

**ROOM VIII, Building E**  
**Palais des Nations, Geneva**  
**10-12 May 2016**



UNITED NATIONS  
UNCTAD



The Commonwealth



IOI International  
Ocean Institute

**Oceans economy and trade:**  
Sustainable fisheries, transport and tourism



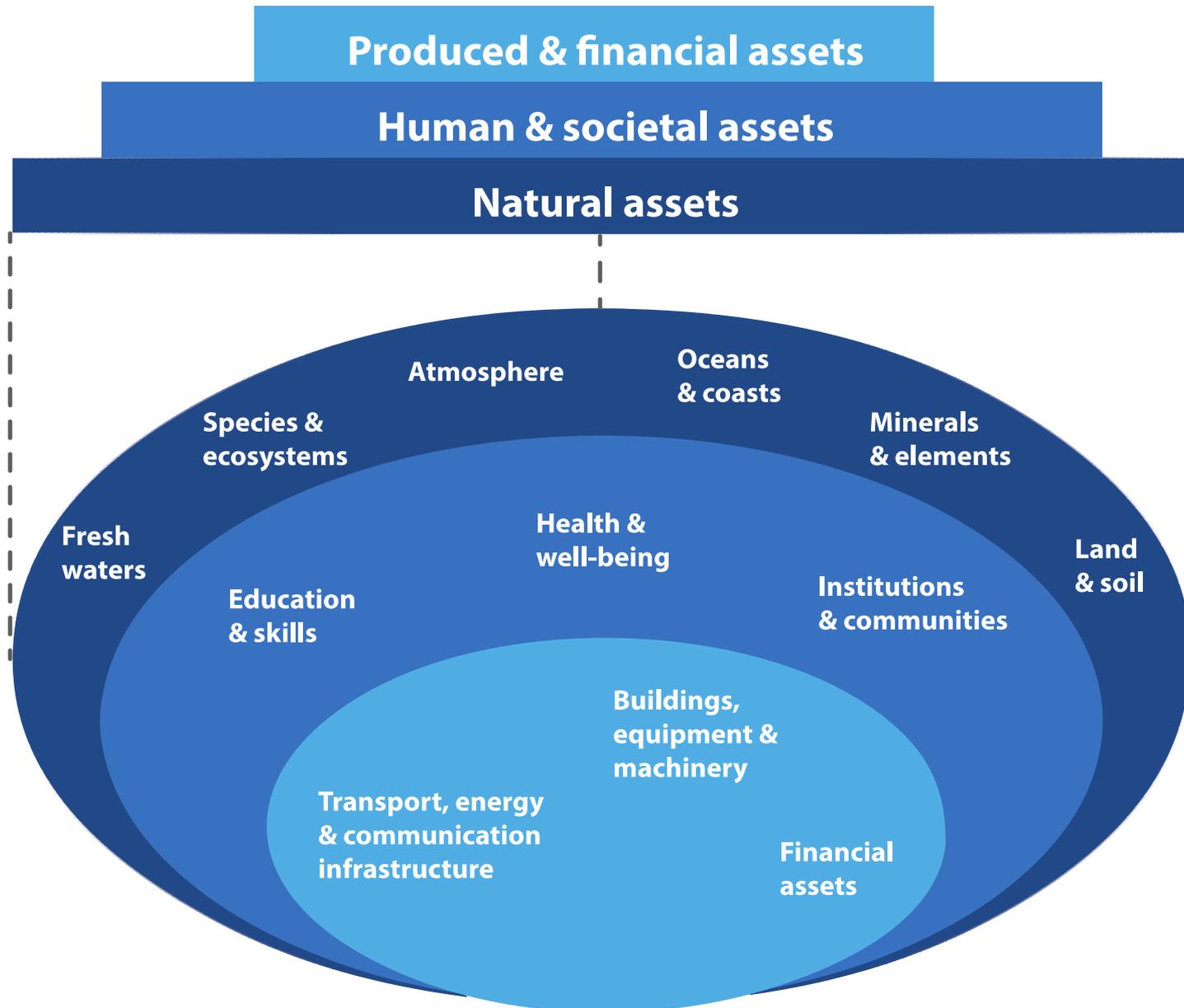
**Shipping and sustainable development:**  
**Opportunities, climate challenges, and the role of stakeholder**  
**partnerships**

