



Environmental Issues

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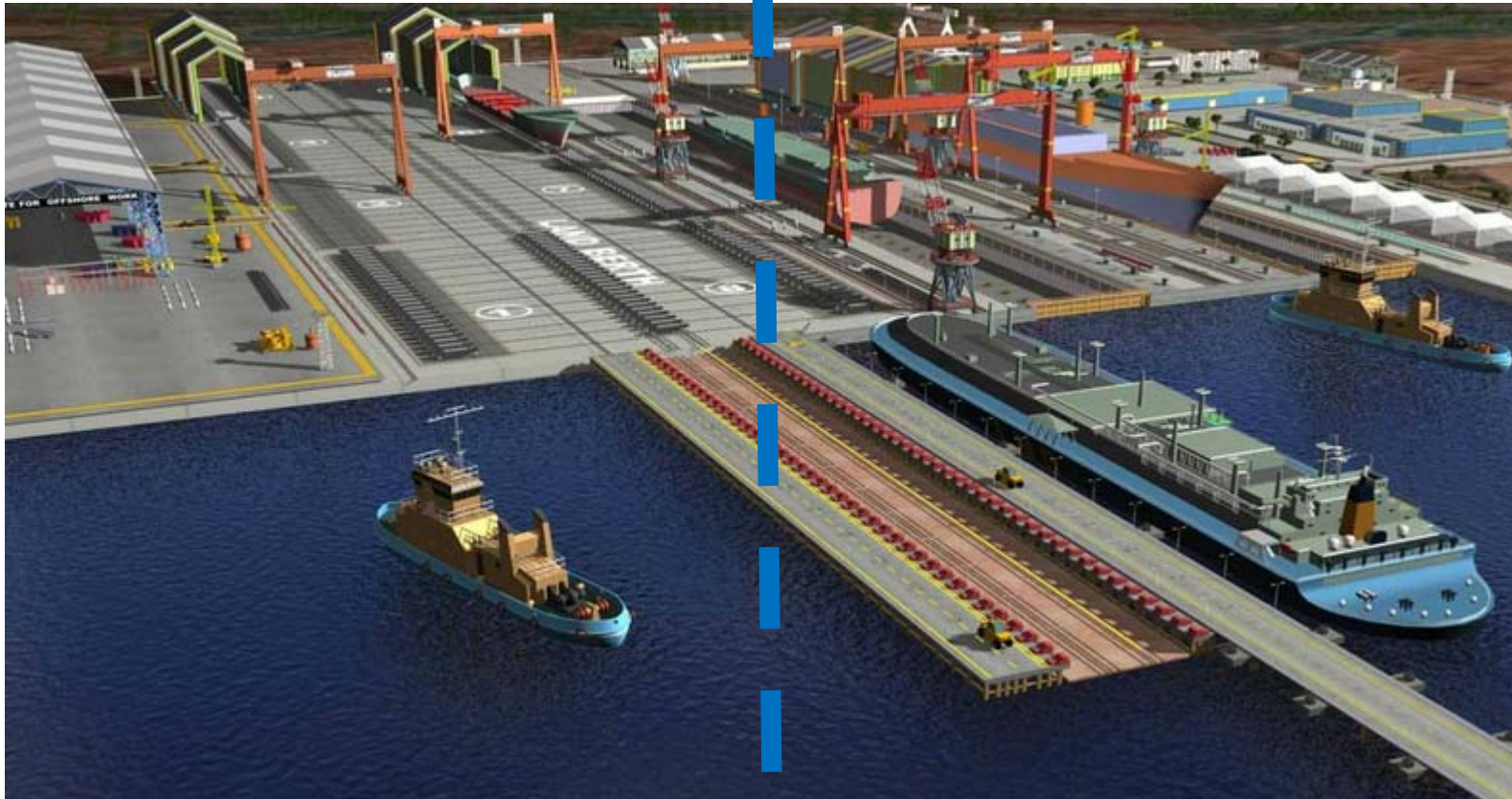
Increased Marine Environmental Awareness of Shipbuilders

EXTERNAL

Regulatory / societal expectations

INTERNAL

Local environmental impact



External Considerations

1. Move of customer business focus from Capex to Opex when building vessels, driven by:
 - Rising fuel costs
 - Economy of scale
 - Incoming legislation (ECA, Nox, EEDI BWMS, etc.)

2. Environment vs. Safety in developing new vessel types and technologies:
 - Optimisation of design
 - New technologies designed for the benefit of the environment but safety conscious.
 - Need for consistent well developed international legislation.

Recent and upcoming IMO regulations

- MARPOL Annex V “general prohibition” of discharges to sea: 1 January 2013
- NOx Technical Code (SCR) guidelines: 1 July 2013
- IBC Code (Dangerous Chemicals in Bulk) : 1 June 2014
- Noise Levels on Board Ships : 1 July 2014
- Ballast Water Convention (2004) in force : not before 1 January 2015
- MARPOL Annex VI EEDI : ships delivered July 2015. Older ships only a SEEMP
- IGF Code (gases or other low flashpoint fuels) : in force not before January 2016
- Coating Corrosion protection of cargo oil tanks : ships delivered January, 2016.
- Tier III limit to 1.00% NOx : ships built after 1 January 2016 may be postponed:
- Sewage discharge in the Baltic Sea: New ships from 2016 , existing from 2018.
- Ship recycling (2009) : entry into force not before 1 January 2017 –
- Mandatory ‘Polar Code’: Estimated entry into force not before 1 January 2017

NOx Tier III

- Delay from 2016 to 2021 supported by only simple majority
- Severe risk for the environment and occupational health,
- Shipbuilders, engine and other equipment manufacturers have heavily invested in R&D providing fit for purpose technology and processes.
- Uncertainty in the maritime regulatory framework endangers innovation and employment in manufacturing.

Ballast Water Convention

- Proposed delay does not encourage ratification
- Continued indefinite risk for the environment
- Other regional regulations, like US rules, likely
- Shipbuilders, engine and other equipment manufacturers have heavily invested in R&D providing fit for purpose technology and processes.
- Regulatory uncertainty endangers innovation and employment in manufacturing.

Positive Impact on Shipping and Shipbuilding

- Opportunities for those that anticipate new trends
- Fuel inflation triggers replacement / refitting
- Yards and suppliers:
 - Additional demand
 - Technical challenges of new designs and configurations
- Owners:
 - Increase of investment costs, reduction of operating costs
 - Increase of risks, technically and commercially
 - Cargo volume impact?

Internal Considerations

1. Shipyards need to set a good example collectively
 - Promote own environment control efforts (disposal of hazardous waste, etc.)
 - Design for recycling
2. Could become targets for unnecessary further regulation – this should be avoided
 - Regional legislation can distort level playing field
3. Adopt measures to reduce the environmental burden:
 - Dealing with eco-friendly manufacturers
 - Minimising waste of electricity and fuels
 - CO₂ emission reduction

Conclusions

- Consistent, well-prepared legislation at IMO
- Regulatory certainty (content + time)
- Technological improvements:
 - In safety
 - In environmental protection
 - In reducing costs of operation
- Collective good example for local environment

} Combined Efforts