paid by the ship owner to the International GHG fund. If bunker fuel suppliers collect the GHG contribution, they would be required to register to be eligible to sell bunker fuels in compliance with the scheme. All ships flying the flag of a Party to the suggested Convention must buy fuels at registered bunker fuel suppliers and keep the documentation on board of the ship as evidence.

A global reduction target for international shipping would be set either by the UNFCCC or the IMO. The purpose of the fund is to offset shipping emissions above (and only above) this target line, “a significant reduction of GHG emissions from international shipping in absolute terms is not foreseen” (MEPC 60/4/8). To meet this goal offset units may be purchased from other sectors, e.g. CDM credits or units from other mechanisms established under the United Nations Framework Convention on Climate Change (UNFCCC).

The tariff of the GHG contribution will be determined based on the expected cost of purchasing enough credits to cover shipping emissions below the target line. To judge the amount of revenues required; the following parameters would need to be estimated for the period for which the contribution level is defined:

- expected amount of emissions to be offset (difference between projected shipping emissions and target line); and
- expected price for offsets per ton of CO₂.

² REDD+: Reducing Emissions from Deforestation and Forest Degradation.

The amount of revenues required is calculated by multiplying the expected amount of emissions to be offset with the corresponding price for offsets. To determine the GHG contribution per ton of bunker fuel the amount of revenues required is divided by the projected shipping emissions resulting in a contribution per t of CO₂ which can be converted to contribution per t of bunker fuel based on the CO₂ emissions caused by one ton of bunker fuel.

$$GHG\ contribution = \frac{(projected\ emissions - target\ line) * carbon\ price}{projected\ emissions} * emissions\ per\ t\ fuel$$

Regular adjustments are needed to ensure that an adequate amount of credits can be purchased. An interval for those updates should be set in the new IMO convention; the initial proposal (MEPC 59/4/5) suggests a time span of four years to provide predictability and certainty to the shipping industry on the one hand and reflect deviations from emissions and market prices projections for carbon units on the other hand. There have been substantial fluctuations in the market price for Certified Emission Reductions (CER, i.e. units issued under the CDM) over the past four years (Figure 2 in chapter 3.2).

Alongside offsetting shipping emissions above the target line the proposal (MEPC 60/4/8) also lists other purposes for the allocation of revenues from the GHG fund. These include adaptation (especially in the most vulnerable developing countries), research and development, technical cooperation within the IMO framework and administrative costs of the Fund Administrator. The resulting financing needs of these additional purposes are not included in the example calculation for the tariff of the GHG contribution (MEPC 60/4/8, p.10).³ The receipt of revenues for mitigation and adaptation purposes would be limited to those countries which are parties to the new convention in order to incentivise participation in the scheme.

The proposal assumed that the additional costs occurring to the shipping industry is negligible and can be passed on to the consumers due to the predominance of shipping as a transport means in world trade.

3 Comparison of policy option

3.1 Environmental effectiveness

The environmental effectiveness of the schemes depends on the coverage, the stringency of the target and the incentives provided to the shipping industries. In terms of coverage the two approaches are very similar. The proposal for an ETS foresees exclusion of smaller ships below a certain size threshold whereas the GHG fund proposal includes all ships as long as the bunker fuel suppliers collect the GHG contribution. In the case that ship owners pay the contribution directly, a minimum size limit may also apply for the GHG fund proposal. For both MBMs a

³ It is assumed that the support of the Adaptation Fund will include but not be limited to the 2% share of proceeds applied to credits issued for a CDM project going to the Adaptation Fund.

threshold chosen in a way which does not exclude a large share of emissions, is expected not to hamper the environmental effectiveness while reducing the administrative burden.

For both proposals the target line/cap has not yet been defined and therefore cannot be compared at this stage. Different options are assessed in, for example, the Norwegian submission on alternative caps (MEPC 60/4/23) and the example calculations included in the GHG fund proposal (60/40/8). In both policy options the base year should be chosen with care as shipping emissions fluctuate with economic cycles. A base period which covers several years might be preferable to choosing a single year that might not be representative.

Both proposals allow for unlimited use of offsets from other sectors. This is an option to cater for the concerns of shipping industry that their growth might be hampered and offers the opportunity to tap low cost emission reductions in other sectors and thus act as a cost-reducing mechanism. The environmental integrity is not affected as long as emissions are effectively reduced in other sectors. High quality standards for allowable credits are therefore essential. In the case of other schemes with an absolute limit on emissions (e.g. the EU ETS) emission reduction can be assumed safely to occur as long as the absolute limit (or cap) does not exceed business as usual (BAU) emissions. In the case of project-based mechanisms (e.g. the CDM) no quantitative limit exists, the reduction is estimated by comparing the actual emissions of a CDM project with a baseline which is inevitably a hypothetical reference scenario. If those units are recognized in the shipping sector, the question of whether the project would have been carried out also without the CDM or not (additionality) is crucial to the integrity of the project-based credits and thus to the environmental integrity of the market-based instrument in the shipping sector. An option could be to exclude certain project types where there are severe doubts on the environmental integrity.

