



Bunker Fuel Emissions, Adaptation Funding, and Technology Transformation

“IMERS: 4 Bali pillars in 1 maritime scheme”

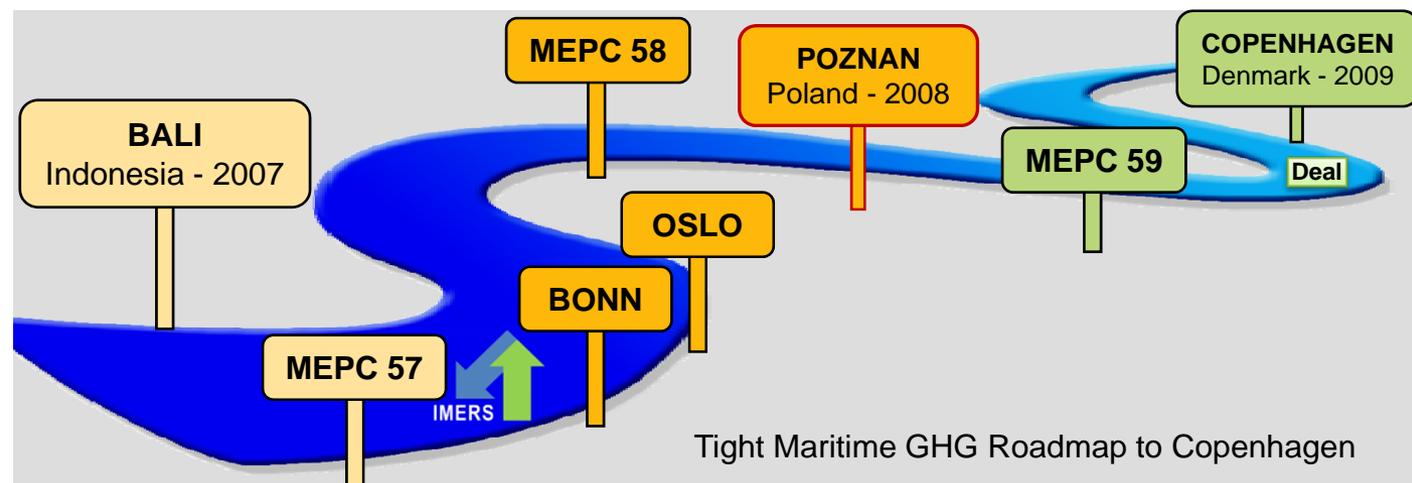
Bonn Climate Change Talks, Side Event

Thursday, 12 June 2008

18:00 – 20:00h, Ministry of Transport, METRO

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- How to differentiate responsibilities within a global scheme for shipping?
 - Design principles for an equitable and cost-efficient scheme
 - Benefits
 - Debate 1: Climate Change Principles for Maritime Differentiation?
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- Unlocking the solution deadlock
 - International Maritime Emission Reduction Scheme (IMERS)
 - Why hybrid? What it is?
 - Costs & benefits for different countries and stakeholders
 - Implementation and regulatory aspects
 - Debate 2: 4 Bali pillars in 1 maritime scheme?
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- Innovating in Climate Change Diplomacy & Solutions
 - Experiences and lessons learned
 - Main debate: How to accelerate a solution for shipping while simultaneously bringing adaptation financing before 2012

Views from developing states are clear

In the IMO and the UNFCCC



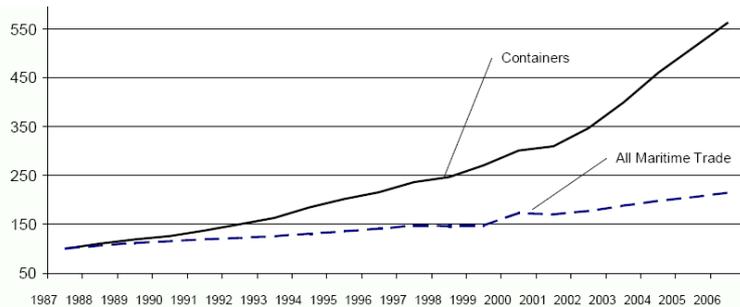
- IMO GHG principles should be framed within the previous agreements
- Maritime GHG framework should: *(the follow-on text is the proposal from India at MEPC 57 (report's §4.73); it was adapted from the UNFCCC Bali Roadmap)*
 - have a shared vision for long-term co-operative action including a long-term goal for emission reductions; contribute fairly to the ultimate objective of the UNFCCC in accordance with its provisions, in particular the principle of **‘common but differentiated responsibilities and respective capabilities’**, and take into account social and economic condition and other relevant factors;
 - recognize the maritime contributions to the **four building blocks** of the Bali Action Plan for Climate Change, namely **mitigation, adaptation, technology transfer**, as well as related **finance** and investment matters
- Need to unlock the deadlock to address maritime emissions post 2012:
 - There is no easy solution for the complex shipping (it would have been found by now)
 - Flexibility, and a creative approach are needed

Key issues & 4 pillars of Bali Roadmap ...

International transport and climate change are truly global

1. Mitigation

Intern'l maritime emissions at 1GtCO₂, **4% of total**; exempt from taxes, growing, unaffected by Kyoto P; more than double the emissions from aviation, greater than the 6th highest polluting country; complex!



Growth of World Maritime Trade (1987-2006)

(Source: Drewry Shipping Consultants; Fearnleys; UNCTAD 2007) (index: 1987 = 100)

2. Adaptation to climate change

Crucial to developing states - the poorest countries are most vulnerable & will be hit hardest by CC.

Current financial mechanisms are inadequate →

- **50:1 gap** (\$billions/pa needed, \$0.4bn available)
- New innovative means are urgently needed



3. Technology

Essential to developing states – technology, better infrastructure and faster processes could reduce the high freight costs, and lead to increased growth.

Technology transformation, including hydrogen transport, could dramatically reduce cost & emissions, but R&D spend goes down rather than up.

Freight cost as % of import (c.i.f., 2005; rounded):

Developed countries: **5%**

Developing countries: **8%** (source: UNCTAD, IMF)

4. Financing

How to finance mitigation, adaptation & technology for a global industry such as maritime transport?

How to:

- square the different priorities and needs?
- achieve **adequate and predictable** financing?
- be affordable?

Some argue that a “differentiated approach” is not appropriate for global shipping, as most ships are registered in developing countries (77%), but owned by companies in industrialized countries .

- Address **differentiated** priorities in one cohesive supra-national scheme
 - **Halve** maritime GHG **emissions** (in long-term)
 - **Reduce the gap** in financing for adaptation (in \$bn annually)
 - Contribute to sustainable economic growth

At an affordable cost, equivalent to:

Adding \$1 to price of \$1,000 of imported cargo (=0.1%)

While delivering on the UNFCCC principles, including:

Common but differentiated responsibilities and respective capabilities

- Differentiation for a global scheme can occur at two points:
 - Collection: IN (polluter pays)
 - Distribution: OUT



- From the business point of view the scheme should:
 - Maximize benefits (difference between OUT & IN)
 - Minimize costs (IN)
 - While delivering on the chosen long-term goals
- A creative approach should include such a business view
 - Leaving the most difficult emission reduction subjects properly and technically unresolved till COP 15 increases the risk of a repetition of the Kyoto negotiations process, as they might be left unresolved again.

