GREEN GROWTH IN OCEAN ACTIVITIES: ROLE AND CONTRIBUTION OF THE EUROPEAN MARITIME TECHNOLOGY INDUSTRY

OECD Workshop 20 November 2017
OUTLINE OF THE PRESENTATION

- INTRODUCTION ABOUT SEA EUROPE
- THE EUROPEAN MARITIME TECHNOLOGY SECTOR AND ITS CONTRIBUTION TO ENVIRONMENTAL SUSTAINABILITY
- REGULATORY AND TECHNOLOGY OUTLOOK: CHALLENGES AND SOLUTIONS
- IMPACT OF INTERNATIONAL REGULATIONS: DRIVING FORCES AND BARRIERS
- CONCLUSIONS
The Maritime Technology Sector: A Key Industry for Europe

- Marine Equipment: €60bn
- Naval Newbuilding: €10.8bn
- Commercial Newbuilding: €9.5bn
- Commercial SMRC: €3.2bn
- Naval Maintenance: €4.2bn
- Mega Yachts Newbuilding: 3.2 bn €

Total: €91bn
EU + Norway Commercial Shipbuilding Activity

EU28 + Norway Commercial Shipbuilding Activity in CGT

<table>
<thead>
<tr>
<th>Year</th>
<th>orderbook</th>
<th>new orders</th>
<th>completions</th>
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<tbody>
<tr>
<td>2002</td>
<td>9,666</td>
<td>2,341</td>
<td>4,896</td>
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<tr>
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<td>9,610</td>
<td>3,951</td>
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<td>12,406</td>
<td>6,798</td>
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<td>2005</td>
<td>15,738</td>
<td>7,226</td>
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<td>2006</td>
<td>17,430</td>
<td>5,597</td>
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<tr>
<td>2009</td>
<td>9,647</td>
<td>571</td>
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<td>6,495</td>
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<td>5,836</td>
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<td>5,705</td>
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<td>8,645</td>
<td>2,745</td>
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<td>2017</td>
<td>10,898</td>
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<td>1,790</td>
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Data Source: IHS Fairplay
European Orderbook by Ship Types

Source: IHS Fairplay
Reduction in the Quantity of Spilled Oil

The amount of oil spilled by ships varies from year to year and figures for a particular year can be distorted by a single large incident. However, in general terms, shipping has shown a marked downward trend in the amount of oil spilled each year.

Improvements to energy efficiency of ship engine oil consumption (gram/kW/hour)

Source: Danish Shipowners’ Association

Decade 1970s
Decade 2000s

Maritime Casualties

Number of total losses by year (vessels over 100 GT)

Source: Lloyd’s List Intelligence Casualty Statistics, Analysis: AGCS

Comparison of typical CO₂ emissions between modes of transport

Examples: Scrubbers & LNG as a marine fuel

After having completed the liquefied natural gas sea trials, the F.-A.-Ga ferry built by Fincantieri in its shipyard Castellammare di Stabia, left on Wednesday sailing to Matane, in Canada.

The delivery to Société des traversiers d'élite will take place when the ferry arrives in Fincantieri said in a statement.

MSC Orders Four LNG Megaships
April 06, 2016

2014

2015

AIDA & COSTA

2016
The LNG DEMAND already started
MARITIME CRUISE SECTOR IS LEADING
THE WAY...

15 LNG FUELLED CRUISE SHIP IN
SEA Europe’s orderbook

15x3.000 m3 LNG every 2 weeks

Disney CRUISE LINE
Retrofitting of existing ships to LNG vessels for a Canadian Ferry company

Renowned Canadian ferry operator switches its fleet to LNG with the help of Polish shipyard!
SEA EUROPE COMMITS TO FOSTER BALLAST WATER RETROFITTING
DECARBONIZATION AND CLEANER ENERGY
### IMO agreement on technical regulations will reduce ships' CO₂