A generic difference between an ETS and a GHG contribution (that acts in a comparable way to a tax or levy) is that in the trading scheme a quantitative limit is set and the price will adapt to it. In the case of a tax, the price is set politically and the emissions will adapt to it. Whereas in the first case there is certainty on the emissions level, in the latter case there is certainty on the price. The differences between the two instruments are somewhat blurred in the present proposals. In the case of the ETS, the certainty on the emissions level in the shipping sector is reduced by allowing an unlimited use of offset units. In the case of the GHG contribution it is envisaged that the price per ton of emissions is set in a way that reflects the target line and enables the offsetting of the excess emissions. Therefore, the certainty of the price is reduced compared to a conventional environmental tax but the probability of archiving the target improved. The total level of emissions in the shipping sector may exceed the target line as the goal is only to offset the emissions above them, not to set the tariff of the GHG contribution in a way that the target line is met exactly.

3.2 Generation of revenues and incentives in the shipping sector

In both MBMs analysed revenues are generated. In the case of the proposed ETS all certificates are envisaged to be auctioned or sold. The price for allowances will be determined by the marginal abatement cost in the shipping sector or by the price of offset units (e.g. CDM), whichever is lower.

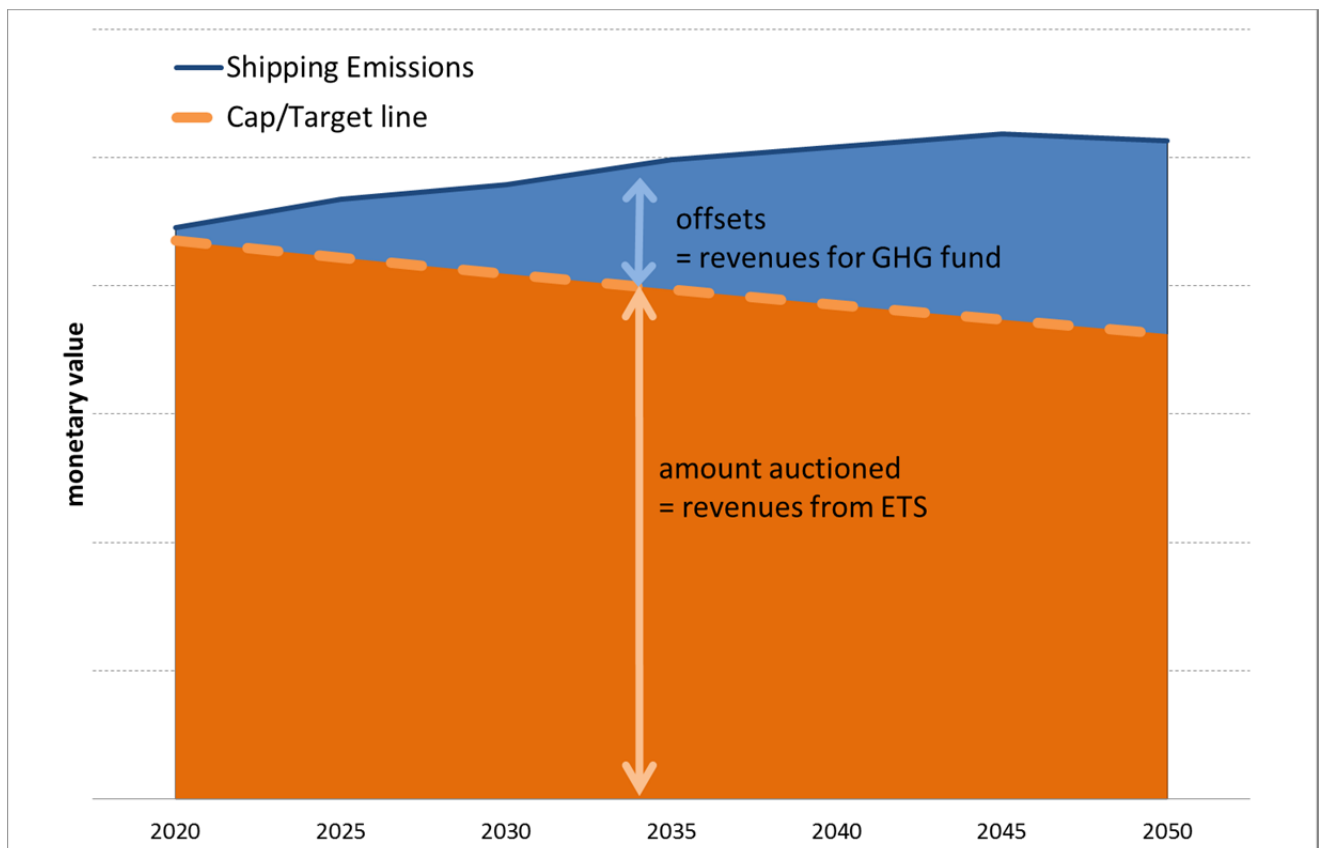
The revenues of a GHG contribution would be similar if the aim were to offset all shipping emissions – then the price for offsets would determine the GHG contribution per ton of emis-