**Dr Ben Milligan, University College London**  
**Energy Institute**





# The foundations of (ocean-based) development



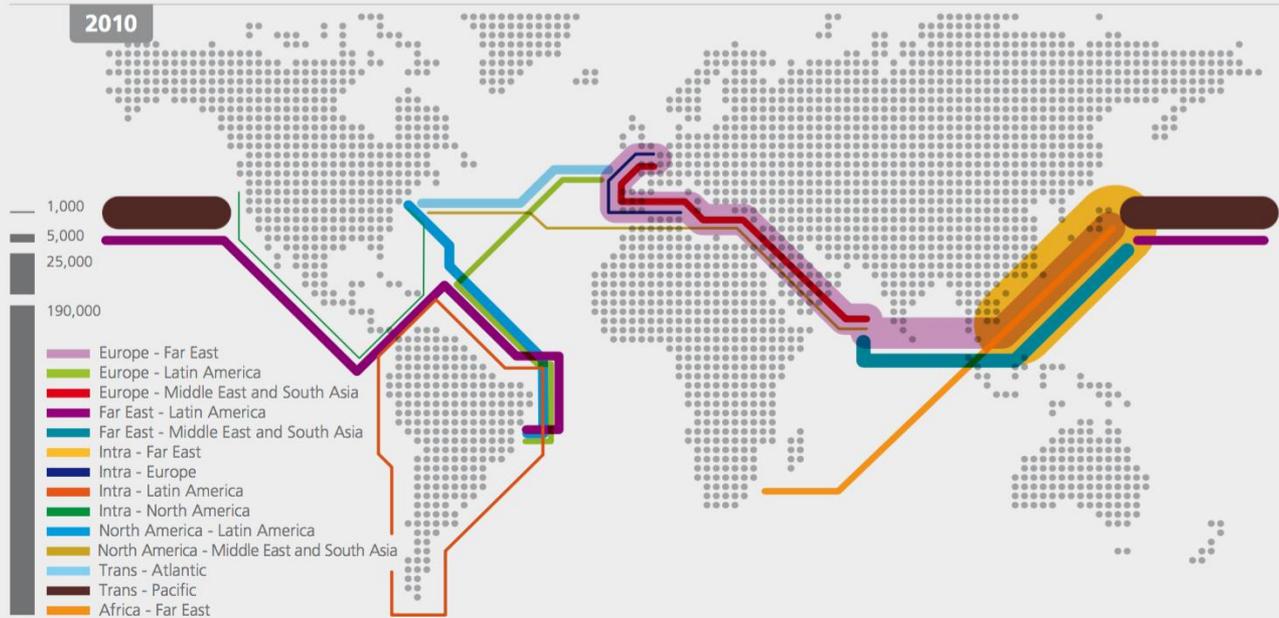
# Unsustainable development of ocean-based economies