Which deal would a business person choose?

Business attitude to differentiation is needed



Three market-based deals:

	Biz Name	Benefit (Net)	Example
1. Old differentiation at source	“0 in 0 out”	0	“Kyoto style”
2. Global harmonized (no diff.)	“1 in 1 out”	0	“Levy”
3. New diff. at distribution (3 rd way)	“1 in 2 out”	1	Hybrid (IMERS)

- Also, in the 3rd way **developing countries have decisive voice** where & how the money is spend
- Illustrative calculations follow ↓

Deal	Countries	In	\$ I:D Decisions	M Mitigation	A Adaptation	T Technology	Out (M+A+T)	Benefit (Out-In)
1 “Kyoto”	Developed	1						
	Developing	0	80:20	0.12	0.002		0.1	0.1
2 “Levy”	Developed	1						
	Developing	1	60:40	1.12	0.02		1.0	0.1
3 Hybrid	Developed	1				0.1		
	Developing	1	40:60	0.8	0.8	0.2	1.8	0.8*

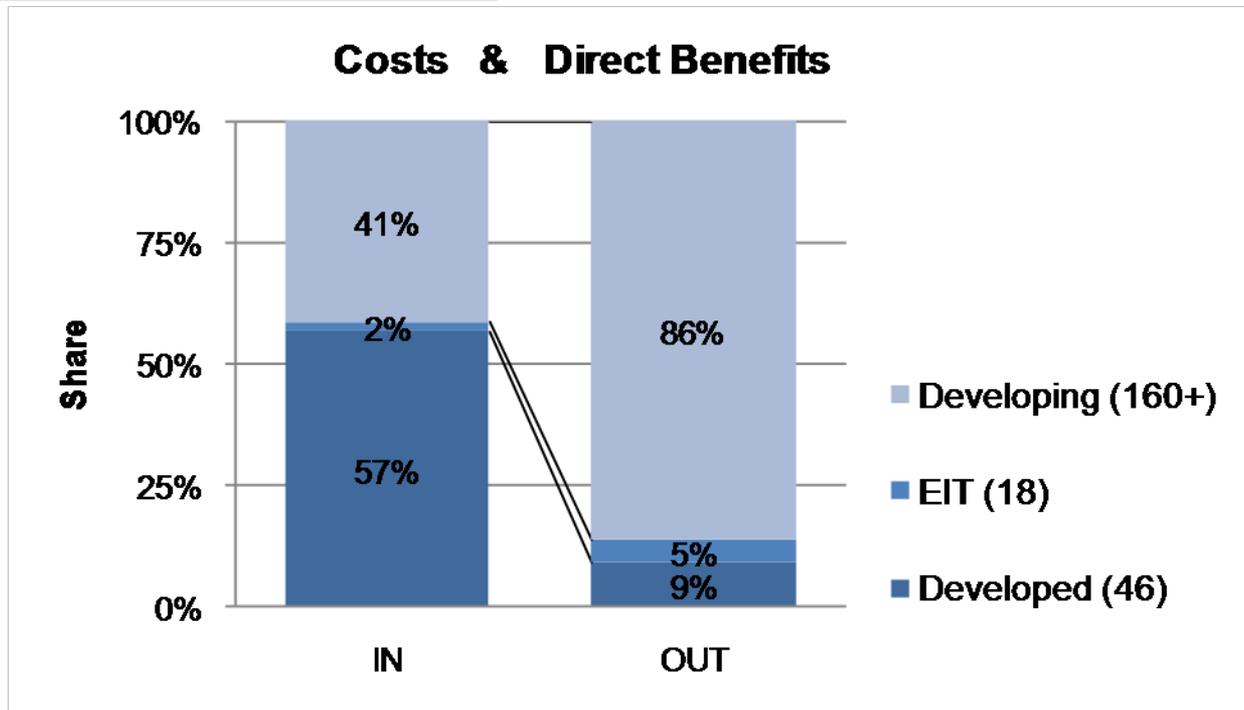
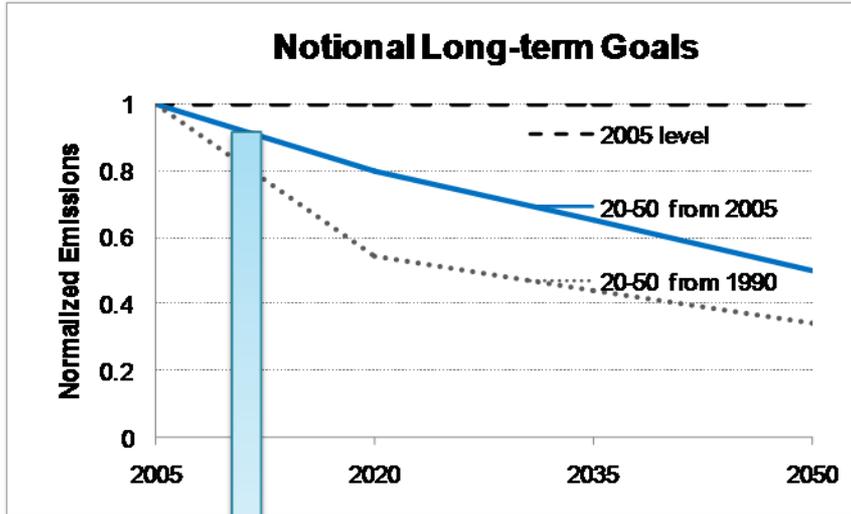
*In reality the net benefit is > 1
(as industrialized will pay more than “1”)

Calculations based on the EU ETS parameters for 2013-2020 (flexible mechanisms capped at 3% of 2005 emissions = about 1/4 of reductions), 2% CDM adaptation levy, nearly 50% difference in prices of CERs on the primary and secondary markets, near zero technology transfer in the CDM transport project portfolio, and “primarily for CO2 quotas” assumptions for the global levy

1. Mitigation and adaptation to climate change will be treated as equally important
 - Therefore the funding of mitigation and adaptation will be equal (50:50)
2. The adaptation funding will be allocated only to developing countries
 - To reduce the significant gap in financing required (the gap is 50:1)
3. Transformational changes are critical for shipping
 - Funding will be raised for a low emission technology development, and technology transfer for the entire maritime sector, on top of funding for climate change mitigation and adaptation
4. A supra-national approach should be adopted
 - To dramatically reduce the complexity, costs, economic impacts, risks of fraud
5. The UNFCCC/IMO should agree a long-term CO₂ emission reduction goal
 - To enable the functioning of a policy instrument (such as a hybrid emission reduction scheme)