sions. As offsets are likely to be cheaper than the marginal abatement cost in the shipping sector, the resulting price would be of a similar level. The GHG fund proposed by Denmark, though, aims at offsetting only emissions above the target line. The amount of revenues available for other purposes will thus be substantially lower if not negligible.

Figure 1 illustrates exemplarily the order of magnitude of revenues generated. For the example it was assumed that the emissions in the shipping sector would be higher than the cap or target line.

- ETS:
The revenues generated in an ETS equal the proceeds from the auctioning of allowances; the number of allowances that can be sold/auctioned depends on the cap defined. In case the ETS starts with an introductory phase in which allowances surrendered would only have to cover a certain share of the total emissions reported, the revenues generated would be lower in the first years. Emissions above the cap would have to be covered by certificates from linked schemes such as the CDM or other mechanisms. These certificates would be purchased additionally by the ship owners. The total amount available for climate action would therefore be the sum of the two areas.

Figure 1 Illustrative example of revenues generated



Note: The revenues are a function of the emissions ($t\ CO_2 * price\ per\ ton$), in the graph total emissions and cap/target line are expressed in value, too. For the illustrative example it was assumed that the carbon price will remain stable over the years. If the price fluctuates the revenues will fluctuate accordingly while, for example,

the target line/cap remains unchanged. As those fluctuations are expected to be similar for both proposals; they are not assessed further here.

- GHG contribution:

The price on shipping emissions set by the GHG contribution would be set in a way that revenues are generated to offset the emissions above the target line only (blue area in Figure 1). The revenues for a GHG fund will therefore be substantially lower than the overall amount spent on climate action in the case of the ETS. Also, if only the revenues generated for a climate fund (excluding other purposes) are compared, the revenues in the case of the GHG contribution are expected to be substantially lower than in the case of an ETS with full auctioning (unless the actual shipping emissions more than double the emissions defined by the target line/cap). In case the GHG fund aims to fund other purposes such as adaptation and technical cooperation on top of the offsets, the GHG contribution tariff would have to be set correspondingly at a higher level. But as the proposal of a GHG fund “is essentially focused on mitigation rather than raising a large amount of new revenue for a new climate fund” (Keen/Parry/Strand 2012); the GHG contribution per ton of CO₂ emitted will most likely still be lower than in the case of the ETS.

For both proposals the absolute amount of revenues can only be estimated when the instrument is introduced, as this depends largely on the prices for offsets and these interact, e.g. with the prices in the EU ETS, and are influenced by the demand by other players such as parties to the Kyoto Protocol purchasing offsets. In the past the prices, e.g. for CDM credits, have fluctuated substantially – from nearly 25 Euro in mid-2008 to below 1 Euro in 2013 (see Figure 2).

Figure 2 Prices for CDM credits on the secondary market



Source: Data by Point Carbon, compilation by Oeko-Institut

The difference in the price per ton of CO₂ and consequently per ton of bunker fuel will in turn influence the number of abatement measures that are economically viable in the shipping sector. The lower the price, the lower the number of technical and operational abatement

measures that ship owners will implement. The overall emissions in the shipping sector are therefore envisaged to be higher in the case of implementing the GHG fund proposal.

3.3 Impact on developing countries/CBDR

Whereas the IMO adheres to the uniform treatment of all ships and flag states, the principle of “common but differentiated responsibilities” (CBDR) is at the core of the UNFCCC climate regime. In both proposals all ships regardless of whether they fly the flag of a developed or a developing country are envisaged to be treated in equal manner while the revenues generated should be used to compensate especially the least developed countries and small island developing states and thus ensure equity.

In the ETS proposal an option to exclude small island developing states is foreseen. Additionally, it is argued in MEPC 60/4/22 that participation is voluntary, but at the same time only parties to the instruments are eligible to receive financing from the fund. Also in the GHG fund proposal by Denmark only parties may benefit from the revenues gained.