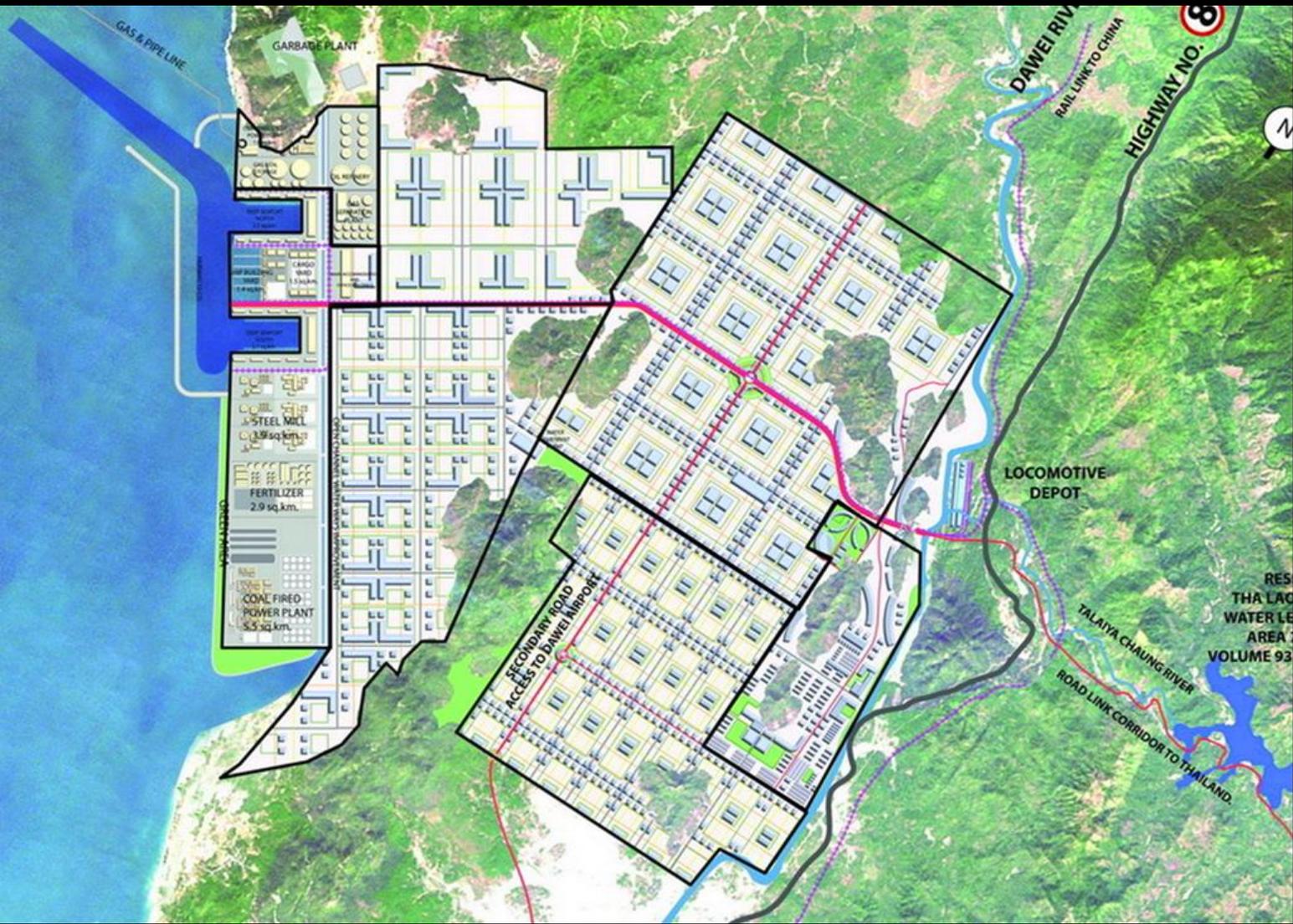


# Sustainable development of ocean-based economies



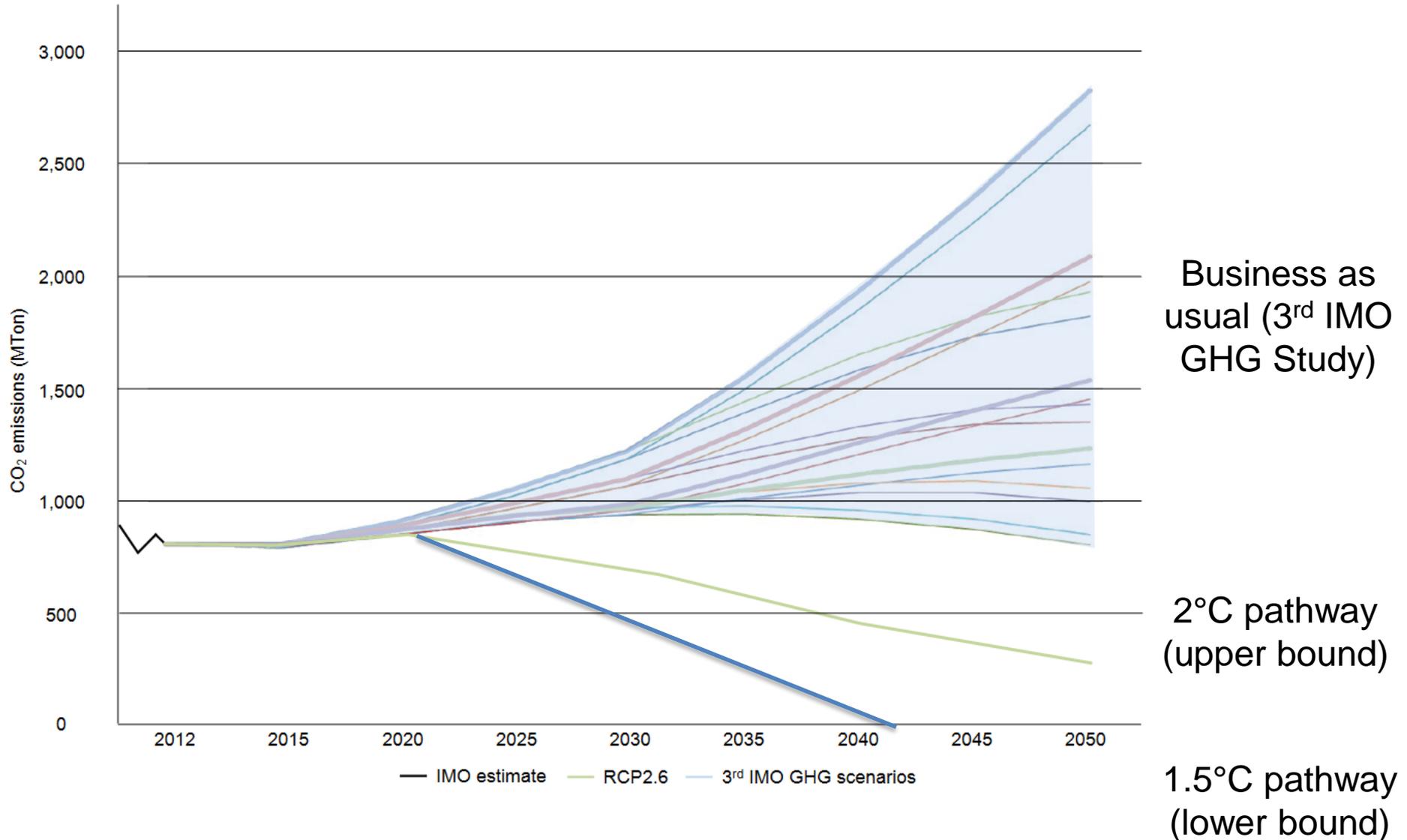
# Development of the shipping sector: opportunities



