Europe's approach to tackling shipping emissions
The Mediterranean and beyond

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Athens
11 May 2007
Not if, but when will the Mediterranean become a SECA

The Next SECA
Future legislation will be subject to conflicting pressures

Currently legislation is constantly changing making it increasingly difficult to plan
Expected implementation scenario for marine SOx emission reduction legislation in Europe

- **Ratification Of Annex VI**
  - 19 May

- **Global Cap and BDN**
  - 19 May

- **Baltic Sea SECA**
  - 19 May

- **North Sea SECA**
  - 21 Nov

- **IMO permits scrubbing globally**

- **IMO is now considering six options**

Timeline:

- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010

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IMO option A

Current Annex I

- Use of all types of Fuel
- Scrubbing permitted
IMO option B

- Use of all types of fuel
- Scrubbing permitted

Current
Annex I

Norway
2010

Norway
2015

Global S cap
0.5% 1.0% 1.5% 3.0% 4.5%

SECA S Level
0.1% 0.5% 1.0% 1.5%
IMO option B1

- Use of all types of fuel but
- Distillates or HFO scrubbed to 0.4 gm/kW hr in SECA
IMO option B2

- Use of all types of fuel but
- Distillates or HFO scrubbed in SECA

Global S cap

- USA
- Current Annex I
- BIMCO 2016
- BIMCO 2012
- Norway 2010
- Norway 2015

SECA S level

- 0.1%
- 0.5%
- 1.0%
- 1.5%

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IMO option C

- Global use of distillates only
- No SECA
- No scrubbing

- Current Annex I
- USA
- BIMCO 2012
- Intertanko 2012
- Intertanko 2015
- Norway 2010
- Norway 2015

Global S cap vs SECA S level chart.
IMO option C2

- Global use of distillates only
- No SECA
- Permits scrubbing

Scrubbing can achieve this

Global S cap

SECA S Level

Current Annex I
Norway 2010
Norway 2015
USA

0.1%
0.5%
1.5%
4.5%
5.0%
10.0%
IMO instigated an independent study

Scrubbing can achieve this with fuel oil
The All Distillate Options (ADO) is unlikely to be adopted

It has a negative economic impact

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Reduction 1,000 tons assuming 70% fall on land</th>
<th>Value of reducing emissions by 1.0 ton $/ton</th>
<th>Total Benefits $ billion</th>
</tr>
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<tbody>
<tr>
<td>SOx 2015</td>
<td>9,000</td>
<td>4,300</td>
<td>39</td>
</tr>
<tr>
<td>PM</td>
<td>1,130</td>
<td>29,000</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Total 72</strong></td>
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<tr>
<td>Cost increase in global fuel purchases/ manufacture</td>
<td></td>
<td></td>
<td><strong>74</strong></td>
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<tr>
<td>Net loss</td>
<td></td>
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<td><strong>2</strong></td>
</tr>
</tbody>
</table>

- Will not reduce SOx or PM emissions as effectively as scrubbing
- IMO Option C” accepts scrubbing - why not use fuel oil
- Scrubbing will permit the lowest global cap
- Significant increase in global CO2 emissions converting fuel oil to distillates
- Scrubbing dissipates sulphur relatively benignly into the sea avoiding on-land disposal
- ADO benefits to ship owners of less sludge disposal and lower ship building costs
Expected implementation scenario for marine SOx emission reduction legislation in Europe

- **Ratification Of Annex VI**: 19 May
- **Global Cap and BDN**: 19 May
- **Baltic Sea SECA**: 19 May
- **North Sea SECA**: 21 Nov

**2004**
- Continued 0.2%S limit on all marine distillate (DMX, DMA, DMB and DMC) use in all EU territorial waters, ports and inland waterways

**2005**
- **Baltic 11 Aug**: 99-32/05-33 enforces 1.5%S in Baltic and North Seas

**2006**
- **North 11 Aug**: USEO 2005
  - 0.1%S fuels in all EU ports at berth and inland waterway vessels but not in territorial waters
  - Ban on sale of MGO above 0.1%S

**2007**
- Review of more stringent regulations
- EU permits scrubbing globally
- MGO (DMX and DMA) max reduced to 0.1% in territorial waters, ports and inland