Who would benefit most directly? (#1 of 2)

Costs & benefits depend on the emission reduction goal

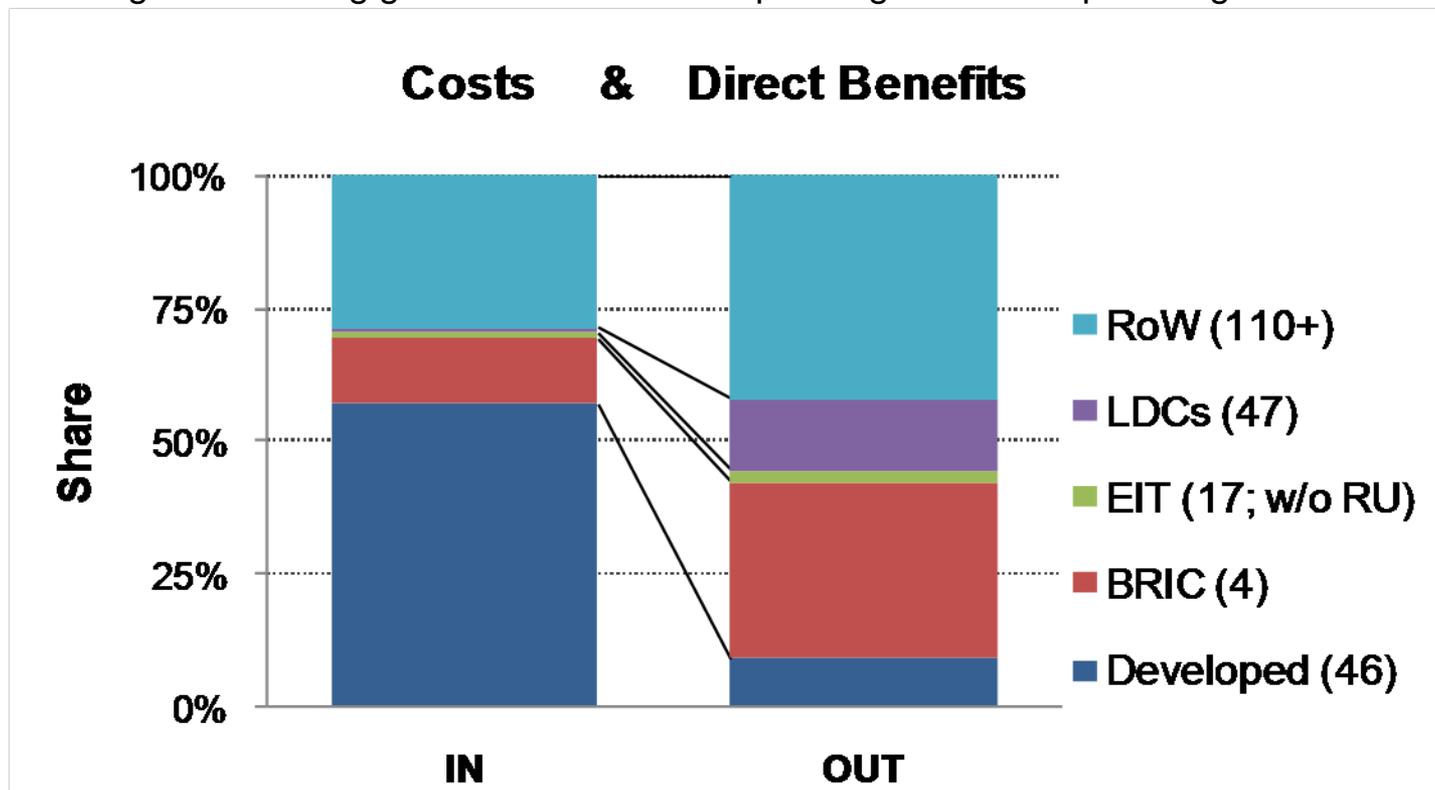


Who would benefit most directly? (#2 of 2)

Additional funding policies for differentiation



- The CC principles (from slide 8) require **further policies** to quantify direct benefits:
 - Mitigation: emission credits are purchased from the CDM/JI projects
 - May include credits from REDD (reducing emissions from deforestation and forest degradation)
 - Adaptation: **30%** of adaptation funding is provided to the **Least Developed Countries** (as per the “Blueprint for Adaptation” submitted by Tuvalu to COP 13)
 - Technology:
 - Near-term funding goes primarily to developing countries (technology transfer)
 - Long-term funding goes to the countries spending most on import freight costs

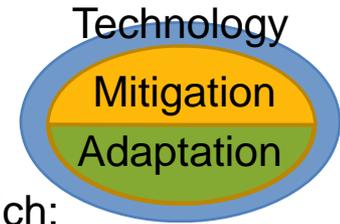


Debate 1

Starting with Climate Change Principles for Maritime Differentiation?



1. Mitigation and adaptation to climate change will be treated as equally important
 - Therefore the funding of mitigation and adaptation will be equal (50:50)
2. The adaptation funding will be allocated only to developing countries
 - Of which 30% for the LDC's
3. Transformational changes are critical for shipping
 - Funding will be raised (optional) for the entire maritime sector
 - On top of funding for climate change mitigation and adaptation, of which:
 - 50% will be for near-term technology transfer primarily for developing countries
 - 50% will be for long-term transformational R&D, and deployment
4. A supra-national approach should be adopted
 - To dramatically reduce the complexity, costs, economic impacts, risks of fraud
5. The UNFCCC/IMO should agree a long-term CO₂ emission reduction goal
 - To enable the functioning of the policy instrument under IMO (such as a hybrid emission reduction scheme)
- ...

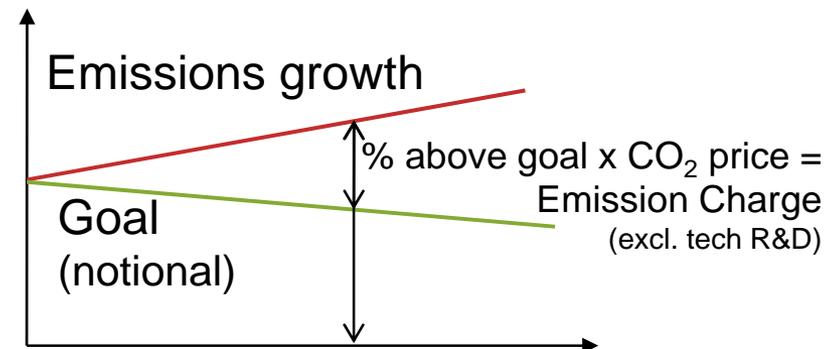


Unlocking the solution deadlock

IMERS outline (discussed as the “hybrid” in the IMO and UNFCCC)

