

# **Analysis of Policy Measures to Reduce Ship Emissions in the Context of the Revision of the National Emissions Ceilings Directive**

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## **Appendices to Final Report**

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## Table of contents

<b>APPENDIX A: NATIONAL AND INTERNATIONAL EMISSIONS WITHIN 12-MILE ZONES IN 2000.....</b>	<b>1</b>
<b>APPENDIX B: 2000 EMISSIONS BY FLAG, SEA AREA, MOVEMENT TYPE AND VESSEL TYPE .....</b>	<b>7</b>
<b>APPENDIX C: EMISSIONS OF AIR POLLUTANTS FROM INTERNATIONAL SHIPPING IN 2000 AND IN 2020 BY SCENARIO AND SEA REGION .....</b>	<b>19</b>
<b>APPENDIX D: PROJECTIONS OF EMISSIONS BY SCENARIO, SEA AREA, FLAG, AND VESSEL TYPE .....</b>	<b>27</b>
<b>APPENDIX E: EMISSION CONTROL COSTS FOR INTERNATIONAL SHIPPING IN 2000 AND 2020 BY SCENARIO AND SEA REGION .....</b>	<b>79</b>
<b>APPENDIX F: EMISSION CONTROL COSTS BY SCENARIO, SEA AREA, FLAG, AND VESSEL TYPE .....</b>	<b>85</b>



# **Appendix A: National and International Emissions within 12-Mile Zones in 2000**



**Table A.1a 12-mile Zone (Territorial Sea) Emissions for each Country, by National (N) and International (I) Movements - Excluding Smaller Vessels.**

Country	SO <sub>2</sub>		CO <sub>2</sub>		HC		NO <sub>x</sub>		PMtotal	
	N	I	N	I	N	I	N	I	N	I
Austria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belgium	0.4	12.2	26.2	726.9	0.0	0.6	0.5	14.9	0.0	1.3
Bulgaria	0.1	1.8	3.9	108.5	0.0	0.1	0.1	2.3	0.0	0.2
Croatia	0.2	4.9	9.5	307.9	0.0	0.2	0.2	6.5	0.0	0.5
Cyprus	0.1	2.9	7.2	174.8	0.0	0.1	0.1	3.5	0.0	0.3
Czech Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denmark	3.7	50.6	222.0	3025.3	0.2	2.5	4.6	72.5	0.4	6.0
Estonia	0.1	6.6	3.6	397.0	0.0	0.3	0.1	8.9	0.0	0.7
Finland	2.7	6.9	161.1	411.9	0.1	0.4	3.4	8.8	0.3	0.7
France	6.8	37.4	427.6	2265.3	0.4	1.9	8.6	49.6	0.7	4.2
Germany	6.4	30.2	378.8	1808.4	0.3	1.5	8.1	41.3	0.7	3.4
Greece	9.5	54.8	578.0	3364.5	0.5	2.6	11.5	75.3	1.0	6.0
Hungary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	0.9	4.7	51.3	278.3	0.0	0.2	1.0	6.1	0.1	0.5
Italy	25.4	31.4	1574.2	1941.8	1.4	1.6	31.1	40.1	2.6	3.2
Latvia	0.2	3.8	14.1	227.7	0.0	0.2	0.3	4.8	0.0	0.4
Lithuania	0.0	1.2	1.3	72.7	0.0	0.1	0.0	1.5	0.0	0.1
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Country	SO <sub>2</sub>		CO <sub>2</sub>		HC		NO <sub>x</sub>		PMtotal	
	N	I	N	I	N	I	N	I	N	I
Malta	0.3	2.4	17.5	141.5	0.0	0.1	0.3	3.0	0.0	0.3
Netherlands	2.7	34.1	160.0	2037.5	0.1	1.8	3.1	44.7	0.3	3.9
Poland	0.3	3.5	20.6	205.2	0.0	0.2	0.4	4.3	0.0	0.4
Portugal	1.7	6.5	103.2	387.7	0.1	0.3	2.2	8.3	0.2	0.7
Romania	0.5	2.3	30.7	136.2	0.0	0.1	0.6	2.9	0.1	0.3
Slovakia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovenia	0.0	0.9	0.2	55.5	0.0	0.0	0.0	1.1	0.0	0.1
Spain	29.5	27.3	1765.6	1628.0	1.5	1.4	38.1	37.0	3.3	3.2
Sweden	3.4	19.1	201.5	1143.3	0.2	1.0	4.1	25.4	0.4	2.1
Turkey	12.2	23.8	727.2	1428.6	0.6	1.2	15.1	32.5	1.4	2.8
UK	29.8	70.6	1778.7	4220.7	1.6	3.5	36.9	96.1	3.4	8.3
<b>Sub-Total</b>	<b>137</b>	<b>440</b>	<b>8264</b>	<b>26495</b>	<b>7</b>	<b>22</b>	<b>170</b>	<b>591</b>	<b>15</b>	<b>50</b>
<b>TOTAL (National and International)</b>		<b>577</b>		<b>34759</b>		<b>29</b>		<b>762</b>		<b>65</b>

**Table A.1b 12-mile Zone (Territorial Sea) Emissions for each Country, by National (N) and International (I) Movements - Excluding Smaller Vessels.**

Country	CO		VOC		PM <sub>2.5</sub>		PM <sub>coarse</sub>	
	N	I	N	I	N	I	N	I
Austria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belgium	6.3	174.5	0.0	0.6	0.0	1.2	0.0	0.1
Bulgaria	0.9	26.0	0.0	0.1	0.0	0.2	0.0	0.0
Croatia	2.3	73.9	0.0	0.2	0.0	0.4	0.0	0.0
Cyprus	1.7	42.0	0.0	0.1	0.0	0.3	0.0	0.0
Czech Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denmark	53.3	726.1	0.2	2.5	0.4	5.4	0.0	0.3
Estonia	0.9	95.3	0.0	0.3	0.0	0.7	0.0	0.0
Finland	38.7	98.8	0.1	0.4	0.3	0.7	0.0	0.0
France	102.6	543.7	0.4	1.9	0.6	3.8	0.0	0.2
Germany	90.9	434.0	0.3	1.5	0.6	3.1	0.0	0.2
Greece	138.7	807.5	0.5	2.6	0.9	5.4	0.1	0.3
Hungary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ireland	12.3	66.8	0.0	0.2	0.1	0.5	0.0	0.0
Italy	377.8	466.0	1.3	1.6	2.3	2.9	0.1	0.2
Latvia	3.4	54.6	0.0	0.2	0.0	0.4	0.0	0.0
Lithuania	0.3	17.4	0.0	0.1	0.0	0.1	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Country	CO		VOC		PM <sub>2.5</sub>		PM <sub>coarse</sub>	
	N	I	N	I	N	I	N	I
Malta	4.2	34.0	0.0	0.1	0.0	0.2	0.0	0.0
Netherlands	38.4	489.0	0.1	1.8	0.2	3.5	0.0	0.2
Poland	4.9	49.2	0.0	0.2	0.0	0.3	0.0	0.0
Portugal	24.8	93.1	0.1	0.3	0.2	0.7	0.0	0.0
Romania	7.4	32.7	0.0	0.1	0.0	0.2	0.0	0.0
Slovakia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slovenia	0.1	13.3	0.0	0.0	0.0	0.1	0.0	0.0
Spain	423.7	390.7	1.5	1.4	3.0	2.9	0.2	0.2
Sweden	48.4	274.4	0.2	1.0	0.3	1.9	0.0	0.1
Turkey	174.5	342.9	0.6	1.1	1.2	2.5	0.1	0.1
UK	426.9	1013.0	1.6	3.5	3.1	7.4	0.2	0.4
<b>Sub-Total</b>	<b>1983</b>	<b>6359</b>	<b>7</b>	<b>22</b>	<b>13</b>	<b>45</b>	<b>1</b>	<b>2</b>
<b>TOTAL (National and International)</b>		<b>8342</b>		<b>29</b>		<b>58</b>		<b>3</b>

