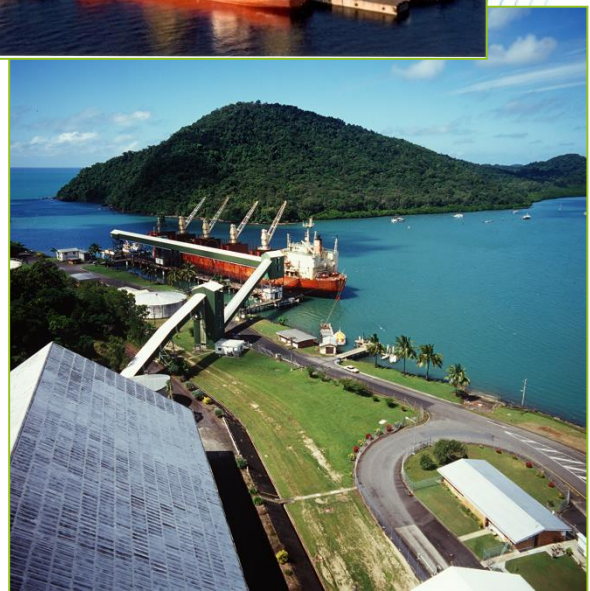
Ministry of Transport and Communications

Towards energy efficient and low emission shipping

UNFCCC - TEM 23.5.2016
Lolan Margaretha Eriksson
Ministry of Transport and Communications
Finland

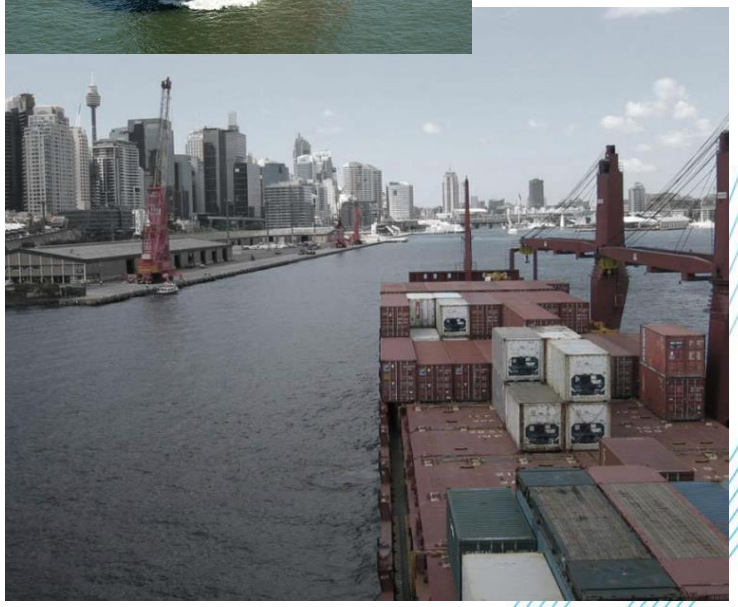
Shipping affects us all

- ~ 90 % of global trade by sea
- Growth predicted, especially in intra-regional trade, in Asia and in South-South cooperation and links
- Climate change is the biggest challenge of our time
- ~ 3 % of global GHG emissions, predicted increase of 50 to 250 % by 2050
- Shipping a part of the solution



Responding to Climate change

- **Globally harmonized rules in IMO** on EE shipping and reduction of GHG emissions from international shipping
- **Innovations** to transform current technologies (both software and hardware) into cleaner and climate-resilient technologies, including use of **digitalization** as a tool to optimize ship´s performance
- **Enabling environments** for energy efficient technologies and practices to be absorbed worldwide



International Maritime Organization (IMO)

- A specialized agency of the UN
- The IMO Convention adopted in 1948
- 171 Member States
- Develop and maintain a comprehensive regulatory framework for shipping
- Safety, **environment**, legal matters, technical co-operation, security and the efficiency of shipping

Safe, secure and efficient shipping on clean oceans

Regulations on energy efficiency for ships

IMO Marine Environment Protection Committee **adopted in July 2011** regulations on energy efficiency for ships as amendments to MARPOL Annex VI – into force 1.1.2013