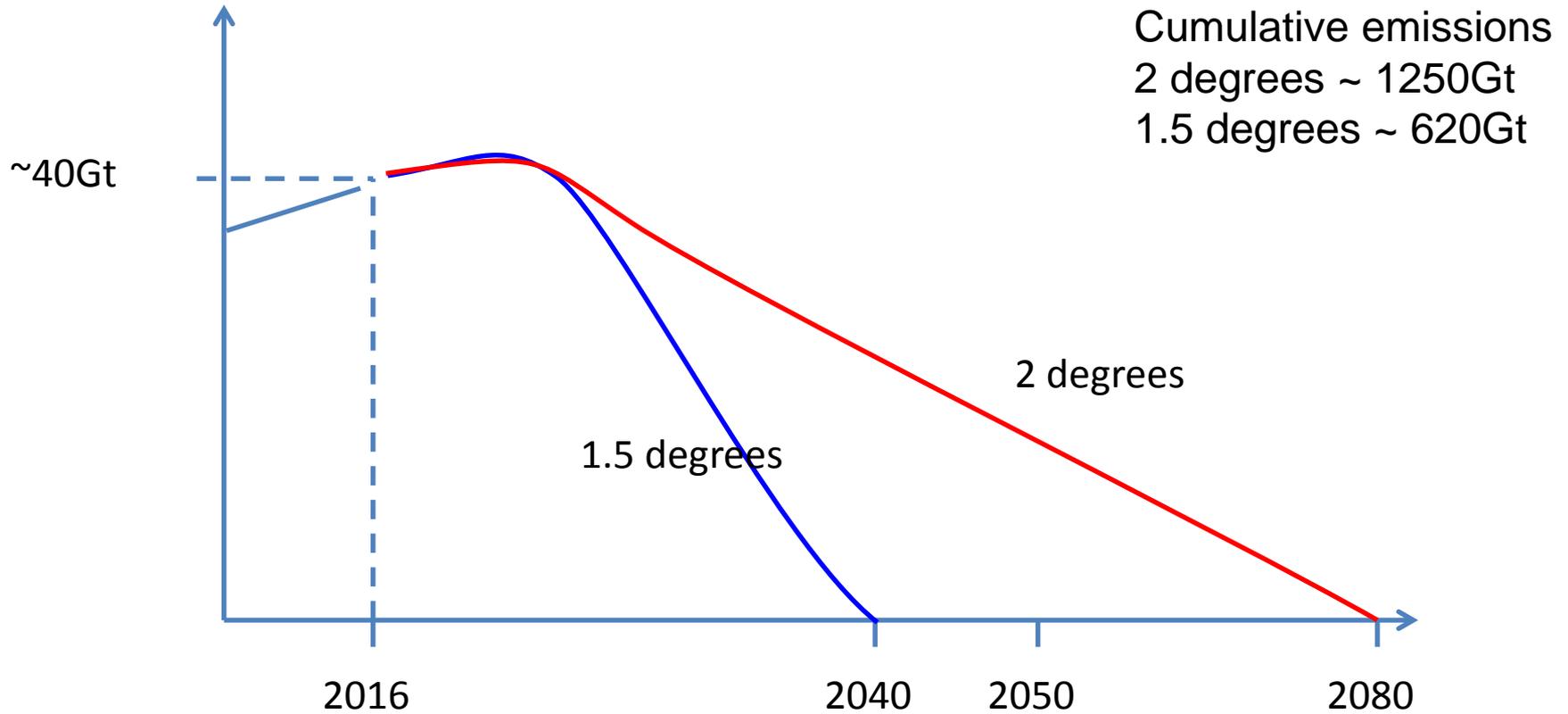




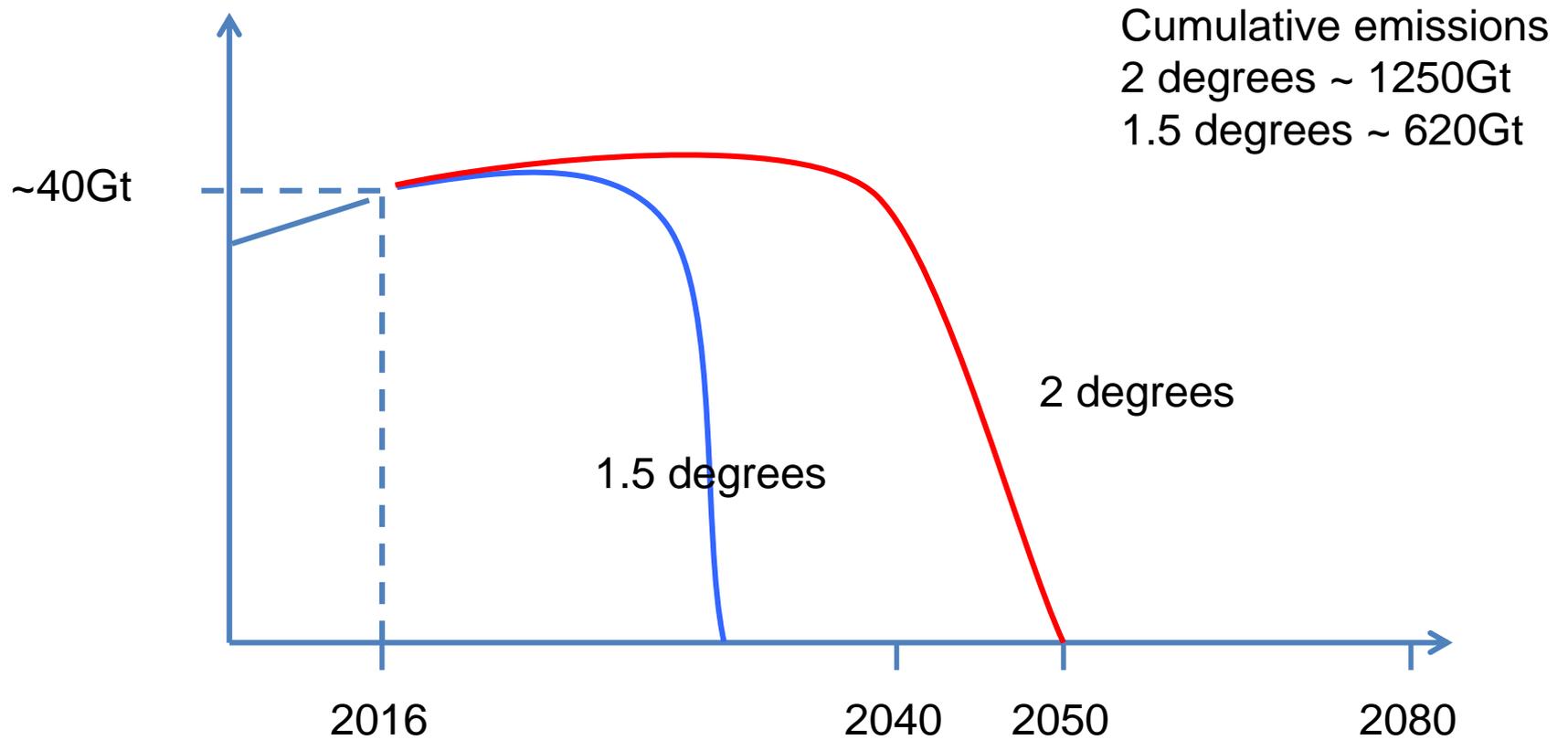
# Development of the shipping sector: climate-related challenges