## **Appendix B: 2000 emissions by Flag, Sea Area, Movement Type and Vessel Type**



**Table B.1 Year 2000 SO<sub>2</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags	SO <sub>2</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
		Sea	Man	Berth	Sea	Man	Berth	
North Sea	187.5	2.6	24.4	10.5	0.2	0.2	<b>226</b>	
Black Sea	27.7	0.3	4.5	0.4	0.0	0.0	<b>33</b>	
Med	478.7	2.9	32.7	94.9	1.3	1.2	<b>613</b>	
Baltic	111.9	1.0	10.3	2.1	0.0	0.0	<b>125</b>	
NE Atlantic	168.5	0.5	7.2	4.1	0.0	0.0	<b>180</b>	
<b>TOTAL</b>	<b>974</b>	<b>7</b>	<b>79</b>	<b>112</b>	<b>2</b>	<b>1</b>	<b>1176</b>	

**Table B.2 Year 2000 SO<sub>2</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags SO <sub>2</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	233.6	2.9	31.2	2.7	0.1	0.1	<b>271</b>
Black Sea	25.1	0.3	3.9	0.2	0.0	0.0	<b>30</b>
Med	593.8	2.6	27.8	14.0	0.3	0.3	<b>639</b>
Baltic	78.1	0.6	7.2	0.9	0.0	0.0	<b>87</b>
NE Atlantic	329.0	0.9	10.8	1.1	0.0	0.0	<b>342</b>
<b>TOTAL</b>	<b>1260</b>	<b>7</b>	<b>81</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>1368</b>

**Table B.3 Year 2000 CO<sub>2</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags CO <sub>2</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	11170.8	157.6	1447.3	730.7	12.7	12.8	<b>13532</b>
Black Sea	1644.5	18.6	268.9	27.0	0.3	0.4	<b>1960</b>
Med	28454.3	173.6	1940.0	6594.4	87.3	69.0	<b>37319</b>
Baltic	6722.5	57.7	610.0	147.1	1.9	2.8	<b>7542</b>
NE Atlantic	9999.1	31.7	424.9	284.9	1.0	0.8	<b>10742</b>
<b>TOTAL</b>	<b>57991</b>	<b>439</b>	<b>4691</b>	<b>7784</b>	<b>103</b>	<b>86</b>	<b>71095</b>

**Table B.4 Year 2000 CO<sub>2</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags CO <sub>2</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	13910.2	171.0	1853.7	189.5	3.7	4.2	<b>16132</b>
Black Sea	1497.2	16.3	232.0	14.9	0.3	0.4	<b>1761</b>
Med	35349.2	153.6	1655.2	971.8	17.9	17.5	<b>38165</b>
Baltic	4656.1	36.7	425.4	64.3	1.2	1.2	<b>5185</b>
NE Atlantic	19594.8	51.7	641.3	78.0	0.6	0.5	<b>20367</b>
<b>TOTAL</b>	<b>75008</b>	<b>429</b>	<b>4808</b>	<b>1319</b>	<b>24</b>	<b>24</b>	<b>81610</b>

**Table B.5 Year 2000 CO Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags CO	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	2681.0	37.8	347.4	175.4	3.0	3.1	<b>3248</b>
Black Sea	394.7	4.5	64.5	6.5	0.1	0.1	<b>470</b>
Med	6829.0	41.7	465.6	1582.7	20.9	16.6	<b>8956</b>
Baltic	1613.4	13.8	146.4	35.3	0.5	0.7	<b>1810</b>
NE Atlantic	2399.8	7.6	102.0	68.4	0.2	0.2	<b>2578</b>
<b>TOTAL</b>	<b>13918</b>	<b>105</b>	<b>1126</b>	<b>1868</b>	<b>25</b>	<b>21</b>	<b>17063</b>

**Table B.6 Year 2000 CO Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags CO	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	3338.5	41.0	444.9	45.5	0.9	1.0	<b>3872</b>
Black Sea	359.3	3.9	55.7	3.6	0.1	0.1	<b>423</b>
Med	8483.8	36.9	397.2	233.2	4.3	4.2	<b>9160</b>
Baltic	1117.5	8.8	102.1	15.4	0.3	0.3	<b>1244</b>
NE Atlantic	4702.8	12.4	153.9	18.7	0.1	0.1	<b>4888</b>
<b>TOTAL</b>	<b>18002</b>	<b>103</b>	<b>1154</b>	<b>316</b>	<b>6</b>	<b>6</b>	<b>19586</b>

**Table B.7 Year 2000 HC Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags HC	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	9.1	0.2	1.4	0.4	0.0	0.0	11
Black Sea	1.3	0.0	0.3	0.0	0.0	0.0	2
Med	23.2	0.3	2.0	4.0	0.1	0.0	30
Baltic	5.4	0.1	0.6	0.1	0.0	0.0	6
NE Atlantic	8.3	0.0	0.4	0.2	0.0	0.0	9
<b>TOTAL</b>	<b>47</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>58</b>

**Table B.8 Year 2000 HC Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags HC	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	11.4	0.3	1.8	0.1	0.0	0.0	14
Black Sea	1.2	0.0	0.2	0.0	0.0	0.0	1
Med	29.0	0.2	1.4	0.6	0.0	0.0	31
Baltic	3.8	0.1	0.4	0.0	0.0	0.0	4
NE Atlantic	16.3	0.1	0.6	0.0	0.0	0.0	17
<b>TOTAL</b>	<b>62</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>67</b>

**Table B.9 Year 2000 NMVOC Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags NMVOC	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	9.0	0.2	1.4	0.4	0.0	0.0	11
Black Sea	1.3	0.0	0.3	0.0	0.0	0.0	2
Med	23.0	0.3	2.0	4.0	0.1	0.0	29
Baltic	5.3	0.1	0.6	0.1	0.0	0.0	6
NE Atlantic	8.3	0.0	0.4	0.2	0.0	0.0	9
<b>TOTAL</b>	<b>47</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>57</b>

**Table B.10 Year 2000 NMVOC Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags NMVOC	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	11.3	0.3	1.7	0.1	0.0	0.0	13
Black Sea	1.2	0.0	0.2	0.0	0.0	0.0	1
Med	28.7	0.2	1.4	0.6	0.0	0.0	31
Baltic	3.8	0.1	0.4	0.0	0.0	0.0	4
NE Atlantic	16.1	0.1	0.6	0.0	0.0	0.0	17
<b>TOTAL</b>	<b>61</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>67</b>

**Table B.11 Year 2000 NO<sub>x</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags NO <sub>x</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	270.7	2.8	25.7	14.1	0.2	0.2	<b>314</b>
Black Sea	39.2	0.3	4.8	0.5	0.0	0.0	<b>45</b>
Med	694.6	3.1	34.0	127.5	1.4	1.3	<b>862</b>
Baltic	160.6	1.0	11.0	2.8	0.0	0.1	<b>176</b>
NE Atlantic	249.9	0.6	7.5	5.5	0.0	0.0	<b>264</b>
<b>TOTAL</b>	<b>1415</b>	<b>8</b>	<b>83</b>	<b>150</b>	<b>2</b>	<b>2</b>	<b>1660</b>

**Table B.12 Year 2000 NO<sub>x</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags NO <sub>x</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	340.1	3.1	32.7	3.7	0.1	0.1	<b>380</b>
Black Sea	36.3	0.3	4.2	0.3	0.0	0.0	<b>41</b>
Med	868.2	2.8	29.2	18.8	0.3	0.3	<b>920</b>
Baltic	113.3	0.7	7.7	1.2	0.0	0.0	<b>123</b>
NE Atlantic	486.7	0.9	11.3	1.5	0.0	0.0	<b>501</b>
<b>TOTAL</b>	<b>1845</b>	<b>8</b>	<b>85</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>1964</b>