**MARPOL Annex VI, Chapter 4 adopted July 2011, which entered into force in January 2013**

<table>
<thead>
<tr>
<th>Regulations enter into force for over 90% of world fleet</th>
<th>EEDI requires new ships to meet agreed efficiency targets</th>
<th>New ships must improve efficiency 10%</th>
<th>New ships must improve efficiency up to 20%</th>
<th>New ships must improve efficiency 30%</th>
<th>50% CO₂ reduction per tonne/km (industry goal)</th>
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<tbody>
<tr>
<td>Ship Energy Efficiency Management Plan (SEEMP): mandatory implementation for all ships</td>
<td>20% CO₂ reduction per tonne/km (industry goal)</td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2050</th>
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</tbody>
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**Regulatory outlook**

- **2013**: Implementation begins.
- **2015**: 20% CO₂ reduction per tonne/km (industry goal).
- **2020**: New ships must improve efficiency 10%.
- **2025**: New ships must improve efficiency up to 20%.
- **2030**: New ships must improve efficiency 30%.
- **2050**: 50% CO₂ reduction per tonne/km (industry goal).
Technology outlook

Global Marine Technology Trends 2030

WATERBORNE VISION 2030 & INNOVATION OPPORTUNITIES

2050 BLUEPRINT: the maritime world beyond the horizon

Minister of Maritime Affairs looks back from 2050

'Automation will never replace manpower'

Four discus-interviewers: directors and students discuss the future

Smartest

Greenest

Safest
Viking Cruises to Build World’s 1st Hydrogen-Powered Cruise Ship?

Cruise ship owner Viking Cruises unveiled plans for a liquid hydrogen-fuelled cruise ship in an effort to develop the world’s first cruise ship with zero-emission technology.
Need for legal certainty, i.e. once legislation has been adopted, there is a need for the shipping industry to adapt to it as well as to put it in reality.
FACTORS INFLUENCING DEPLOYMENT OF IMO NOx TIER III VESSELS

Figure 1.4: 2005-2016 Global Keels Laid but Not Constructed

Keels Laid Waiting for Construction, by Vessel Class

Source: San Pedro Bay Ports Clean Air Action Plan
OGV IMO Tier Forecasts 2015 – 2050 (July 2017)
Infrastructure development: the example of LNG bunkering facilities

Source: www.dnvgl.com/lngi
... NEW SKILLS AGENDA

Commercial Shipping Transformed

It is envisaged that these eight technologies will be implemented differently from ship type to ship type. These ships will be called TechnoMax Ships as technology implementation will be at its most appropriate and fullest level in 2030. They will be operated differently from in the past, and will be smarter, data-driven, and greener, with flexible powering options, full on-board wireless connections, and digital connections through global satellites.

New Skills

New skills will be required to maximise the benefits of a fully integrated logistics supply chain. These skills will include:

- Big data management
- Big data analytics
- Automated operation and maintenance (O&M)
- Management of complex service constructs
- Management of data belts to keep them safe from cyber attacks and maintain its integrity

Crew

Due to the concurrent application of different kinds of technologies at different levels, a highly qualified and multi-skilled crew will be needed. The benefits of the balanced combination between a TechnoMax Ship managed by a highly skilled crew will be recognised by ship owners and ship operators. Effective action on the human element will require effort at the conception, design and construction stages of a ship’s life, as well as throughout its operation.

Ship operations will be conducted partially or entirely onshore and remotely manned by personnel with doctorate degrees.
Conclusions

Shipping is at the core of political and societal debates to significantly reduce its environmental footprint.

Several measures have already been imposed to reduce SOx or NOx, or to install BWMTS. Other regulatory measures are debated to reduce e.g. CO2 emissions from shipping.

Now, it is time to act: European Maritime Technology sector stands ready to foster closer dialogue with international regulators, shipowners and other maritime stakeholders
Thank you for attention

Christophe Tytgat
ct@seaeurope.eu
Secretary General