# Development within carbon budgets: The glide path scenario



# Development within carbon budgets: The delayed action scenario



# 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



MARINE ENVIRONMENT PROTECTION  
COMMITTEE  
69th session  
Agenda item 7

MEPC 69/7/1  
12 February 2016  
Original: ENGLISH

## REDUCTION OF GHG EMISSIONS FROM SHIPS

Proposal to develop an "Intended IMO Determined Contribution" on  
CO<sub>2</sub> reduction for international shipping

Submitted by International Chamber of Shipping (ICS)

### SUMMARY

*Executive summary:* ICS proposes that the Organization should develop an Intended IMO Determined Contribution on CO<sub>2</sub> reduction for the international shipping sector as a whole, taking account of the UNFCCC (COP 21) Paris Agreement



MARINE ENVIRONMENT PROTECTION  
COMMITTEE  
69th session  
Agenda item 7

MEPC 69/7/2  
12 February 2016  
Original: ENGLISH

## REDUCTION OF GHG EMISSIONS FROM SHIPS

International shipping's share in international efforts to limit the rise  
of global average temperature

Submitted by Belgium, France, Germany, the Marshall Islands,  
Morocco and Solomon Islands

### SUMMARY

*Executive summary:* International shipping is called upon to contribute its fair share to the

# **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

Important part of low-carbon transition, but need strengthening

# **What does success look like?**

**Practical options and scenarios for  
reducing GHG emission from shipping**

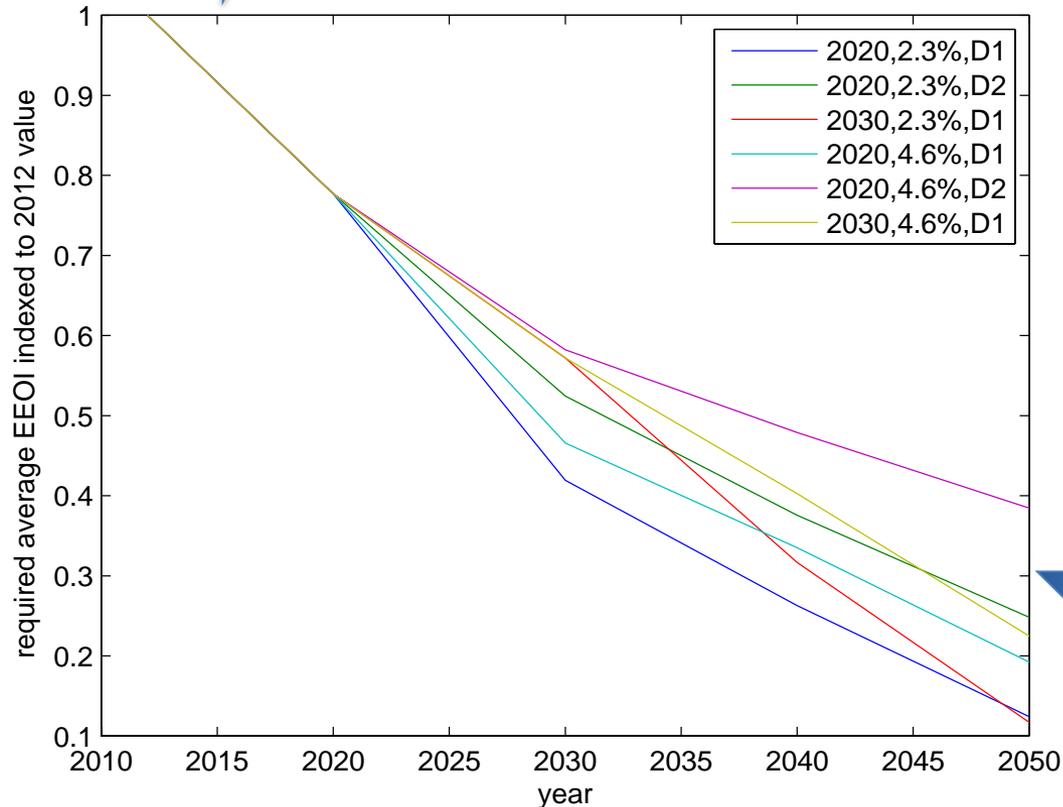
# Absolute versus relative targets

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

