



# **Increasing mitigation & financing ambitions through action on international transport**

Side event SB 38, 7 June 2013,  
18:30 – 20:00 RAIL (MoT)

**Andre Stochniol** ([andre@imers.org](mailto:andre@imers.org))

Panel:

**Erik Haites**, Margaree Consultants



- Background
- Fair and effective carbon pricing
  - Equity as a gateway to increased ambition
    - Greater focus on aviation this time round
- Summary and Conclusions
- Panel Views, and Debate

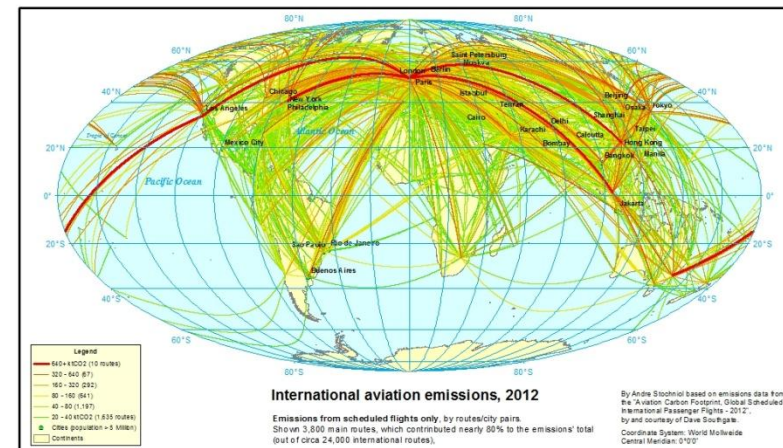
# Two multilateral issues ...



1. **Whether and how to mobilize climate financing**, including from the environmentally under-charged international transport?
  - International aviation and maritime transport are exempt from various taxes, while climate financing mechanisms are inadequate, both in scale and design
  - “The writing is on the wall” regarding a contribution from international transport:
    - Practically every independent report on the topic highlights carbon pricing of emissions from international aviation and shipping as an important and/or promising source of public finance; the costs would be marginal

## 2. How to address CO<sub>2</sub> emissions from international transport?

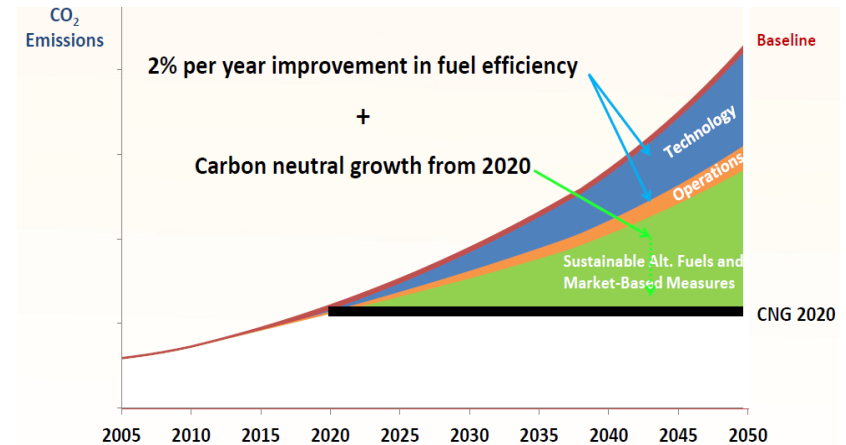
- Global and complex
- Outside the national regimes
- Significant (circa 5% ) & rapidly growing
- The IMO & ICAO technical, operational and infrastructure measures will only slow their growth
- All uniform market-based proposals are unacceptable to certain developing countries (as not taking into account the UNFCCC principles)



# Deadlock on carbon pricing ... and low ambition



- Market-Based Measures (**MBMs**) discussed at both ICAO and IMO
- Slow pace, no agreed roadmap, low ambition, aviation industry calls for:
  - Fuel efficiency improvements and “carbon-neutral growth” (CNG) from 2020” (see graphic)



ICAO's CNG2020 approach (source [SB 38/MISC.15](#))

- **Focus on emission** offsetting/reductions, not adaptation financing
  - Industry wary of becoming “cash cow”, thus talk about “proportionality” of effort, “carbon neutral growth”, and wants to keep any potential money raised in the sector
  - The simpler the better attitude to avoid bureaucracy (thus offsetting or a levy is supported more than ETS; issues on potential sharing of burden between airlines)
- **The deadlock between developed & developing countries remains!**
  - Namely, whether and how to relate the UNFCCC principle of common but differentiated responsibilities and respective capabilities (CBDRRC) to a global MBM for inherently international aviation and shipping
  - Proven by the different perspectives on the recent IMO MEPC technology resolution!

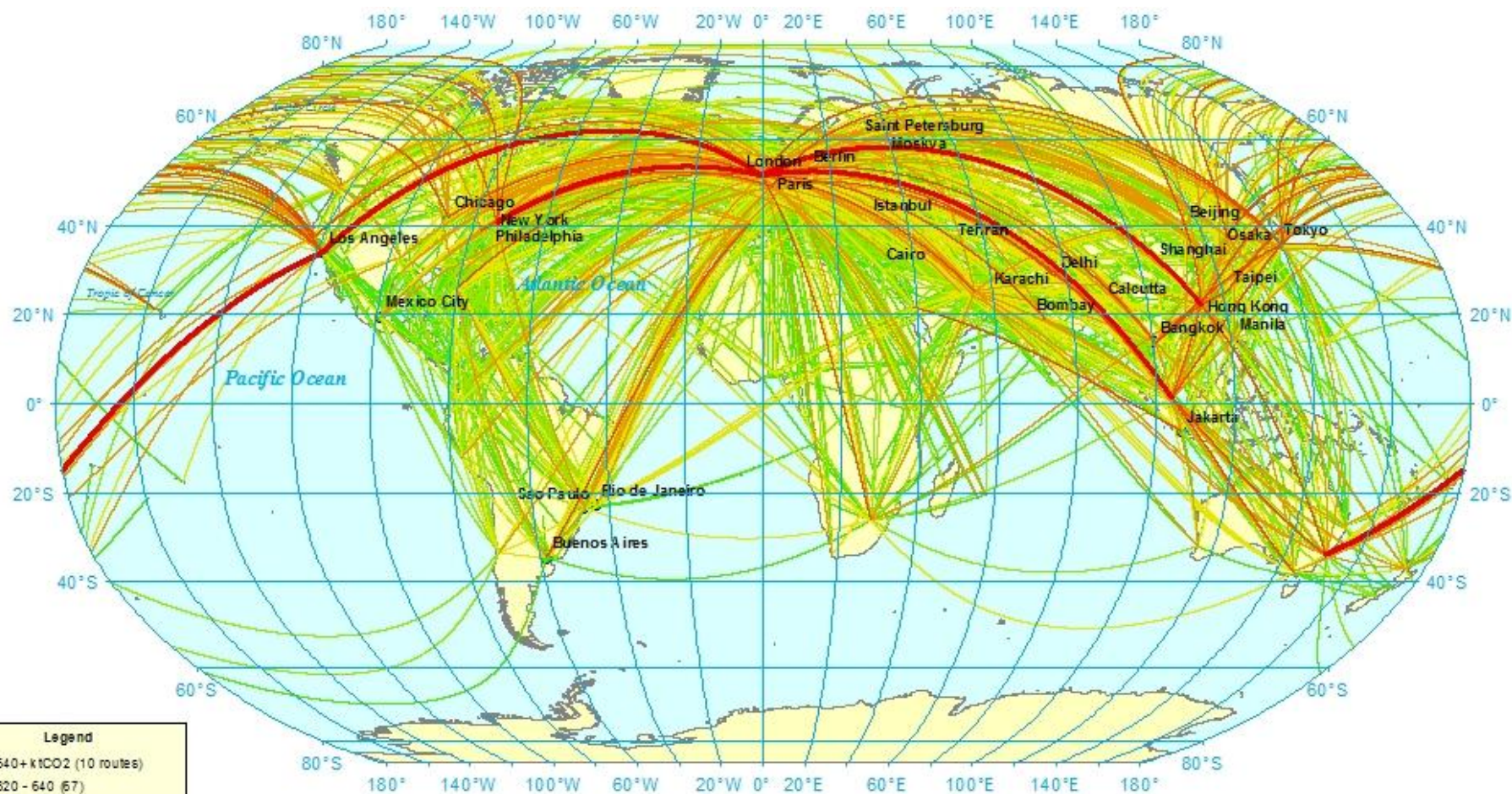


- **Not whether, but how to relate**
  - Differentiated climate principles and provisions (CBDRRC), to
  - Uniform carbon pricing for international transport
    - i.e. a global approach, as a regional/national, even at the framework level is unlikely to work
- **Furthermore, carbon price/MBM would be regressive**, impacting less developed countries most, as they often disproportionately rely on international transport (as % of GDP)