**2008**
- All regular passenger ferries to or from EU ports use max 1.5%S fuels

**2009**
- Max permitted S level for MDO (DMB and DMC) set at 1.5% in SECA, territorial waters and Inland waterways. MGO (DMX and DMA) remain at max 0.2%S in territorial waters and Inland waterways
- Ban on sale of MDO above 1.5%S

**2010**
- Use of 0.1%S fuels in all EU ports at berth and inland waterway vessels but not in territorial waters
- Ban on sale of MGO above 0.1%S

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Europe is hopefully moving closer to a unified position with IMO

<table>
<thead>
<tr>
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<th>IN PLACE</th>
<th>EXPECTED</th>
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<tbody>
<tr>
<td>BEGINNING 2008</td>
<td>North and Baltic Sea SECA</td>
<td>Scrubbing</td>
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<tr>
<td></td>
<td>Ferries use 1.5%S</td>
<td></td>
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<tr>
<td>BEGINNING 2010</td>
<td>Use of 0.1%S alongside</td>
<td>Emissions Trading</td>
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<td>Comprehensive review of</td>
<td>CO2 indexing</td>
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<td>all air emissions</td>
<td>NOx regs, in line with IMO</td>
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<td>Guidance on enforcement</td>
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<td>PM controls for inland</td>
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<td>shipping</td>
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The EU Parliament has adopted a forceful approach

- Establish NOx emission standards
- Discount port/fairway charges for low emissions vessel
- Use of shore-side electricity by ships when in ports
- EU directive on the quality of marine fuels
- Insist on action within IMO
- Coordinated action to ensure a level playing field and balance between costs of reducing marine and land based emissions
- Designate the Mediterranean as a SECA
- Reduce S level for passenger ships from 1.5% to 0.5% in SECA
- Taxes on SO2 and NOx emissions
European areas is being considered as SECA

N. E. Atlantic?

Baltic Sea

Black Sea?

North Sea

Mediterranean?

Irish Sea
Part of N.E. Atlantic?
By 2020 the Mediterranean SOx emissions will be over three times greater than the Baltic and North Seas combined.
Deposition of Sulphur Emissions From Ships In The Mediterranean (mg S/m²)

Emissions SO2 in:
2000: 1100 kT/year
2020: 1740 kT/year
Deposition of Sulphur Emissions From Volcanoes (mg S/m²)
Some 80% higher than from shipping

Emissions SO2 in:
2000: 2000 kT/year
Of the 27 EU member states, all but three of the sea board countries have ratified Annex VI

Ireland, Malta and Portugal remain the only Member States of the EU with a seaboard that have NOT ratified Annex VI.

Croatia is the only other Mediterranean state to ratify.

France, Spain, Cyprus and Greece are the only Mediterranean States expected to have legislation in place by the end of 2007.

Enforcement will be delayed.
Assuming enforcement improves the LSBFO market in the Mediterranean will approach 4 million tons by 2015.
The EU has funded a study to commence the process of making the Mediterranean a SECA

- In involves all but two of the Mediterranean states

- Key purpose to demonstrate how to make the application to IMO

- It will demonstrate
  - The Pro’s and Con’s to all parties involved
  - The impact on ports, states and shipping

- Identify ways to transpose Annex VI into national legislation and bylaws that are
  - Clear
  - Unambiguous
  - User friendly
  - Enforceable

- Prepare a strategy that includes
  - What analysis is needed to justify the SECA or not
  - The new or strengthened government bodies required
  - Budgets and schedules

It is hoped that this structured approach will accelerate the introduction of user friendly, economically justified regulations
In summary – Europe is taking a more measured approach to tackling shipping emissions

- Greater cooperation with IMO
- Recognises the benefits of globally consistent regulations
- Considering a holistic approach taking account of all viewpoints
- Improving enforcement
- Reducing CO2
- Consider SOx in the context of all liquid fuels emissions
- Following IMO on NOx
- Instigating PM controls
- Encouraging scrubbing and emission trading

It can only be hoped that we will see a better informed and motivated approach to reducing European marine emissions in the future
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