

Multi-year Expert Meeting
On Transport and Trade Facilitation:

**Maritime Transport and
the Climate Change Challenge**

16-18 February 2009

**A levy on fuel for international shipping,
which differentiates responsibilities between
developed and developing countries**

Paper submitted by

Dr. Andre Stochniol
Founder, IMERS

A levy on fuel for international shipping, which differentiates responsibilities between developed and developing countries

Dr Andre Stochniol, andre@imers.org

Founder, [IMERS](http://imers.org), UK

IMERS in 30 words

A technically sound and politically acceptable levy on fuel for international shipping, which differentiates responsibilities between developed and developing countries. Applied worldwide, collected centrally – bypassing national coffers – raising \$6bn+ annually for climate action.

Scheme Details

- 1 The International Maritime Emission Reduction Scheme (IMERS) aims to raise much needed finance for climate adaptation in developing countries while simultaneously reducing shipping CO2 emissions, which are significant, growing and currently unregulated.
- 2 Under the proposed scheme, an emission cap for all destinations with emission reduction commitments - Annex I countries to the UNFCCC (A1) – is established. A carbon levy on ship fuel is derived from the amount of emissions above the cap and the prevailing market price for carbon. The levy is collected centrally based on ship fuel use and a ratio of delivered cargo to A1 countries, thereby differentiating responsibilities between developed and developing countries. The levy is paid periodically by the fuel payers, typically charterers. The liability stays with the ship and is enforced by A1 ports.
- 3 100% of revenue raised is disbursed to climate change action, comprising: (1) mitigation of emissions in excess of the cap, (2) climate adaptation, (3) maritime technology transfer and transformation.
- 4 The anticipated price impact of the scheme on final consumers is only circa 0.1% increase in the price of imported goods to A1 countries (equivalent to an extra \$1 for every \$1,000 of imported goods). There is no impact on imports to non A1 countries.

Innovative Elements

- 5 The scheme has highly innovative characteristics.
 - .1 It resolves the conundrum of reconciling the need for a uniform shipping regime with differentiated responsibilities enshrined in the UNFCCC.
 - .2 Economically, it is a novel hybrid quantity-price instrument which efficiently combines a pre-determined cap with the market price for carbon (cap-and-levy).
 - .3 Operationally, it eliminates several barriers such as emission allocation, which has made traditional cap-and-trade impossible to implement effectively for shipping.
 - .4 Technologically, it is a centralized system rather than a patchwork of 100+ variants for different flag states.
 - .5 It is future-proof, as it can incorporate emission deviation commitments.
 - .6 Importantly, it creates new governance to address emissions outside national jurisdictions.

Feasibility

- 6 The feasibility of the scheme has been proven by its rapid ascent to the international negotiation table, and subsequent support for it. In 2007 Norway brought a uniform version

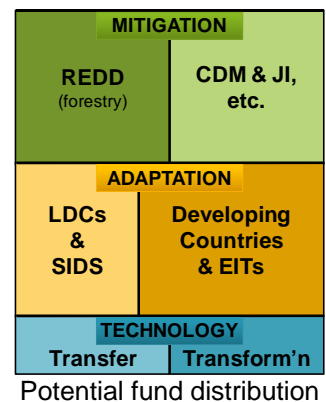
of IMERS to multilateral negotiations, both in the IMO and UNFCCC. Support from the EU, Australia, other countries and organizations, as well as reviews and recommendations in 10+ influential reports followed in 2007-08.¹ The differentiated version was created in mid 2008 and is now informally supported by a number of developing countries, and is being considered by India and China. There are no similar schemes.

Contribution to Tackling Climate Change

- 7 IMERS could be the first global scheme to reduce emissions for an entire sector. It could:
 - .1 Halve shipping emissions by 2050 at the lowest cost without constraining economic growth;
 - .2 Provide \$billions for climate adaptation & technology transfer;
 - .3 Establish new governance for international emissions that are inherently beyond national jurisdictions.

- 8 For an emission reduction goal (cap) of 20% below the 2005 level by 2020 for developed countries, IMERS' annual contribution from 2013 onwards would be:
 - .1 Emission reductions of 160+ million tons of CO₂, initially mostly through purchasing emission reduction credits from REDD (forestry) and the CDM/JI projects; in the longer term through efficiency improvements & technological breakthroughs.
 - .2 Additional and predictable financing for adaptation to climate change in developing countries of \$2.5bn+, of which \$1bn+ is anticipated for the most vulnerable countries (LDCs & SIDS).
 - .3 Dedicated financing for technology transfer and transformation of \$1bn. This would lead to improved maritime transport, reduced costs and reduced emissions.

