



MANAGING RISK

DNV

Environmental challenges – with focus on emissions to air



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Three main challenges

- Urgency – 20 and 40 year time lines
- Technology availability & long lead items
- Effective global incentive schemes

Technology – 20 year horizon

- Fuels – HFO, MDO, Natural gas
- Sulphur – Long term solution at refineries
- NOx – Solution onboard
- CO2 – Fuel saving, no CO2 storage

Feasible emission reductions

- CO₂ – 20 – 50 % reduction
- NO_x – 30% reduction towards elimination
- SO_x – Towards elimination
- Particulate matters – Towards elimination

Effective incentive schemes

- Level playing field
- CO₂, NO_x, SO_x pricing and fuel cost
- Design and operational issues
- Cost-effective – Investments in shipping
- Global rather than regional
- Legislative and voluntary instruments?
- 20 – 50 % transportation cost increase?



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The time
to act is now

Thank you !

