SHIPPING 2020

TECHNOLOGY UPTAKE IN THE WORLD FLEET TOWARDS 2020
WHAT IS SHIPPING 2020

WHAT:
We need to understand what are possible developments on technology and regulations and how they will impact the shipping industry.

CHALLENGE:
Uncertainties associated with market trends and drivers, fuel choices, technology developments and other variables.
The wrong investment decisions will be detrimental to both the industry and individual ship owners.
Wrong decisions impact the financial bottom line and the environment.

ANSWER:
Shipping 2020 aims to create a picture of future possible developments within shipping and to indicate which technologies are most likely to be adopted by the industry by 2020.
Megatrends and external drivers

**ECONOMIC GROWTH AND DEMAND FOR TRANSPORT**
- Boom or bust?
- Growth level and level of contracting
- Overcapacity of vessels?

**REGULATORY AND STAKEHOLDER PRESSURE**
- Global or local regulations?
- Further requirements on GHG emissions?
- Rating schemes and requirements from charterer and public

**FUEL TRENDS**
- Sustained high fuel prices?
- LNG cheaper than HFO?
- Development of LNG infrastructure
- Impact of sulphur regulations
Compliance and fuel efficiency are the main motivation, and cost and technology maturity are the main barriers

Source: DNV survey (23 respondents)
Which technologies do ship owners envisage using in the future?

**FIGURE 3: FAMILIARITY AND EXPERIENCE WITH TECHNOLOGIES**

- Low sulphur heavy fuel oil
- Distillate fuel
- Shaft generators
- Ballast Water Treatment System
- Waste heat recovery
- Propulsion efficiency devices
- Hull shape optimisation
- SOx scrubber
- System efficiency improvement (Aux)
- Smaller engine/de-rating (speed reduction)
- Low NOx tuning
- Reduction of seawater ballast capacity
- EGR system
- Counter-rotating propulsion
- Dual-fuel engine
- SCR system
- Hybrid propulsion system
- Pure LNG engine
- Water emulsification
- Lightweight constructions
- Air cushion
- Humid air motor/ direct water injection
- Wind & solar power

**FIGURE 4: LIKELIHOOD OF IMPLEMENTING TECHNOLOGIES**

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Source: DNV survey (23 respondents)
Findings – sulphur regulations

- More than 1000 new buildings in the next 8 years will be delivered with gas fuelled engines
  - LNG price is the main contributing factor, but from 2020 also the global sulphur limit and EEDI
- In 2020, with the global sulphur requirements, scrubbers become a significant solution
  - Scrubbers can be retrofitted and can take 25% of the market, 15-20,000 ship
- In 2020, the demand for marine distillates could be as high as 200-250 million tonnes annually
  - The use of LNG will not significantly impact the demand of other fuels
- Energy efficiency measure will only slow the fuel demand in the short term
Findings – energy efficiency

- Newbuildings in 2020 will emit up to 10 to 35% less CO\textsubscript{2} than today’s ships.
- High fuel costs and regulations have increased focus on energy efficiency
- The EEDI will be also be an important driver

- New technologies emerging, but long time from development to implementation

- Energy efficiency will slow but not reverse growth in emissions
- Growth in transport demand will cancel absolute reduction
- New carbon-neutral fuels have to be implemented to reach 80-95% reduction

Source: LR/DNV study, 2011
Safeguarding life, property and the environment

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