



MANAGING RISK

Energy Management; Utviklingen av energieffektivitet i skipsfarten



Energiøkonomisering i fiskeflåten
26. – 27.november 2008 - Ålesund

Hanna Lee Behrens, Director Environmental Solutions

From Boardroom to Engine Room

Applying knowledge, creating lasting value

Approach

- Our projects are process driven
- The solutions are implemented in close cooperation with our clients
- Transfer of knowledge and competence is a key success factor
- Sharing industry best practice and benchmarking results with our clients is a central part of our model

Expertise



DNV
Maritime
Solutions

Management Consulting

Technology Consulting



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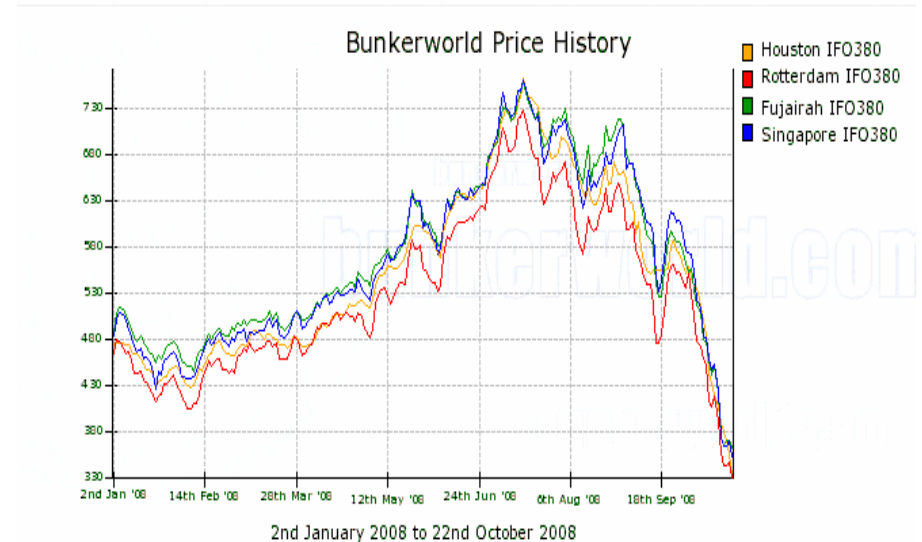
There are many reasons for saving fuel.....

- Strong fluctuating in fuel prices
 - Substantial business risk
 - Cargo owners concern about relative cost picture

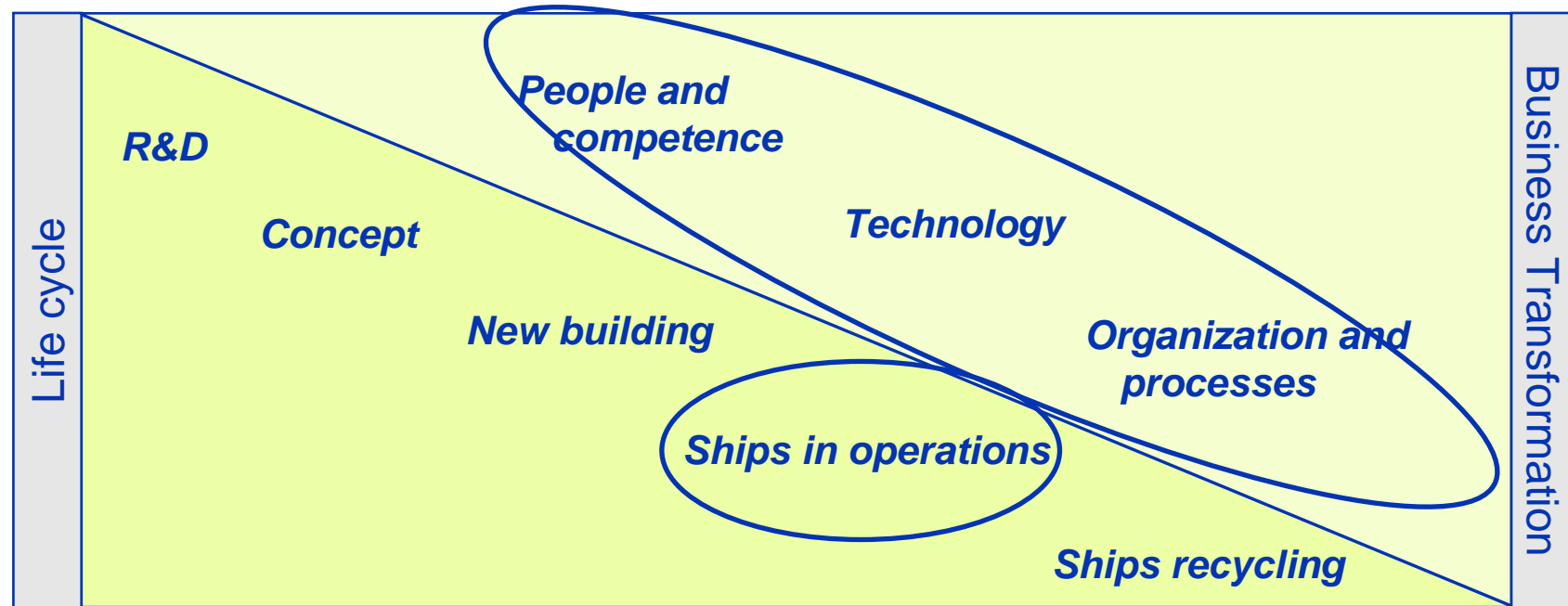
- Maintain market attractiveness
 - Need to actively demonstrate fuel efficiency