- 9 Furthermore, the approach paves the way for early action. Accelerating the scheme's start by 1 year would raise \$6bn of climate funding. The scheme can start as quickly as 2013 and would be permanent.



Implementation Points

- 10 The proposed levy is equitable, clear, predictable and effective. By being collected centrally, it bypasses national coffers and 100% of revenue raised goes directly towards climate action.
- 11 In contrast to cap-and-trade, it can be rapidly and cheaply implemented; neither large bureaucracy nor complex reporting is required.
- 12 Furthermore, the scheme is underpinned by existing law and trade rules (UNCLOS, WTO, GATT).

Momentum for Action

- 13 The author hopes that discussion of the paper will add to the momentum for the proposed scheme, which is feasible, needed and affordable. IMERS is seen by insiders as one of the least controversial and most effective ways to raise \$billions of additional financing for climate action. It would simultaneously resolve the deadlock in addressing CO₂ emissions from international maritime transport. Additional effort and support is however required.
- 14 Submissions from parties to the UNFCCC and the IMO processes are needed in 2009.

¹ See: www.imers.org/buyin/achieve. Letters of support from top-level influencers have also been obtained.

ANNEX – FAQs

Selected questions and answers from 2007-2008 negotiations follow as preparation for the debate.

Q1: Does IMERS actually cap emissions?

- 15 A cap on emissions is an integral part of the scheme and applies to total CO₂ emissions subject to the regime. Achievement of the cap is the key objective of the scheme. This cap is not further divided into individual country obligations, or caps.
- 16 The volume of projected emissions above the agreed cap together with the prevailing market carbon price dictates the level of the levy (emission charge). Collected at this level, the levy would generate enough money to offset the emissions above the cap.
- 17 Emission reductions are therefore guaranteed, albeit not necessarily in the shipping sector. The collected money is spent on reducing emissions elsewhere. These reductions are most likely to be outside the shipping sector due to lower abatement costs in the power generation sector, and similar. If a deficit appeared in a given year for whatever reason, the levy is adjusted upwards the following year to cover it.

Q2: It is just a tax, isn't it?

- 18 The employed mechanism is a hybrid quantity-price instrument, not just a tax, pure price instrument. The level of the levy is not set arbitrarily as in a tax but it is determined by the quantity goal (cap on emissions) and the prevailing market carbon price (i.e. it can be called cap-and-levy). The carbon price, created by the EU ETS and other mechanisms, in fact enables this hybrid mechanism. Without it the scheme could not exist. Secondly, the revenue raised is directed to reduce emissions as per the cap.
- 19 Furthermore, the scheme provides an option to go some way in correcting the market failure relating to the lack of adequate investments in shipping R&D for the significant emission reductions required. Additional revenue for technology research and transfer can be raised, but only if the levy is set higher than the level dictated by the emission cap and carbon price.
- 20 Some emission reductions would inevitably occur within the shipping sector driven by underlying economics. Only the remainder of reductions needed would be purchased from other sectors. How much is purchased from other sectors is driven by what is most cost efficient.

Q3: What would be the cost impact on end customers?

- 21 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. There will be no cost impact on imports to developing countries.

Q4: How much funding would go to climate change?

- 22 100% of raised financing would go to climate change. Projected funds are expected to be in excess of \$6bn annually from 2013 onwards, as shown in the table below.

FUNDS (in \$billions per annum)	2013	2020
Mitigation	2.5	10
Adaptation	2.5	10
Technology	1	3

TOTAL: \$6bn+

Q5: How would the funds be managed?

- 23 The adaptation funds would be contributed to the existing funds under the UNFCCC, such as the Adaptation Fund. The mitigation funds would be used to acquire emission credits through professionally managed carbon funds. The technology funds, if raised, would be managed through a dedicated Maritime Technology Fund, or similar. This will be part of the post-2012 climate change protocol.

Q6: What would the funds be used for? Who would benefit most?

- 24 Least Developed Countries (LDCs) and Small Island Developing States (SIDS) would benefit most from the scheme due to the significant adaptation financing that would become available to them. How the funds will be split would be agreed by parties to the UNFCCC. One potential distribution is as follows:²

Total revenue	42%	Mitigation	50%	REDD (forestry)
			50%	CDM & JI
	42%	Adaptation	40%	LDCs & SIDS
			60%	Other Developing Countries and Economies in Transition
	16%	Technology	50%	Short-term technology transfer
			50%	Long-term R&D

Q7: Where does the money for adaptation come from?

