THE FOLLOWING DISSENTING VIEW WAS SUBMITTED TO THE EXPERT GROUP BY HARILAOS N. PSARAFTIS BUT HAS NOT BEEN INCLUDED IN THE GROUP'S FINAL REPORT.

IT WAS INCLUDED AS ANNEX 2 OF INTERNAL DOCUMENT MBM-EG 3/8 DATED 20 AUG. 2010 (REPORT OF GROUP'S 3RD AND FINAL MEETING).

IT HAS BEEN EXCERPTED FROM THAT DOC. AND REPRODUCED HERE FOR COMPLETENESS PURPOSES AND SO AS TO AVOID POSSIBLE MISUNDERSTANDINGS.

H. N. PSARAFTIS

ANNEX 2

MBM EG Report

Dissenting view by Harilaos N. Psaraftis
Professor, National Technical University of Athens, Greece
August 13, 2010

1   It is clear that all group participants, the focal points, the task group leaders, the IMO secretariat and, last but not least, the Expert Group chairman must be highly commended for contributing to a report covering many complex issues in which difference of opinion among experts was not uncommon. This expert tried to contribute to the discussion as best he could, hoping that his views were of some help.

2   It is obviously impossible for all comments made by all experts to be included in the report, even though this expert recognizes that there was a sincere and honest attempt to do so as much as practically feasible. Whereas it is believed that consensus is a desirable goal, differences of opinion can also have an important role in helping the Committee ultimately decide what action to take. To that end, a selected subset of points made by this expert are summarized below and can be considered as a dissenting view which is respectfully requested to be included as part of the record[1].

3   It is unfortunate that the data and models on Marginal Abatement Cost (MAC) curves supplied to the expert group by DNV are not fully available to scrutiny, as this significantly limits their usefulness. If the model itself is not made available for scrutiny by the experts (remaining virtually a black box) then obviously the correctness of its results cannot be confirmed. To state one example, one important response of ship owners to a fuel price increase is slow steaming, which obviously has important implications on the emissions generated by a ship. For any given fuel price, the optimal speed chosen by the owner is a function of that price and the state of the market (boom, slump, or other). Although the DNV model includes slow steaming as a possible abatement <u>measure</u> it ignores that slow steaming is also primarily an automatic <u>response</u> of owners to fuel price increases. In fact, in two variants, one which is based on port efficiency measures and typically has MAC<0 and one which is based on fleet replacement and typically has MAC>0, the model does not seem (at least from the information made available) to capture the owner's response to fuel price changes. Also not very clear is how EEDI effects are factored in. Based on the above, reservations on the DNV results are expressed, even though the MAC concept is obviously extremely important.

4   Similar considerations apply to the excel model which was developed to estimate emissions reductions, revenues generated, costs and other attributes of each MBM proposal. It is very much appreciated that this model is more transparent than the DNV model, but again some reservations are expressed for some of the modelling assumptions. For instance, an illustrative assumption has been made that an increase in fuel prices due to an MBM of 100 per cent over the long-term will result in 4% reduction in emissions below BAU. However, this percentage (4% or other) critically depends on the slope of the MAC curve at the point it crosses the x-axis, and as illustrated by the DNV MAC curves for the 72 scenarios examined, that slope can vary widely from very low to very high (projected future fuel price being the main determinant). In that sense, this expert has reservations on the numerical results of this model, which are sometimes difficult to follow and, at a minimum, should be interpreted with caution.

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[1] See also TOR 2.4.9 of the EG: "The Expert Group should, as far as possible, reach its conclusions by consensus, and if not, this should be recorded in the report."