- Innovation in technology and IT

- Reduction in environmental footprint
 - Rapidly emerging legislations
 - Increased attention



Energy Management should encompass all elements in an organization....



Typical implementation bottlenecks for EM

Bottlenecks

- No defined Energy Management vision
 - Unclear strategy
 - Embedded organisational barriers
- Shortage of resources
 - Day to day focused
- Shortage of structured approach
 - Focus on single initiatives
 - Difficult to prioritise
- Principles of change management not applied in projects
 - Managing people during change
 - Performance management
- Poor implementation record



DNV assistance...

...anchor & verify

...guide & assist

...plan & initiate

...communicate

...follow-through

DNV Energy Management work process



DNV Energy Management focus areas

Voyage Planning (2 - 5%)

- Voyage planning & execution
- Weather routing & sea current
- Shipping contracts
- Speed Management
- Port operations
- Logistic planning (scm)



Main and AUX engines (2 – 4%)

- Main Engine tuning & efficiency
- Aux Engines tuning & utilization
- Steam boilers



Ship Performance (1 - 3%)

- Hull condition
- Propeller condition
- Autopilot & rudder
- Trim & draft
- Technical modifications
- Operational procedures



E – Consumers (1 – 2%)

- Thruster operations
- Ventilation and HVAC
- Insulation
- Water productions
- Incinerator
- Reefer systems



Fuel Management (2 – 5%)

- Pre-bunkering
 - Contracts securing fuel quality
- During bunkering
 - Processes securing fuel quantity
- Post-bunkering
 - Secure equipment condition



Management and organisation (> eff)

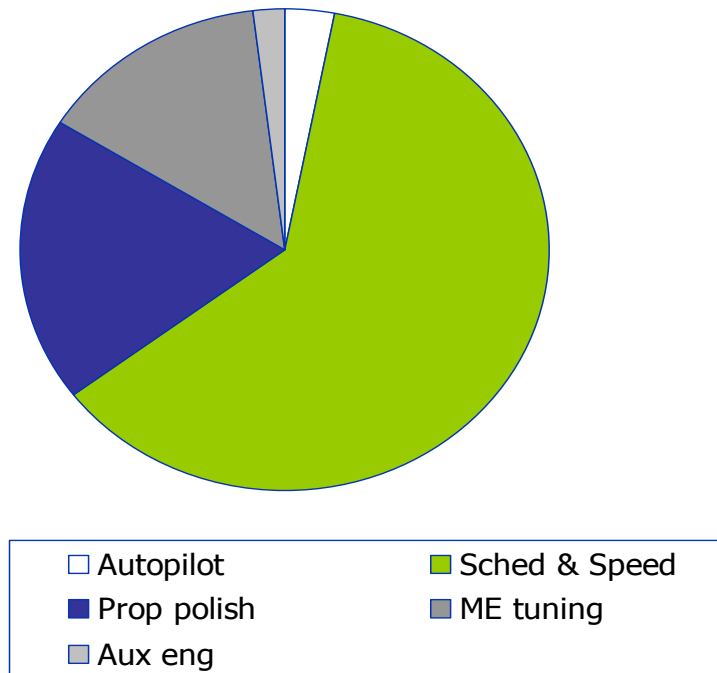
- Cross departmental cooperation
- Performance Management
- Roles and responsibilities
- Culture and awareness
- Integrate with environmental profile



