INTERTANKO

WMU 2017

Malmö, Sweden

MARENER

International Conference on Maritime Energy Management

Katharina Stanzel
Managing Director
INTERTANKO

INTERTANKO

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Members

Lead the continuous improvement of the tanker industry's performance

Strive to achieve the goals of:
ZERO fatalities
ZERO pollution
ZERO detentions

Deliver the highest quality services to meet their stakeholders' expectations

Promote the availability and use of personnel with the best marine skills and competencies

Tanker Shipping

Leading the way; Making a difference

Tanker Shipping

complex jobs, machinery & equipment, difficult environments
expectations constantly adapting

Leading the way; making a difference

Environmental Concerns

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Marpol Annex VI

Greenhouse Gas Emissions
- CO_2
- *Methane etc.*

Air Emissions
- SO_x
- NO_x
- PM

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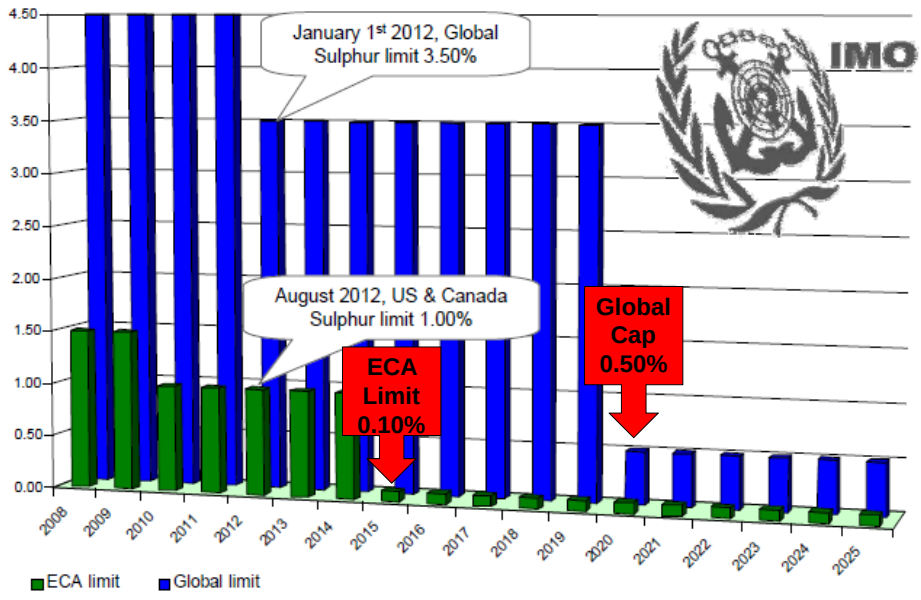
SOx Emission Limits & ECAs



Emission Reductions

Energy Efficient Designs & Operations

↓

Lower fuel consumption per tonne-mile

↓

Cheaper Operations & Reduced Emissions

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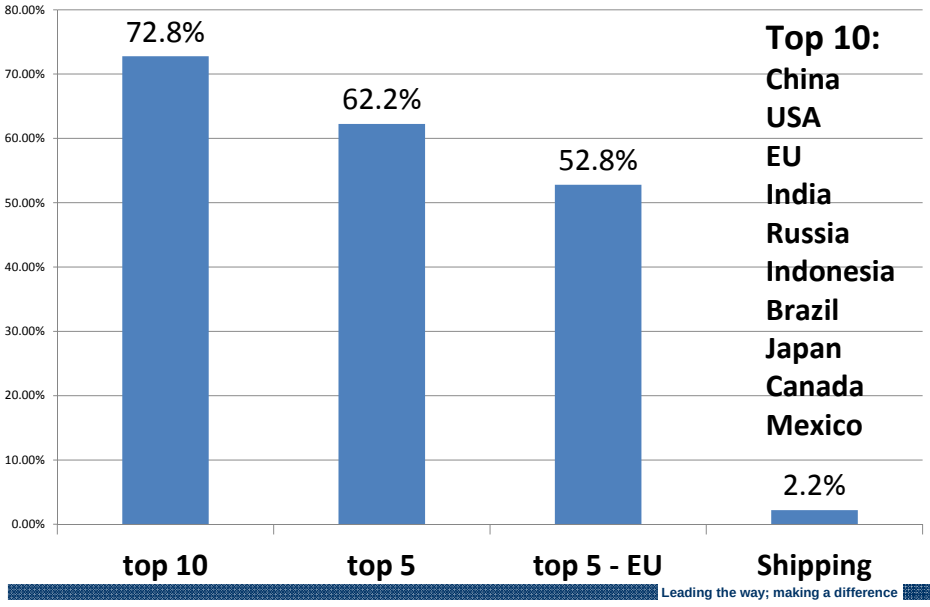
Shipping Contribution to Global GHG Emissions



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GHG Emission Reductions

- IMO - EEDI (new buildings) & SEEMP (all ships)
- SEEMP - no target for GHG emissions reduction
- Amend MARPOL Annex VI
  additional technical & operational measures
  to improve efficiency of ships in operation

Three step phase-in legislation
Phase I – data monitoring, reporting and verification (MRV)
NOW UNDERWAY: IMO rule development
EU regs adopted & enforced 1 July 2015
Phase II – trial period (verification of enforceability of target)
Phase III – enforcement