5   This expert disagrees to the apparent conclusion of the report that the GHG Fund proposal is a weak driver for uptake of in-sector technological measures to reduce emissions whereas the ETS proposal is a strong driver. Uncertainties aside, to achieve the same amount of reduction, the Fund contribution and the ETS carbon price must be the same. Basically we get to choose either the target reduction (ETS) or the target contribution (Fund). Either can be high or low. It is our choice. If we go for a modest target reduction, the carbon price will be low, close to zero according to the DNV MAC curves. Alternatively, we could impose a constant \$50/tonne of CO_2 contribution (approx. \$150/ tonne of bunkers) and then watch the owners react, especially since the contribution they will have to pay is a sure thing, instead of guessing how the carbon price will fluctuate under ETS. And we all the problems of maintaining a permits market (administration, etc) are avoided. As regards revenues generated, if carbon price and CO_2 reductions are the same, revenues will also be the same. But ETS will be more expensive to maintain, and (in that sense) less efficient. This means that in-sector CO_2 reductions for the GHG Fund proposal can be much higher than those shown in the report.

6   Last, but not least, the set of tables below represents this expert's opinion on how each of the proposals stands with respect to the main criteria and some other criteria. It is a simplified version of the matrix circulated to the group under doc. MBM-EG 3/4/2. Comments on criteria 6 (compatibility to UNFCCC and other international laws) and 9 (compatibility with existing IMO framework) have been omitted as outside this expert's main area of competence. Although obviously this table only represents this expert's opinion and it is clear that some may disagree with it, it is hoped it can be found useful. Due to space limitations, not all proposals can fit in one table, so this is in 2 parts, each with 4 proposals. All ETS proposals are combined.

TABLE A: HORIZONTAL ASSESSMENT OF ALL MBM PROPOSALS

PART I

Main criterion	GHG Fund (Denmark)	Leverage Incentive Scheme (Japan)	ETS (Norway, UK, France)	SECT (USA)
1. Environmental effectiveness (how certain is MBM to achieve a specific reduction target)	There may be less certainty of CO_2 reductions than ETS, but MAC curves of DNV can give an estimate. If price is same, CO_2 reductions are same with ETS. Offsets can contribute meeting a cap. See also criterion 2 below.	Lower than GHG Fund, but may have side-effects due to possible distortions induced by misuse of EEDI (eg, an underpowered ship has a low EEDI but may emit more CO_2).	There may be higher certainty of CO_2 reduction, but reduction target is arbitrary (or very difficult to determine). Plus, enforcing the cap can be difficult and carbon price may skyrocket if we are close to the cap. Significant carbon leakage risks exist (eg, if not all ships are covered, some countries like LDCs excluded, etc).	Low. CO_2 reduction certainty does not exist, as scheme trades on EEDI. No attempt to compute CO_2 directly. Variant to use actual fuel burned instead of EEDI has merit.

Main criterion	GHG Fund (Denmark)	Leverage Incentive Scheme (Japan)	ETS (Norway, UK, France)	SECT (USA)
2. Cost effectiveness	High. Costs are known as price is known. Simplest scheme (except Bahamas). Option 2 is probably better than Option 1. According to US CBO study, Levy is most efficient way to reduce emissions[2].	High, but lower than GHG Fund, due to costs of tracking EEDI.	Low. High administrative costs, very unpredictable carbon prices.	Low. Combines problems of ETS with EEDI distortions and other problems.
3. Incentives to technological change	High. Investors will respond to known price.	High, but lower than GHG Fund, due to possible mixed EEDI signals (eg, invest in underpowered ships).	Low. Investors will not know what future prices they will encounter and will pay high administrative costs.	Same as above. May provide the wrong signals in favour of low-EEDI ships than may emit more CO_2.
4. Practical feasibility	Reasonable. Can be modelled from IOPCF.	Lower than GHG Fund, due to tracking of EEDI for existing ships.	Low. All GHG Fund (option 2) processes, plus auction permits, monitor allowance market, enforce compliance, indentify fraud, etc.	Worse than ETS. Combines problems of ETS with tracking EEDI for existing ships and estimating activity levels.
5. Impact on LDCs and SIDS	Neutral. From a revenue perspective, if prices are same, revenue is same as ETS.	Same as GHG Fund- although scheme will likely benefit developed countries more (as these are more likely to have low EEDI ships).	Distortions likely, as traffic to LDCs-SIDS countries is excluded.	Neutral.
7. National administrative burden	Reasonable. Tracking bunkers is not trivial (whether Option 1 or 2) but burden is lower than all other schemes (except Bahamas)	Higher than GHG Fund.	Significant. High admin. costs to track, monitor, enforce, avoid evasion and fraud, etc. If all ships in the scheme, impossible to implement.	Worse than ETS.
8. Administrative burden on industry	Same as above.	Higher than GHG Fund.	Same as above.	Same as above.