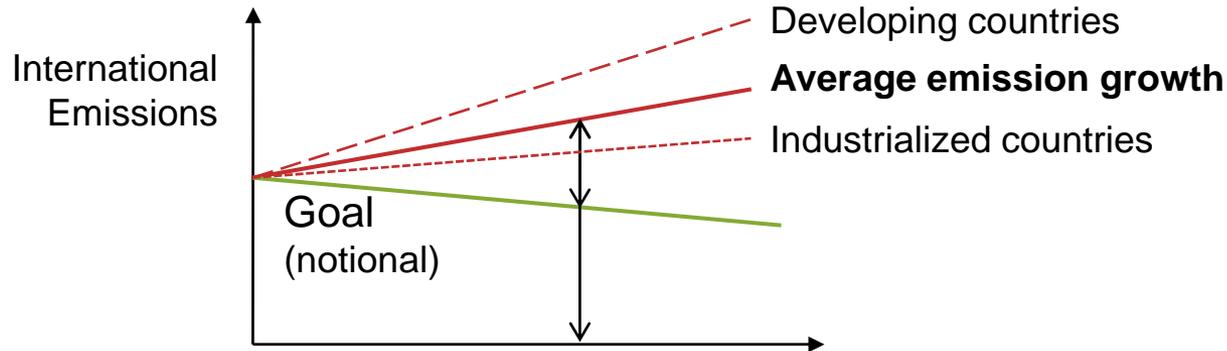


- **No allocation** of emissions to countries, **one aggregated emission goal**
- **A fund** established to invest in:
 - Mitigation of shipping GHG emissions
 - Adaptation to climate change in developing countries (→ Adaptation Fund)
 - Near-term and long-term transformations (technology R&D, and transfer)
- **A novel hybrid economic instrument**
 - Delivering a quantity target through fair emission charges
 - A cap-and-charge approach
- **Differentiated charge* & differentiated use of revenue**
- Link the base charge to:
 - Emissions growth above a goal
 - Carbon market price (it exists!)



* Charges can be differentiated, even 0 for food import

- Charging per average emissions above notional goal is a partial differentiation



- Developed countries pay effectively more
- Developing countries pay versus lower, average trajectory
 - This can be **further differentiated per ship type** (containers, bulk etc.) leading to 0 cost for food import
- Why? Trade in developing countries will grow around 3%-4% faster
 - Than in the developed world, for the next couple of decades
 - See : Annual growth rates in bilateral trade p.a. to 2030

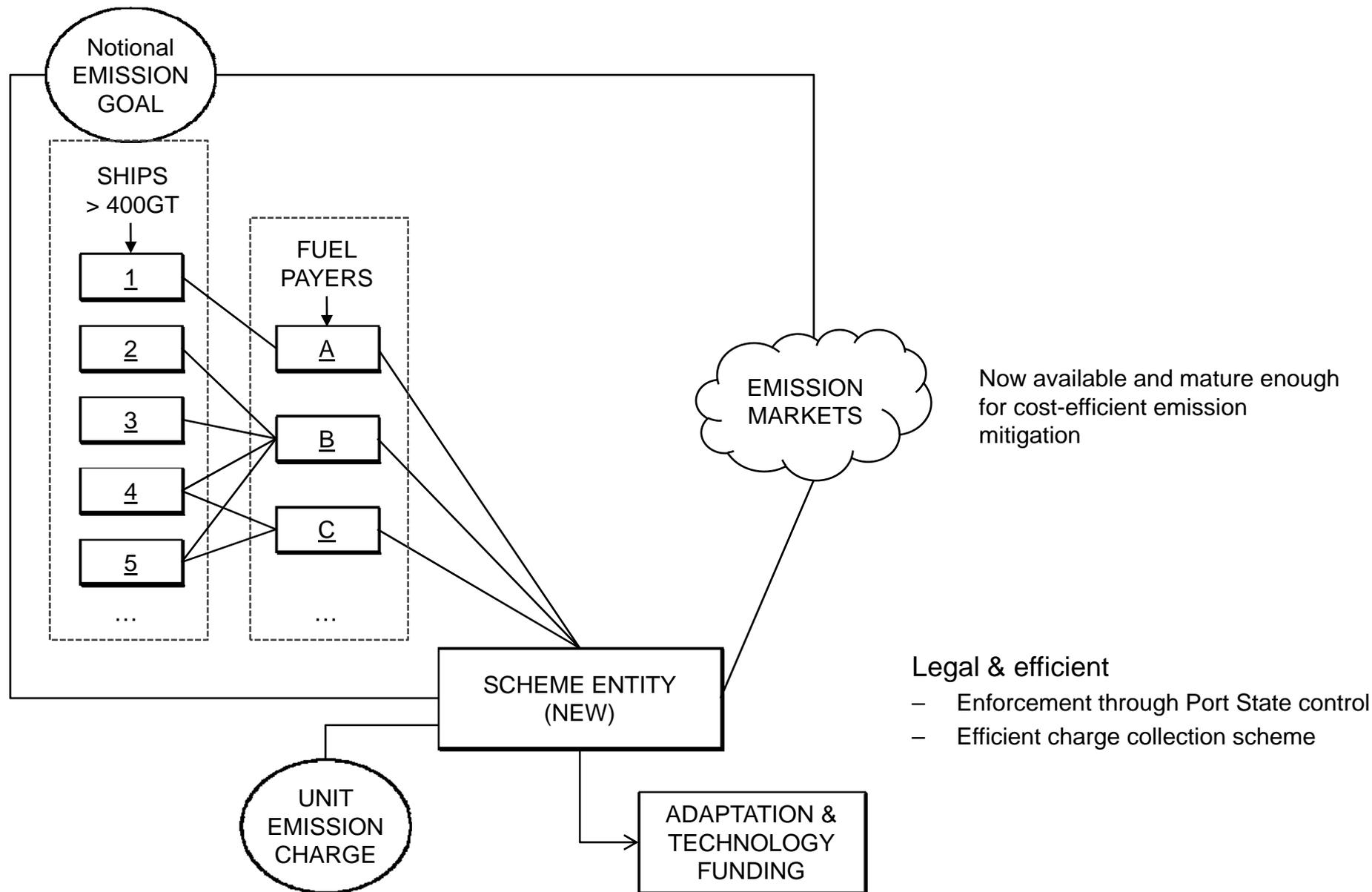
	Latin America	South Asia	East Asia + Pacific	Sub-Saharan	Middle East/ North Africa	Transition countries*	Industrial. countries
Latin America	8.5%	9.7%	10.5%	8.7%	8.0%	8.1%	7.2%
South Asia		10.9%	11.8%	9.9%	9.2%	9.3%	8.4%
East Asia/Pacific			12.6%	10.7%	10.1%	10.1%	9.2%
Sub-Saharan				8.9%	8.2%	8.3%	7.4%
Middle East/North Africa					7.6%	7.6%	6.7%
Transition countries*						7.7%	6.8%
Industrialized countries							5.7%

Source: Berenberg Bank · HWWI: Strategy 2030 – Maritime Trade and Transport Logistics; Forecast by HWWI Hamburg Institute of International Economics, 2006 (Fig. 35).

