International Maritime Climate Change Fund (IMCC Fund)

Abbreviations: IM = International Maritime (excludes domestic), IMCC = IM Climate Change

WHAT's NEW / UNIQUE?

A simple, globally scalable solution for international maritime's CO_2 emissions, significantly more efficient than other schemes being considered; very compelling politically as it delivers quantifiable results rapidly (including a stringent emission cap) and concurrently fulfils the often conflicting goals of three stakeholder groups:

- the maritime industry interested in operational and environmental improvements,
- developed countries interested in mitigation of climate change,
- developing countries looking for financial support to adapt to climate changes already affecting them.

<table>
<tr><th colspan="2">KEY FEATURES & OUTCOMES</th></tr>
<tr><td>Objectives</td><td>1. Address international maritime's growing climate change impact by charging for emissions.
2. Deliver a stringent emission cap and accelerate future maritime emission reductions.
3. Provide additional funding for climate adaptation for developing countries.</td></tr>
<tr><td>Market instrument</td><td>Hybrid: Price based (charges per emissions) with quantity constrains (cap on emission).
"Charge & Cap"</td></tr>
<tr><td>Geographical scope</td><td>Worldwide. Emissions from all international maritime transport.</td></tr>
<tr><td>Emission scope: CO_2</td><td>CO_2 emissions are to be covered only.
However, the scheme could be expanded to cover the non-CO_2 impact[1].</td></tr>
<tr><td>Charges</td><td>Paid by ship owners or operators for the emission impact (CO_2).
Calculated based on the fuel used during the voyage(s) (as maritime emissions are directly proportional to fuel used).
Recovered through increased customer charges, set by the ship owners/operators (impacted by load factor, fuel efficiency of ship, operational and technical measures; efficient ship operators will be able to charge less).</td></tr>
<tr><td>Use of funds raised</td><td>Money collected will be spent on:
Mitigation (including meeting the agreed cap and offsetting emission growth)
Adaptation (primarily in developing countries)
Industry improvements (leading to emission/fuel reduction; future mitigation)</td></tr>
<tr><td>Climate change efficiency

(Comparison with "cap & trade")</td><td>
<table>
<tr><th>Result / Mechanism</th><th>Mitigation</th><th>Adaptation</th><th>Direct industry improvements</th></tr>
<tr><td>IMCC Fund,
"charge, cap & fund"</td><td>Cap CO_2 at 2005 level (globally)</td><td>1/3 of funding dedicated to adaptation</td><td>1/3 of funding dedicated to industry improvements</td></tr>
<tr><td>EU ETS (maritime, hypothetical),
"cap & trade"</td><td>Cap CO_2 at 2005 level (Europe)</td><td>Very limited effect (funding possibility)</td><td>No effect</td></tr>
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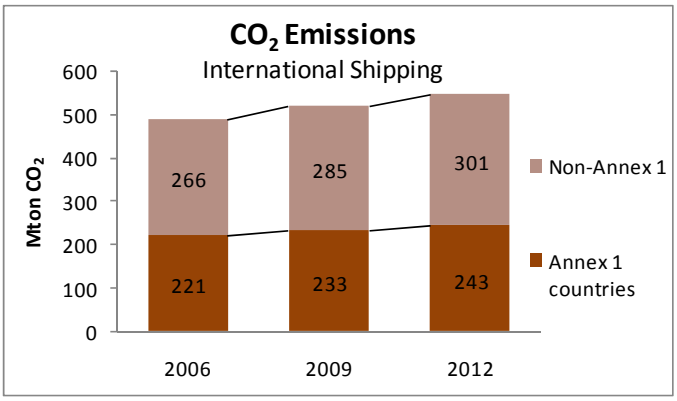
[1] Maritime transport's climate impact is greater than the effect of CO_2 emissions alone due to a number of other substances and indirect effects (nitrogen oxides NO_x , sulphur oxides SO_x).