# View 1: CO2 footprint of international aviation

(largest on routes to/from certain high-income countries)



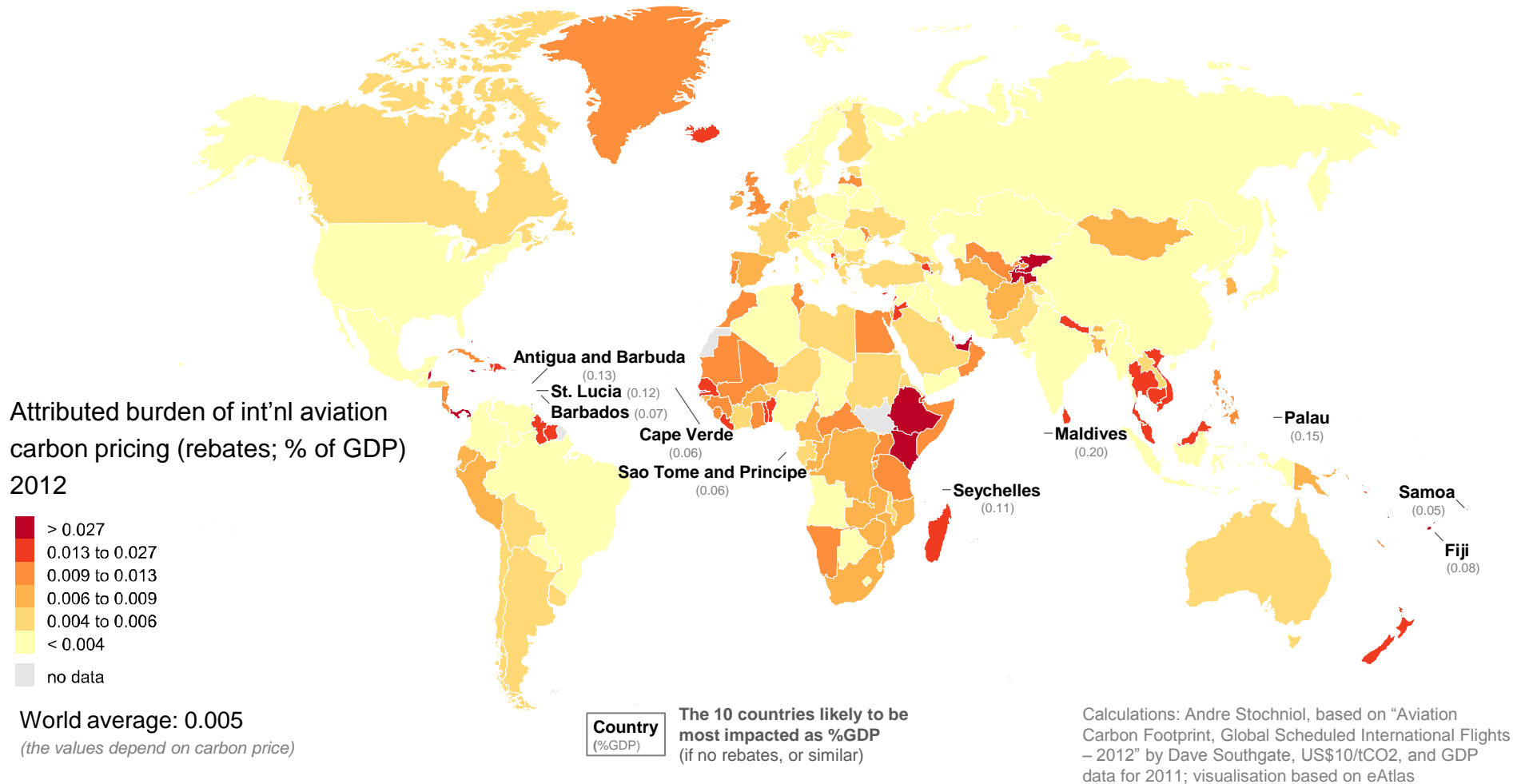
## International aviation emissions, 2012

Emissions from scheduled flights only, by routes/city pairs.  
Shown 3,800 main routes, which contributed nearly 80% to the emissions' total  
(out of circa 24,000 international routes),

By Andre Stochl based on emissions data from  
the "Aviation Carbon Footprint, Global Scheduled  
International Passenger Flights - 2012",  
by and courtesy of Dave Southgate.

Coordinate System: World Robinson  
Central Meridian: 0°00'

## View 2: Burden of carbon pricing (% of GDP; the largest burden may fall on some of the poorest, unless dealt with)



At the world-scale's map this regressive character is not fully feasible given the small size of the most impacted countries (many SIDS) → Switching to a country-by-country view:

<< Interactive map demonstration, using **eAtlas of Global Development** >>

# Rebate Mechanism (RM) (in 140 characters)



All ships/planes pay for their emissions. Certain countries obtain rebates, and the remaining revenue goes to climate change action, including in the sector.

## *Detailed points:*

1. Ensures that countries receiving rebates are at least not worse off, with the poorest being better off
2. **Relates a global approach**, which is required for international transport, **to** the principles of equity and **CBDTRC**
3. **Can apply to any revenue raising MBM** (such as a levy and ETS)
4. Highlighted **in the AGF** (2010), **and the IMF/WB reports** (2011); rebating mentioned in the **LTF report** (2012)
5. Rebates to developing countries may amount to 1/3 of revenue raised, the remaining 2/3 will be a **predictable and affordable source** of climate change financing and R&D for clean international transport
  - Potential for cooperative contributions from the rebate-eligible countries