- 25 The centralized approach aggregates demand for emission credits from the entire shipping sector. This would provide access to cheaper emission credits on primary emission markets (including CDM/JI) and access to government forestry schemes (REDD) at prices much lower than on the retail market. This would generate gains which are utilized to address adaptation issues, without any costs to shipping.

Q8: How would it be implemented globally?

- 26 The simplest option is a direct payment to an emission account administered centrally. Each ship would have an account and would be liable for the levy being settled for the previous period. The account would be with the World Bank (or a selected commercial bank operating the accounts). The levy will be paid by charterers, ship-owners, ship-operators or other entities as specified in the commercial terms of the ship charter/use, in a similar way as the terms which specify who pays for fuel.
- 27 Compliance would be enforced through Port State Controls in Annex I countries only. They would have access to a central system for shipping emissions based on IMO ship numbers. There is no need to enforce the scheme in non-Annex I countries, which is an important co-benefit of the scheme as it accelerates implementation and avoids lack of capacity in some developing countries.
- 28 The governance of the funds, including a supra-national body and how the revenue would be distributed, is to be agreed within the climate change negotiations. This would be part of the overall framework for financing climate change action to be governed under the UNFCCC convention. The supra-national body is not prejudged but proposed at this stage. One reason is to assure that the funding generated is treated as additional in the meaning of the Bali Action Plan for climate change (i.e. it should be governed under the UNFCCC convention).

Q9: How does the scheme preserve a level playing field for ships?

- 29 All ships transporting goods to any destination are treated the same, irrespective of flag they carry and the ship-owner nationality, and so on. For instance all ships delivering goods to Hamburg are treated the same and are subject to the levy. All ships delivering goods to Shanghai are treated the same (and currently would not be subject to the levy).
- 30 The level of the levy would be announced one year in advance, thus providing cost predictability and enough time for the shipping industry to incorporate the levy in their prices.

Q10: Is the scheme ambitious enough given that it is limited to emissions from Annex I?

- 31 Approximately 60% of shipping emissions are attributable to Annex I countries, based on volume of unloaded cargo. Therefore 60% of emissions will be addressed on day 1 of the scheme with an ambitious emission reduction goal – such as 20% emissions reductions by 2020 – as it would apply to

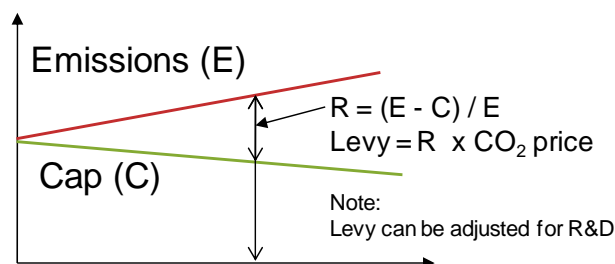
² See www.imers.org/climate for detailed example and reasoning for funds distribution.

Annex I countries only. The current regime does not guarantee any reductions whatsoever in the sector.

- 32 The scheme scope and cap are not independent. Expanding the scope to developing countries in a uniform manner is likely to lead to a significantly less ambitious, diluted cap. The end result might actually be the same or even worse than a scheme applied only to Annex I, not to mention being less likely to be accepted in the first place.
- 33 Objections for such a uniform scheme would stem from both sides. For instance to achieve similar total reductions as for the Annex I scheme, it would be enough for the uniform scheme to use a simple stabilization goal at the 2005 level. However simple, this goal for shipping emissions would be in our view: 1) difficult to accept in Annex I countries as not ambitious enough for the public and at odds with national targets, 2) impossible to accept in non-Annex I countries due to the principle of common but differentiated responsibilities and respective capabilities (CBDR), and the reality that greater reduction commitments and costs would be imposed on them than on developed countries.
- 34 Furthermore, IMERS can easily accommodate an important additional goal: to deviate below business-as-usual emission trajectory. This could enable some developing countries to enter the scheme. However for them the differentiated levy would be determined from the committed emission deviation and market carbon price, rather than the cap and carbon price used for developed countries. This would increase the ambition of the scheme further. Inclusion of such a deviation commitment in any cap-and-trade scheme seems rather complex, if not impossible.

Q11: How the levy is calculated?

- 35 The level of the levy is derived from the projected gap between emissions and the cap, as shown below. E is the projected emissions, and C is the cap for the total emissions. R is the ratio equal to the percentage of emissions that are above the cap, calculated as $R = (E - C) / E$. In the simplest case R defines the level of levy in terms of the carbon price. The levy can be adjusted upwards for an extra charge for technology R&D.