**Table B.13 Year 2000 PM Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags PM	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	22.5	0.4	2.4	0.8	0.0	0.0	<b>26</b>
Black Sea	3.5	0.0	0.5	0.0	0.0	0.0	<b>4</b>
Med	60.2	0.4	3.4	7.0	0.2	0.1	<b>71</b>
Baltic	13.0	0.1	1.0	0.2	0.0	0.0	<b>14</b>
NE Atlantic	21.8	0.1	0.7	0.3	0.0	0.0	<b>23</b>
<b>TOTAL</b>	<b>121</b>	<b>1</b>	<b>8</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>139</b>

**Table B.14 Year 2000 PM Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags PM	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	29.1	0.4	3.0	0.2	0.0	0.0	<b>33</b>
Black Sea	3.1	0.0	0.4	0.0	0.0	0.0	<b>3</b>
Med	75.6	0.4	2.6	1.0	0.0	0.0	<b>80</b>
Baltic	9.3	0.1	0.6	0.1	0.0	0.0	<b>10</b>
NE Atlantic	42.6	0.1	1.0	0.1	0.0	0.0	<b>44</b>
<b>TOTAL</b>	<b>160</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>170</b>

**Table B.15 Year 2000 PM<sub>2.5</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags PM <sub>2.5</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	20.3	0.3	2.2	0.7	0.0	0.0	<b>24</b>
Black Sea	3.1	0.0	0.4	0.0	0.0	0.0	<b>4</b>
Med	54.2	0.4	3.1	6.3	0.2	0.1	<b>64</b>
Baltic	11.7	0.1	0.9	0.1	0.0	0.0	<b>13</b>
NE Atlantic	19.6	0.1	0.7	0.3	0.0	0.0	<b>21</b>
<b>TOTAL</b>	<b>109</b>	<b>1</b>	<b>7</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>125</b>

**Table B.16 Year 2000 PM<sub>2.5</sub> Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags PM <sub>2.5</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	26.2	0.4	2.7	0.2	0.0	0.0	<b>29</b>
Black Sea	2.8	0.0	0.3	0.0	0.0	0.0	<b>3</b>
Med	68.0	0.3	2.3	0.9	0.0	0.0	<b>72</b>
Baltic	8.4	0.1	0.6	0.1	0.0	0.0	<b>9</b>
NE Atlantic	38.4	0.1	0.9	0.1	0.0	0.0	<b>39</b>
<b>TOTAL</b>	<b>144</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>153</b>

**Table B.17 Year 2000 PM<sub>Coarse</sub> (PM<sub>2.5</sub> to PM<sub>10</sub> element) Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

EU Flags PM <sub>Coarse</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	1.1	0.0	0.1	0.0	0.0	0.0	1
Black Sea	0.2	0.0	0.0	0.0	0.0	0.0	0
Med	3.0	0.0	0.2	0.3	0.0	0.0	4
Baltic	0.6	0.0	0.0	0.0	0.0	0.0	1
NE Atlantic	1.1	0.0	0.0	0.0	0.0	0.0	1
<b>TOTAL</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>

**Table B.18 Year 2000 PM<sub>Coarse</sub> (PM<sub>2.5</sub> to PM<sub>10</sub> element) Emissions by Flag State, Sea Area and Movement Type (Excluding Smaller Vessels).**

Non-EU Flags PM <sub>Coarse</sub>	Cargo Vessels (kT)			Passenger Vessels (kT)			Total
	Sea	Man	Berth	Sea	Man	Berth	
North Sea	1.5	0.0	0.2	0.0	0.0	0.0	2
Black Sea	0.2	0.0	0.0	0.0	0.0	0.0	0
Med	3.8	0.0	0.1	0.1	0.0	0.0	4
Baltic	0.5	0.0	0.0	0.0	0.0	0.0	1
NE Atlantic	2.1	0.0	0.1	0.0	0.0	0.0	2
<b>TOTAL</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>



## **Appendix C: Emissions of air pollutants from international shipping in 2000 and in 2020 by scenario and sea region**



**Table C 1: Total emissions of air pollutants from international shipping in 2000 and in 2020 in all sea regions [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	85.3	101.7	101.7	48.5	101.7	37.3	37.3	37.3	37.3	34.3
	Cargo	2164.8	3084.1	3084.1	2913.8	3084.1	2729.4	2656.6	721.0	721.0	663.9
	Total	2250.1	3185.8	3185.8	2962.2	3185.8	2766.6	2693.9	758.2	758.2	698.2
NOx	Ferry	123.8	246.4	227.9	192.6	224.0	181.2	181.2	167.9	137.8	27.0
	Cargo	3170.9	4582.0	4401.8	4048.8	4158.9	3330.1	3330.1	3043.9	2594.0	523.2
	Total	3294.7	4828.4	4629.7	4241.4	4382.9	3511.3	3511.3	3211.8	2731.8	550.2
PM2.5	Ferry	9.6	17.0	17.0	16.7	17.0	16.6	16.6	16.6	16.6	16.6
	Cargo	244.5	379.4	379.4	378.4	379.4	377.2	373.9	320.9	320.9	320.9
	Total	254.2	396.4	396.4	395.0	396.4	393.8	390.5	337.5	337.5	337.5

**Table C 2: Emissions of air pollutants from international shipping in 2000 and in 2020 in the Atlantic Ocean [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	4.2	5.0	5.0	2.5	5.0	1.8	1.8	1.8	1.8	1.7
	Cargo	490.2	799.1	799.1	799.1	799.1	799.1	778.1	163.2	163.2	150.3
	Total	494.5	804.1	804.1	801.6	804.1	800.9	779.9	165.1	165.1	152.0
NOx	Ferry	6.1	12.2	11.3	9.6	11.1	9.0	9.0	8.3	6.7	1.3
	Cargo	717.1	1036.1	1004.0	941.0	940.5	753.0	753.0	688.1	573.8	118.3
	Total	723.3	1048.3	1015.3	950.7	951.6	762.0	762.0	696.5	580.6	119.7
PM2.5	Ferry	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Cargo	55.4	90.5	90.5	90.5	90.5	90.5	89.5	72.7	72.7	72.7
	Total	55.8	91.3	91.3	91.3	91.3	91.3	90.3	73.5	73.5	73.5

**Table C 3: Emissions of air pollutants from international shipping in 2000 and in 2020 in the Baltic Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	2.7	3.3	3.3	1.8	3.3	1.2	1.2	1.2	1.2	1.1
	Cargo	184.3	167.4	167.4	106.3	167.4	61.5	61.5	61.5	61.5	56.7
	Total	187.0	170.7	170.7	108.2	170.7	62.7	62.7	62.7	62.7	57.8
NOx	Ferry	4.1	8.1	7.6	6.6	7.3	5.9	5.9	5.5	4.9	0.9
	Cargo	273.8	396.1	374.9	333.7	359.4	287.9	287.9	263.3	239.2	45.2
	Total	277.8	404.1	382.5	340.3	366.8	293.8	293.8	268.8	244.1	46.1
PM2.5	Ferry	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Cargo	20.9	28.1	28.1	27.7	28.1	27.4	27.4	27.4	27.4	27.4
	Total	21.2	28.6	28.6	28.2	28.6	27.9	27.9	27.9	27.9	27.9