# Technology options

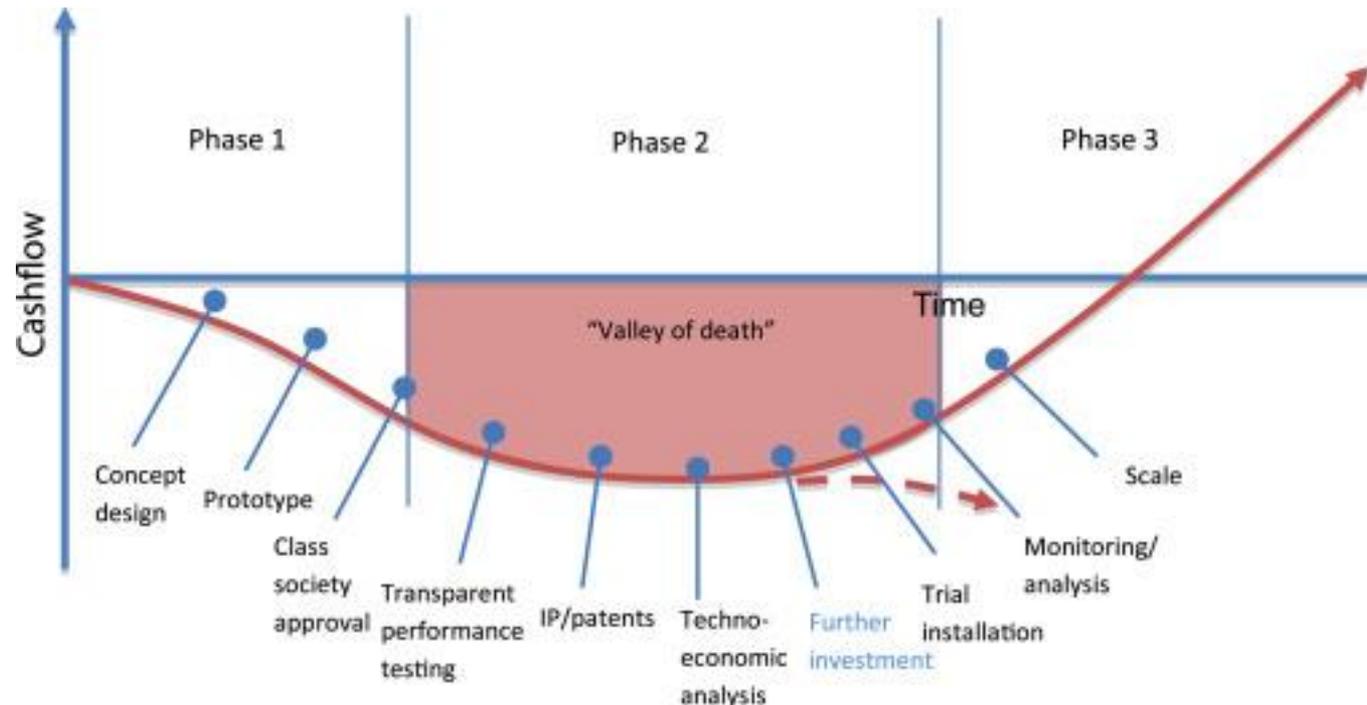
Emissions capture & removal – e.g. scrubbers

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



# Financing the transition

Climate finance

Development finance

Private sector investment

Blended and staged approaches

Type of investor	Return objective		
	Conservation impact	'Lockstep'	Financial alpha
Donor	<ul style="list-style-type: none"> <li>Sole demand is to see conservation impact</li> <li>No financial return expectations</li> </ul>	<ul style="list-style-type: none"> <li>Seeks to enable pioneer conservation projects that unlock a cash flow</li> <li>Establishes potential for return</li> </ul>	
Wealth-preserving	<ul style="list-style-type: none"> <li>Seeks impact as primary objective while preserving wealth</li> <li>No financial return expectations</li> </ul>	<ul style="list-style-type: none"> <li>Wealth preservation is underlying objective</li> <li>Individual investment decisions intended to achieve 'lockstep' returns</li> </ul>	
Return-seeking		<ul style="list-style-type: none"> <li>Objective is market-level returns while achieving superior impact</li> <li>No trade-off envisaged</li> </ul>	<ul style="list-style-type: none"> <li>Seeks to achieve market-outperforming returns</li> <li>Considers impact as a secondary or non-existent consideration</li> </ul>

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

# **Key ongoing intergovernmental efforts**

**GLOMEEP – Global Partnerships for Maritime Energy Efficiency**

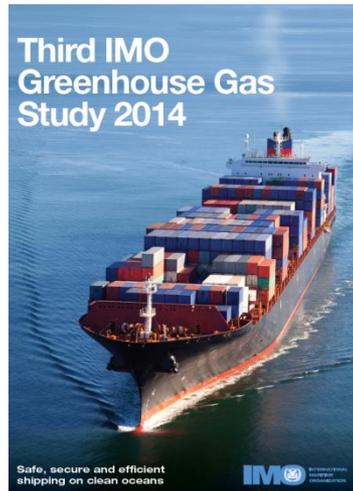
**MTCC – Maritime Technology Cooperation**