- 36 Furthermore, both E and C can be expressed in reference to emissions in any given year – such as 2005 – through an appropriate growth rate. R can therefore be calculated from an emission growth rate for E and an emission reduction rate for C. This allows the scheme to start operating without the a priori knowledge of total emissions, in contrast to cap-and-trade for which reliable emission data is required to allocate emissions.
- 37 Example calculations for 2013. Emissions (E) and cap (C) are projected to be 116%³ and 89%⁴ of emissions in 2005, respectively. The ratio (R) is calculated as 23%. An adjustment of +7% for technology and scheme costs brings the levy to 30% of carbon price.

Q12: Have the calculations taken the impact of the current recession into account?

- 38 Sample costs and benefits calculations for 2013 are provided. The annual net emissions growth rate has been discounted to 2% per annum due to the current global slowdown (this is equivalent to skipping one year of growth and using the most conservative previous growth scenarios). An illustrative cap 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

³ Calculated using simplified linear growth for 8 years: $100\% + 8 \times 2\%$

⁴ Calculated by linear interpolation for 2013 (8 years from 2005) from the 20% reduction goal defined for 2020 (i.e. 15 years from 2005), as follows: $100\% - (20\% \times 8 / 15)$

emissions in 2005 are rounded to 1 GtCO₂, as per the higher estimates and for ease of scaling. Based on the emission growth rate and the emission cap, the levy is calculated as 30% of the carbon price in 2013,⁵ translating to approximately 5% of the fuel price.

Q13: Given that ships would not obtain emission allowances which they could sell if unused, is it an efficient scheme?

- 39 The scheme is economically efficient; trading occurs between different sectors: those which can make emission reductions cheaply and those which can't. The shipping sector would be the net buyer of emission allowances/credits from other sectors for the foreseeable future. These purchases would cover the reductions they cannot make cost-effectively themselves and would be purchased centrally from the funds aggregated in the scheme (purchased from the power sector, REDD, CDM/JI, etc.). The shipping industry will also have an increased incentive to become more fuel-efficient, as the total levy paid is directly linked to the amount of fuel used. The trading aspects of IMERS, its links to emissions trading schemes have been independently analyzed and endorsed.⁶
- 40 The incentive for selling unused allowances depends on the cost of their acquisition, and may not exist in reality. The only cap-and-trade scheme with relevant details in this area is METS, introduced by Germany for furthering discussions on the topic. In METS, emission allowances are auctioned and none are allocated for free (see IMO GHG-WG 1/5/7). Therefore the incentive from selling unused allowances does not exist as the price of selling would equal the acquisition price (either at auction or from the carbon market).⁷

Q14: Extra data seems required. Isn't it too complex?

- 41 The fuel data is available from the already obligatory fuel receipts (so called Bunker Delivery Notes).
- 42 The levy is only paid at lower than 100% level once the ship demonstrates that it is entitled to the reduced rate through the selected responsibility measure (such as the ship's ratio of delivered cargo to Annex I countries). We understand that this single number can be extracted from the cargo data available for the ship charterers without much effort.
- 43 This additional measure will not even be required for many ships. The majority of oil tankers and cargo ships would pay either 100% or 0% in a given period, as they are typically bound for a single destination, either to an Annex I or non Annex I country/countries (for instance a tanker chartered to transport crude oil from the Gulf to the USA).
- 44 For container ships, the responsibility measure could be the share of full containers destined to Annex I countries (expressed in TEUs). This information is available from the systems operated by the liners, as the destination of container is practically always known. For the very limited number of "ghost containers", this loophole is expected to be fixed in the near future, mainly for supply chain security

⁵ In 2013, approximately 23% of emissions are above the emission goal. A mark-up for technology and scheme costs brings the ratio to 30% of the carbon price. For a carbon price of \$30 per ton of CO₂, the levy 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 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 a report by the reputable organization Climate Strategies, entitled: "Linking Emissions Trading schemes for International Aviation and Maritime Emissions", October 2008, http://www.joanneum.at/climate/linking/CSlinking_Bunkers.pdf