Background

Pilot trials – approx 12 weeks

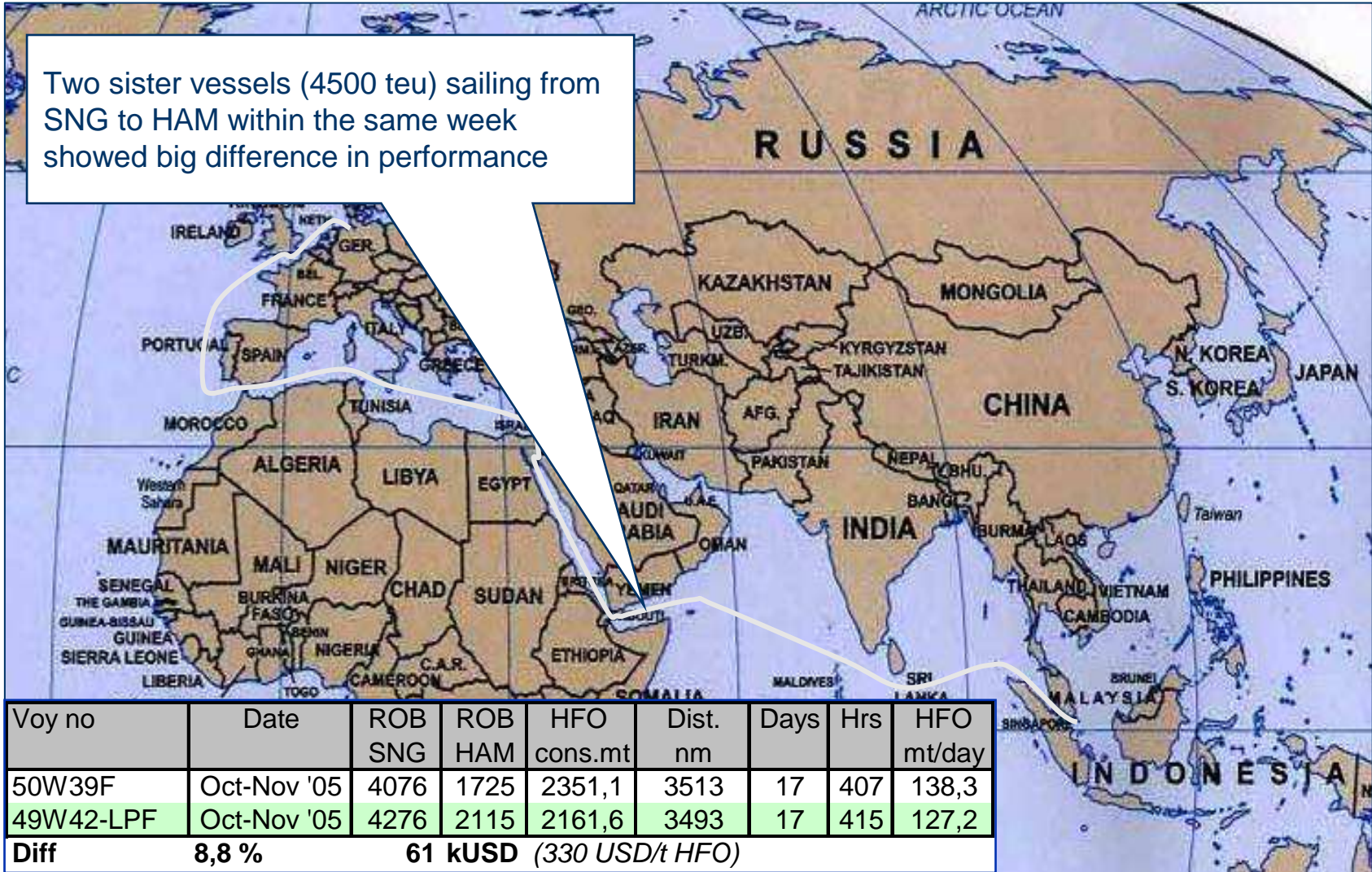
- Reason for project
 - Lower cost
 - Benchmarking
 - Environmental
- Pilot implementation of phase one
“Quick Wins”: (8 vessels)
 - Autopilot
 - Voyage scheduling
 - Propeller
 - Main/aux engines
- Benefits
 - Pilot project documented 5,8 % savings and enabled fleet wide implementation
 - Improved performance management and communication
 - Future training need requirements identified



The importance of cross fleet fuel consumption monitoring and sharing of best practice



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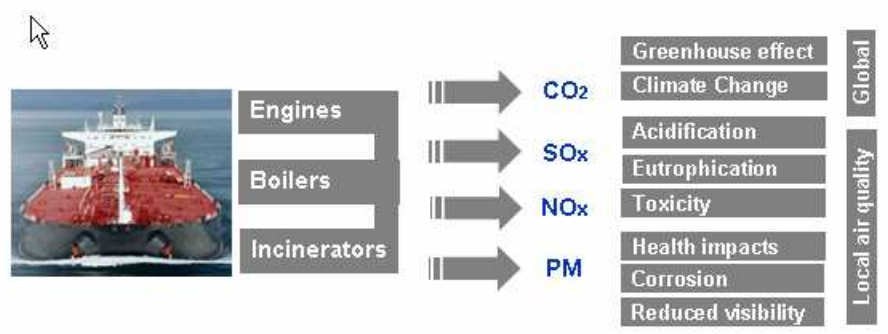
DNV's projects have addressed fuel savings potentials within all market segments



