


Market Prospects for Low Sulphur Fuels

CIMAC Circle, Norway
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- New legislation
- Demand: the needs of the shipping industry
- Supply: Prospects for Low Sulphur Fuel Oil (LSFO)
- Consequences for the shipping industry

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Fuel oil quality requirements; MARPOL Annex VI

- **Fuel Oil quality**
  - Max 4.5%w S
  - Max 1.5%w S in SECA's

- **Bunker delivery note**
  - Signed, certified declaration wrt Annex VI, incl Sulphur content

- **Bunker sample**
  - Legal, not commercial status. Supplier's responsibility

- **Compliance monitoring**
  - For vessels: Port State control
  - For Suppliers: local relevant body (e.g. Marine Coastguard Agency in UK)

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Fuel oil quality requirements; EU Legislation

- **1999/32/EC based on Annex VI**
  - Max 4.5%w S
  - Max 1.5%w S in SECA's
  - Max 1.5%w S regular passenger ferries operating EU ports
  - BDN, sample requirements
  - Max 0.1%w S when stationary from 2010

- **Future review, reassessment**
  - Encourage testing of abatement technologies
  - Report on use of economic instruments, e.g. emissions trading, by Dec 31 2005
  - Additional SECA's, reduction to 0.5%w S review by 2008

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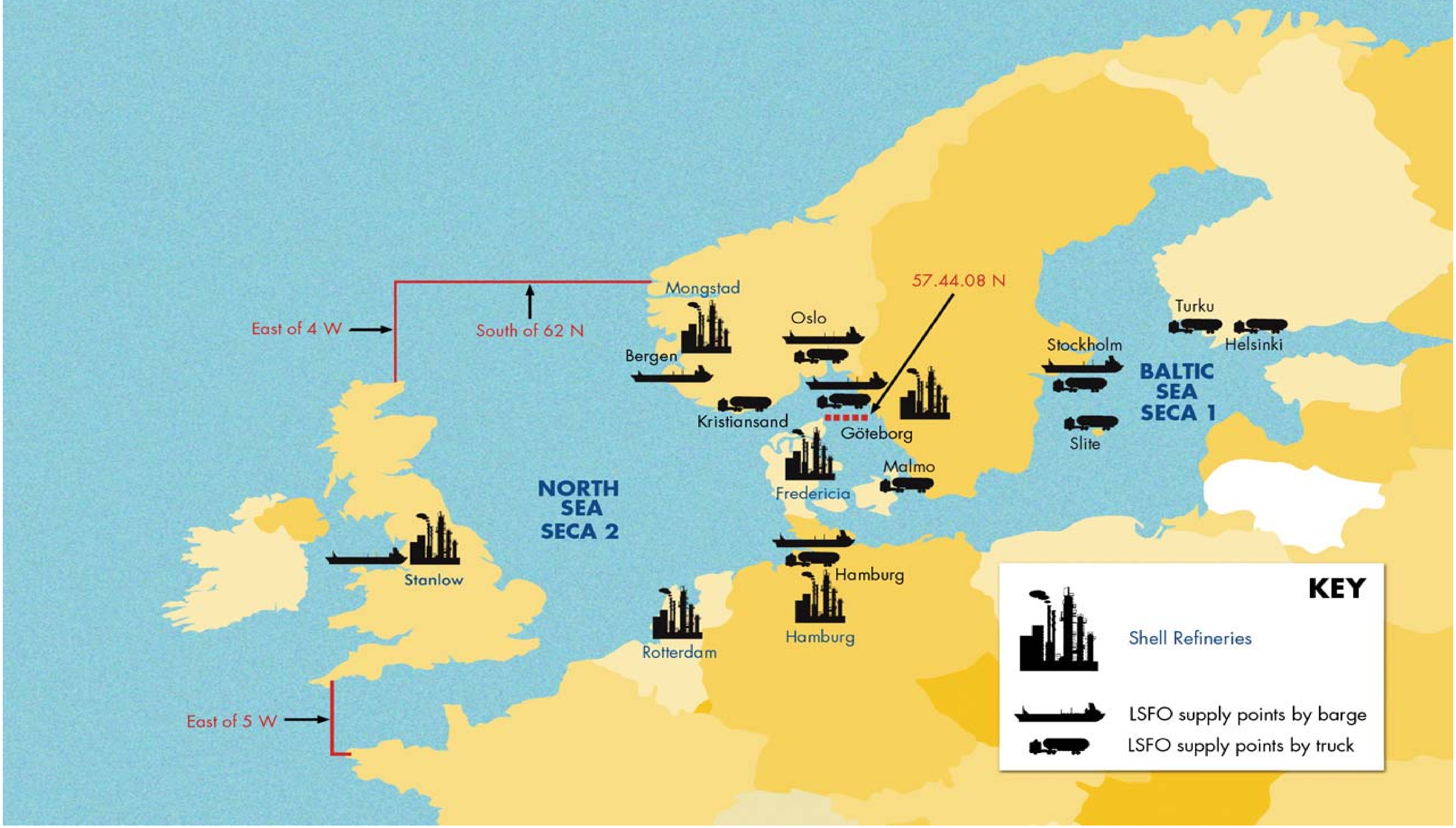
SECA 1, Passenger ferries in EU ports: 19th May 2006
SECA 2: expected November 2007



