Shipping and sustainable development:
Opportunities, climate challenges, and the role of stakeholder partnerships

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Unsustainable development of ocean-based economies

Natural assets

Conversion & depletion

Damage from human activity

Conversion or substitution without net loss

Investment in conservation, restoration & enhancement

Milligan et al, forthcoming 2016
Development of the shipping sector: opportunities

2010

2030 Status Quo

MSI/Lloyd’s Register, 2013
Development of the shipping sector: climate-related challenges

Business as usual (3rd IMO GHG Study)

2°C pathway (upper bound)

1.5°C pathway (lower bound)
Development within carbon budgets:
The glide path scenario

Cumulative emissions
2 degrees ~ 1250Gt
1.5 degrees ~ 620Gt
Development within carbon budgets:
The delayed action scenario

Cumulative emissions
2 degrees ~ 1250Gt
1.5 degrees ~ 620Gt
The current public policy response:

2011 IMO – EEDI and SEEMP
2015 EU – MRV Regulation
2015 Paris Agreement – no specific provisions
2016 IMO – MEPC Working Group

Key outstanding issues: raising ambition, fair share, CBDR–RC, design of regulatory mechanisms
Key design challenges at international level

Target proportionate to ‘well below 2 and aiming for 1.5’
‘Lever’ to enable a low carbon pathways (e.g. carbon price)
System for addressing revenue deployment for:
  GCF
  Offsetting
  In-sector schemes to assist transition (infrastructure, R&D, grandfathering)
  Developing country compensation
Address barriers and failures that hinder market efficiency
MRV / fuel monitoring – for sector ‘health’ monitoring and progress review
The current private sector response:

Various standards and initiatives (CCWG, EVDI, ESI…)

Some challenges: transparency, data quality, ambition

Import part of low-carbon transition, but need strengthening
What does success look like?

Practical options and scenarios for reducing GHG emission from shipping
Absolute versus relative targets

Typical length of contract (charter)

Average economic lifespan of ships today

Max period for financing

All scenarios here are 2 degree

60–90% decrease in fleet average carbon intensity

Typical length of contract (charter)
Technology options

Emissions capture & removal – e.g. scrubbers
Energy storage – e.g. batteries, fuel cells
Low carbon fuels – e.g. LNG, biofuels
Propulsion – e.g. sails, kites, flettner rotors
Operational – e.g. speed, route

Rehmatulla et al, 2015
Financing the transition

- Climate finance
- Development finance
- Private sector investment
- Blended and staged approaches

<table>
<thead>
<tr>
<th>Type of investor</th>
<th>Return objective</th>
<th>‘Lockstep’</th>
<th>Financial alpha</th>
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</table>
| Donor            | Conservation impact  
  - Sole demand is to see conservation impact  
  - No financial return expectations |
  - Seeks to enable pioneer conservation projects that unlock a cash flow  
  - Establishes potential for return |

- Wealth-preserving  
  - Seeks impact as primary objective while preserving wealth  
  - No financial return expectations  
  - Wealth preservation is underlying objective  
  - Individual investment decisions intended to achieve ‘lockstep’ returns

- Return-seeking  
  - Objective is market-level returns while achieving superior impact  
  - No trade-off envisaged  
  - Seeks to achieve market-outperforming returns  
  - Considers impact as a secondary or non-existent consideration

These investor groups are the most critical ones in the effort to scale up conservation finance.

WWF, McKinsey, Credit Suisse, 2014
Key ongoing intergovernmental efforts

GLOMEEP – Global Partnerships for Maritime Energy Efficiency

MTCC – Maritime Technology Cooperation
Focus of our shipping research and consultancy work

Recent trends in energy efficiency

Energy efficiency futures and options for achieving them
Modelling the shipping sector – our approach

EXOGENOUS DRIVERS
- Consumption: Population, wealth
- Production: Natural resources, manufacturing
- Fuel: Price, availability
- Policy: Regulation, fiscal

OTHER MODES
- Train, air, road

SHIPPING
- Allocation to mode: ship, train, road, air
- Shipping logistics model
- Ship loading, speed, distance
- Ship model

ENERGY, EMISSION, COST

Containership

Tanker

Crude

Bulk carriers/General cargo

Product/Chemical
Collaborations and partnerships

- IMO Secretariat
- National shipowners associations
- International associations
- National governments
- Professional institutions
- Multinationals
- Environment NGOs
- Other academia
- Carbon War Room
The shipping in changing climates consortium
Stakeholder partnerships: key lessons learned

Diversity and complexity of stakeholders and relationships
Stakeholder partnerships: key lessons learned

Academics as pan-stakeholders and information brokers
Academics as problem framers and facilitators of track two dialogue
Mutually supportive relationships between research and consulting
Most references on above websites. Please get in touch if you have questions.