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- > 20 Projects
- > 10 Major clients
- All segments
- > 500 ships
- > 5000 Sailors
- >450 MUSD savings
- Substantial environmental impact

Segment	Fleet (# of ships)	Possible % fuel cost savings identified	
		Low	High
Tanker	50	2 %	6 %
Tanker	30	12 %	30 %
Chemical	80	6%	12 %
Container	100	5 %	8 %
Container	30	4 %	8 %
Container	>100	2 %	6 %
Cruise	15	4 %	8 %
LNG and RORO	75	12 %	32 %
Total	Approx 500 ships	190 MUSD	460 MUSD





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Maritime Solutions is the leading worldwide Management and Technology consultancy unit of DNV, helping its clients in the maritime industry to unlock their full potential.

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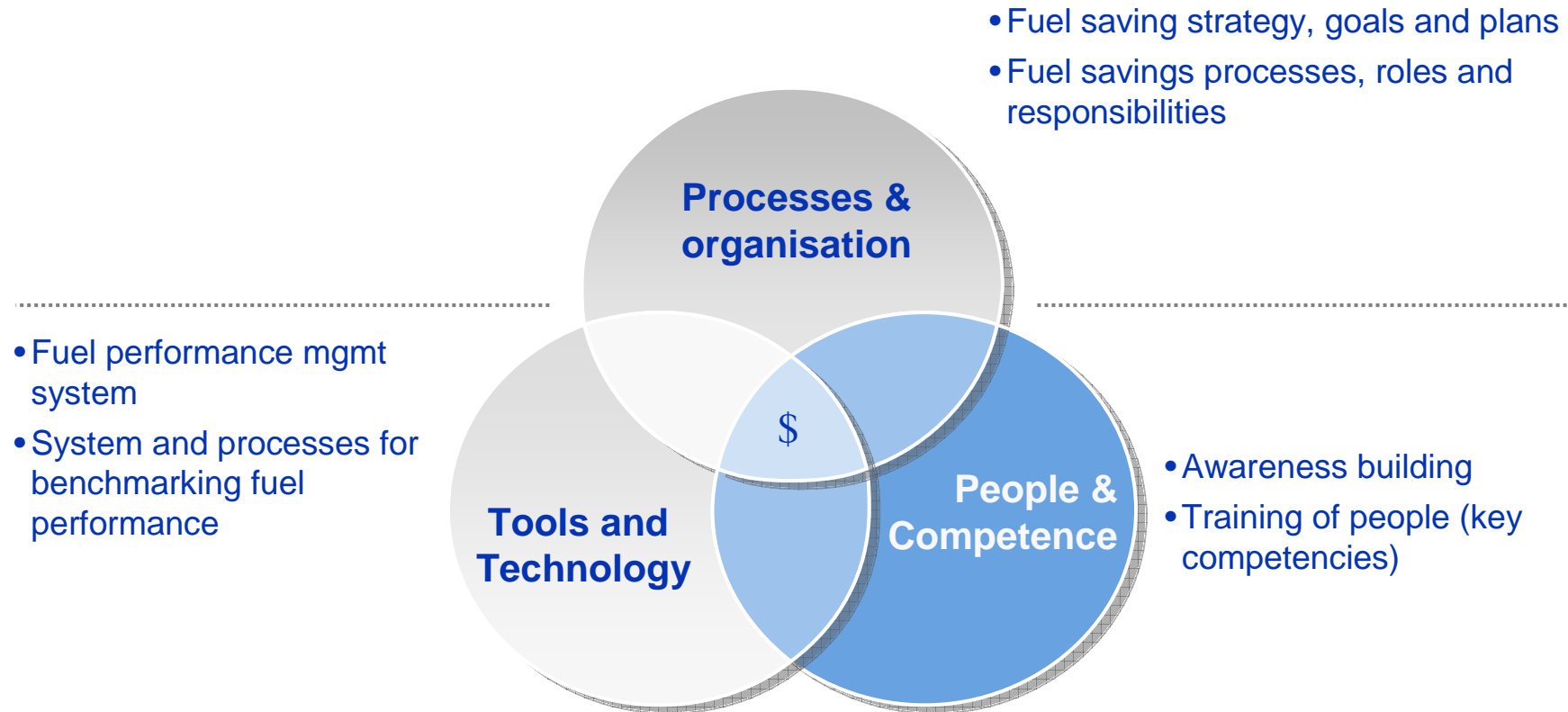
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An holistic approach would lay the ground for sustained improvements



....and change management is key enabler in developing and implementing the solutions