Vessel operators may have several options :

- **Switch to 100% Low Sulphur Bunkers**
  - If operating entirely within the SECA or no other alternatives feasible
- **On Board Bunker Fuel Management**
  - If configuration allows, segregate HS and LS fuels
  - Use gasoil to navigate or blend on board within SECA's
- **Clean up Exhaust Gases, burn High Sulphur Fuels**
  - Commercially proven abatement technology required
  - Currently no offset trading of emissions to support investment

Decision factors for vessel owners/operators:

- **View on LS-HS premium, medium- and long-term**
  - To justify investment to reduce LSFO consumption
- **Trade pattern: frequency, duration, predictability in SECA**
  - Different industry sectors/players will take different investment views
- **Existing Configuration fleet bunker tanks**
  - Retrofitting has a cost & availability impact
- **Availability of abatement technology**
  - Commercially proven technology; opportunity to implement

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Decision factors for vessel owners/operators:

- View on LS-HS premium, medium- and long-term
- Availability of abatement technology

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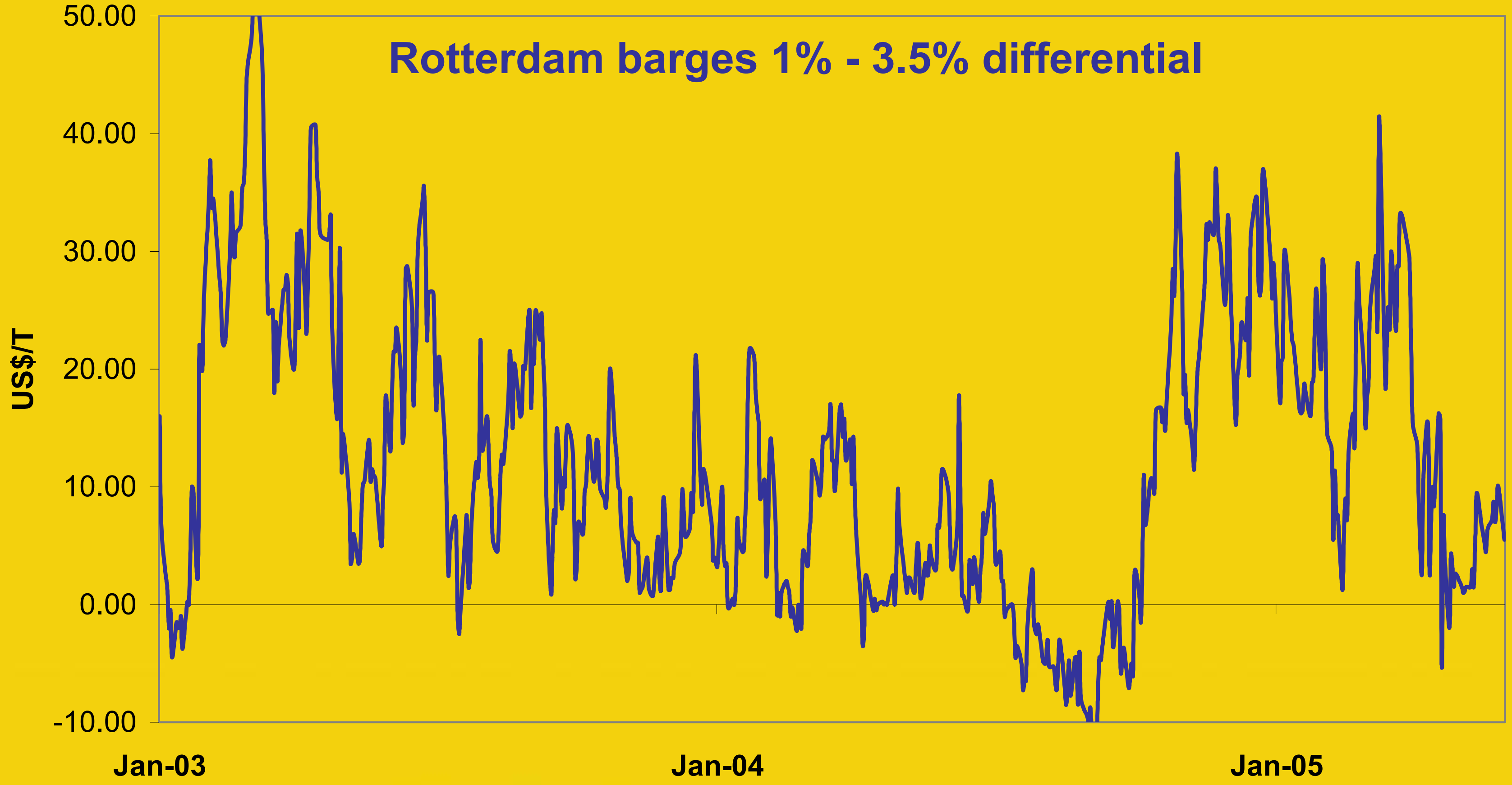
LS-HS differential is volatile even now:



- The 1% barges quote is not well traded, treat with caution
- 1% quotes are not bunker specification (S and metals content)
- The supply/demand balance will change significantly

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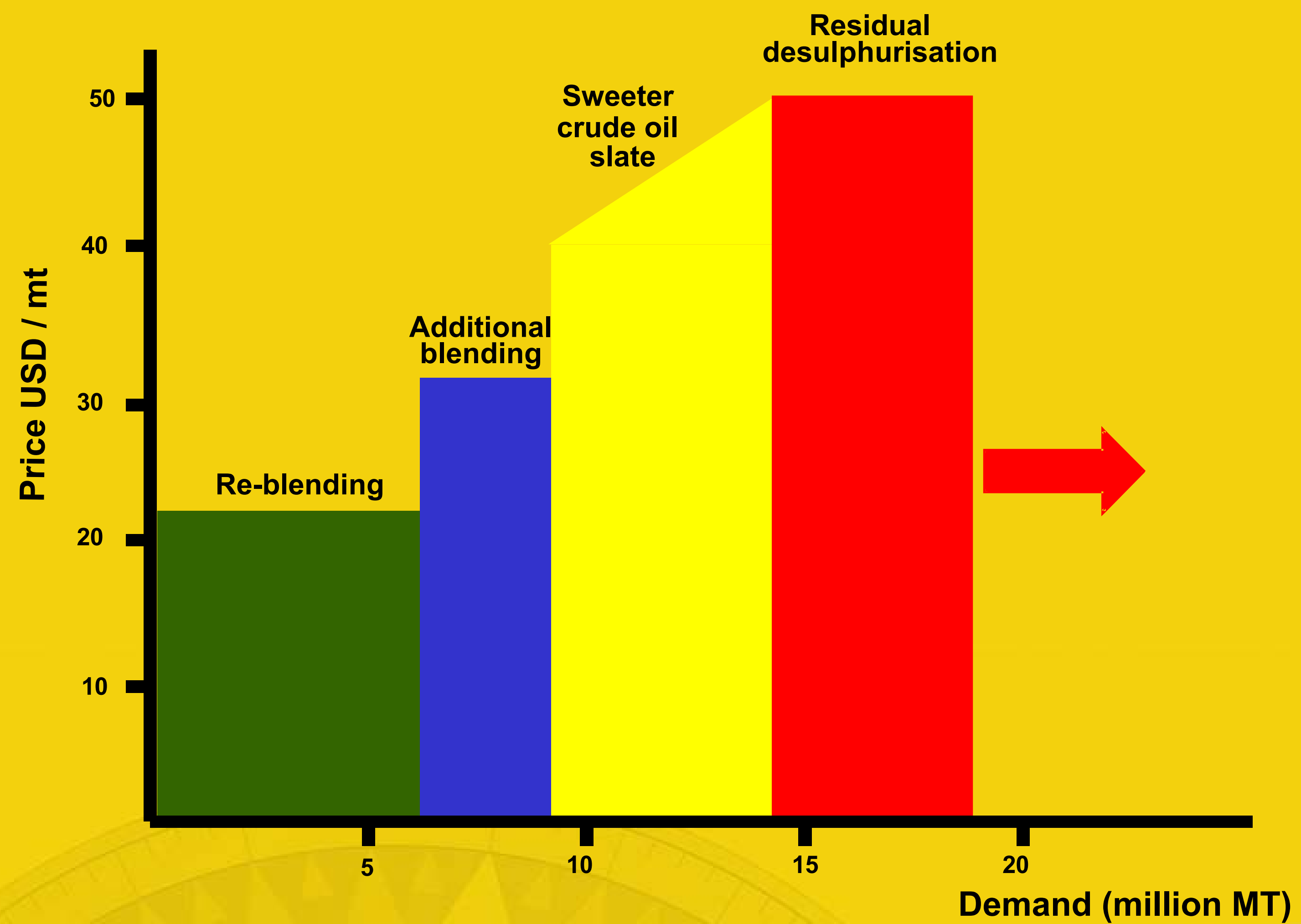
High cost of producing incremental LSFO:



SEAaT

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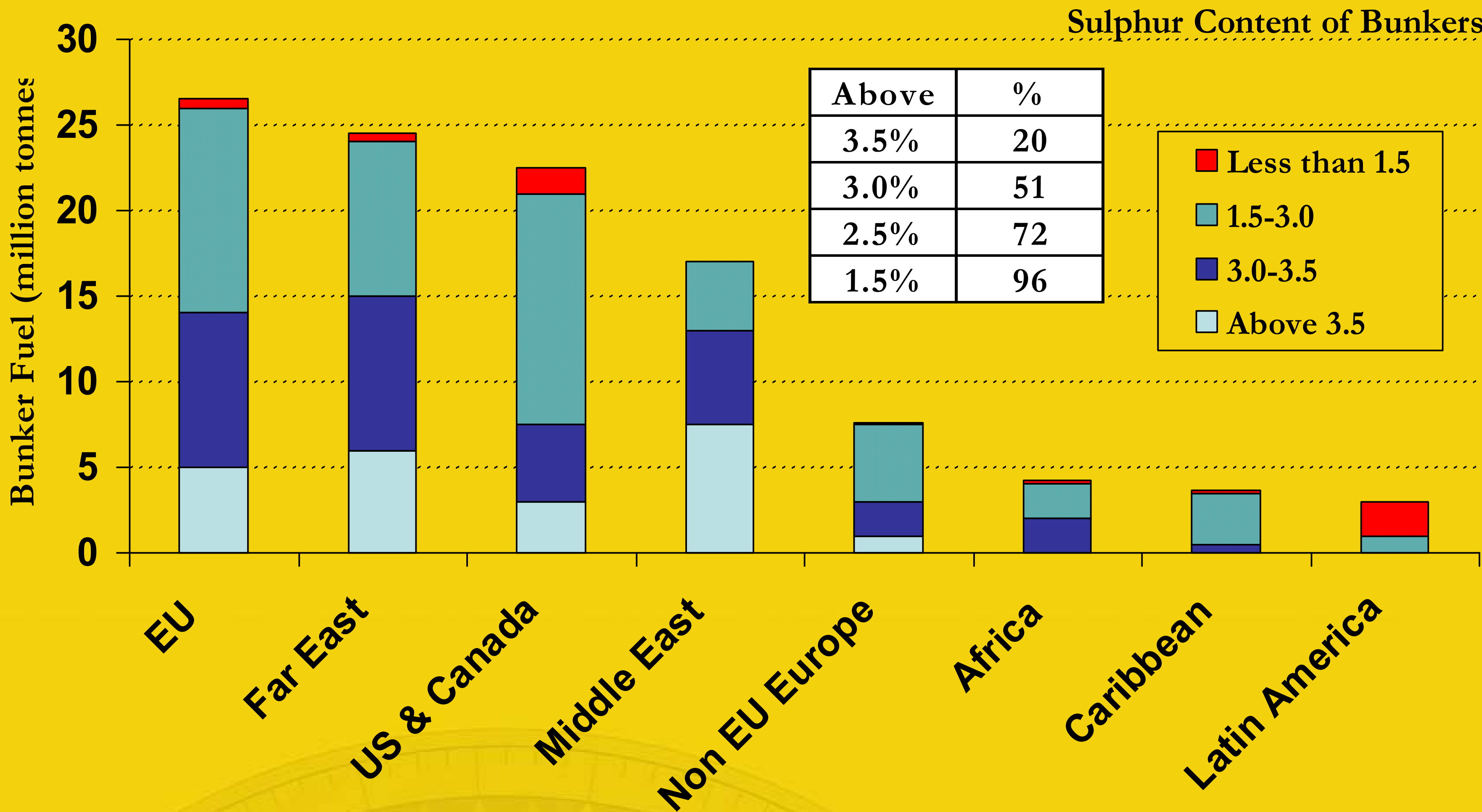
Further SECA's will increase pressure on LSFO:



Above	%
3.5%	20
3.0%	51
2.5%	72
1.5%	96

Source : The Cost of Limiting the Sulphur Content of Marine Bunker Fuels to a Maximum of 3.5% Sulphur, **An IPIECA Study for OCIMF Submission to IMO, Table 3**

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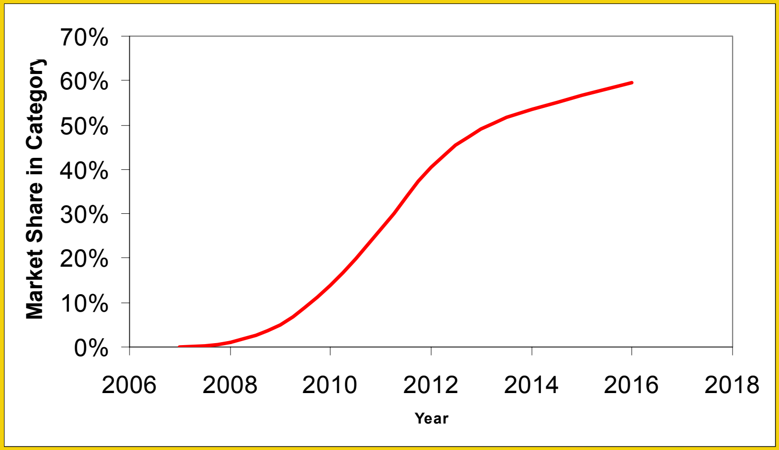
Abatement technology will come…eventually

- **There is currently no commercially proven technology**
  - But several systems in development
- **The economic and environmental benefits of seawater scrubbing are significant**
  - And will drive innovation and development of viable technologies
- **But market penetration will take time**
  - Unless technology requires minor refit
  - Curve here makes typical assumptions re fleet renewal and major refit frequency, for a typical category where abatement is a good investment decision
  - Emission trading will improve economic efficiency/speed of uptake



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Operational Issues for vessels/operators:

- **Quality:**
  - Stability problems from onboard mixing of HS and LS fuels
  - Potentially lower combustion/ignition quality LSFO, depending on source
  - Increased risk of unstable fuel (depending on the refinery desulphurisation or blending process)
- **Scheduling:**
  - Managing LSFO inventories through complex voyage patterns
  - Fuel switch-over procedures when transiting in/out SECA
- **Lubrication:**
  - Evaluate/monitor lubrication strategy in line with fuel strategy

Summary:

- **The new legislation has significant cost implications for the shipping industry:**
  - Increased demand, high cost of producing incremental LSFO volumes
- **This is a global issue:**
  - Additional legislation can be expected to put further pressure on LSFO availability – and cost
- **Abatement will come, but will not change the picture in the short term**
  - Development and installation of proven technology has lead time
- **Compliance presents immediate operational challenges for vessel owners/operators – and for bunker suppliers**
  - Marine fuel quality and segregation issues

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Vessel operators should work with and expect strong support from bunker/lubricant suppliers to minimise operational and financial consequences of the new legislation

SMP are focussing on key elements to support our customers:

- Further developing our supply network of LSFO
- Speciality lubricants
- Lubrication services and advice
- As a founding member of SEAaT, active participation in evaluation of abatement and emissions trading developments

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