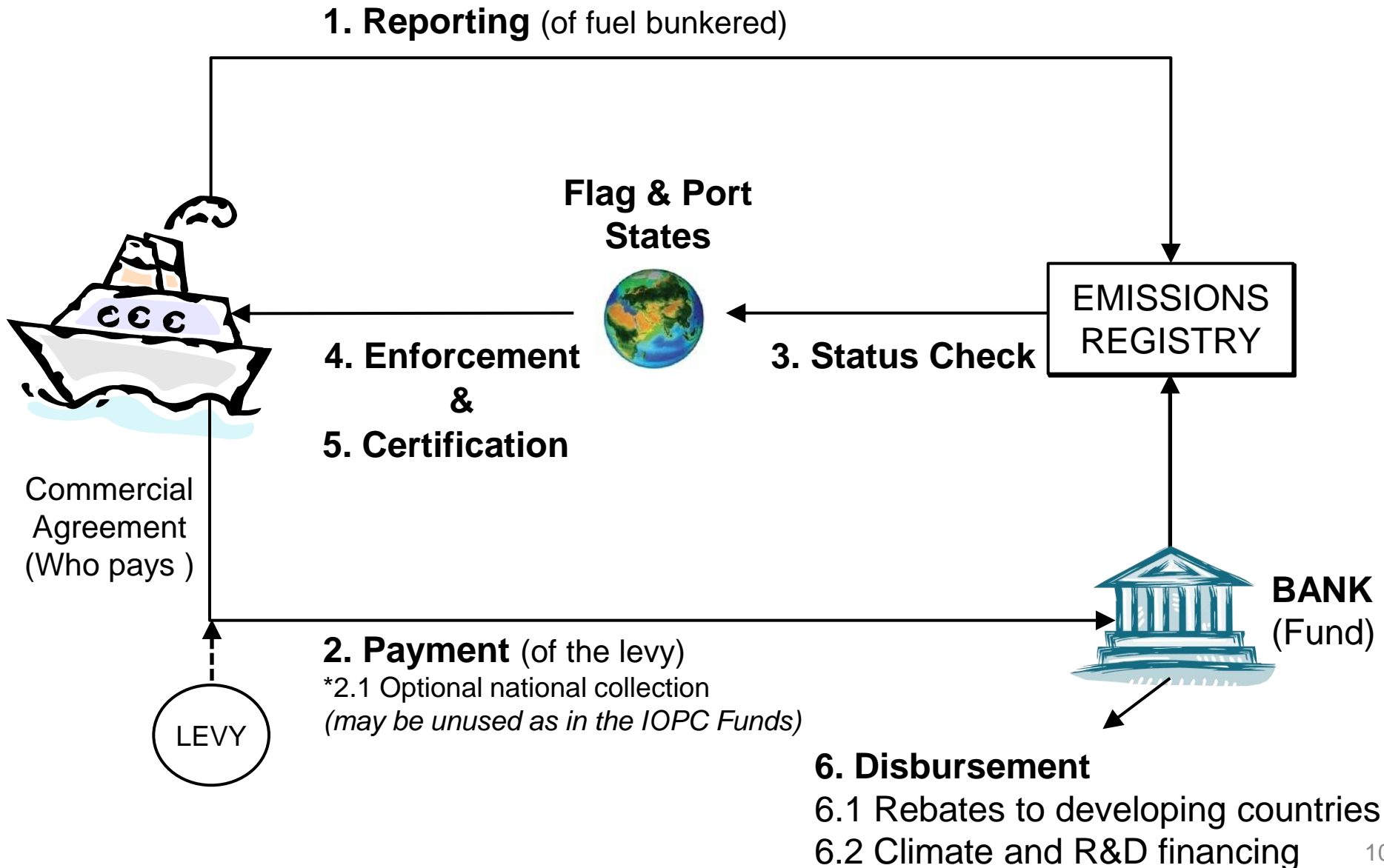




1. **RM** can apply to any **revenue raising** MBM, such as a levy or ETS, both for aviation in shipping
  2. The rebate key could may be based on:
    1. A country share of fuel uplifted for international flights, for aviation (proposed for instance in the IMF/WB report for G20)
    2. A country share of seaborne trade (detailed proposals and analysis in the submissions to the IMO, in the IMF/WB report, and in the RM [Study](#) )
  3. **RM integrated** (aka IMERS) is a complete proposal with the RM built-in at the IMO
- RM seems the only differentiation option being currently considered to address potential adverse & disproportionate impacts of a global MBM scheme on the poor countries
    - An alternative option based on exempting routes to the less developed countries, could have negative consequences anyway, distort competition and is too complex, especially for container ships
    - RM with climate financing would make the poor countries better off, and also could help build modern infrastructure benefiting all (e.g. in Africa)

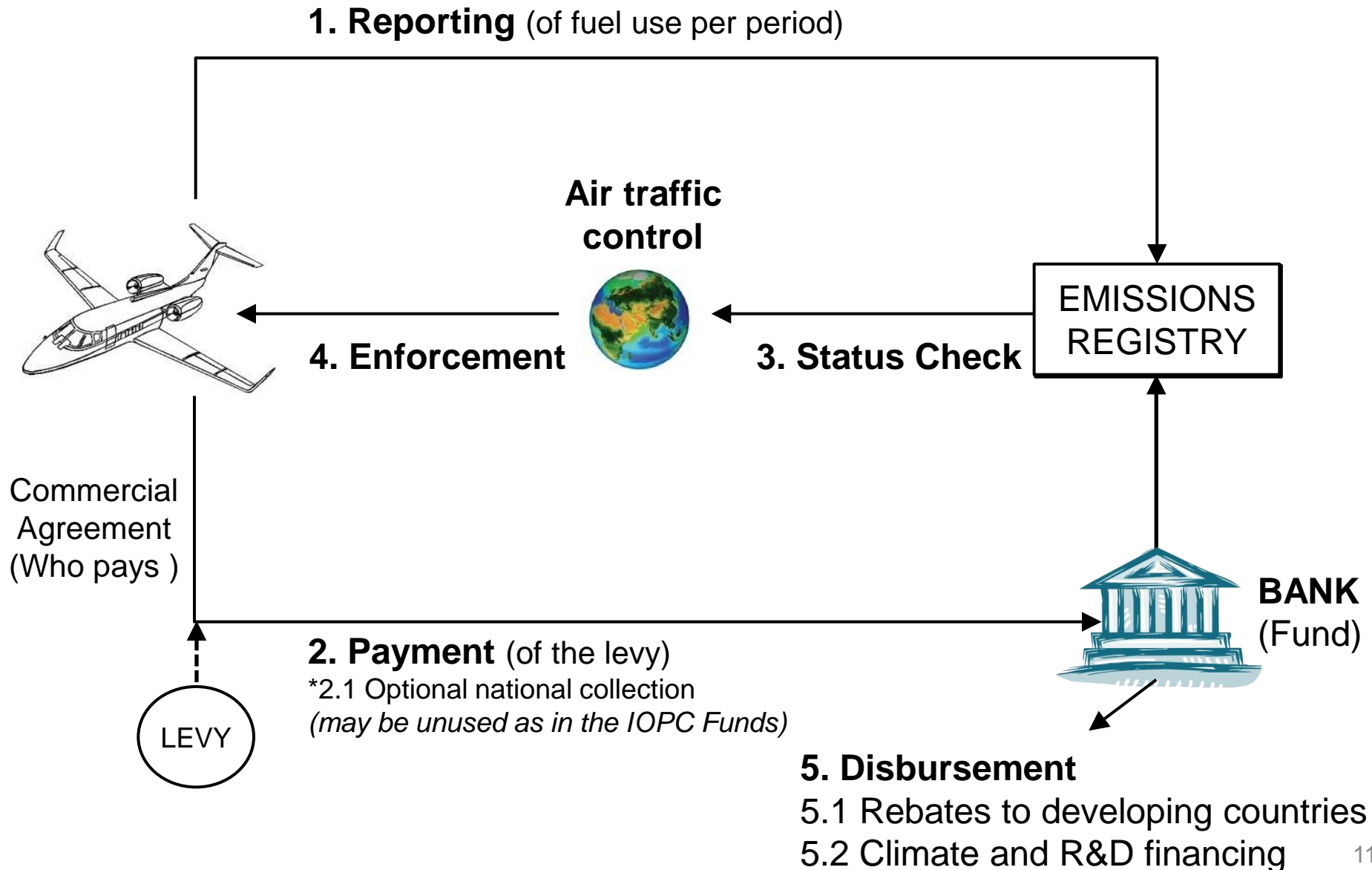
# How would it work in shipping?

Direct/global approach proposed (IMERS)



# How may it work for aviation?

(fuel/emission levy illustration; IAFund)





- Disbursement of MBM revenue is to comprise two steps:
  - Cost burden incurred by a developing country Party participating in the MBM is rebated (paid) to it
  - The remaining revenue (net revenue), is disbursed by the agreed entity or entities (i.e. GCF, IMO/ICAO)

## Consequently (details):

1. Net revenue for climate change action would come from consumers in developed countries only, complying with the UNFCCC principles
2. Developing countries would be beneficiaries of the MBM, with the most vulnerable countries to benefit most through the relevant rules and provisions applied at the 2nd step (SIDS, LDCs, African countries) – **LDCs circa tenfold**
3. The transport sector would also benefit at the 2nd step, potentially through a new global Maritime (Aviation) Technology Fund, or similar

# The most frequent question: “Graduation”

(i.e. what about high income developing countries?)



1. “Voluntary” agreement: foregoing the rebate, or part of it (with such money potentially towards South-South collaboration)
2. Capacity-based: securing commitment based on or scaling through a capacity factor, such as GDP per capita
  - For details on options see the draft legal text, in which a developed country means a country in Annex II, or any successor annex, or arrangement (i.e. “future proof”)



# Burden sharing, if no rebates or similar

## If rebates, how much?



- Example views on burden per country categorizations:
  - Economies (UNCTAD categorization)
    - **Shipping:** Developed 56.8%, Transition 2.3%, **Developing 40.9%**
      - Of developing: **Africa 3.4%**, Americas: 5.4%, Asia: 31.9%, Oceania: 0.1% (all 40.9%)
    - **Aviation:** Developed 54.3%, Transition 2.7%, **Developing 42.9%**
      - Of developing: **Africa 4.7%**, Americas: 7.0%, Asia: 31.0%, Oceania: 0.2% (all 42.9%)
  - Income based (World Bank categorization)
    - Shipping:
      - High Income: 70%, Upper Middle Income: **22%**
      - Lower Middle Income: 7%, Low Income: 1% (**subtotal 8%; <10%**)
    - Aviation:
      - High Income: 71%, Upper Middle Income: **19%**,
      - Lower Middle Income: 7%, Low Income: 2% (**subtotal 9%; <10%**)
- Thus the “real” rebates are very likely to be somewhere between **10% and 30%** of total costs (*depending on the agreement reached*)



- Backup slides, for Q&A etc.
  - Available from <http://imers.org/bonn13>
- Presentation and fact sheet from Doha, focused on shipping
  - Available from <http://imers.org/cop18> (and from the UNFCCC side event repository; various documents linked from the fact sheet)
- Draft legal text
  - <http://imers.org/docs/mepc64-5-10.pdf> (for shipping; aviation's draft is similar, available on request)
- A combined RM Fact Sheet for aviation and shipping:
  - [http://imers.org/docs/RM\\_Fact\\_Sheet2.pdf](http://imers.org/docs/RM_Fact_Sheet2.pdf) (coming up)
- Or simply contact Andre ([andre@imers.org](mailto:andre@imers.org))



- The RM approach to equity/CBDRRC is practical and potentially transformative
  - It creatively respects the international transport and climate principles
  - It is fair and efficient
  - Thus, it may enable greater mitigation and financing ambitions
- Enough has been done on technical analysis
- **It is high time for a political decision** how to take equity into consideration in inherently global international transport
  - Doing so will very likely **enable global action, and increased ambition** for international aviation and maritime transport