**Table C 4: Emissions of air pollutants from international shipping in 2000 and in 2020 in the Black Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	0.5	0.6	0.6	0.4	0.6	0.2	0.2	0.2	0.2	0.2
	Cargo	55.1	89.8	89.8	89.8	89.8	89.8	84.7	18.4	18.4	16.9
	Total	55.6	90.5	90.5	90.2	90.5	90.1	85.0	18.6	18.6	17.1
NOx	Ferry	0.7	1.5	1.4	1.3	1.4	1.1	1.1	1.0	0.8	0.2
	Cargo	80.6	116.5	110.9	100.1	105.8	84.7	84.7	77.4	64.6	13.3
	Total	81.4	118.0	112.4	101.3	107.1	85.8	85.8	78.4	65.4	13.5
PM2.5	Ferry	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Cargo	6.2	10.2	10.2	10.2	10.2	10.2	9.9	8.2	8.2	8.2
	Total	6.3	10.3	10.3	10.3	10.3	10.3	10.0	8.3	8.3	8.3

**Table C 5: Emissions of air pollutants from international shipping in 2000 and in 2020 in the Mediterranean Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	66.4	79.2	79.2	36.9	79.2	29.0	29.0	29.0	29.0	26.7
	Cargo	1003.2	1635.1	1635.1	1635.1	1635.1	1635.1	1588.4	334.0	334.0	307.6
	Total	1069.5	1714.3	1714.3	1672.0	1714.3	1664.1	1617.4	363.0	363.0	334.3
NOx	Ferry	96.3	191.6	176.9	148.9	174.2	140.9	140.9	130.6	105.8	21.0
	Cargo	1467.5	2120.2	2035.9	1870.5	1924.5	1541.0	1541.0	1408.5	1174.5	242.1
	Total	1563.7	2311.8	2212.8	2019.4	2098.7	1681.9	1681.9	1539.1	1280.4	263.1
PM2.5	Ferry	7.5	13.2	13.2	13.0	13.2	12.9	12.9	12.9	12.9	12.9
	Cargo	113.3	185.1	185.1	185.1	185.1	185.1	183.0	148.7	148.7	148.7
	Total	120.8	198.4	198.4	198.1	198.4	198.0	195.9	161.6	161.6	161.6

**Table C 6: Emissions of air pollutants from international shipping in 2000 and in 2020 in the North Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	11.4	13.6	13.6	6.9	13.6	5.0	5.0	5.0	5.0	4.6
	Cargo	432.0	392.7	392.7	283.4	392.7	143.8	143.8	143.8	143.8	132.4
	Total	443.4	406.3	406.3	290.3	406.3	148.8	148.8	148.8	148.8	137.0
NOx	Ferry	16.6	33.0	30.7	26.2	30.0	24.3	24.3	22.5	19.6	3.6
	Cargo	631.9	913.0	876.0	803.5	828.7	663.6	663.6	606.5	541.9	104.3
	Total	648.5	946.0	906.7	829.7	858.7	687.9	687.9	629.0	561.4	107.9
PM2.5	Ferry	1.3	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2
	Cargo	48.8	65.6	65.6	64.9	65.6	64.0	64.0	64.0	64.0	64.0
	Total	50.1	67.9	67.9	67.1	67.9	66.3	66.3	66.3	66.3	66.3

**Table C 7: Emissions of air pollutants from international shipping in the 12-mile zones, all sea regions [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	12.4	14.7	14.7	6.6	14.7	5.4	5.4	5.4	5.4	5.0
	Cargo	203.8	257.9	257.9	230.0	257.9	198.9	126.1	68.0	68.0	62.6
	Total	216.1	272.6	272.6	236.6	272.6	204.3	131.5	73.4	73.4	67.6
NOx	Ferry	18.0	35.8	33.0	27.6	32.6	26.4	26.4	24.4	20.1	3.9
	Cargo	302.3	437.3	418.6	382.1	396.8	317.8	317.8	290.6	254.3	49.9
	Total	320.3	473.1	451.6	409.6	429.4	344.2	344.2	315.0	274.4	53.8
PM2.5	Ferry	1.4	2.5	2.5	2.4	2.5	2.4	2.4	2.4	2.4	2.4
	Cargo	23.1	34.3	34.3	34.1	34.3	33.9	30.6	30.3	30.3	30.3
	Total	24.5	36.8	36.8	36.6	36.8	36.4	33.1	32.7	32.7	32.7

**Table C 8: Emissions of air pollutants from international shipping in the 12-mile zones of the Atlantic Ocean [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	0.3	0.4	0.4	0.2	0.4	0.1	0.1	0.1	0.1	0.1
	Cargo	29.1	47.4	47.4	47.4	47.4	47.4	26.5	9.7	9.7	8.9
	Total	29.4	47.8	47.8	47.6	47.8	47.6	26.6	9.8	9.8	9.0
NOx	Ferry	0.4	0.9	0.8	0.7	0.8	0.6	0.6	0.6	0.5	0.1
	Cargo	42.6	61.5	59.4	55.3	55.8	44.7	44.7	40.8	34.1	7.0
	Total	43.0	62.4	60.2	56.0	56.6	45.3	45.3	41.4	34.5	7.1
PM2.5	Ferry	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Cargo	3.3	5.4	5.4	5.4	5.4	5.4	4.4	4.3	4.3	4.3
	Total	3.3	5.4	5.4	5.4	5.4	5.4	4.5	4.4	4.4	4.4

**Table C 9: Emissions of air pollutants from international shipping in the 12-mile zones of the Baltic Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	0.7	0.8	0.8	0.4	0.8	0.3	0.3	0.3	0.3	0.3
	Cargo	39.5	35.8	35.8	23.3	35.8	13.3	13.3	13.3	13.3	12.3
	Total	40.2	36.6	36.6	23.7	36.6	13.6	13.6	13.6	13.6	12.6
NOx	Ferry	1.0	2.1	1.9	1.7	1.9	1.5	1.5	1.4	1.3	0.2
	Cargo	62.1	90.2	85.5	76.5	81.8	65.6	65.6	60.0	56.8	10.2
	Total	63.1	92.2	87.4	78.1	83.6	67.1	67.1	61.4	58.1	10.5
PM2.5	Ferry	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Cargo	4.5	6.1	6.1	6.0	6.1	5.9	5.9	5.9	5.9	5.9
	Total	4.6	6.2	6.2	6.1	6.2	6.1	6.1	6.1	6.1	6.1

**Table C 10: Emissions of air pollutants from international shipping in the 12-mile zones of the Black Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cargo	7.1	11.5	11.5	11.5	11.5	11.5	6.4	2.4	2.4	2.2
	Total	7.1	11.6	11.6	11.6	11.6	11.6	6.5	2.4	2.4	2.2
NOx	Ferry	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	Cargo	10.4	15.0	14.3	12.9	13.6	10.9	10.9	10.0	8.3	1.7
	Total	10.4	15.1	14.4	13.0	13.7	11.0	11.0	10.0	8.4	1.7
PM2.5	Ferry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cargo	0.8	1.3	1.3	1.3	1.3	1.3	1.1	1.1	1.1	1.1
	Total	0.8	1.3	1.3	1.3	1.3	1.3	1.1	1.1	1.1	1.1

**Table C 11: Emissions of air pollutants from international shipping in the 12-mile zones of the Mediterranean Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	9.9	11.8	11.8	5.1	11.8	4.3	4.3	4.3	4.3	4.0
	Cargo	64.8	105.5	105.5	105.5	105.5	105.5	58.9	21.6	21.6	19.9
	Total	74.6	117.3	117.3	110.6	117.3	109.9	63.2	25.9	25.9	23.8
NOx	Ferry	14.3	28.6	26.2	21.7	26.0	21.0	21.0	19.5	15.8	3.1
	Cargo	94.7	136.9	130.9	119.1	124.2	99.5	99.5	90.9	75.8	15.6
	Total	109.1	165.4	157.1	140.8	150.2	120.5	120.5	110.4	91.6	18.8
PM2.5	Ferry	1.1	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9
	Cargo	7.3	12.0	12.0	12.0	12.0	12.0	9.8	9.6	9.6	9.6
	Total	8.4	13.9	13.9	13.9	13.9	13.9	11.8	11.5	11.5	11.5