* Former Eastern European Bloc and Asian Soviet countries

Carbon markets are essential

Scheme diagram



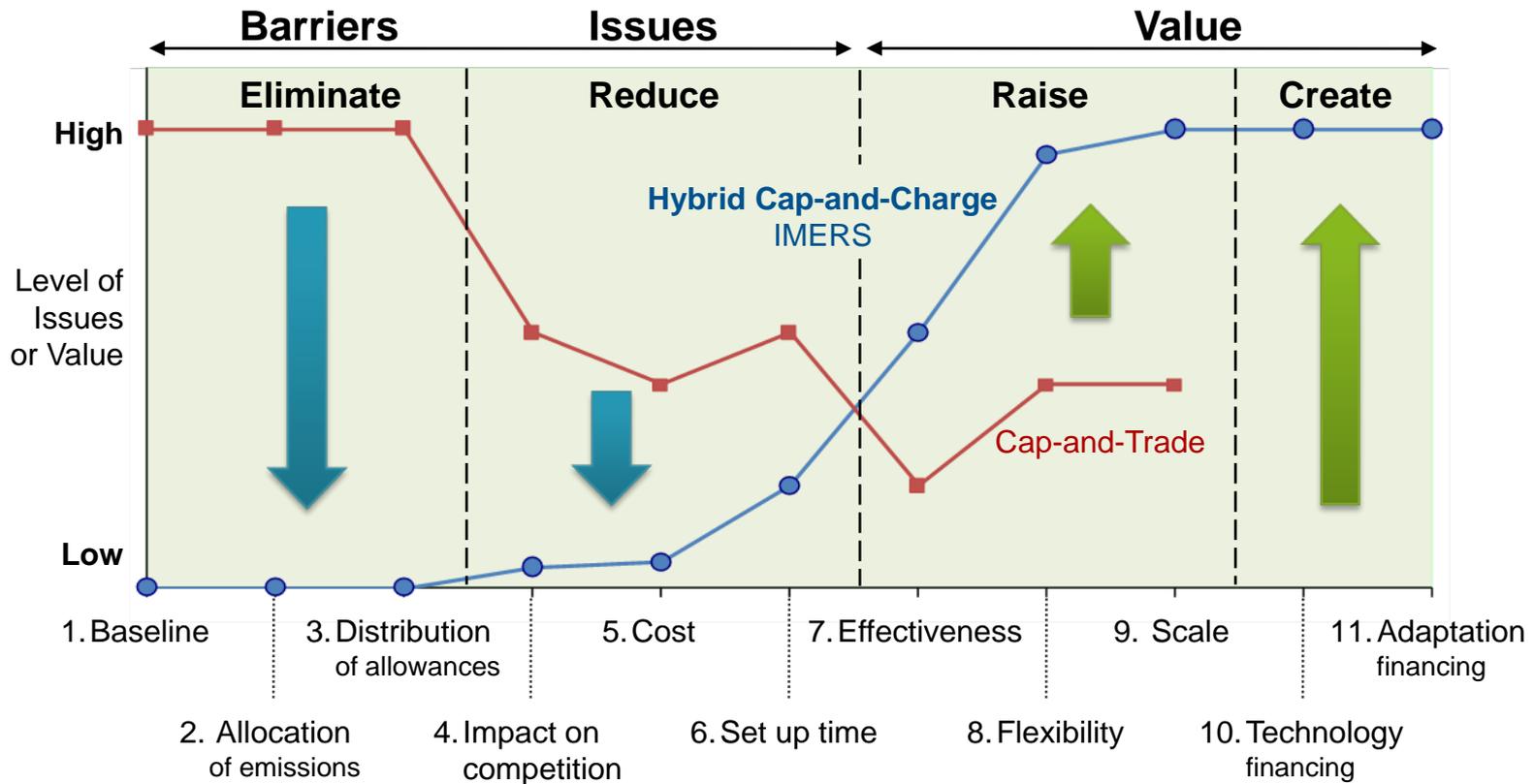
- Make it a legal requirement for ships above 400GT to participate
 - Amendment to MARPOL Annex VI (the fastest route; 16 mths tacit acceptance)
 - Leverage regulation 18 and Bunker Delivery Notes (BDN) for reliable source of data
 - Currently ratified by 48 parties representing 75% tonnage
 - Make it predictable by announcing a unit emission charge 1 year in advance
 - Could be easily linked to business rates through WorldScale, and similar
- Create a central entity for direct billing and collection of charges
 - Similar in concept to route charges in aviation (Eurocontrol in Europe)
 - No impact on flag states; additional services could be provided
 - Enforce compliance through Port States (starting with major ports)
- This approach already complies with the principles from the IMO MEPC 57

- Ship arrives at a participating port:
 - Validate fuel data with legally required Bunker Delivery Notes for the past period
 - If not completed submit data on the ship's behalf
 - Check online payment of emission charges for the period ended 3 months earlier
 - If not compliant, decline access to port until the charges and a penalty are fully paid
 - Check for fraud when prompted by the central business intelligence tools
- Starting from couple of hundreds ports is a way to scale-up
 - Alternative up-stream approaches are possible, but are more difficult to implement in a supra-national scheme, legally and practically
 - They typically use locally collected charges/taxes and many states are against hypothecating (allocating) such revenues
 - Also, collecting in some states is unlikely, due to legal, capacity and other issues