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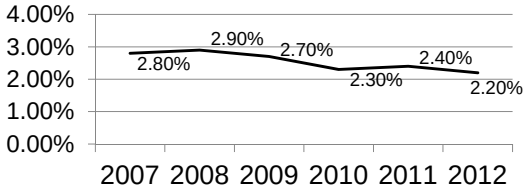
GHG Emission Reductions from Shipping - Facts

- Newbuilding Energy Efficiency Standards:
  - 10% BETTER IF BUILT IN 2015
  - 20% BETTER IF BUILT IN 2020
  - 30% BETTER IF BUILT IN 2025

- SEEMP = high improvement - 19% Reduction to global CO_2 emissions contribution in just 5 years



Fact:

CO_2 Emissions from Shipping reduced at much higher rate than landbased

Source: IMO 3rd GHG Study (2014)

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Vessel Efficiency

	Fuel Savings / Applicable Voyage	Yearly Fleet Potential	Combined	Potential Emissions Reduction
SHIP RESISTANCE				
Hull / Propeller Optimization (CASPER)	1.5 %	0.9%		
PROPULSION				
Propeller Boss Cap Fin	5% (laden passage)	2.5%		
Engine Optimization	2%	1.2%		
OPERATIONS			10%	~140,000 tonnes of Fuel ~420,000 tonnes of CO2
Cargo Heating	20% where applicable	1.0%		
Trim Optimization	1% (specific voyages)	0.2%		
Optimum Weather Routing	2% (trans-oceanic voyages)	1.0%		
Speed Optimization	20% (Slow steaming on selects voyages)	1 - 4%		Source: TK

From ship design (EEDI) to operations (SEEMP)

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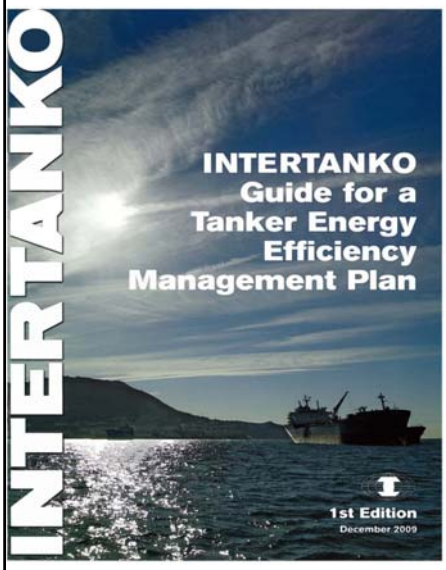
Initiatives to reduce emissions

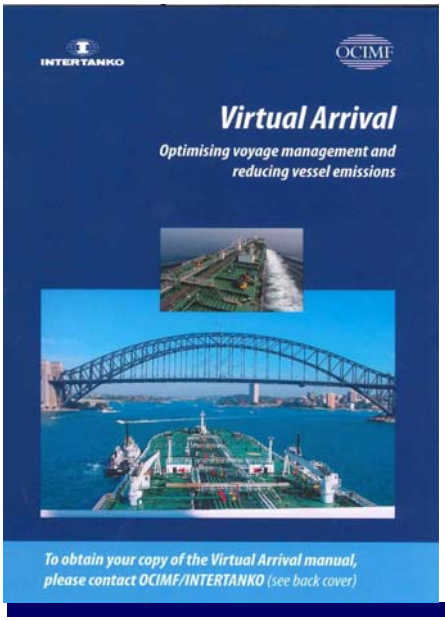


Best practice guidance TEEMP

Co-operation between members and other stakeholders

- Company TEEMP
- Voyage optimisation
- Propulsion resistance managemt
- Machinery optimisation
- Cargo handling optimisation

Initiatives to reduce emissions



Virtual Arrival

- Reduce emissions by adapting vessel speed to terminal slots
- Uses inefficiencies in the market, but does not affect the market
- Reduces port congestion and contributes to improve safety

Co-operation between OCIMF and INTERTANKO

Initiatives to reduce emissions

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UCL Study for INTERTANKO

UCL

A Case Study of Fuel Monitoring and Efficiency Indicators for INTERTANKO

Eoin O'Keeffe and Tristan Smith

July 2016

Executive Summary

The study investigates the CO_2 emissions and other relevant data collected over a five-year period from 11 "identical ships", namely ships:

- built according to the same design
- built by the same shipyard
- operated by the ship management company
- having similar systems for measuring and obtaining data.

These ships have same Estimated Index Values but they have variable operational performance as expressed through their annual EEOIs. Since these ships are identical and operated by the same ship operator, they do represent a unique opportunity to better understand their CO_2 emissions and to identify the impact that some important environmental, commercial and contractual factors have on their operational performance. To that extent, the study provides direct measurable challenges and obstacles to determine a simple methodology to assess the operational efficiency of a ship.

The data collected reveals a poor relationship between individual ship's total annual CO_2 emissions and their EEOI values. In one case, the ship with the highest amount of CO_2 emissions over one year was also the ship with the lowest (best) EEOI.

Up to 60% of the variation in EEOI values is due to contractual factors such as speed, total amount of cargo carried and the share between laden and ballast voyages. The remaining 40% of the variability on the EEOI values could be attributed to: the environmental conditions (sea state and the climate in which the ship operates), the commercial conditions (e.g. nature of cargo, the calorific value of fuel used) and the

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