**Table C 12: Emissions of air pollutants from international shipping in the 12-mile zones of the North Sea [kilotons]**

Pollutant	Vessel type	2000	2020 - ambition level								Max. techn. feasible reduction
			Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	1.5	1.8	1.8	0.9	1.8	0.6	0.6	0.6	0.6	0.6
	Cargo	63.3	57.5	57.5	42.2	57.5	21.1	21.1	21.1	21.1	19.4
	Total	64.8	59.3	59.3	43.1	59.3	21.7	21.7	21.7	21.7	20.0
NOx	Ferry	2.1	4.2	3.9	3.4	3.9	3.1	3.1	2.9	2.5	0.5
	Cargo	92.6	133.7	128.6	118.4	121.4	97.2	97.2	88.8	79.3	15.3
	Total	94.7	138.0	132.5	121.8	125.3	100.3	100.3	91.7	81.8	15.7
PM2.5	Ferry	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Cargo	7.1	9.6	9.6	9.5	9.6	9.4	9.4	9.4	9.4	9.4
	Total	7.3	9.9	9.9	9.8	9.9	9.7	9.7	9.7	9.7	9.7

## **Appendix D: Projections of Emissions by Scenario, Sea Area, Flag, and Vessel Type**



**Table D 1: Emissions of air pollutants by scenario, sea region and year, kilotons. Atlantic Ocean, outside 12 miles zone**

<b>Scenario:</b>	<b>Baseline</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	6.4	7.6	9.1
Ferry - Non EU	NOx	1.1	1.4	1.6	1.9	2.3
Cargo - EU	NOx	225.1	247.0	270.6	296.8	325.2
Cargo - Non EU	NOx	449.5	493.3	540.4	592.7	649.4
Ferry - EU	SO2	3.1	3.8	2.5	3.1	3.7
Ferry - Non EU	SO2	0.8	1.0	0.6	0.8	0.9
Cargo - EU	SO2	153.9	173.6	195.9	221.7	250.8
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	500.8
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	28.4
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	56.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.6
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	3.2
Total	NOx	680.3	747.0	818.9	899.0	986.0
Total	SO2	465.1	525.1	590.4	668.2	756.3
Total	PM2.5	52.5	59.4	67.0	75.9	85.9
Total	PMcoarse	2.9	3.3	3.8	4.2	4.8

<b>Scenario:</b>	<b>Ambition level 1 - EU ships</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	6.4	7.2	8.2
Ferry - Non EU	NOx	1.1	1.4	1.6	1.9	2.3
Cargo - EU	NOx	225.1	247.0	253.5	273.9	295.2
Cargo - Non EU	NOx	449.5	493.3	540.4	592.7	649.4
Ferry - EU	SO2	3.1	3.8	2.5	3.1	3.7
Ferry - Non EU	SO2	0.8	1.0	0.6	0.8	0.9
Cargo - EU	SO2	153.9	173.6	195.9	221.7	250.8
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	500.8
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	28.4
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	56.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.6
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	3.2
Total	NOx	680.3	747.0	801.9	875.7	955.1
Total	SO2	465.1	525.1	590.4	668.2	756.3
Total	PM2.5	52.5	59.4	67.0	75.9	85.9
Total	PMcoarse	2.9	3.3	3.8	4.2	4.8

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	6.4	6.6	6.7
Ferry - Non EU	NOx	1.1	1.4	1.6	1.9	2.3
Cargo - EU	NOx	225.1	247.0	253.5	247.9	236.3
Cargo - Non EU	NOx	449.5	493.3	540.4	592.7	649.4
Ferry - EU	SO2	3.1	3.8	0.9	1.1	1.4
Ferry - Non EU	SO2	0.8	1.0	0.6	0.8	0.9
Cargo - EU	SO2	153.9	173.6	195.9	221.7	250.8
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	500.8
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	28.4
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	56.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.6
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	3.2
Total	NOx	680.3	747.0	801.9	849.1	894.7
Total	SO2	465.1	525.1	588.8	666.2	753.9
Total	PM2.5	52.5	59.4	67.0	75.9	85.9
Total	PMcoarse	2.9	3.3	3.8	4.2	4.8

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	6.4	7.2	8.2
Ferry - Non EU	NOx	1.1	1.4	1.6	1.8	2.1
Cargo - EU	NOx	225.1	247.0	253.5	273.9	295.2
Cargo - Non EU	NOx	449.5	493.3	506.3	546.9	589.5
Ferry - EU	SO2	3.1	3.8	2.5	3.1	3.7
Ferry - Non EU	SO2	0.8	1.0	0.6	0.8	0.9
Cargo - EU	SO2	153.9	173.6	195.9	221.7	250.8
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	500.8
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	28.4
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	56.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.6
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	3.2
Total	NOx	680.3	747.0	767.8	829.9	894.9
Total	SO2	465.1	525.1	590.4	668.2	756.3
Total	PM2.5	52.5	59.4	67.0	75.9	85.9
Total	PMcoarse	2.9	3.3	3.8	4.2	4.8

<b>Scenario:</b>		<b>Ambition level 2 - all ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	6.4	6.6	6.7
Ferry - Non EU	NOx	1.1	1.4	1.6	1.7	1.7
Cargo - EU	NOx	225.1	247.0	253.5	247.9	236.3
Cargo - Non EU	NOx	449.5	493.3	506.3	495.0	472.0
Ferry - EU	SO2	3.1	3.8	0.9	1.1	1.4
Ferry - Non EU	SO2	0.8	1.0	0.2	0.3	0.3
Cargo - EU	SO2	153.9	173.6	195.9	221.7	250.8
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	500.8
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	28.4
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	56.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.6
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	3.2
Total	NOx	680.3	747.0	767.8	751.2	716.7
Total	SO2	465.1	525.1	588.3	665.8	753.4
Total	PM2.5	52.5	59.4	67.0	75.8	85.9
Total	PMcoarse	2.9	3.3	3.8	4.2	4.8

<b>Scenario:</b>		<b>Ambition level 2 all ships plus S measures in 12 mile zone</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	6.4	6.6	6.7
Ferry - Non EU	NOx	1.1	1.4	1.6	1.7	1.7
Cargo - EU	NOx	225.1	247.0	253.5	247.9	236.3
Cargo - Non EU	NOx	449.5	493.3	506.3	495.0	472.0
Ferry - EU	SO2	3.1	3.8	0.9	1.1	1.4
Ferry - Non EU	SO2	0.8	1.0	0.2	0.3	0.3
Cargo - EU	SO2	153.9	173.6	195.9	221.7	250.8
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	500.8
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	28.4
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	56.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.6
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	3.2
Total	NOx	680.3	747.0	767.8	751.2	716.7
Total	SO2	465.1	525.1	588.3	665.8	753.4
Total	PM2.5	52.5	59.4	67.0	75.8	85.9
Total	PMcoarse	2.9	3.3	3.8	4.2	4.8

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	5.4	5.8	6.2
Ferry - Non EU	NOx	1.1	1.4	1.4	1.5	1.5
Cargo - EU	NOx	225.1	247.0	226.7	223.9	216.4
Cargo - Non EU	NOx	449.5	493.3	451.9	446.1	430.9
Ferry - EU	SO2	3.1	3.8	2.5	3.1	1.4
Ferry - Non EU	SO2	0.8	1.0	0.6	0.8	0.3
Cargo - EU	SO2	153.9	173.6	195.9	221.7	51.2
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	102.3
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	22.8
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	45.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.3
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	2.6
Total	NOx	680.3	747.0	685.4	677.2	655.0
Total	SO2	465.1	525.1	590.4	668.2	155.3
Total	PM2.5	52.5	59.4	67.0	75.9	69.1
Total	PMcoarse	2.9	3.3	3.8	4.2	3.9