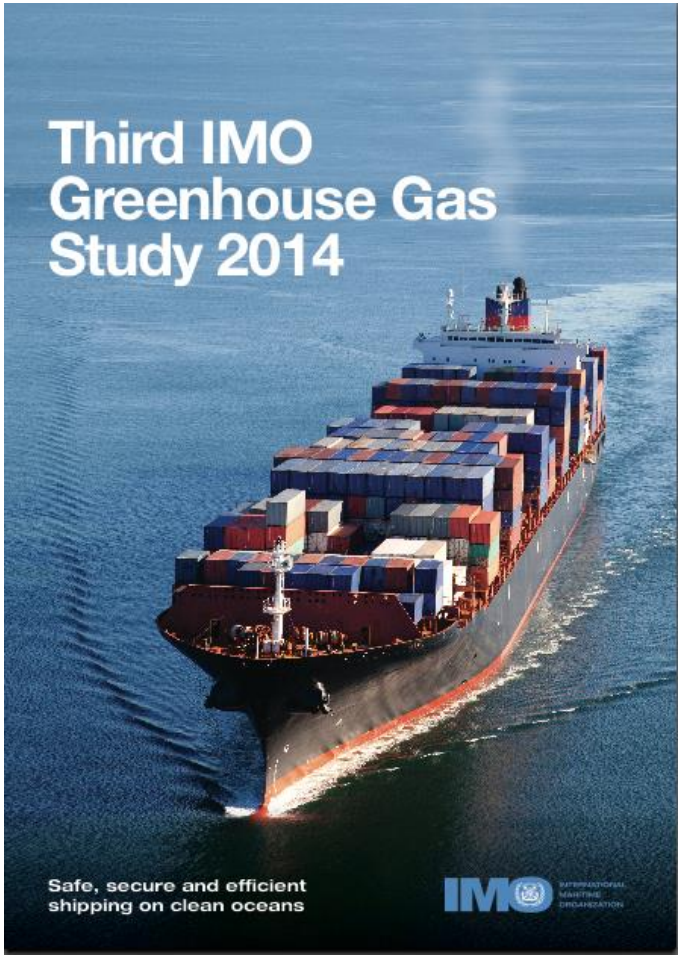
Chapter 4 – Regulations on energy efficiency for ships

Attained Energy Efficiency Design Index (EEDI)	Reg.20
Required EEDI	Reg.21
Ship Energy Efficiency Management Plan (SEEMP)	Reg.22
Technical co-operation and transfer of technology	Reg.23

EEDI mandatory for all new ships: 30% increase in EE in 2025

SEEMP mandatory for all ships

Further measures in IMO



Download as free ebook from:
www.imo.org

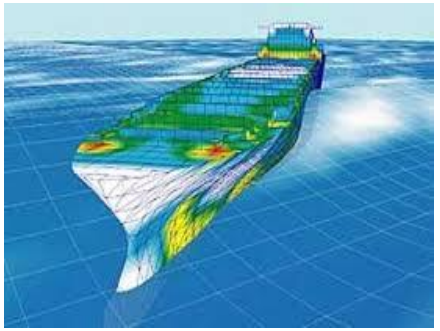
MEPC 69 in April 2016

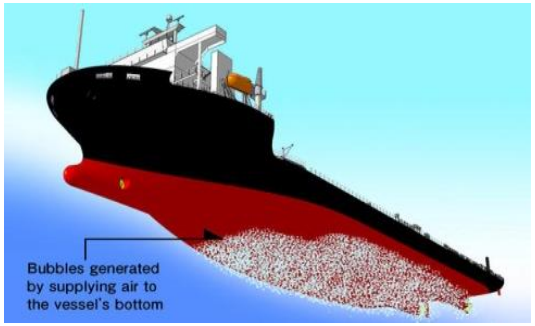
- approved draft amendments to MARPOL Annex VI for a **mandatory data collection system for fuel consumption**
- reiterated its endorsement of the **three-step approach** consisting of data collection, analysis and decision making
- considered proposals for development of **further work** to define international shipping's share of global CO_2 emissions and will hold an in-depth discussion at MEPC 70 in October 2016 on how to progress the matter

Technical Measures

Efficiency Improvement by enhanced hardware

- Improvement of hull form/hydrodynamics (reduction of propulsion resistance)
- Improvement of engine/propeller (improvement in propulsion efficiency)
- Hull appendage for energy saving
- Waste Heat Recovery
- Utilization of renewable energy, etc.