## Debate

Feel free to ask any questions & express your views

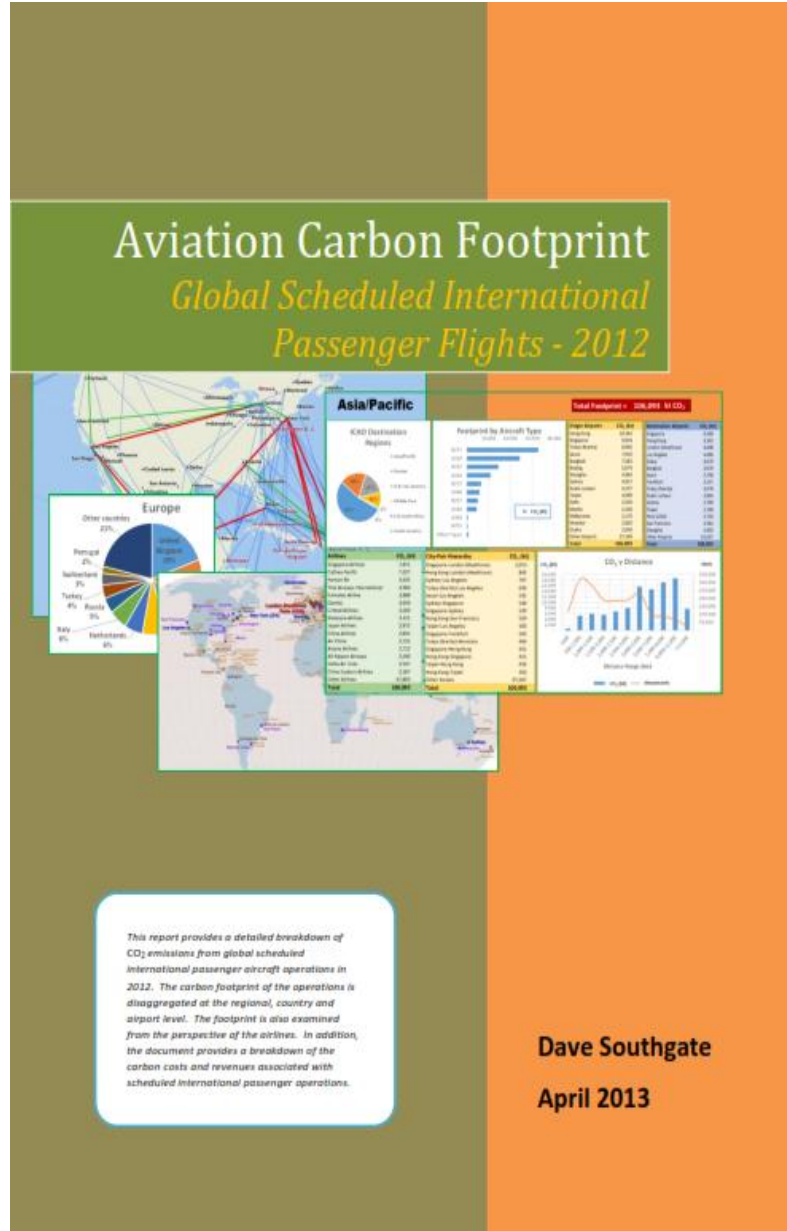


# **Backup slides**

For Q&A

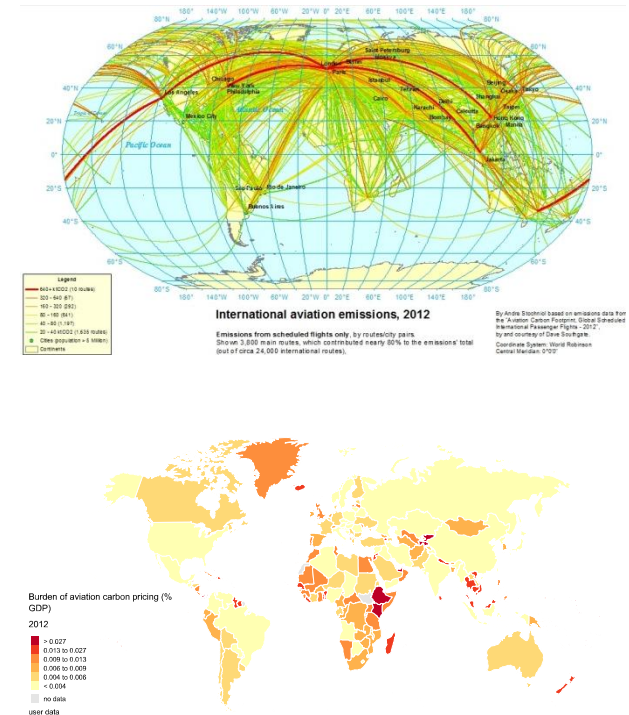


# Comprehensive source for aviation carbon footprint data (per region, country, route, airline, aircraft type, etc.)

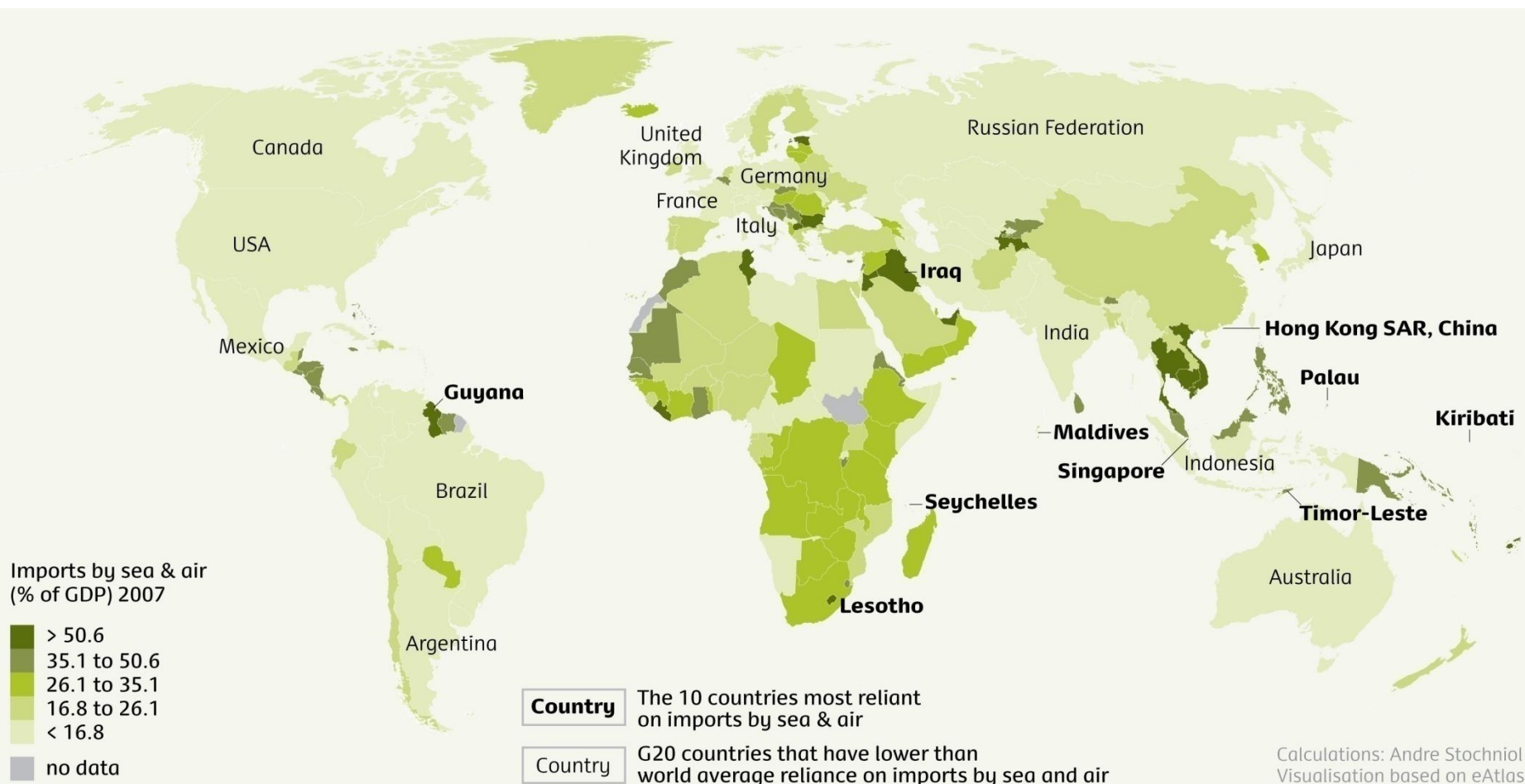


Used by Andre for the  
rebate/burden calculations

(together with airport  
locations, and GDP data)