KEY FEATURES & OUTCOMES *(continued)*	
IM emission price	Ship owners/operators to pay for a defined percentage of the total climate impact of emissions (starting at, say 40%). At present a 100% charge is considered overly burdensome, however the 40% level might need to be increased with time. Unit prices are fixed annually for period of 1 year (at least 1 year in advance, based on market forward prices and indices). Example: Market forward price for 1t CO_2 for 2009 = €20. **IM unit emission price for 2009**= €20 *40% = **€8/tCO_2** (=$10/t CO_2) Setting the level initially at 40% has additional advantages: (a) It will cover the increase of IM emissions from 1990 to 2009 (making it Kyoto "compatible"); (b) It will allow to raise the level with cost (1.5% of annual increase is assumed from 2011). The climate impact of non-CO_2 could be included in future (through a multiplier or otherwise).
Impact on customer / freights prices	**Price increase** is estimated at **2% - 3%**. Assumptions: Total emission cost passed through and covered by customers; IMCC unit charge: €8 ($10)/t$CO_2$, fuel price: $300/metric tonne, fuel costs make 20%-30% of customer prices. The costs to end customers are slightly less when compared with a hypothetical Cap & Trade scheme, such as the EU ETS, even before considering the administration costs (assuming that 40% or more of emission allowances were auctioned to the sector). The customers will also benefit from efficiency improvements achieved through lower prices.
Quantum of funds raised	First year roll out of the scheme in Europe could raise revenues of €1.2bn. Successful expansion of the IMCC Fund on a global scale will result in collection of €4bn per annum.
DETAILED ANALYSIS	
EMISSIONS GROWTH	
IM Emissions growth & distribution	Average 2.1% emission growth per annum (see table; emission growth = annual traffic growth of 2.8%-3.3% minus 1% of maritime improvements pa); 45% of IM emissions worldwide from bunker fuels purchased in Annex 1 countries.

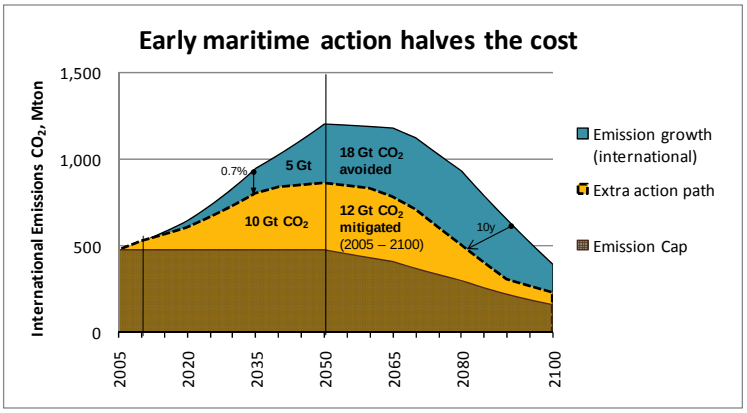


Annual Emission Growth International Maritime	2005 - 2020
Annex 1 countries	**1.8%**
Non Annex 1	**2.3%**
World: effective average	2.1%
Emission multiple, 2020/2005	1.4

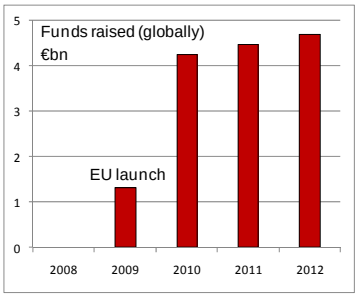
Source: 2004 UNFCCC historical data; adjusted with estimates for Russia and non-Annex 1 countries[2].