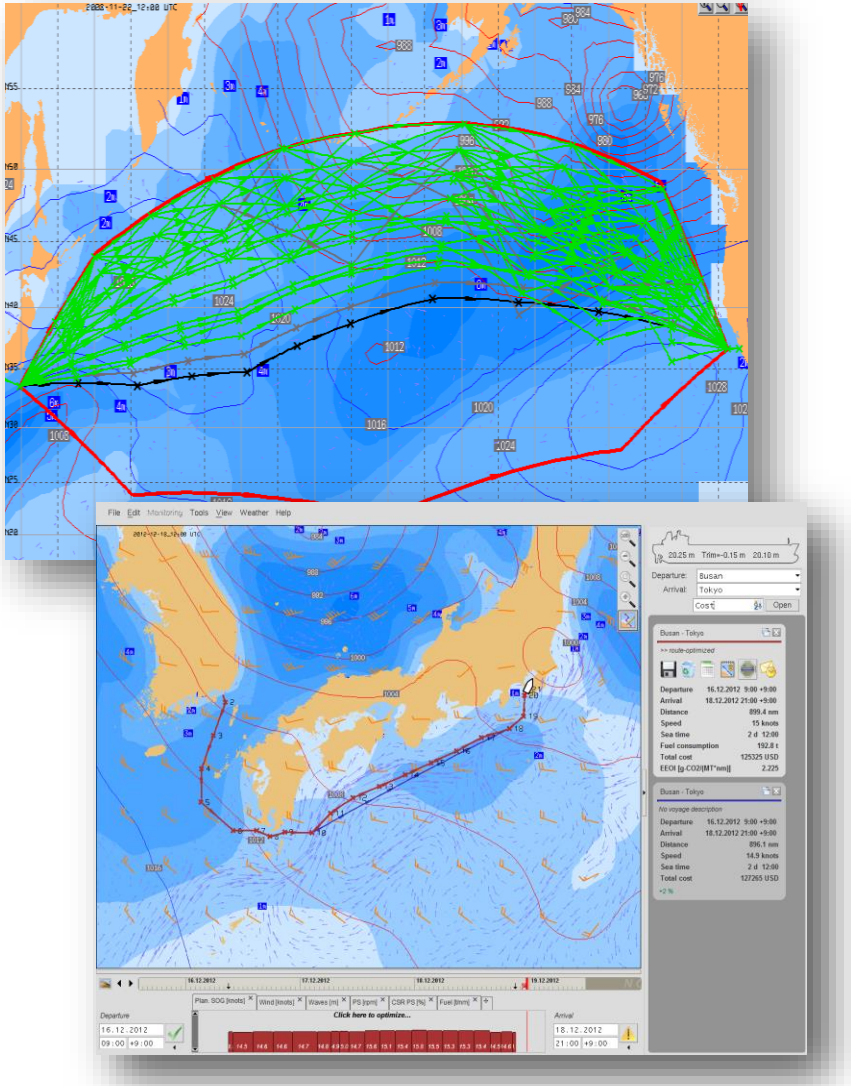




Operational Measures

Efficiency improvement by operational efforts

- Optimization of operating plan for each ship or fleet
- Speed Reduction
- Weather Routing
- Just in Time arrival in Port
- Hull cleaning
- Propeller polishing
- Maintenance of engine