# Strong Case for Rebates for shipping MBM



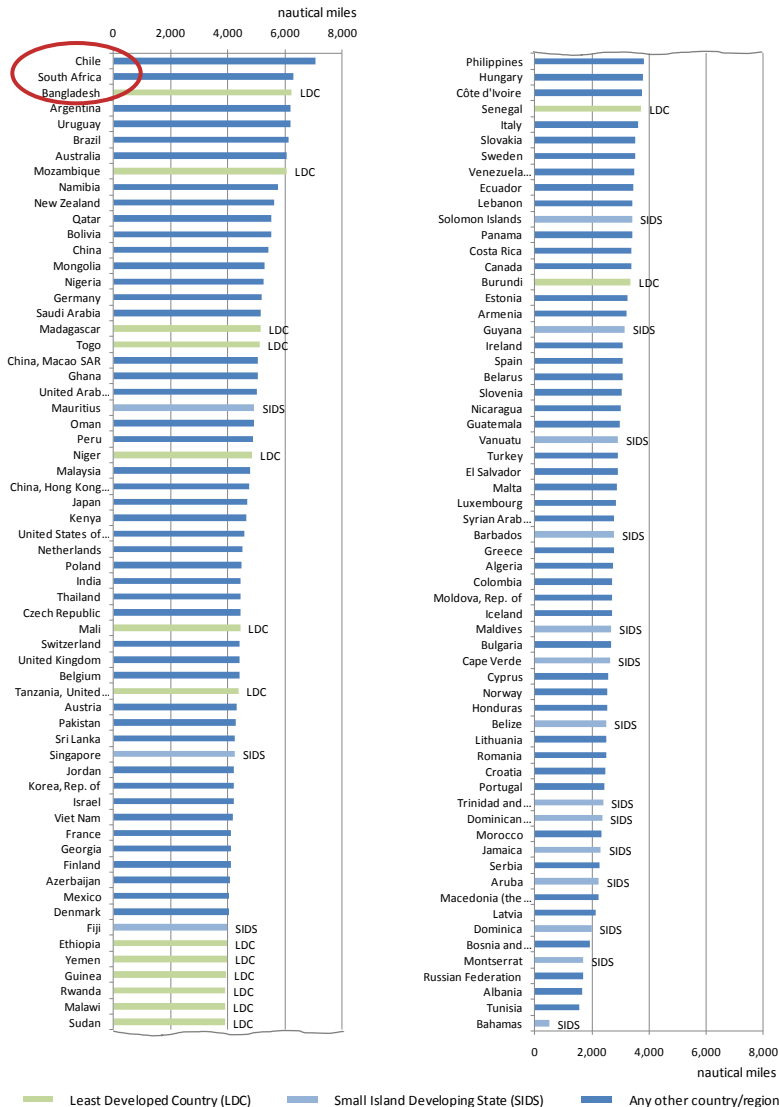
Source: "Fair Finance" briefing, CAFOD & A. Stochniol, 2011

Updated map is available that takes into account long trading distances (minor map changes).  
For calculations and a map showing estimated cost burden as % of GDP see the [RM Fact Sheet](#).

# Detailed Analysis Supports Global Action with RM



## 1. Country Trade-Weighted Distance



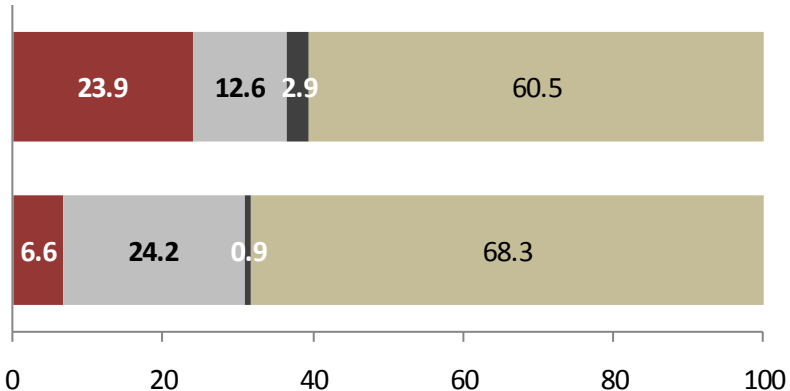
## 2. Impact analysis by country & regions

### Seaborne imports by sector

Share of total value of seaborne imports(percent; estimated)

Food Fuels Minerals Manufactures (HS 28-97)

Bangladesh



South Africa

Maximum cost impact on import prices  
(example; excluding rebates & any benefits)

Bangladesh	South Africa
0.19%	0.14%

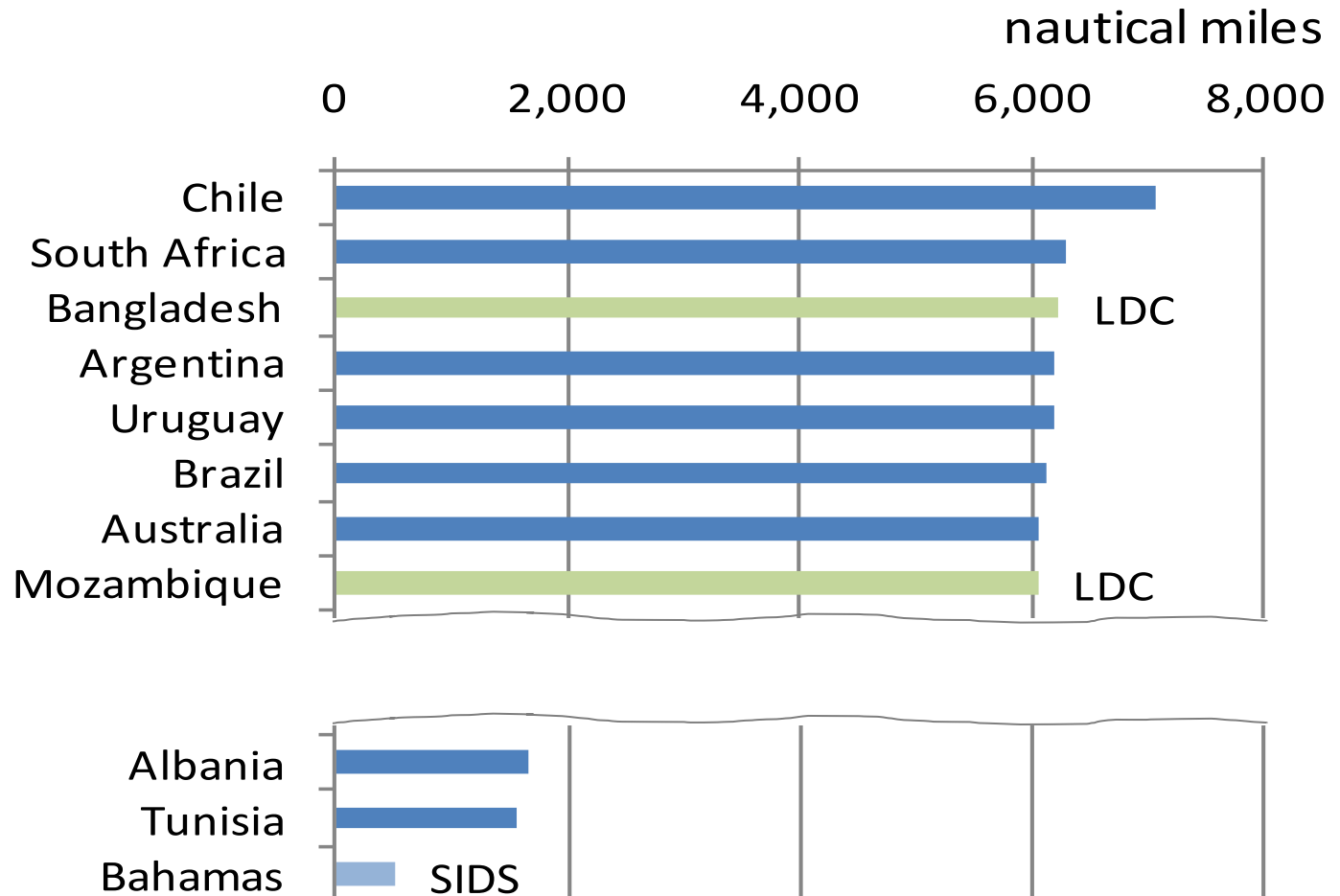
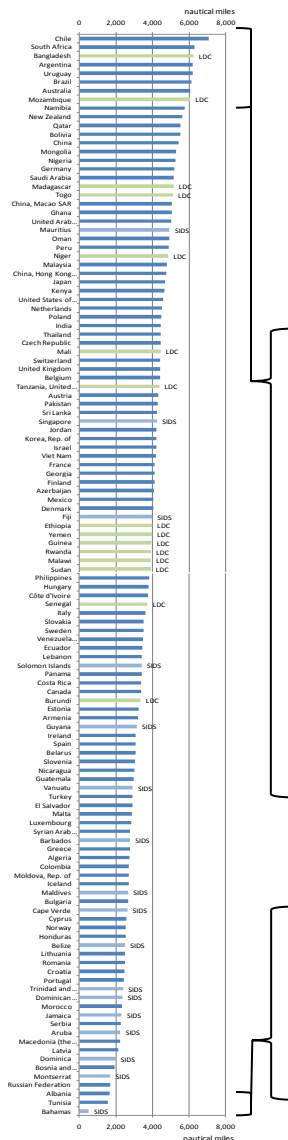
Available at:

[http://imers.org/docs/bottom-up\\_analysis\\_BGD\\_ZAF.pdf](http://imers.org/docs/bottom-up_analysis_BGD_ZAF.pdf)

# Trade-Weighted Distance Analysis



Trade-weighted distance (TWD) vary but much less than many expect; grouping of countries is not helpful; **TWD can be excluded from incidence calculations**, as justified in the [Study](#).