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	4.5	5.4	5.4	5.3	5.0
Ferry - Non EU	NOx	1.1	1.4	1.4	1.3	1.3
Cargo - EU	NOx	225.1	247.0	226.7	208.0	180.4
Cargo - Non EU	NOx	449.5	493.3	451.9	414.4	359.3
Ferry - EU	SO2	3.1	3.8	2.5	3.1	1.4
Ferry - Non EU	SO2	0.8	1.0	0.6	0.8	0.3
Cargo - EU	SO2	153.9	173.6	195.9	221.7	51.2
Cargo - Non EU	SO2	307.3	346.7	391.3	442.7	102.3
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	22.2	25.1	22.8
Cargo - Non EU	PM2.5	34.7	39.2	44.3	50.1	45.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.2	1.4	1.3
Cargo - Non EU	PMcoarse	1.9	2.2	2.5	2.8	2.6
Total	NOx	680.3	747.0	685.4	629.1	546.0
Total	SO2	465.1	525.1	590.4	668.2	155.3
Total	PM2.5	52.5	59.4	67.0	75.9	69.1
Total	PMcoarse	2.9	3.3	3.8	4.2	3.9

<b>Scenario:</b>		<b>Maximum technically feasible reduction</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	4.5	5.4	0.7	0.8	1.0
Ferry - Non EU	NOx	1.1	1.4	0.2	0.2	0.2
Cargo - EU	NOx	225.1	247.0	29.0	32.8	37.1
Cargo - Non EU	NOx	449.5	493.3	57.9	65.6	74.2
Ferry - EU	SO2	3.1	3.8	0.9	1.0	1.3
Ferry - Non EU	SO2	0.8	1.0	0.2	0.3	0.3
Cargo - EU	SO2	153.9	173.6	36.9	41.7	47.2
Cargo - Non EU	SO2	307.3	346.7	73.6	83.3	94.2
Ferry - EU	PM2.5	0.4	0.4	0.4	0.5	0.6
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.2
Cargo - EU	PM2.5	17.4	19.6	17.8	20.2	22.8
Cargo - Non EU	PM2.5	34.7	39.2	35.6	40.3	45.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.0	1.1	1.3
Cargo - Non EU	PMcoarse	1.9	2.2	2.0	2.3	2.6
Total	NOx	680.3	747.0	87.8	99.4	112.5
Total	SO2	465.1	525.1	111.5	126.3	143.0
Total	PM2.5	52.5	59.4	53.9	61.0	69.1
Total	PMcoarse	2.9	3.3	3.0	3.4	3.9

**Table D 2: Emissions of air pollutants by scenario, sea region and year, kilotons. Atlantic Ocean, inside 12 miles zone**

<b>Scenario:</b>	<b>Baseline</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.5	0.6
Ferry - Non EU	NOx	0.1	0.1	0.2	0.2	0.2
Cargo - EU	NOx	15.8	17.4	19.0	20.9	22.9
Cargo - Non EU	NOx	26.7	29.3	32.1	35.3	38.6
Ferry - EU	SO2	0.2	0.3	0.2	0.2	0.3
Ferry - Non EU	SO2	0.1	0.1	0.1	0.1	0.1
Cargo - EU	SO2	10.8	12.2	13.8	15.6	17.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	29.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	2.0
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	51.8	56.9	62.4
Total	SO2	29.4	33.2	37.3	42.2	47.8
Total	PM2.5	3.3	3.8	4.2	4.8	5.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.3

<b>Scenario:</b>	<b>Ambition level 1 - EU ships</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.5	0.6
Ferry - Non EU	NOx	0.1	0.1	0.2	0.2	0.2
Cargo - EU	NOx	15.8	17.4	17.8	19.3	20.7
Cargo - Non EU	NOx	26.7	29.3	32.1	35.3	38.6
Ferry - EU	SO2	0.2	0.3	0.2	0.2	0.3
Ferry - Non EU	SO2	0.1	0.1	0.1	0.1	0.1
Cargo - EU	SO2	10.8	12.2	13.8	15.6	17.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	29.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	2.0
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	50.6	55.2	60.2
Total	SO2	29.4	33.2	37.3	42.2	47.8
Total	PM2.5	3.3	3.8	4.2	4.8	5.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.3

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.5	0.5
Ferry - Non EU	NOx	0.1	0.1	0.2	0.2	0.2
Cargo - EU	NOx	15.8	17.4	17.8	17.4	16.6
Cargo - Non EU	NOx	26.7	29.3	32.1	35.3	38.6
Ferry - EU	SO2	0.2	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.1	0.1	0.1	0.1	0.1
Cargo - EU	SO2	10.8	12.2	13.8	15.6	17.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	29.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	2.0
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	50.6	53.4	56.0
Total	SO2	29.4	33.2	37.2	42.1	47.6
Total	PM2.5	3.3	3.8	4.2	4.8	5.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.3

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.5	0.6
Ferry - Non EU	NOx	0.1	0.1	0.2	0.2	0.2
Cargo - EU	NOx	15.8	17.4	17.8	19.3	20.7
Cargo - Non EU	NOx	26.7	29.3	30.1	32.5	35.1
Ferry - EU	SO2	0.2	0.3	0.2	0.2	0.3
Ferry - Non EU	SO2	0.1	0.1	0.1	0.1	0.1
Cargo - EU	SO2	10.8	12.2	13.8	15.6	17.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	29.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	2.0
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	48.6	52.5	56.6
Total	SO2	29.4	33.2	37.3	42.2	47.8
Total	PM2.5	3.3	3.8	4.2	4.8	5.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.3

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.5	0.5
Ferry - Non EU	NOx	0.1	0.1	0.2	0.2	0.2
Cargo - EU	NOx	15.8	17.4	17.8	17.4	16.6
Cargo - Non EU	NOx	26.7	29.3	30.1	29.5	28.1
Ferry - EU	SO2	0.2	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.1	0.1	0.0	0.0	0.0
Cargo - EU	SO2	10.8	12.2	13.8	15.6	17.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	29.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	2.0
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	48.6	47.5	45.3
Total	SO2	29.4	33.2	37.1	42.0	47.6
Total	PM2.5	3.3	3.8	4.2	4.8	5.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.3

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.5	0.5
Ferry - Non EU	NOx	0.1	0.1	0.2	0.2	0.2
Cargo - EU	NOx	15.8	17.4	17.8	17.4	16.6
Cargo - Non EU	NOx	26.7	29.3	30.1	29.5	28.1
Ferry - EU	SO2	0.2	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.1	0.1	0.0	0.0	0.0
Cargo - EU	SO2	10.8	12.2	7.7	8.7	9.8
Cargo - Non EU	SO2	18.3	20.6	13.0	14.7	16.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.3	1.5	1.6
Cargo - Non EU	PM2.5	2.1	2.3	2.2	2.5	2.8
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.2
Total	NOx	43.0	47.2	48.6	47.5	45.3
Total	SO2	29.4	33.2	20.8	23.5	26.6
Total	PM2.5	3.3	3.8	3.5	4.0	4.5
Total	PMcoarse	0.2	0.2	0.2	0.2	0.3

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.4	0.4
Ferry - Non EU	NOx	0.1	0.1	0.1	0.2	0.2
Cargo - EU	NOx	15.8	17.4	15.9	15.7	15.2
Cargo - Non EU	NOx	26.7	29.3	26.9	26.5	25.6
Ferry - EU	SO2	0.2	0.3	0.2	0.2	0.1
Ferry - Non EU	SO2	0.1	0.1	0.1	0.1	0.0
Cargo - EU	SO2	10.8	12.2	13.8	15.6	3.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	6.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	1.6
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	43.3	42.8	41.4
Total	SO2	29.4	33.2	37.3	42.2	9.8
Total	PM2.5	3.3	3.8	4.2	4.8	4.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.2