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[2] See "Policy Options for Reducing CO_2 Emissions," Congress of the United States, Congressional Budget Office, February 2008 (reference no. 18 in the 'other document' list of the report).

Main criterion	GHG Fund (Denmark)	Leverage Incentive Scheme (Japan)	ETS (Norway, UK, France)	SECT (USA)
OTHER CRITERIA				
Impact on safety	Neutral.	Problem if under-powered ships are advocated due to low EEDI.	Neutral.	Problem if under-powered ships are advocated due to low EEDI
Risk of fraud	Average.	Average.	High- documented cases in EU ETS and elsewhere.	Higher than GHG Fund
Money collected	Limited to in-sector contributions. Depends on level of Levy.	Same as GHG Fund minus difference in admin. costs- some of the proceeds go to ships of low EEDI.	If GHG Fund Levy and ETS carbon price are same, amount of money collected for ETS is same as GHG Fund minus difference in admin. costs.	Depends on price of EEDI traded.

PART II

Main criterion	VES (WSC)	Rebate Mechanism (IUCN)	Port Levy (Jamaica)	Penalty on trade (Bahamas)
1. Environmental effectiveness (how certain is MBM to achieve a specific reduction target)	Problems due to possible distortions due to use of EEDI. Not as bad as SECT.	Proposal piggybacks any MBM. If MBM is GHG Fund, environmental effectiveness is as GHG Fund's.	Approach has theoretical merit but is plagued by implementation difficulties. Carbon leakage risks exist as some port states may not implement scheme.	As shown by MAC curves of DNV, some non-trivial CO_2 reductions can be achieved even with no MBM.
2. Cost effectiveness	Same as above.	Lower than that of MBM implemented.	Lower than GHG Fund due to port state control	High for high fuel prices, low otherwise.
3. Incentives to technological change	Unclear- perhaps higher than SECT but risk of wrong signals due to EEDI.	Lower than GHG Fund's, as price will be less predictable.	High if implemented globally, but that is the key difficulty.	Owners will implement measures with MAC<0 anyway.
4. Practical feasibility	Higher than SECT but lower than GHG Fund, due to tracking of EEDI for existing ships.	Lower than GHG Fund (add costs of administering rebates)	Low. Practically impossible to monitor emissions.	Highest.
5. Impact on LDCs and SIDS	Neutral.	Could be beneficial to LDCs and SIDs if levy is based on imports.	Unclear. May create distortions by diverting traffic to port states that do not implement the scheme.	Neutral.
7. National administrative burden	Lower than SECT, but higher than GHG Fund.	Higher than GHG Fund (add costs of administering rebates).	High.	Zero.

Main criterion	VES (WSC)	Rebate Mechanism (IUCN)	Port Levy (Jamaica)	Penalty on trade (Bahamas)
8. Administrative burden on industry	Lower than SECT, but higher than GHG Fund.	Same as GHG Fund.	High.	Zero.
OTHER CRITERIA				
Impact on safety	Problem if under-powered ships are advocated due to low EEDI	Neutral.	Neutral.	Neutral.
Risk of fraud	Higher than GHG Fund.	Average.	High.	N/A
Money collected	Depends on level of Fee.	Similar to GHG Fund- minus difference in admin. costs	Depends on level of port Levy. Have to deduct high admin. costs.	Zero.

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