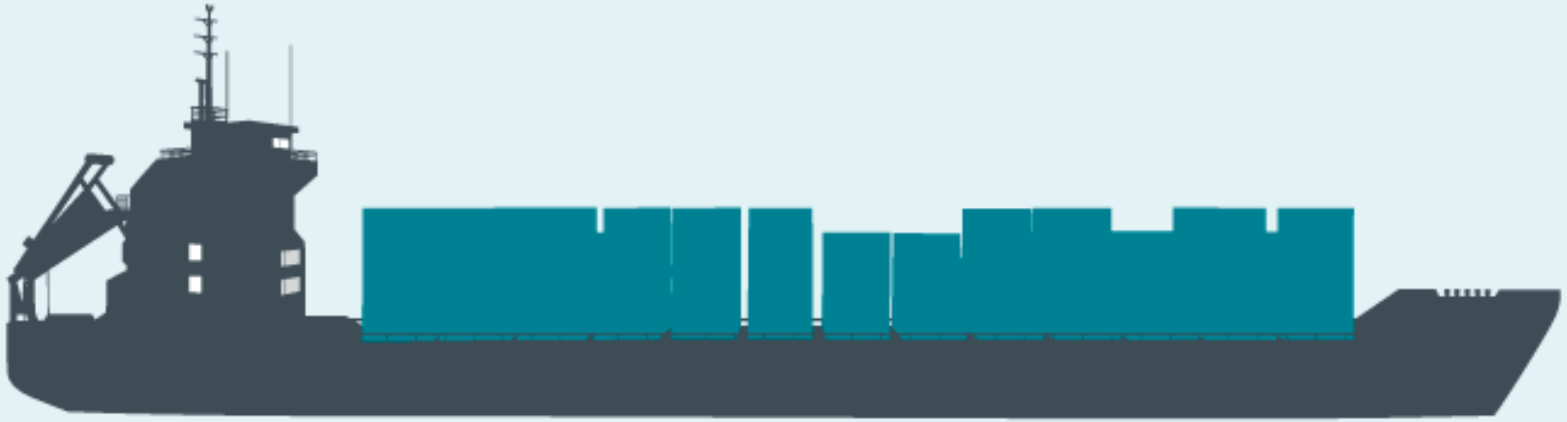


Potential energy efficiency improvements

Operational
Weather routing **1-4%**
Autopilot upgrade **1-3%**
Speed reduction **10-30%**

Auxiliary power
Efficient pumps, fans **0-1%**
High efficiency lighting **0-1%**
Solar panel **0-3%**

Aerodynamics
Air lubrication **5-15%**
Wind engine **3-12%**
Kite **2-10%**



Thrust efficiency
Propeller polishing **3-8%**
Propeller upgrade **1-3%**
Prop/rudder retrofit **2-6%**

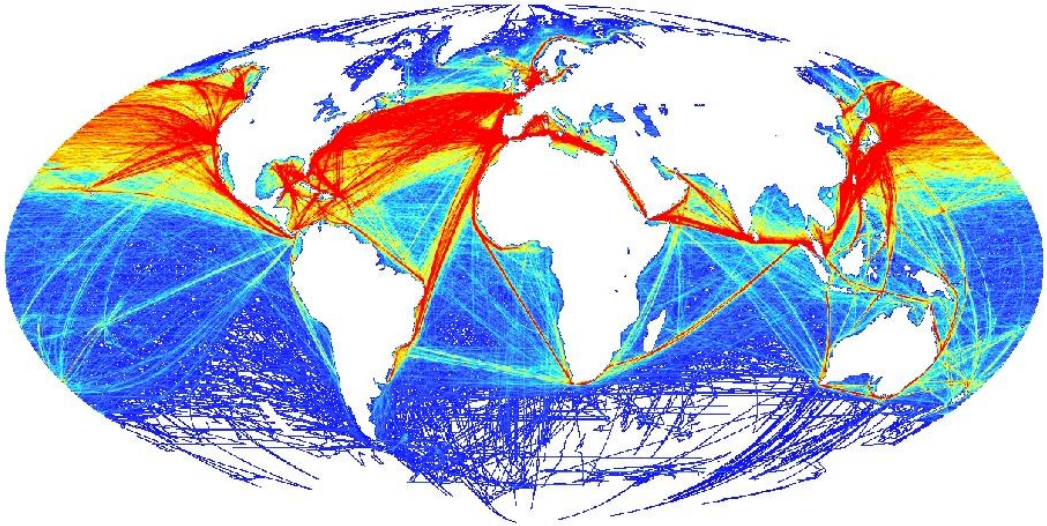
Engine efficiency
Waste heat recovery **6-8%**
Engine controls **0-1%**
Engine common rail **0-1%**
Engine speed de-rating **10-30%**

Hydrodynamics
Hull cleaning **1-10%**
Hull coating **1-5%**
Water flow optimization **1-4%**