# IMO measures to reduce shipping GHG emissions



- IMO – the International Maritime Organization – is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships (HQ in London)
- MEPC – the IMO's Marine Environment Protection Committee – consists of all Member States and deals with the marine environment matters, including GHG emissions; meets circa every 9 months
- Technical and operational measures to improve energy efficiency of ships were adopted at MEPC 62 in 2011 (unusually by voting)
  - Enter into force in Jan 2013 (so called EEDI and SEEMP)
  - Hailed as a breakthrough by developed countries and industry (with some hoping that these measures will be sufficient, and no others needed, even though they would only reduce the rate of emissions growth)
  - Criticized by BASIC countries, with Brazil voicing privately a view “we cannot trust the IMO anymore” [to deal with the climate issues]
  - Resolution on technical co-operation and transfer of technology relating to the above measures was finally adopted at MEPC 65, in May 2013
- Remains to be done:
  - A Market-Based Measure (carbon price) for GHG emissions



# Options under consideration at the IMO



- Two RM options are being considered:
  - **RM add-on** (applicable to any revenue-raising MBM)
  - **RM integrated** (IMERS), a standalone MBM

Details on support & selected documents (2010-2012):

- “A number of delegations expressed interest in the RM proposal and supported its further development and consideration either as an integral or add-on element to a future MBM for international shipping under IMO”
- “A number of delegations stated that the RM is an innovative and constructive proposal that addresses the CBDR principle and should be analysed and considered further”
- MEPC 60/4/54, and MEPC 61/5/33 (IUCN) - RM proposal, including the two options
- MEPC 61/INF.2 (MBM-EG Report) – RM assessment in Chapter 18, 19.83-85, Annex 11
- GHG WG 3/3/3 (CSC & WWF) – systematic analysis of CBDR in shipping, including RM
- GHG WG 3/3/11 (WWF) – details on ‘optimal’ attribution key for RM; values for 190 countries
- MEPC 62/INF.3 (Secretariat) – The AGF Report: ‘no net incidence’ concept to ensure equity
  - The AGF’s analysis on International Transport highlights the RM
- MEPC 62/INF.6 (Republic of Korea) – RM at the fourth Seoul International Maritime Forum
- MEPC 62/5/14 (WWF) – outlines how to ensure no net incidence through the RM
- **MEPC 64/5/10 (WWF) – draft legal text**; to be considered in details later, alongside other proposals & submissions
- MEPC 64/5/12 (WWF) – incorporates impact of trading distances

# Integrated option (shipping, IMERS)



A levy on fuel for international shipping with RM, applied globally, collected centrally\*, likely to contribute \$10bn+ to GCF.\*\* *(in 140 characters)*

## Key points:

1. The levy is **market-based** with shipping facing the same carbon price as other modes of transport
  - The levy is however **set constant for at least a quarter**, and bounded within a price floor and ceiling set for many years
  - There is no cap on emissions *(but a % of mitigation finance is determined)*
2. The scheme is based on a central **emissions registry**, holding an emission account for each ship, and **a global bank providing a payment account for each ship** *(other proposals also assume global approach!)*
3. As per RM, a developing country is entitled to an **annual rebate** in relation to its **share of global seaborne imports**, and will further benefit from financing for climate change action

\* Flexible for domestic collection, where required (i.e. potential opt-out for the USA)

\*\* If so decided



- Reconciles CBDR with a global IMO regime, as the only proposal, through 'no net incidence' on developing countries
- Flexible to accommodate different national circumstances
  - A developing country/region may forego a rebate or part of it
  - Any country could account for its share of international shipping emissions through the attribution key, if needed
- Credits developed countries for financing raised in relation to the attribution key
- It is simple, and based on reliable data
  - It does require though political agreement, but the Cancun Agreements and the recent G20 Communiqué points that this could be reached



- The only proposal that integrates RM so far
- No global emission target/cap needed
- Proportionality of effort guaranteed – shipping would pay the same price as others, by linking to (transport) carbon price
- Simple constant levy (automatically adjusted quarterly or less often; thus no need for UN/governments to agree the level)
- Predictability of investment over 20+ years horizon through the predetermined levy price floor and ceiling
- Centralized, direct processes to minimize bureaucracy; but optional national collection possible (“pre-payment”)
- Mature (3<sup>rd</sup> generation; developed since 2007/MEPC 56)
- Proposed to be a part of the UNFCCC deal, and thus not requiring a separate IMO convention (implementation: yes)
- A notable share of funding proposed for clean shipping R&D

# How Will the RM/MBM Reduce Emissions?



1. It will **stimulate energy efficiency** and bring additional **certainty** to invest in efficient engines, ships, and practices
2. It may collect data on ship efficiency, thereby giving charterers a **mechanism to choose more efficient ships** (working as part of the IMO toolbox)
3. Seed financing provided for R&D will **bring forward adoption of low-carbon technologies** (hydrogen ships) by a decade or so
4. Financing provided for **capacity building** of developing countries will increase their openness to globally applicable **efficiency measures** (through the IMO)
5. **Supplemental emission reductions** will be achieved through carbon markets, and forestry (REDD+)



# Question on bureaucratic burden



1. The rebates will cause a huge bureaucratic burden: who will get which amount, and which goods are included (in shipping)
  - The carbon price applies to all ships in international trade (irrespective of type of ship or which cargo they carry).
  - Rebates are calculated from a simple formula (rebate key x total costs), with rebate keys easily calculated from reliable trade data (see keys for 2007).
  - Then GCF or similar would make a single annual transfer to each qualifying country.
    - Circa 100 bank transfers is hardly bureaucratic; in comparison disbursing such funding to projects through World Bank and similar would be bureaucratic as this typically requires 25 full time employee per each \$100 million of disbursed funds, on the bank side alone.

# Attribution Key's Usage (details, shipping)



## (1) Rebates for developing Countries<sup>1</sup> (SIDS shown)

Small Island Developing State	R Key, %
Singapore	2.36
Dominican Republic	0.14
Cuba	0.11
Trinidad and Tobago	0.08
Jamaica	0.07
Mauritius	0.04
Papua New Guinea	0.03
Fiji	0.02
Haiti	0.02
Barbados	0.01
Remaining SIDS	0.33
<b>TOTAL SIDS</b>	<b>3.21</b>
<b>TOTAL non-Annex I</b>	<b>40.19</b>

Country/region	R Key %
Nigeria	0.3311
Niue	0.0001
Oman	0.1176
Pakistan	0.2747
Palau	0.0018
Panama	0.0655
Papua New Guinea	0.0273
Paraguay	0.0340
Peru	0.1676
Philippines	0.5980
Qatar	0.2129
Rwanda	0.0056
Saint Kitts and Nevis	0.0028
Saint Lucia	0.0063
Saint Vincent and the Grenad	0.0034
Samoa	0.0027
San Marino	0.0000
Sao Tome and Principe	0.0008
Saudi Arabia	0.8851
Senegal	0.0502
Serbia	0.1593
Seychelles	0.0089
Sierra Leone	0.0041
Singapore	2.3585
Solomon Islands	0.0029
Somalia	0.0044
South Africa	0.8077
Sri Lanka	0.1174
Sudan	0.0970
Suriname	0.0097
Swaziland	0.0118
Syrian Arab Republic	0.1396
Tajikistan	0.0228
Tanzania, United Rep. of	0.0595
Thailand	1.3440
Timor-Leste	0.0043
Togo	0.0077
Tonga	0.0015
Trinidad and Tobago	0.0790
Tunisia	0.1872
Turkmenistan	0.0213
Tuvalu	0.0002
Uganda	0.0308
United Arab Emirates	1.2684
Uruguay	0.0354
Uzbekistan	0.0450
Vanuatu	0.0021
Venezuela (Bolivarian Rep. o	0.3620
Viet Nam	0.5119
Yemen	0.0827
Zambia	0.0388
Zimbabwe	0.0130

Ecuador	0.1196	Morocco	0.3182
Egypt	0.2499	Mozambique	0.0210
El Salvador	0.0790	Myanmar	0.0304
Equatorial Guinea	0.0288	Namibia	0.0089
Eritrea	0.0066	Nauru	0.0008
Ethiopia	0.0592	Nepal	0.0274
Fiji	0.0184	Nicaragua	0.0325
Gabon	0.0204	Niger	0.0090

## (2) Credits for developed countries (for climate financing raised)

Developed Country/region	Attr Key %
European Union*	28.53
United States of America	15.98
Japan	6.42
Canada	1.98
Turkey	1.64
Australia	1.60
Russian Federation	1.40
<i>Remaining 7 countries</i>	2.28
<b>TOTAL Annex-I Parties</b>	<b>59.81</b>

Germany	4.6015	Spain	3.0122
Greece	0.7362	Sweden	0.9112
Hungary	0.4480	Switzerland	0.5129
Iceland	0.0690	Turkey	1.6386
Ireland	0.5932	Ukraine	0.5624
Italy	2.9651	United Kingdom	3.9644
Japan	6.4161	United States of America	15.9771

Attr Key %
0.0958
0.1143
0.0506
2.3298
0.3177
0.4904
0.7256
0.5020
0.5534
1.3992
0.3236
0.0961

<sup>1</sup>Developing country may forego rebate or a part of it, and be recognized for such action;

Thus the rebates may amount to 30% or less.