Essentially, assessing whether the instrument is consistent with the CBDR principle depends on the use and the magnitude of the fund. In both proposals mitigation, adaptation and technical cooperation are the stated goals. The amount of revenues obtained will be significantly higher in the ETS case than for the GHG contribution if the tariff is determined to generate enough revenues for offsetting emissions above the target line only. In this case, there will be no funds left for other purposes or not all emissions above the target line can be offset.

In the case of the ETS there are two elements. Offsets will most likely be purchased by ship owners for compliance with their obligations under the ETS. Additionally, revenues are generated from auctioning or selling of allowances which can be used for mitigation, adaptation and technical cooperation.

Furthermore, it is argued that the introduction of a shipping ETS would benefit developing countries by enhanced emission cuts, as those countries are especially vulnerable to climate change (MEPC 60/4/22).

3.4 Administrative effort

The administrative effort involved in implementing any of the proposals will depend largely on the final design of the instruments. Whereas in the ETS proposal it is evident that the ship is the point of regulation, two options are presented in the GHG contribution proposal: either the bunker fuel deliverer or the ship. If the ships were chosen, the administrative burden is expected to be rather similar for both instruments, supposing they require ships to monitor and report emissions and/or fuel use (MEPC 63/5/9). In both proposals the option for a *de minimis* rule is envisaged which reduces the aggregate administrative burden by exempting very small entities. Compliance and enforcement could be controlled similar to the rules currently established in the IMO’s MARPOL Convention Annex VI.

If it is decided that the GHG contribution is to be collected from the bunker fuel suppliers, the number of entities to be covered would be lower, while at the same time they have not been regulated by the IMO before. The control and - if necessary - sanctions would have to be carried out by the state in which they are based and for non-party states by a central institution (the GHG fund). Incorporating the collection of the GHG contribution to the tax authorities may

reduce administrative efforts on the one hand but forwarding the revenues collected may require the consent of the institution with budget authority (national parliament) on the other hand.

The total administrative cost is deemed to constitute only a small part of the overall scheme (ZEW/Fraunhofer ISI 2011) and could be covered by the revenues generated. In the case of the GHG contribution this would have to be included in the calculation of the GHG contribution tariff to ensure that the remaining revenues are sufficient to purchase offsets for any shipping emissions above the target line.

4 Conclusions

The environmental effectiveness of the schemes proposed depends on the coverage in terms of shipping emissions and the stringency of the target. For both proposals the coverage of ships envisaged is similar but the target is not yet defined. Therefore, the stringency of the environmental target can only be assessed at a later stage. Growth in the shipping sector would still be possible since offsets can be used without limit. As offsets play an important role in both the ETS and the GHG contribution, exigent quality requirements for emission reductions achieved outside of the maritime scheme are key.

The generation of revenues is substantially higher in the ETS case. This is chiefly due to the fact that the GHG contribution tariff is set at a certain level to enable the offsetting of emissions above the target line only (instead of all emissions). As a consequence, the incentives to reduce emissions within the shipping sector are higher in the ETS so that the reduction within the sector is expected to be higher, too.

Ships from all countries are treated equally in the schemes proposed, as is customary in the IMO. The principle of equal treatment can be reconciled with the principle of “common but differentiated responsibility” of developing and developed countries customary in the UNFCCC by the guidelines on how the revenues can be used. If the use of the revenues is solely or chiefly dedicated to purchasing offsets (as in the GHG fund proposal), the criteria of CBDR cannot be met. Any uses of revenues above and beyond the purchase of offset credits would have to be reflected when setting the tariff for the GHG contribution. In the case of the ETS, the amount of revenues generated is substantially higher and the revenues are not required to offset a certain amount of emissions but can be spent according to priorities established for funding mechanisms under the UNFCCC and for purposes under the IMO (research & development). Additionally private parties (ship owners) are expected to purchase offsets units from other schemes in an order of magnitude similar to the purchases of the GHG fund proposed. The administrative efforts are expected to be similar for both schemes. If the point of regulation is the ship, a *de minimis* rule is advisable.

In summary it can be concluded that the two proposals are in many aspects similar, e.g. in coverage or administrative efforts. As the GHG contribution per ton of CO₂ is expected to be substantially lower than the price per ton of CO₂ resulting from an ETS, the incentives to reduce emissions in the shipping sector itself will be higher in the ETS case. While both proposals are based on the principle of equal treatment of ships, only the ETS proposal provides options to reflect the principle of “common but differentiated responsibilities” by dedicating a certain

amount of revenues for climate mitigation and adaptation in developing countries unless the GHG fund proposal is revised.

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