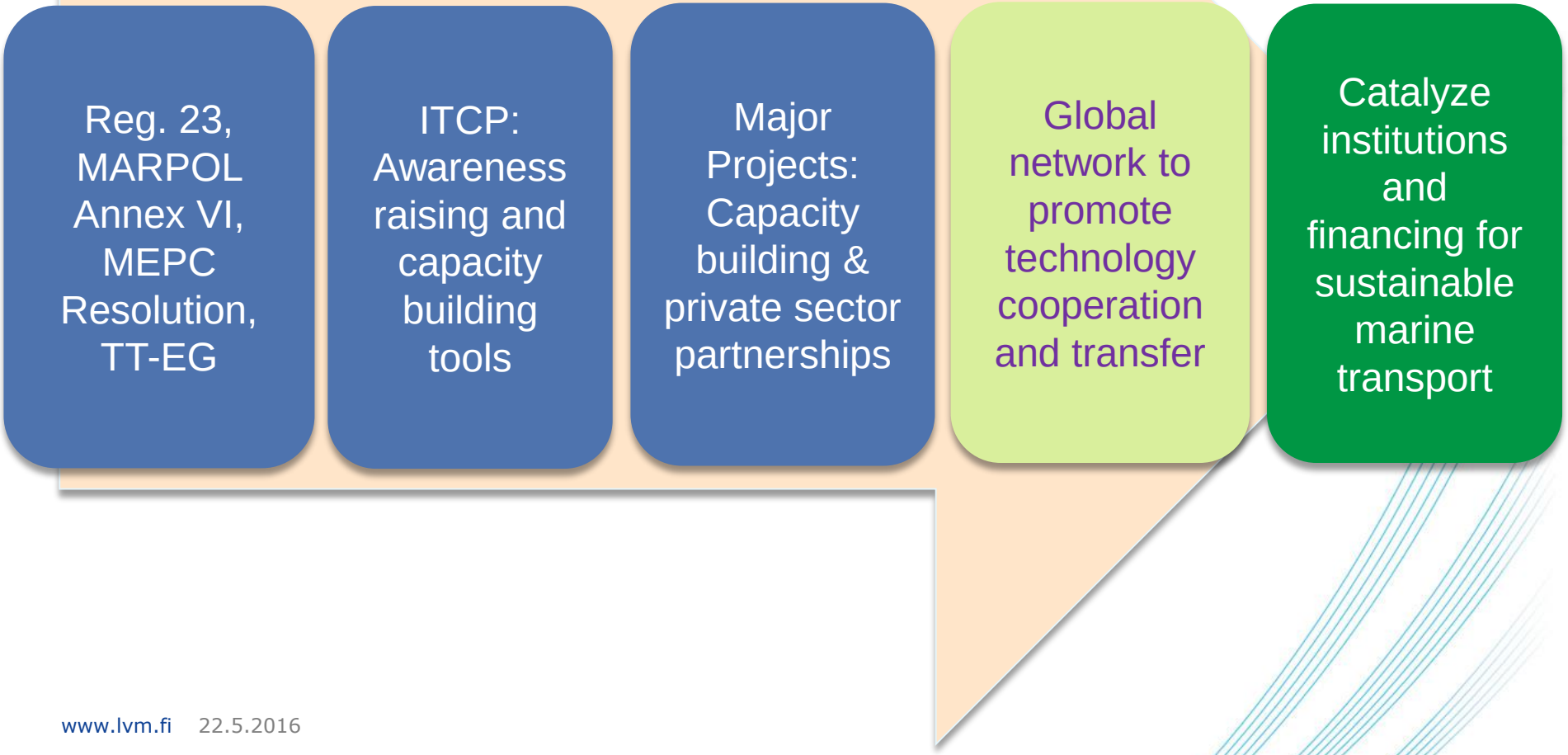
Source: ICCT, 2013

The future is about ECO-shipping and ECO-logistics

- Optimizing performance of ships and the whole logistic chain
- Gives reduced fuel consumption, **reduced emissions**, reduced costs
- Real time data collected from sensors on board, analyzed, translated into recommendations and actions
- Huge amount of data exists already, but fragmented
- **Open and transparent data information for all stakeholders will be the game changer**



IMO's response path to promote transfer of technology and capacity building



The role of IMO and all stakeholders

- **IMO brings** different actors together
  - IMO Technical Cooperation Programme (ITCP) with regional and sub-regional activities, incl. capacity building workshops
  - UNDP-GEF-IMO Global Maritime Energy Efficiency Partnerships Project (**GloMEEP Project**) launched in September 2015
  - Global network of regional **Maritime Technology Cooperation Centres** (MTCC)
- **IMO World Maritime University (WMU)**
- IMO Member States supporting the work