# Focus of our shipping research and consultancy work

2000's

Now

2050



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

**Transport demand**

Freight  
Passenger

Allocation to mode:  
ship, train, road, air

**OTHER MODES**  
Train, air, road

**Routes**  
Port to port, other modes

**SHIPPING**

Shipping logistics model

**Ships**  
Existing, retrofit, new  
technologies/fuels

Ship stock model

Shiploading, speed, distance

Port model

Ship model

**ENERGY, EMISSION, COST**

Containership



Tanker



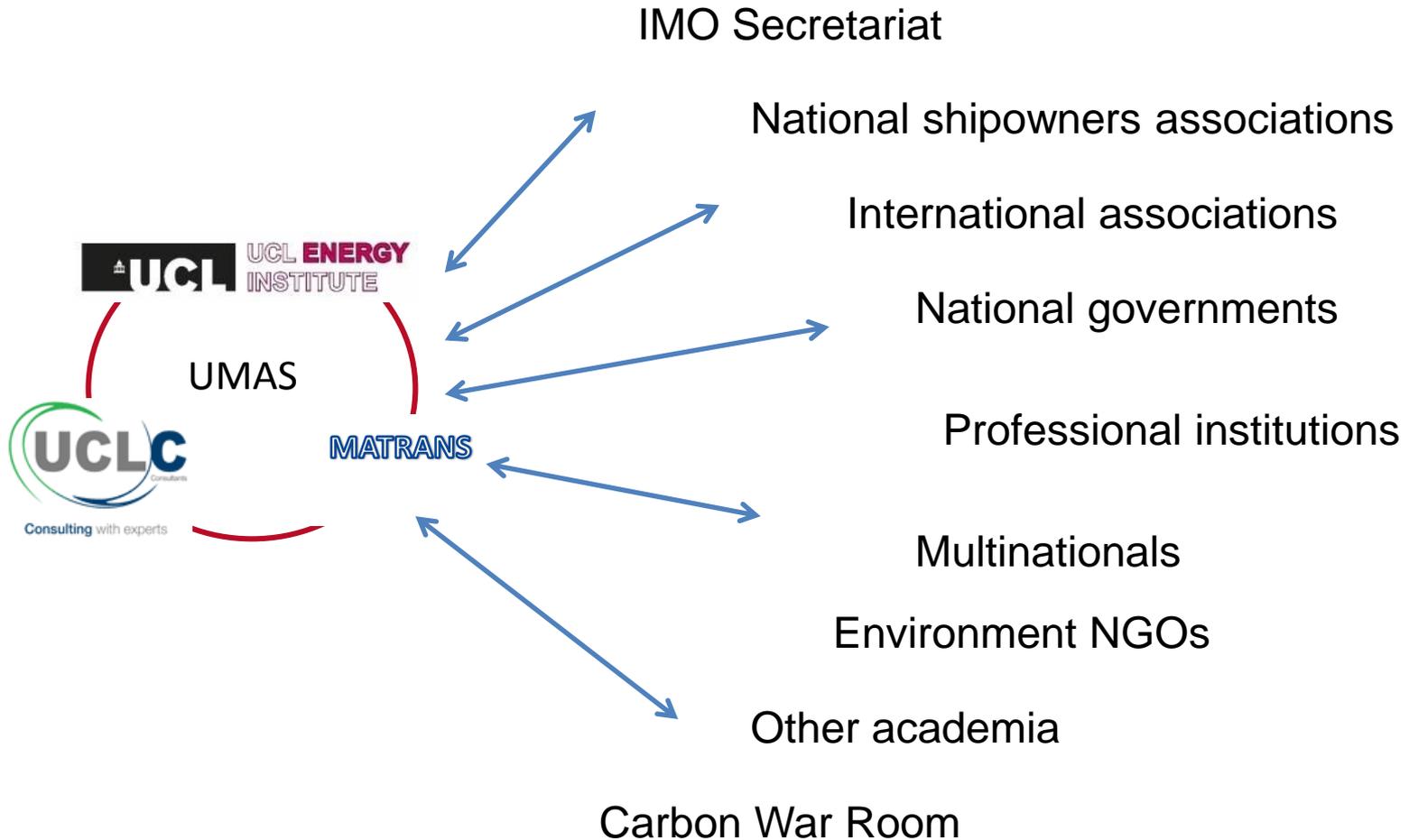
Crude

Bulk carriers/General cargo



Product/Chemical

# Collaborations and partnerships



# The shipping in changing climates consortium



Rolls-Royce®



Lloyd's Register



BMT Group