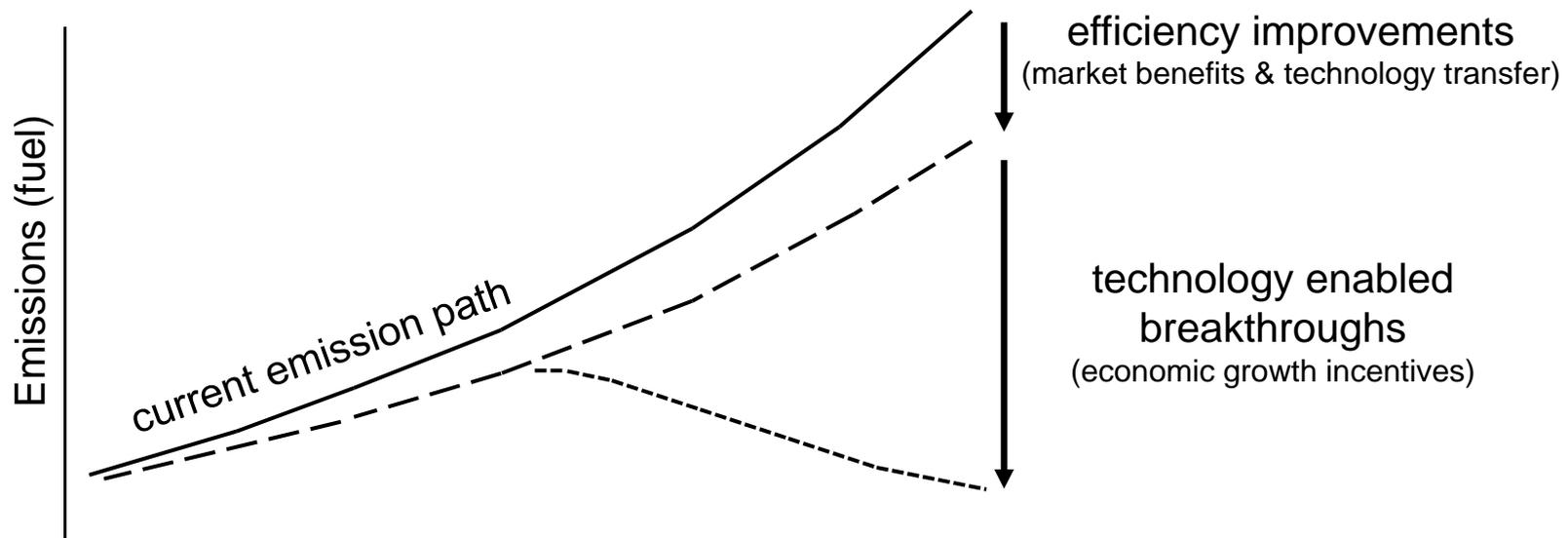
Why go for a hybrid cap-and-charge?

Strategic comparison

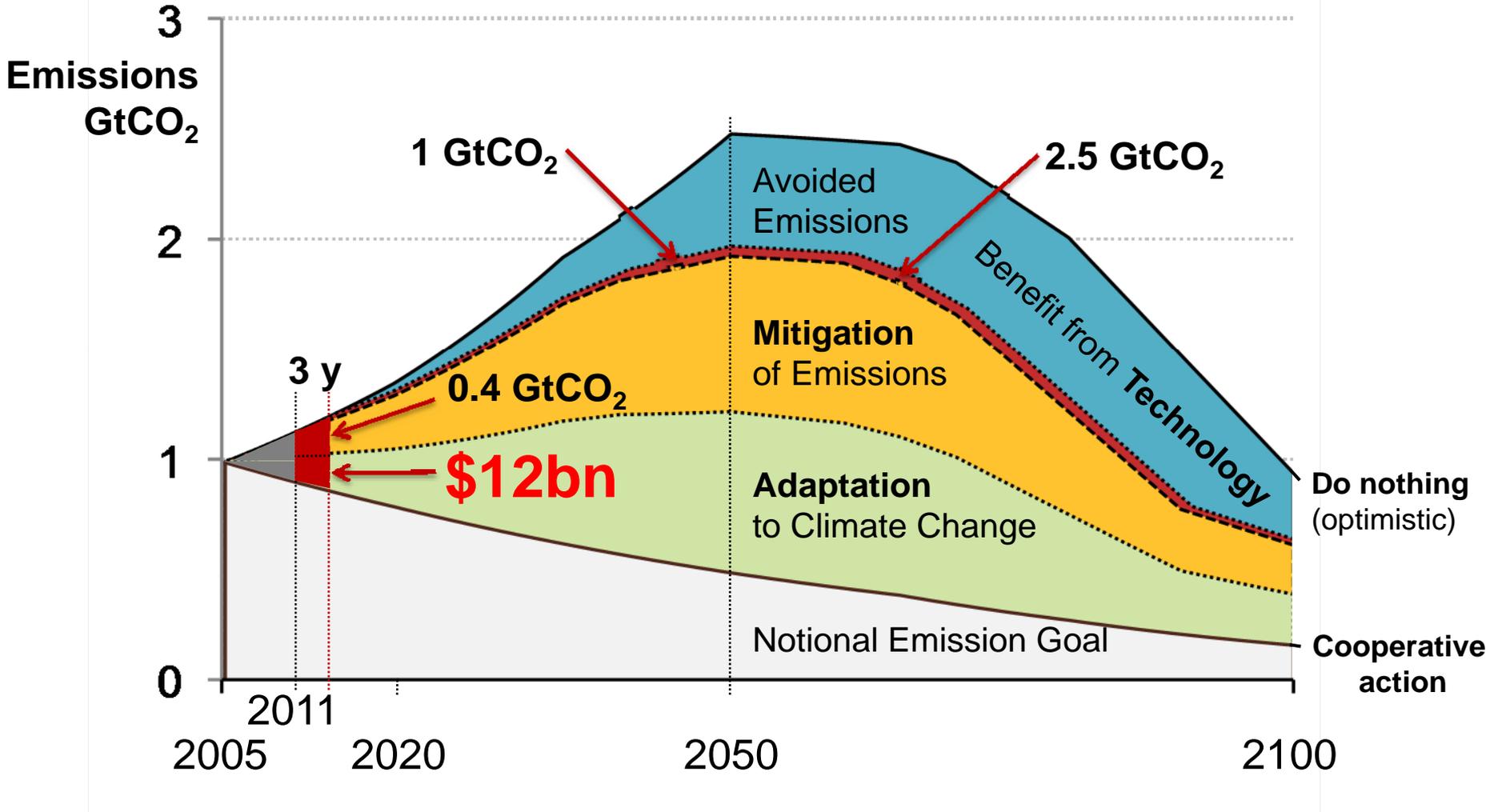
- Primary questions after 10 years. Which instrument is:
 - Likely to be better designed?
 - More flexible?
 - Including innovative financing for technology transfer, and adaptation to climate change



Shipping is already efficient and major breakthroughs are needed



Cost of 3 year delay



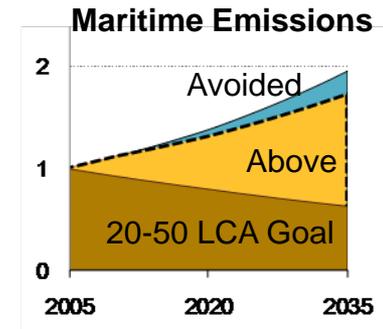
- Improvements start 3 years later
- Bringing forward step changes is reduced by 1 year (from 10 to 9)

Summary: Financing mitigation and adaptation, & technology

For the ambitious '20-50 LCA goal' (#1 of 2)



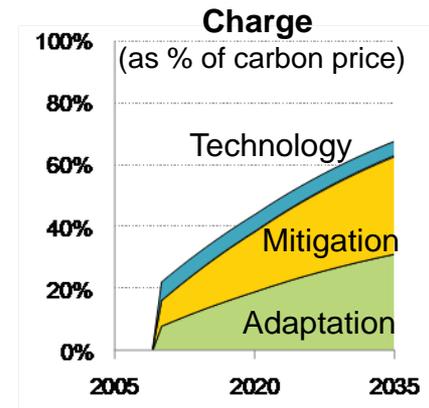
- Shipping can and should contribute fairly to the Long-term Cooperative Action (LCA) goal
 - Example for a notional emission reductions of 20% in 2020, and 50% in 2050 from the 2005 level