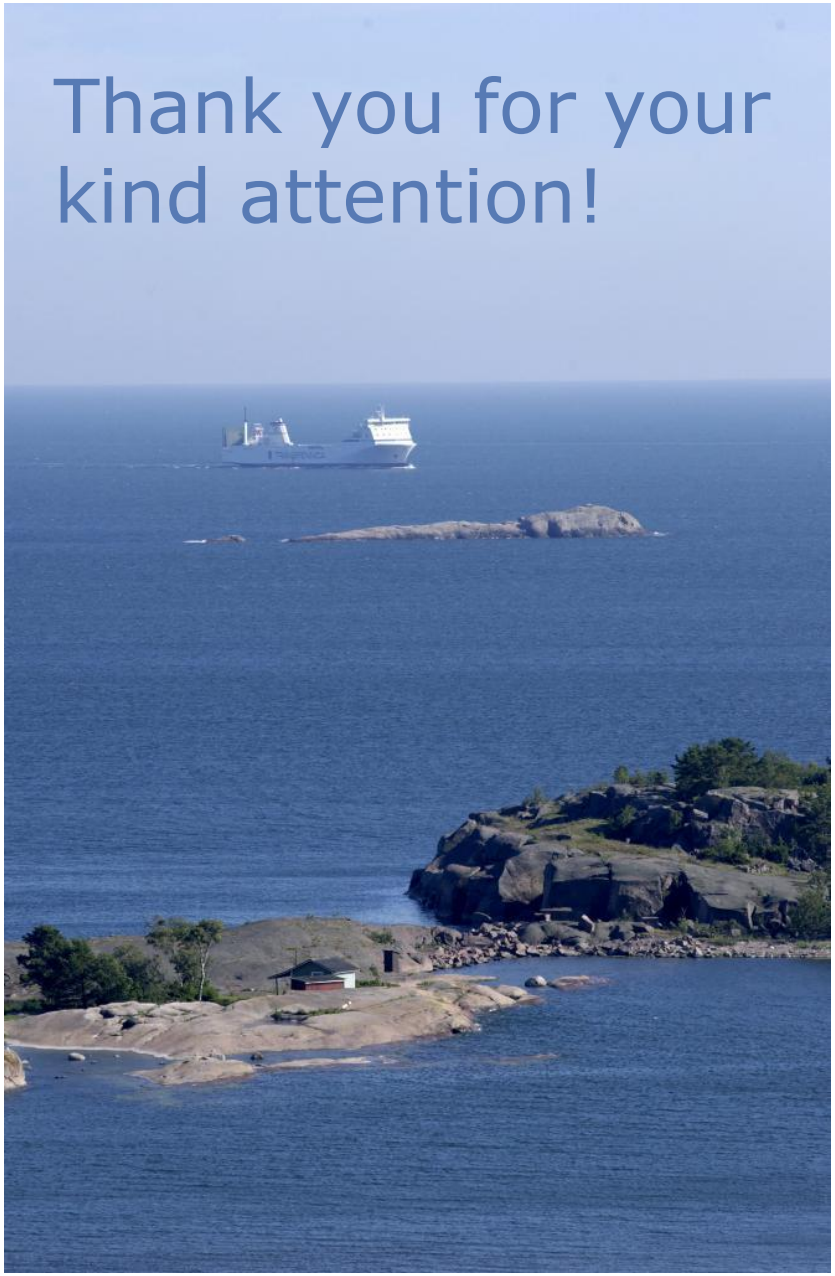
Technical cooperation and capacity building activities

- **IMO Integrated Technical Cooperation Programme**
- **UNDP-GEF-IMO Global Maritime Energy Efficiency Partnerships Project (GloMEEP Project) launched in September 2015**
  - focus in particular on building capacity to implement technical and operational measures in developing countries, where shipping is increasingly concentrated
  - 10 Lead Pilot Countries – support provided to enable governments to pursue legal, policy and institutional reforms
- **Global network of regional Maritime Technology Cooperation Centres (MTCC)**
  - four-year project seeks to promote the uptake of low-carbon technologies and operations in maritime transport
  - administered by the IMO with funding from the European Union
  - aim to limit and reduce GHG emissions from the shipping sectors through technical assistance and capacity building, while encouraging the uptake of innovative energy-efficiency technologies among a large number of users through the widespread dissemination of technical information and know-how
- **Train the Trainer package on "Energy Efficient Ship Operation"**
  - training materials such can be downloaded from the following website: http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/IMO-Train-the-Trainer-Course.aspx

Global Partnerships

- A multi-stakeholder and multi-layered process (national, regional, international, e.g. through IMO)
- Bring together public & private actors (policymakers, business, finance, R&D)
- Short, medium and longer term perspectives
- Business co-operation and Joint Ventures for developing technologies, new innovations, new operational practices

Thank you for your kind attention!



For more information:

Lolan Margaretha Eriksson
Ministry of Transport and Communications
Finland
lolan.eriksson@mintc.fi