The additional (foregone) financing may go to South-South collaboration, if so decided.

# Rebate Keys for Various Countries (shipping)



## LDCs

Least Developed Countries	R Key, %
Bangladesh	0.16
Sudan	0.10
Angola	0.09
Yemen	0.08
Tanzania, United Rep. of	0.06
Ethiopia	0.06
Senegal	0.05
Cambodia	0.05
Zambia	0.04
Uganda	0.03
Remaining LDCs	0.42
<b>TOTAL LDCs</b>	<b>1.13</b>
<b>TOTAL non-Annex I</b>	<b>40.19</b>

## SIDS

Small Island Developing State	R Key, %
Singapore	2.36
Dominican Republic	0.14
Cuba	0.11
Trinidad and Tobago	0.08
Jamaica	0.07
Mauritius	0.04
Papua New Guinea	0.03
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Haiti	0.02
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Remaining SIDS	0.33
<b>TOTAL SIDS</b>	<b>3.21</b>
<b>TOTAL non-Annex I</b>	<b>40.19</b>

## Developing

Developing Country/region	R Key, %
China	8.35
Korea, Republic of	3.68
Singapore	2.36
Taiwan Province of China	2.27
Hong Kong SAR, China	2.06
India	1.98
Next 30	15.31
Remaining 120+ countries	4.19
<b>TOTAL non-Annex I</b>	<b>40.19</b>

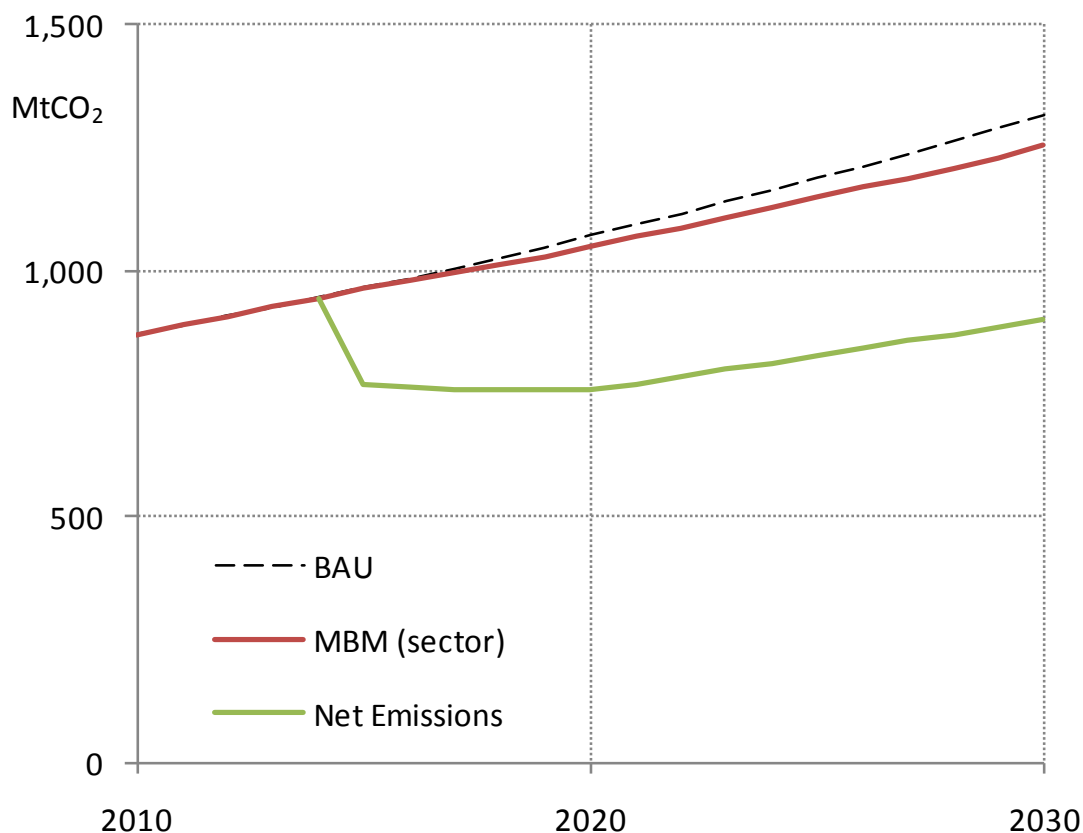
The study on the optimal rebate key is available at: [imers.org/docs/optimal\\_rebate\\_key.pdf](https://imers.org/docs/optimal_rebate_key.pdf)

# Average Scenario, Financials & Impact - Shipping

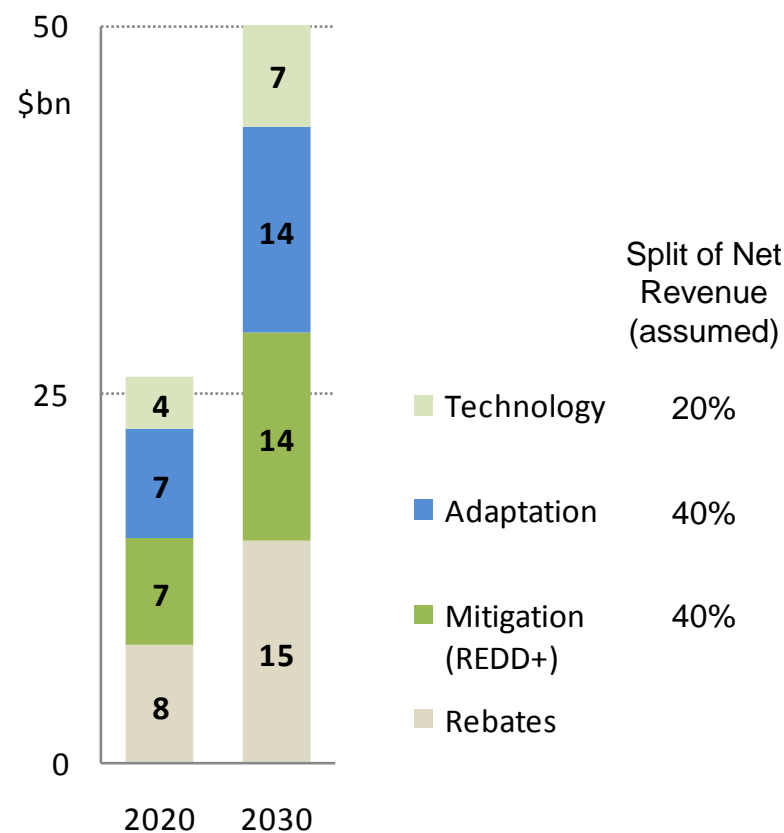
(similar available for ETS)



## Emissions



## Financial



Easily affordable with cost impost estimated as circa **0.2% only** in 2020

(0.16%, based on cost of \$26bn and seaborne trade of \$16.6 trillion).