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.4	0.4	0.4
Ferry - Non EU	NOx	0.1	0.1	0.1	0.1	0.1
Cargo - EU	NOx	15.8	17.4	15.9	14.6	12.7
Cargo - Non EU	NOx	26.7	29.3	26.9	24.7	21.4
Ferry - EU	SO2	0.2	0.3	0.2	0.2	0.1
Ferry - Non EU	SO2	0.1	0.1	0.1	0.1	0.0
Cargo - EU	SO2	10.8	12.2	13.8	15.6	3.6
Cargo - Non EU	SO2	18.3	20.6	23.3	26.3	6.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.6	1.8	1.6
Cargo - Non EU	PM2.5	2.1	2.3	2.6	3.0	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Total	NOx	43.0	47.2	43.3	39.8	34.5
Total	SO2	29.4	33.2	37.3	42.2	9.8
Total	PM2.5	3.3	3.8	4.2	4.8	4.4
Total	PMcoarse	0.2	0.2	0.2	0.3	0.2

**Scenario:** **Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.3	0.4	0.0	0.1	0.1
Ferry - Non EU	NOx	0.1	0.1	0.0	0.0	0.0
Cargo - EU	NOx	15.8	17.2	2.0	2.3	2.6
Cargo - Non EU	NOx	26.7	29.1	3.4	3.9	4.4
Ferry - EU	SO2	0.2	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.1	0.1	0.0	0.0	0.0
Cargo - EU	SO2	10.8	12.2	2.6	2.9	3.3
Cargo - Non EU	SO2	18.3	20.6	4.4	5.0	5.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	1.2	1.4	1.3	1.4	1.6
Cargo - Non EU	PM2.5	2.1	2.3	2.1	2.4	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.2
Total	NOx	43.0	46.9	5.6	6.3	7.1
Total	SO2	29.4	33.2	7.1	8.0	9.0
Total	PM2.5	3.3	3.8	3.4	3.9	4.4
Total	PMcoarse	0.2	0.2	0.2	0.2	0.2

**Table D 3: Emissions of air pollutants by scenario, sea region and year, kilotons. Baltic Sea, outside 12 miles zone**

<b>Scenario:</b>	<b>Baseline</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	3.0	3.5	4.2
Ferry - Non EU	NOx	0.9	1.1	1.3	1.6	1.8
Cargo - EU	NOx	123.3	135.3	148.2	162.5	178.1
Cargo - Non EU	NOx	88.5	97.1	106.3	116.6	127.8
Ferry - EU	SO2	1.4	1.7	1.2	1.4	1.7
Ferry - Non EU	SO2	0.6	0.8	0.5	0.6	0.8
Cargo - EU	SO2	84.3	95.1	59.8	67.7	76.6
Cargo - Non EU	SO2	60.5	68.2	42.9	48.6	55.0
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	10.0	11.3	12.8
Cargo - Non EU	PM2.5	6.8	7.7	7.2	8.1	9.2
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.6	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.5	0.5
Total	NOx	214.7	235.9	258.8	284.2	311.9
Total	SO2	146.8	165.8	104.5	118.3	134.0
Total	PM2.5	16.6	18.8	17.5	19.8	22.4
Total	PMcoarse	0.9	1.1	1.0	1.1	1.3

<b>Scenario:</b>	<b>Ambition level 1 - EU ships</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.9	3.3	3.8
Ferry - Non EU	NOx	0.9	1.1	1.3	1.6	1.8
Cargo - EU	NOx	123.3	135.3	138.8	150.0	161.6
Cargo - Non EU	NOx	88.5	97.1	106.3	116.6	127.8
Ferry - EU	SO2	1.4	1.7	1.2	1.4	1.7
Ferry - Non EU	SO2	0.6	0.8	0.5	0.6	0.8
Cargo - EU	SO2	84.3	95.1	59.8	67.7	76.6
Cargo - Non EU	SO2	60.5	68.2	42.9	48.6	55.0
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	10.0	11.3	12.8
Cargo - Non EU	PM2.5	6.8	7.7	7.2	8.1	9.2
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.6	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.5	0.5
Total	NOx	214.7	235.9	249.4	271.5	295.1
Total	SO2	146.8	165.8	104.5	118.3	134.0
Total	PM2.5	16.6	18.8	17.5	19.8	22.4
Total	PMcoarse	0.9	1.1	1.0	1.1	1.3

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.9	3.0	3.1
Ferry - Non EU	NOx	0.9	1.1	1.3	1.6	1.8
Cargo - EU	NOx	123.3	135.3	138.8	135.7	129.4
Cargo - Non EU	NOx	88.5	97.1	106.3	116.6	127.8
Ferry - EU	SO2	1.4	1.7	0.4	0.5	0.6
Ferry - Non EU	SO2	0.6	0.8	0.5	0.6	0.8
Cargo - EU	SO2	84.3	95.1	21.9	24.8	28.1
Cargo - Non EU	SO2	60.5	68.2	42.9	48.6	55.0
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	9.8	11.0	12.5
Cargo - Non EU	PM2.5	6.8	7.7	7.2	8.1	9.2
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.5	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.5	0.5
Total	NOx	214.7	235.9	249.4	257.0	262.2
Total	SO2	146.8	165.8	65.8	74.5	84.4
Total	PM2.5	16.6	18.8	17.2	19.5	22.1
Total	PMcoarse	0.9	1.1	1.0	1.1	1.2

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.9	3.3	3.8
Ferry - Non EU	NOx	0.9	1.1	1.3	1.5	1.7
Cargo - EU	NOx	123.3	135.3	138.8	150.0	161.6
Cargo - Non EU	NOx	88.5	97.1	99.6	107.6	116.0
Ferry - EU	SO2	1.4	1.7	1.2	1.4	1.7
Ferry - Non EU	SO2	0.6	0.8	0.5	0.6	0.8
Cargo - EU	SO2	84.3	95.1	59.8	67.7	76.6
Cargo - Non EU	SO2	60.5	68.2	42.9	48.6	55.0
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	10.0	11.3	12.8
Cargo - Non EU	PM2.5	6.8	7.7	7.2	8.1	9.2
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.6	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.5	0.5
Total	NOx	214.7	235.9	242.7	262.4	283.1
Total	SO2	146.8	165.8	104.5	118.3	134.0
Total	PM2.5	16.6	18.8	17.5	19.8	22.4
Total	PMcoarse	0.9	1.1	1.0	1.1	1.3

<b>Scenario:</b>		<b>Ambition level 2 - all ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.9	3.0	3.1
Ferry - Non EU	NOx	0.9	1.1	1.3	1.3	1.4
Cargo - EU	NOx	123.3	135.3	138.8	135.7	129.4
Cargo - Non EU	NOx	88.5	97.1	99.6	97.4	92.9
Ferry - EU	SO2	1.4	1.7	0.4	0.5	0.6
Ferry - Non EU	SO2	0.6	0.8	0.2	0.2	0.3
Cargo - EU	SO2	84.3	95.1	21.9	24.8	28.1
Cargo - Non EU	SO2	60.5	68.2	15.7	17.8	20.1
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	9.8	11.0	12.5
Cargo - Non EU	PM2.5	6.8	7.7	7.0	7.9	9.0
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.5	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.4	0.5
Total	NOx	214.7	235.9	242.7	237.5	226.7
Total	SO2	146.8	165.8	38.3	43.3	49.1
Total	PM2.5	16.6	18.8	17.0	19.3	21.9
Total	PMcoarse	0.9	1.1	1.0	1.1	1.2