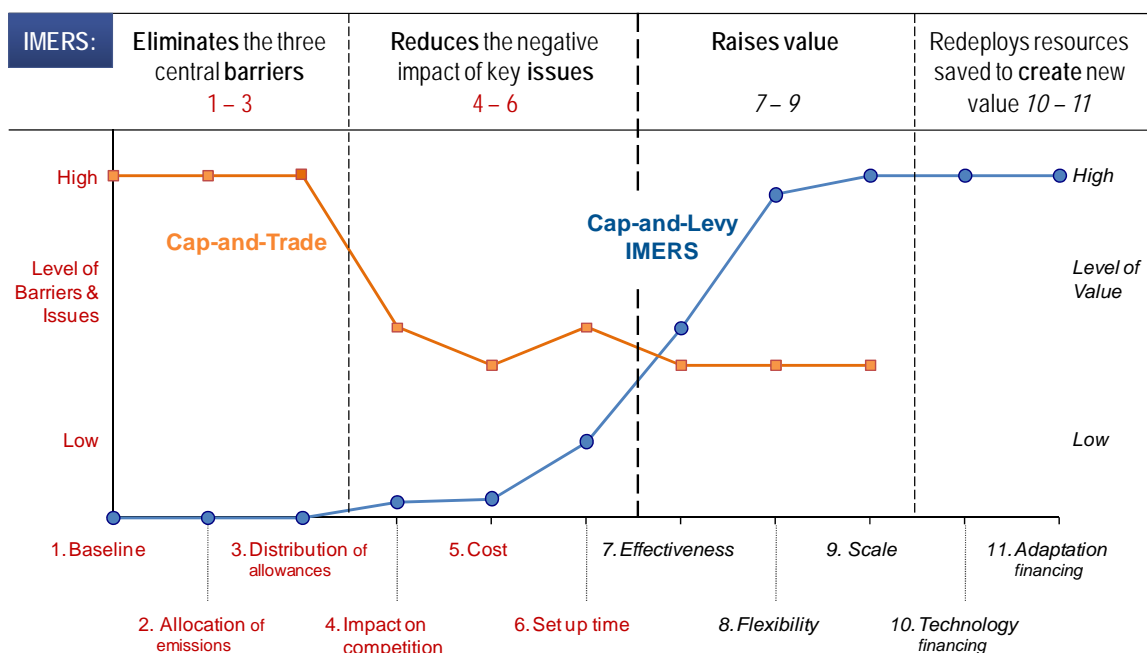
⁷ The main reason for auctioning that was highlighted was that free allocation would be too complicated due to the many different types of ships, of many different sizes. Also the lack of historical data was seen as a barrier to calculating allocations to individual ships. The problem of windfall profits related to free allocation was also underlined. Therefore in METS, the obligation of the ship is directly proportional to the fuel used, as in IMERS. There is no individual cap for the ship or for any other individual company. The difference is that the emission obligation in IMERS is fulfilled through direct payments, whereas in METS emission obligations are fulfilled through emission allowances/certificates which first have to be acquired then surrendered. The emission cost to the ship would be the same, but the levy seems much simpler as additional bureaucracy and administration effort are avoided.

reasons. Implementation for liners would be made easier thanks to the high use of ICT systems and very high concentration in the sector (16 companies comprise 80% of the sector).

Q15: How does IMERS compare with a cap-and-trade scheme then?

45 Given that any market-based scheme for shipping would need to be applied globally in order to be effective, its design viability and flexibility should be the key evaluation criteria. The design should accommodate the highly complex and dynamic nature of the shipping industry. The following graph illustrates a comparison of IMERS with a potential cap-and-trade. The hybrid cap-and-levy scheme employed in IMERS:

- .1 **Eliminates** the three central **barriers** associated with cap-and-trade (emission baseline, allocation of emissions, and distribution of allowances);
- .2 **Reduces** the negative impact of several key implementation **issues** (impact on competition, cost, and set up time);
- .3 **Raises** value (in terms of effectiveness, flexibility, and scale);
- .4 Redeploys resources saved to **create** new value (through technology and adaptation financing).



Q16: Would it be legal and comply with trading rules?

- 46 The fact that international emissions occur outside national jurisdictions, the Law of the Sea (UNCLOS) is seen as a firm legal framework for the supra-national approach proposed (derived from articles 89, 136, 137, and 140, among others).
- 47 The supra-national approach has also an important decision making benefit. It does not raise questions regarding ear-marking (hypothecation) of a national revenue for specific causes in several countries. Supra-national revenue would always be off national books.
- 48 Furthermore, the International Oil Pollution Compensation Funds (IOPC Funds) provide a precedent of direct collection of a levy that bypasses national systems in the maritime sector. The IOPC levy is based on a formula, which is also important from a legal standpoint.
- 49 Finally, as the levy would be driven by a formula, and ultimately paid by the importers without discriminating against any exporting countries it would be compliant with both WTO and GATT rules.

Q17: What is the risk of inaction?

- 50 The risk of inaction is twofold: repeat Kyoto’s failure to address maritime emissions, and fail to provide additional financing for adaptation to climate change crucially needed for the most vulnerable.