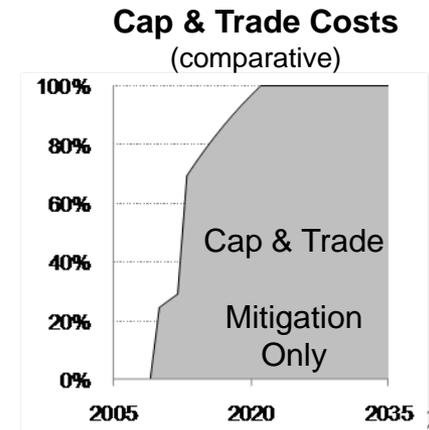
- End user cost impact will be **Very Low**:
 - Adding \$1 to price of \$1,000 of imported goods (0.1%)
 - Details: Charges as % of carbon market price, impact on fuel price, shipping costs and on end customer:

Year	% of C\$	\$/ t fuel*	Shipping \$	Customer
2012	30%	\$27	2%	<0.1%
2020	46%	\$42	3%	<0.1%
2035	70%	\$64	5%	<0.2%

*For market data: \$30/tCO₂, \$500/t HFO



- Alternative approaches are difficult to implement and cost much more
 - The cost of a hypothetical, classical cap-and-trade scheme will be much higher
 - It would deliver mostly on mitigation only
 - The high cost cannot be ignored in the current economic situation



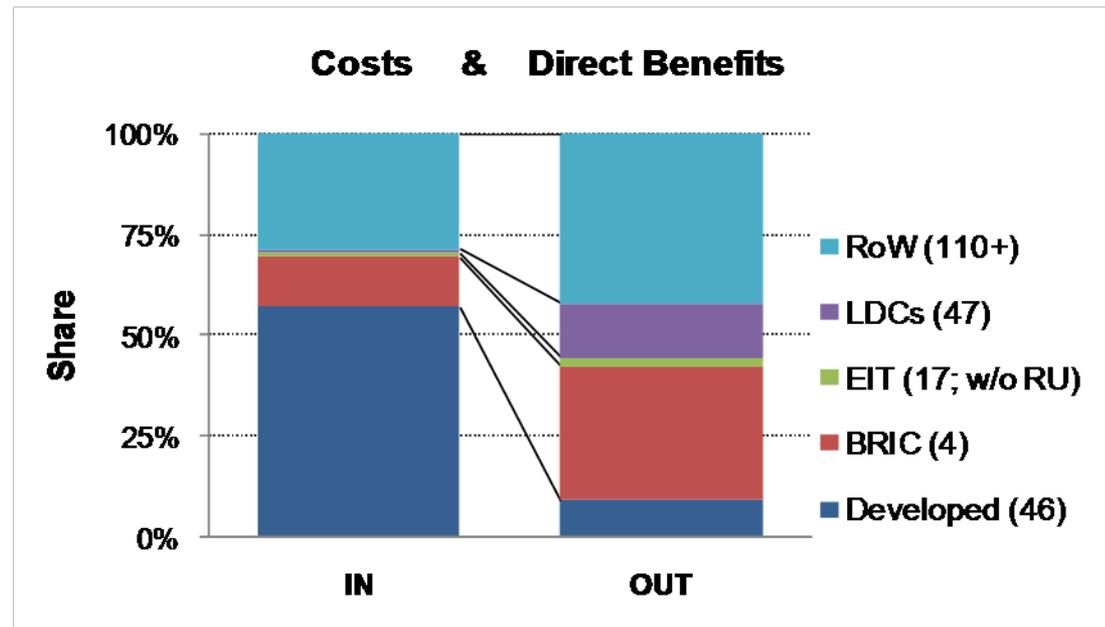
Summary: **Financing mitigation and adaptation, & technology**

For the ambitious '20-50 LCA goal' (#2 of 2)



- **The hybrid scheme can be ambitious, affordable and achievable**
 - **Cost is very low as shipping is the most carbon efficient transport**
 - \$1 for \$1,000 of imported cargo (i.e. 0.1%)
 - Significant emission reductions will be achieved
 - Through transformational changes and reductions outside the sector
 - Developing countries and the EITs will benefit directly & significantly
 - Including \$4bn for adaptation in 2012 and \$8bn in 2020 for the developing countries
 - Of which 30% for LDCs

FUNDS pa	2012	2020
Technology	\$2bn	\$2bn
Mitigation	\$4bn	\$8bn
Adaptation	\$4bn	\$8bn
Ops Costs	0.5bn	0.6bn



- Maritime complexity requires however a global, centralized scheme to make it feasible and to keep the costs down (\$billions can be wasted with an indirect approach)

Debate 2

Hybrid scheme for international maritime emissions (IMERS)



- Financing Mitigation, Adaptation & and Technology Transformation?
 - 4 Bali pillars in 1 maritime scheme?



- Feasibility, benefits and costs
- ...

Examples & lessons learned from the front line

Innovation could help to overcome diplomatic deadlock



- Major obstacles for diplomatic innovation:
 - Bureaucratic constraints, lack of time/resources
 - Free-riding is a norm, despite high promises
 - Passive approach, waiting for clear policy
 - Officials are not asked to take initiative and ownership, let alone provide vision and leadership
 - Lack of inter-departmental clarity makes it worse
 - Bilateral rather than multilateral approaches
 - Partnering with and engaging non-state experts is often against the government pride/policy
 - This creates a big risk of distorting or even destroying the key business elements
- Lessons for innovators:
 - Getting financing for ambitious public good projects is difficult, for VC's risk is too high ...
 - Going through associations and companies does not help either
- New openness, trust and partnerships are urgently needed

Selected quotes from officials

I've only 2 hrs per week for this topic.

Why us? Why not country XYZ?

Seems like a great proposal. But it might be incompatible with our policy.
[Q] What is your policy?
[A] We don't have one yet.