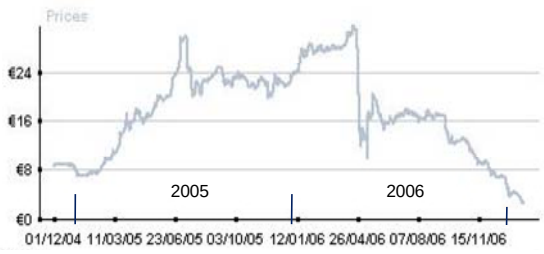
[2] The emissions estimates of global fuel and therefore emission in maritime transport vary considerably. We have used the lower (conservative) estimates based on bunker fuel sales. The estimates based on vessel activity are higher by a factor of 2, and more. The annual emission growth also can be greater than above, even by a factor of 2 (for example international container traffic has grown at an average 8% pa in the last 20 years which is greater than the 5% pa growth in the world trade).

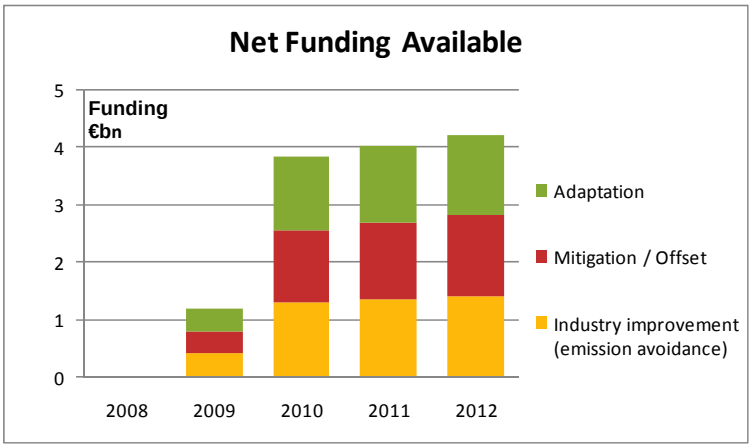
IMPACT	
Environmental Effectiveness	**EU:** Introduction of IMCC Charge in 2009 will provide emission mitigation and revenue streams which can be directed to tackle climate change. **Rest of World:** Extension of IMCCC globally in 2010 (one year after introduction in EU) will provide a mechanism to tackle the impact of international maritime transport globally and provide an additional source of funds. The global environmental benefits are estimated at **15 GtCO2 by 2050** and **30 GtCO2 after 2050,** including avoiding of emission of 5 $GtCO_2$ before 2050 and 18 $GtCO_2$ after 2050 (for the conservative emission growth scenario, shown below).
Funds raised annually – **Globally**	**Scalability to Rest of World in second year provides compelling argument that charges are an effective mechanism to tackle the *global* problem of maritime emissions.** The revenue raised from global charges is 3 times higher than from European charges alone and will exceed €4bn pa. *Figure: Annual funds raised by 2012.*
Predictability, long-term investment signals	IMCC Charge will ensure **high predictability**. Compared with low to moderate predictability for the EU ETS, where price is potentially very volatile (quality of emission data poor), an annually set price for emissions will send a strong signal to the market and should result in increased medium to long term predictability. *Fig: Price volatility under the EU ETS 2005-2006 (source: Pointcarbon)*



Annual Emission Growth International Maritime	2005 - 2020	2021 - 2035	2036 - 2050	2051 - 2065	2066 - 2080	2081 - 2100
Annex 1 countries	**1.8%**	**2.3%**	**1.3%**	**0.5%**	**-0.3%**	**-0.5%**
Non Annex 1	**2.3%**	**2.8%**	**1.8%**	**0.5%**	**-0.3%**	**-0.5%**
World: effective average	2.1%	2.6%	1.6%	0.5%	-0.3%	-0.5%
Emission multiple: end year/2005	1.4	2.0	2.5	Depend on step changes		





<table>
<tr><th colspan="2">COLLECTION AND USE OF FUNDS</th></tr>
<tr><td>Fund collection</td><td>The funds can be collected by:
- ports and contributed to a new supra-national IMCC Fund, established under the UN/IMO
- or collected centrally based on the fuel data supplied through Lloyd's Maritime Intelligence Unit (or similar)</td></tr>
<tr><td>Fund usage: adaptation, mitigation and industry improvements.</td><td>The IMCC Fund will have responsibility for disbursement of monies raised, which will be dedicated to three specific goals: adaptation, mitigation and maritime industry improvement.
The portfolio split might change with time (initially the fund could be split into three equal, independently managed sub-funds).
 