UNIVERSITY OF Southampton



Newcastle University



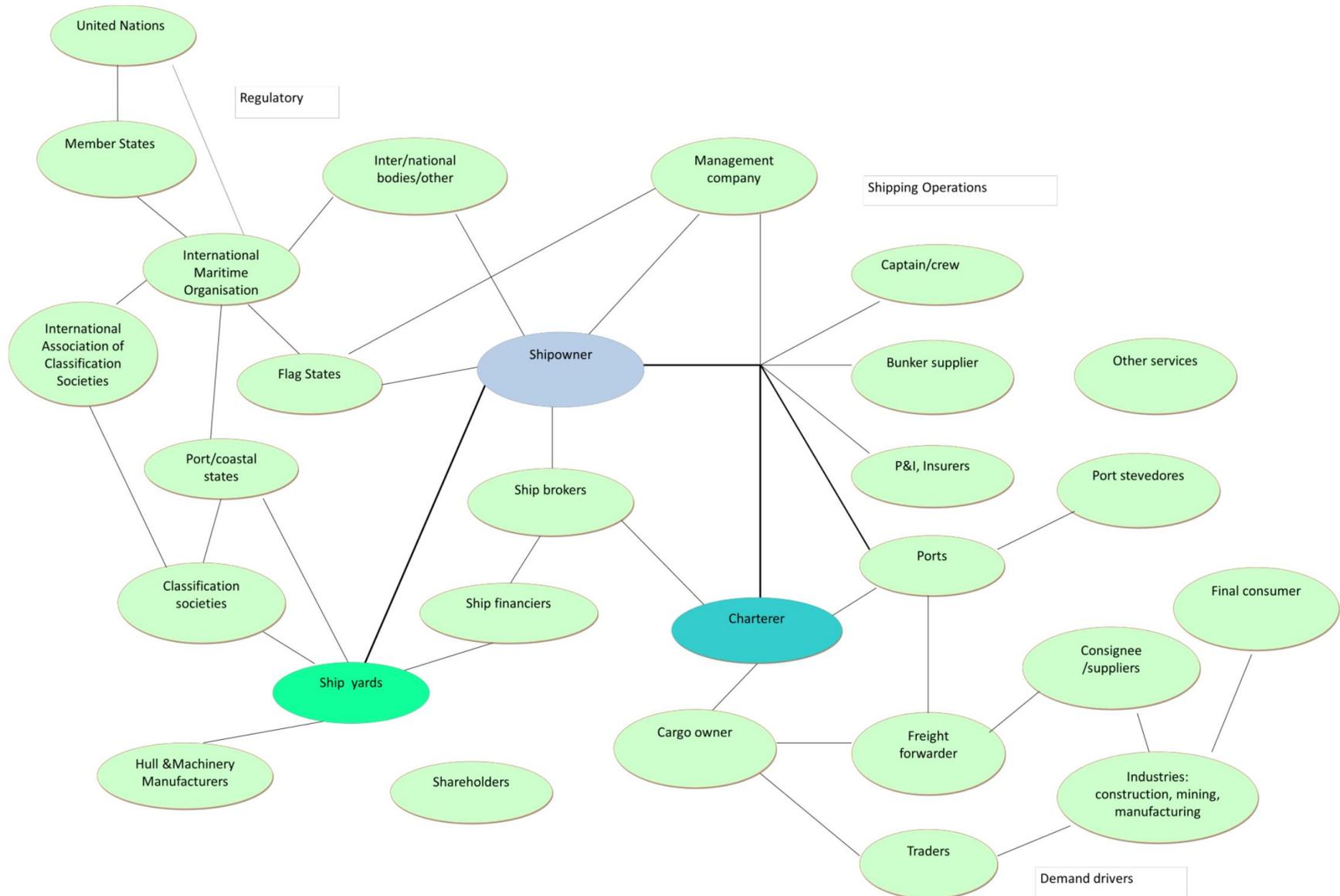
MANCHESTER 1824

The University of Manchester



# Stakeholder partnerships: key lessons learned

## Diversity and complexity of stakeholders and relationships

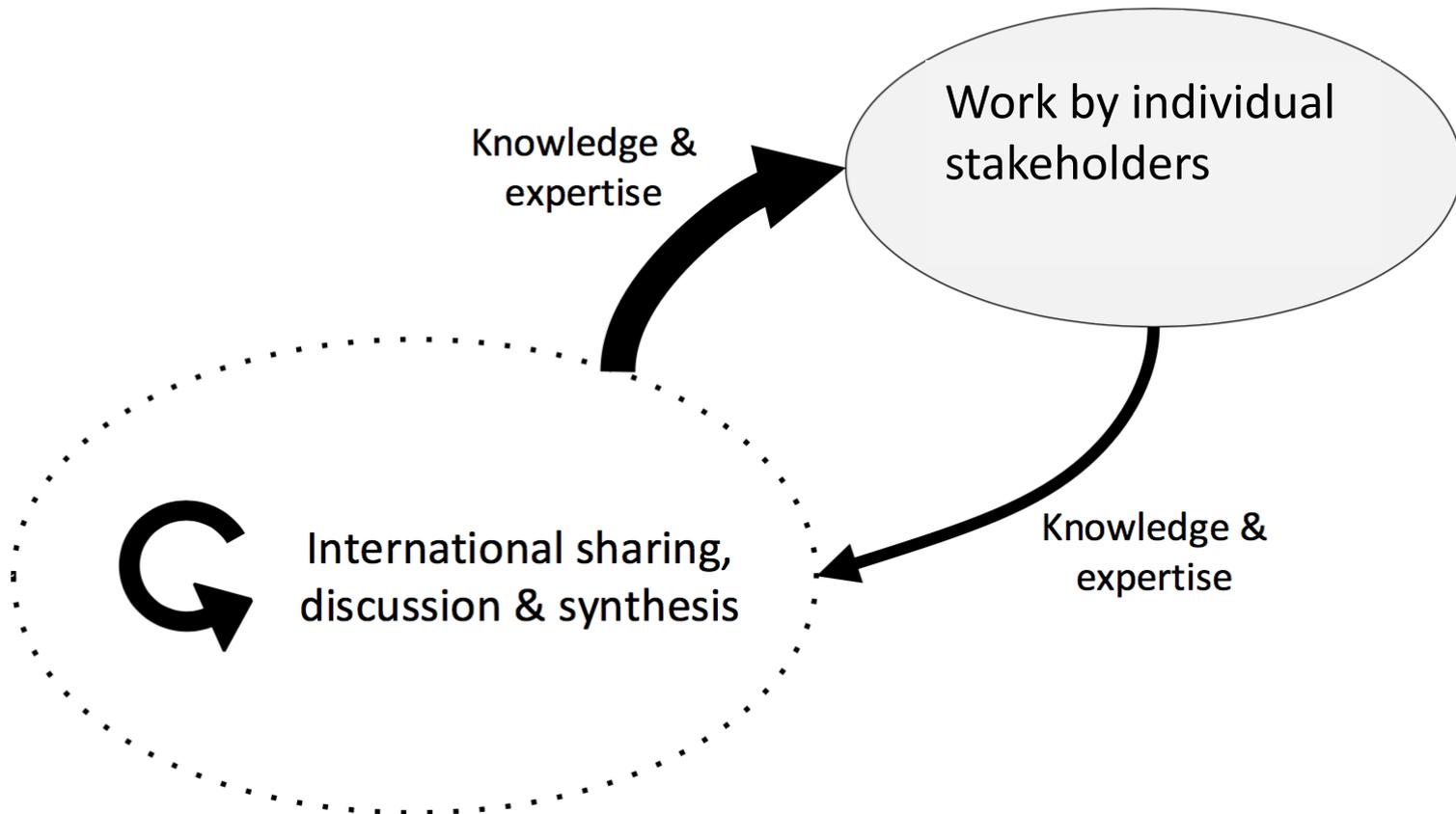


# Stakeholder partnerships: key lessons learned

Academics as pan-stakeholders and information brokers

Academics as problem framers and facilitators of track two dialogue

Mutually supportive relationships between research and consulting





[www.lowcarbonshipping.co.uk](http://www.lowcarbonshipping.co.uk)

[www.ucl.ac.uk/energy](http://www.ucl.ac.uk/energy)

[www.u-mas.co.uk](http://www.u-mas.co.uk)

Most references on above websites. Please get in touch if you have questions.