Detailed analysis confirmed the low impact on prices (Bangladesh: 0.19%, South Africa, 0.14%, and with a different data for dirty bulk: Australia: 0.16%, Chile: 0.26%)

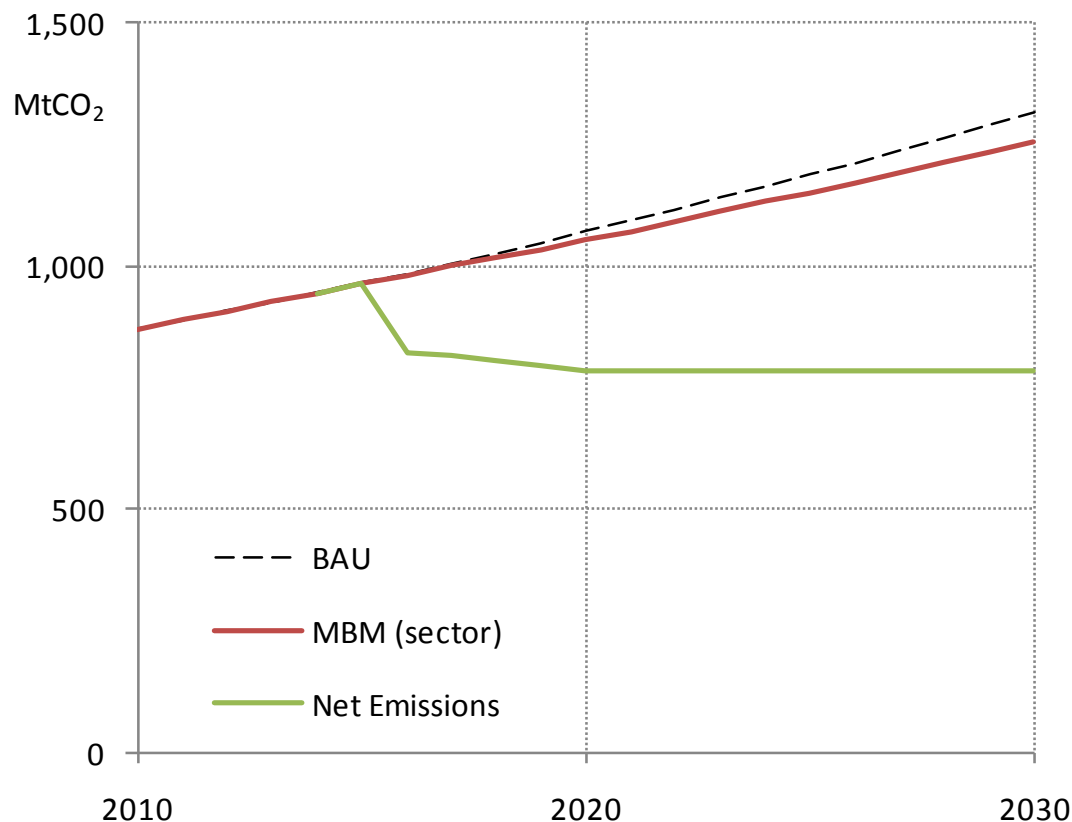
With the recently adopted EEDI & SEMP measures the emissions should be lower.

# ETS with RM - Shipping

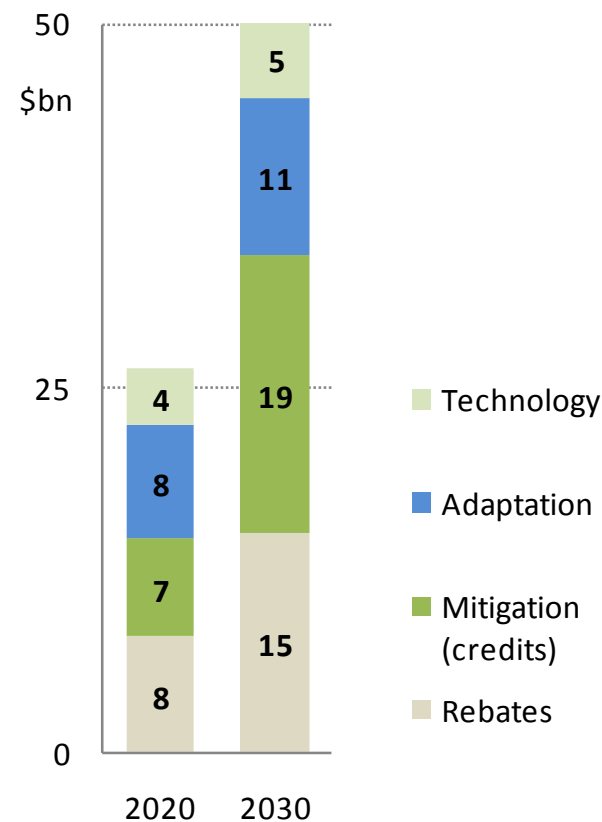
## Average scenario and potential financials



### Emissions



### Financial



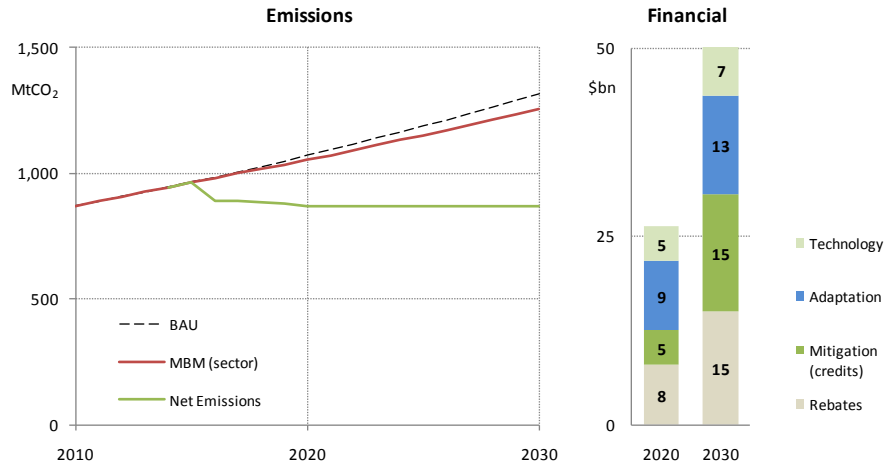
Assumptions: ETS **cap 10%** below 2007 level; 100% auctioning from 2020;  
Financial: rebates to developing countries equals 30% of the total cost; mitigation credits as per the cap; remaining proceeds split between adaptation (2/3) and technology (1/3).

# ETS with RM - Shipping

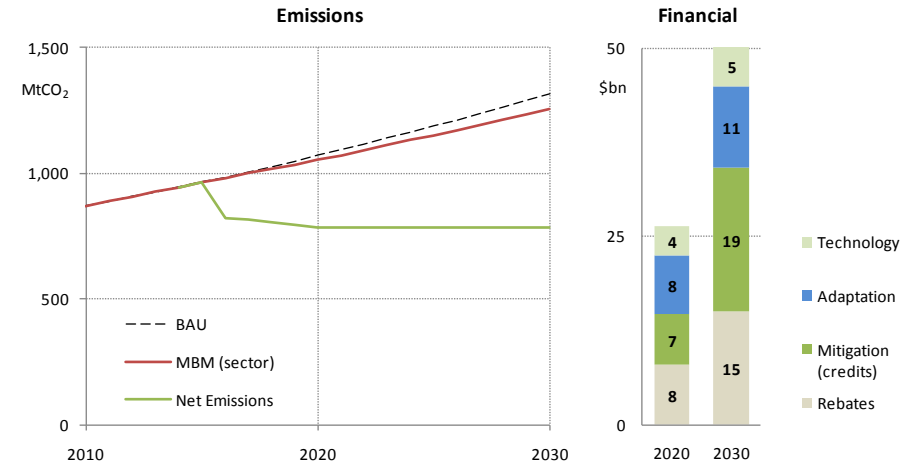
## Finance dynamics vs different emission caps/goals



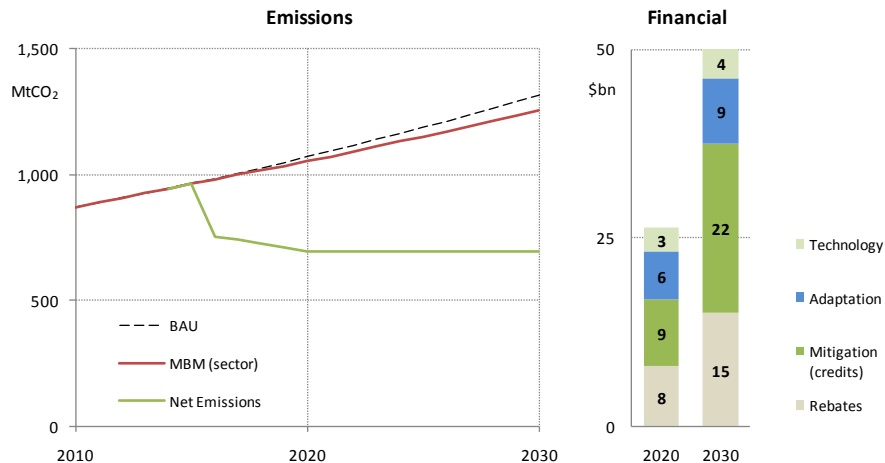
### Cap = 2007 emissions



### Cap = 10% below 2007



### Cap = 20% below 2007



Assumptions: ETS **cap X%** below 2007 level; 100% auctioning from 2020;

Financial: rebates to developing countries equals 30% of the total cost; mitigation credits as per the cap; remaining proceeds split between adaptation (2/3) and technology (1/3).

# Comprehensive book for shipping: Maritime Transport and the Climate Change Challenge



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