The operational and management costs will be minimized, and are estimated at 4% on the collection side, and 6% on the management and disbursement side for the three sub-funds. Assuming equal split, each of the three sub-funds (adaptation, mitigation and industry improvements) will receive €1.4bn in 2012 for meeting their respective goals (30% each).</td></tr>
<tr><td>Fund usage: examples.</td><td>Projects and mechanisms will include:
<table>
<tr><th>Adaptation</th><th>Mitigation</th><th>Industry Improvement</th></tr>
<tr><td>Advance planning for adaptation in developing countries.
Funding for concrete adaptation projects in eligible countries.
Research into new temperature resistant crops.
South – South adaptation transfers.
(Lessons learned from the negotiations of the Global Environment Facility, GEF are to be reviewed)</td><td>Key objective is to mitigate / offset the emission above the cap in the most cost efficient manner.
Mechanisms designed for the above, like Clean Development Mechanism (CDM), will be used.
At least 20% of emission reductions should be generated through CDM projects contributing to sustainable developments (bringing additional quality impact and enhancing corporate and social responsibility).
To reduce cost of emission reductions, investment activities will be used, including banking and borrowing of emission certificates.</td><td>Application of operational best practices (in propeller maintenance, coating and antifouling paint, weather routing, adaptive autopilot, changes in hull shape).
Acceleration of industry improvements through additional investments in Research, Design and Deployment.
Speeding up adoption of new technologies leading to emission reduction (like fuel cells for the auxiliary power units, emission scrubbers etc.).
Industry 10% Emission Challenge and Award.</td></tr>
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POLITICAL AND LEGAL CONTEXT	
Political Acceptability	Adding a stringent cap makes the solution politically very compelling.
Legality (impact of international treaties and agreements)	**Legal** (compliant with IMO resolutions) Potentially two issues need clarification: 1. Single legal entity to collect charges across the world (outside of the national tax systems) 2. Using portion of collected funds for adaptation in developing countries
Public Acceptability	It is anticipated that general public would support an industry proactive approach, including use of emission charges. A consultation for international aviation (EU, 2005) supported both trading and charges options. Greatest support was provided for fuel taxes/en route charges (68%/47%) rather than trading (58%) (based on the first and second choices for the preferred market instrument).
OTHER BENEFITS	
Cost Effectiveness	Harmonized emission charge, with portfolio approach for allocation of funds raised ensures cost-effective implementation globally.
Flexibility	Periodic governance mechanisms allow for adjustment of charges and funding policy to new realities. Every 2-4 years (IMO or similar body) undertake review and potential adjustment of: • Structure and level of charges (percentage of emissions subject to charge – initially 40%, rising likely to 100% in 2050, in 1.5% escalator pa) • Relative size of sub-funds (initial split: each sub-fund equals to 1/3 of total) Every year undertake market prices review and setting of the new emission unit charge. Decisions valid from the year after next, for 2-4 years and 1 year, respectively.
Incentives for participation and compliance for ship operators & industry	Reduced fuel through industry investments and improvements. No impact on international competitiveness (level playing assuming global implementation). Compliance easily verifiable & enforced (via fuel and route data). Developing country participation encouraged through adaptation policy. Improved industry image.
Compelling and easy to understand goals	Cap emissions from international maritime globally at the 2005 level till 2050. Accelerate industry-wide improvements and future mitigation activities investing in excess of $1.5bn (€1.2bn) annually. Provide at least $1.5bn (€1.2bn) annually for climate adaptation in developing countries. Keep customers impact low at 2%-3% price increase by implementing a global solution. Start in 2009 by charging market prices for 40% of the ship CO_2 emissions (potentially rising to 100% in 2050).