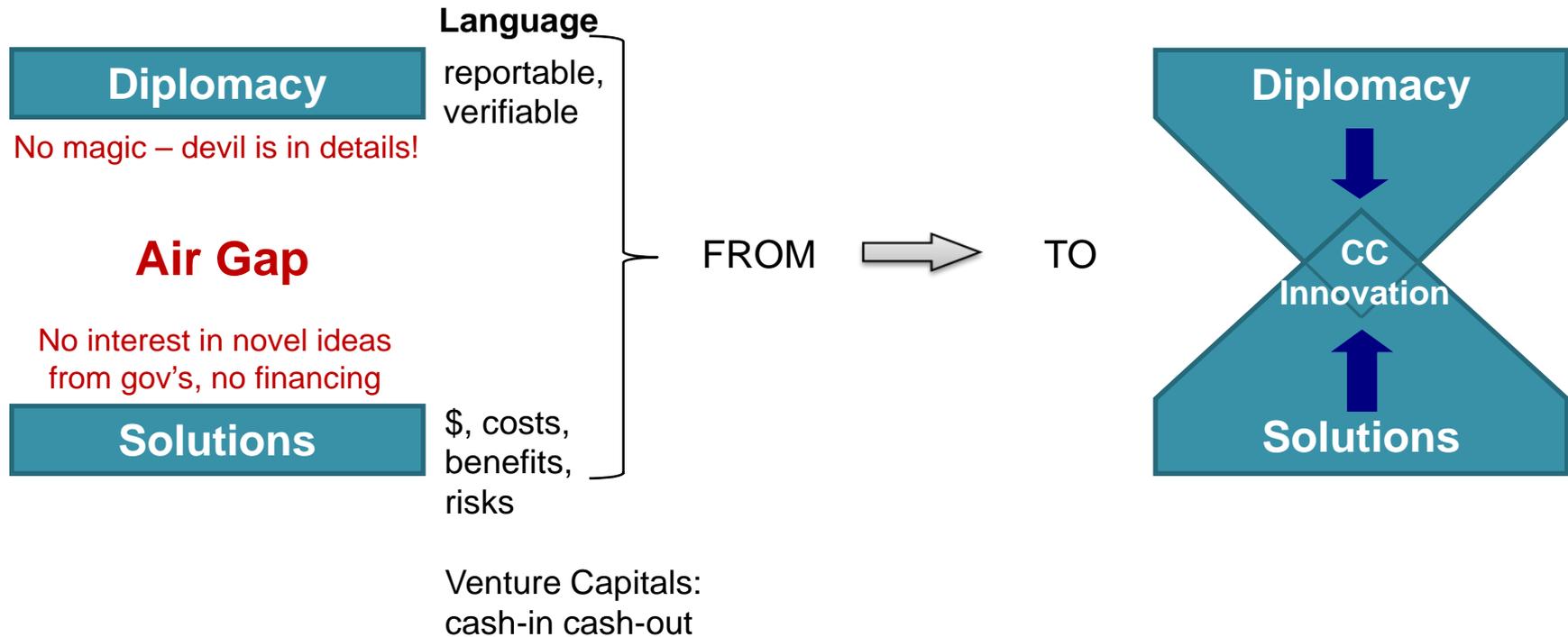
We don't need help. We can manage.
Thank you for bringing the idea to us.

Our experts are uncomfortable.
[Q] What about? [A] I don't know yet.

Great work! Carry on. When it's approved we'll be very interested.

It might be too early. We still have time till 2009.

After so many years of deadlock I don't even remember what's the issue anymore.



A project, partnership attitude will bring tangible actions instead of just words.

This would be a powerful diplomatic win and trust building exercise.
Significant benefits as early as 2011.

AGREE SCHEME PRINCIPLES, including split of funds, and a notional emission target to drive the scheme

ADOPT AMMENDMENTS to MARPOL Annex VI; Establish Governing Body

2009

2008 - 2009

Key Steps:

Political

Operational

Earliest Start: 2011

BUILD, TEST & DEPLOY a central system and processes

2010

Calculate and announce a **UNIT EMISSION CHARGE** one year in advance, and a forecast

2009 & 2010 onwards

$T=T+1$

COLLECT EMISSION CHARGES (0.1% impact on end user)

2011 or 2012 onwards

CONTRIBUTE to ADAPTATION FUND, for developing countries (>\$4bn/pa)

BUY/TRADE in emission credits and **DELIVER** the emission TARGET (>\$4bn/pa)

INVEST IN TECHNOLOGY (and tech transfer; \$2bn/pa)

AUDIT and REPORT overall RESULTS

IT CAN BE DONE
Challenge us on any details!

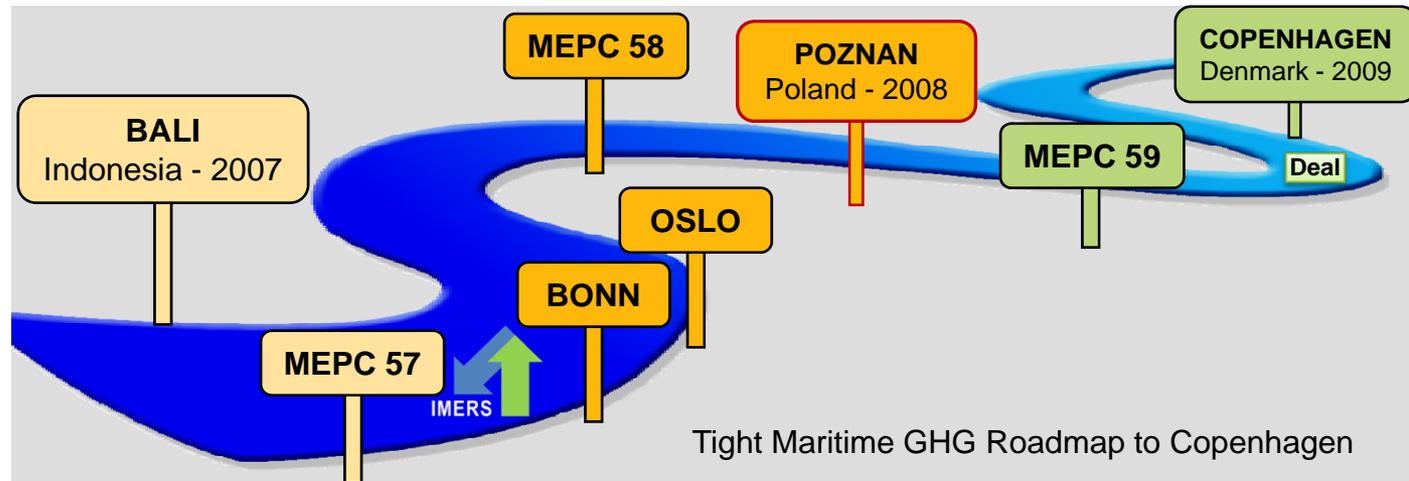
- Multilateral progress

- Significant progress and achievements from 2007: www.imers.org/buyin/achieve
 - Norway embraced the idea in May 2007, submitted as MEPC 56/4/9 to the IMO process
 - As a result a significant multilateral progress in the IMO
 - Positive unofficial discussion with selected 15 developed and 15 developing countries
- **No time to loose** due to interrelations ... and free-riding
 - **No submission from developing countries to Oslo** (a joint proposal did not make the deadline)
 - Other submissions not covering adequately the “differentiated responsibilities”



Credentials

- Accelerating?



MEPC – IMO’s Marine Environment Protection Committee; sessions in London

- Engaging developing countries and other stakeholders

- Through a facilitated iterative project? (to build trust and deal with the devil in details)