<b>Scenario:</b>		<b>Ambition level 2 all ships plus measures in 12 mile zone</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.9	3.0	3.1
Ferry - Non EU	NOx	0.9	1.1	1.3	1.3	1.4
Cargo - EU	NOx	123.3	135.3	138.8	135.7	129.4
Cargo - Non EU	NOx	88.5	97.1	99.6	97.4	92.9
Ferry - EU	SO2	1.4	1.7	0.4	0.5	0.6
Ferry - Non EU	SO2	0.6	0.8	0.2	0.2	0.3
Cargo - EU	SO2	84.3	95.1	21.9	24.8	28.1
Cargo - Non EU	SO2	60.5	68.2	15.7	17.8	20.1
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	9.8	11.0	12.5
Cargo - Non EU	PM2.5	6.8	7.7	7.0	7.9	9.0
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.5	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.4	0.5
Total	NOx	214.7	235.9	242.7	237.5	226.7
Total	SO2	146.8	165.8	38.3	43.3	49.1
Total	PM2.5	16.6	18.8	17.0	19.3	21.9
Total	PMcoarse	0.9	1.1	1.0	1.1	1.2

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.5	2.7	2.8
Ferry - Non EU	NOx	0.9	1.1	1.1	1.2	1.3
Cargo - EU	NOx	123.3	135.3	124.1	122.6	118.5
Cargo - Non EU	NOx	88.5	97.1	88.9	87.8	84.8
Ferry - EU	SO2	1.4	1.7	0.5	0.5	0.6
Ferry - Non EU	SO2	0.6	0.8	0.2	0.2	0.3
Cargo - EU	SO2	84.3	95.1	24.9	24.8	28.1
Cargo - Non EU	SO2	60.5	68.2	17.9	17.8	20.1
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	9.8	11.0	12.5
Cargo - Non EU	PM2.5	6.8	7.7	7.0	7.9	9.0
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.5	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.4	0.5
Total	NOx	214.7	235.9	216.7	214.2	207.4
Total	SO2	146.8	165.8	43.5	43.3	49.1
Total	PM2.5	16.6	18.8	17.1	19.3	21.9
Total	PMcoarse	0.9	1.1	1.0	1.1	1.2

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	2.5	2.6	2.5
Ferry - Non EU	NOx	0.9	1.1	1.1	1.1	1.1
Cargo - EU	NOx	123.3	136.6	125.1	118.4	107.8
Cargo - Non EU	NOx	88.5	98.0	87.7	82.6	74.7
Ferry - EU	SO2	1.4	1.4	0.5	0.5	0.6
Ferry - Non EU	SO2	0.6	0.6	0.2	0.2	0.3
Cargo - EU	SO2	84.3	74.1	24.9	24.8	28.1
Cargo - Non EU	SO2	60.5	53.2	17.9	17.8	20.1
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	9.8	9.8	11.0	12.5
Cargo - Non EU	PM2.5	6.8	7.0	7.0	7.9	9.0
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.5	0.5	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.4	0.5
Total	NOx	214.7	238.2	216.5	204.7	186.0
Total	SO2	146.8	129.3	43.5	43.3	49.1
Total	PM2.5	16.6	17.1	17.1	19.3	21.9
Total	PMcoarse	0.9	1.0	1.0	1.1	1.2

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	2.1	2.5	0.3	0.4	0.5
Ferry - Non EU	NOx	0.9	1.1	0.1	0.2	0.2
Cargo - EU	NOx	123.3	134.2	15.9	18.0	20.3
Cargo - Non EU	NOx	88.5	96.3	11.4	12.9	14.6
Ferry - EU	SO2	1.4	1.7	0.4	0.5	0.6
Ferry - Non EU	SO2	0.6	0.8	0.2	0.2	0.3
Cargo - EU	SO2	84.3	95.1	20.2	22.8	25.8
Cargo - Non EU	SO2	60.5	68.2	14.5	16.4	18.5
Ferry - EU	PM2.5	0.2	0.2	0.2	0.2	0.3
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PM2.5	9.5	10.8	9.8	11.0	12.5
Cargo - Non EU	PM2.5	6.8	7.7	7.0	7.9	9.0
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.5	0.6	0.5	0.6	0.7
Cargo - Non EU	PMcoarse	0.4	0.4	0.4	0.4	0.5
Total	NOx	214.7	234.2	27.7	31.4	35.6
Total	SO2	146.8	165.8	35.2	39.9	45.2
Total	PM2.5	16.6	18.8	17.0	19.3	21.9
Total	PMcoarse	0.9	1.1	1.0	1.1	1.2

**Table D 4: Emissions of air pollutants by scenario, sea region and year, kilotons.  
Baltic Sea, inside 12 miles zone**

<b>Scenario:</b>	<b>Baseline</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	1.1	1.3	1.5
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.6
Cargo - EU	NOx	34.5	38.0	41.6	45.7	50.2
Cargo - Non EU	NOx	27.5	30.2	33.2	36.4	40.0
Ferry - EU	SO2	0.5	0.6	0.4	0.5	0.6
Ferry - Non EU	SO2	0.2	0.2	0.1	0.2	0.2
Cargo - EU	SO2	22.0	24.8	15.6	17.6	20.0
Cargo - Non EU	SO2	17.5	19.7	12.4	14.0	15.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	3.0	3.4
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.4	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.2
Total	NOx	63.1	69.4	76.3	83.9	92.2
Total	SO2	40.2	45.3	28.5	32.3	36.6
Total	PM2.5	4.6	5.2	4.8	5.5	6.2
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

<b>Scenario:</b>	<b>Ambition level 1 - EU ships</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	1.0	1.2	1.4
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.6
Cargo - EU	NOx	34.5	38.0	39.2	42.3	45.5
Cargo - Non EU	NOx	27.5	30.2	33.2	36.4	40.0
Ferry - EU	SO2	0.5	0.6	0.4	0.5	0.6
Ferry - Non EU	SO2	0.2	0.2	0.1	0.2	0.2
Cargo - EU	SO2	22.0	24.8	15.6	17.6	20.0
Cargo - Non EU	SO2	17.5	19.7	12.4	14.0	15.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	3.0	3.4
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.4	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.2
Total	NOx	63.1	69.4	73.8	80.4	87.4
Total	SO2	40.2	45.3	28.5	32.3	36.6
Total	PM2.5	4.6	5.2	4.8	5.5	6.2
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	1.0	1.1	1.1
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.6
Cargo - EU	NOx	34.5	38.0	39.2	38.3	36.5
Cargo - Non EU	NOx	27.5	30.2	33.2	36.4	40.0
Ferry - EU	SO2	0.5	0.6	0.1	0.2	0.2
Ferry - Non EU	SO2	0.2	0.2	0.1	0.2	0.2
Cargo - EU	SO2	22.0	24.8	5.8	6.6	7.4
Cargo - Non EU	SO2	17.5	19.7	12.4	14.0	15.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	2.9	3.3
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.4	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.2
Total	NOx	63.1	69.4	73.8	76.3	78.1
Total	SO2	40.2	45.3	18.5	20.9	23.7
Total	PM2.5	4.6	5.2	4.8	5.4	6.1
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	1.0	1.2	1.4
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.5
Cargo - EU	NOx	34.5	38.0	39.2	42.3	45.5
Cargo - Non EU	NOx	27.5	30.2	31.2	33.7	36.2
Ferry - EU	SO2	0.5	0.6	0.4	0.5	0.6
Ferry - Non EU	SO2	0.2	0.2	0.1	0.2	0.2
Cargo - EU	SO2	22.0	24.8	15.6	17.6	20.0
Cargo - Non EU	SO2	17.5	19.7	12.4	14.0	15.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	3.0	3.4
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.4	2.7
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.2
Total	NOx	63.1	69.4	71.9	77.6	83.6
Total	SO2	40.2	45.3	28.5	32.3	36.6
Total	PM2.5	4.6	5.2	4.8	5.5	6.2
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	1.0	1.1	1.1
Ferry - Non EU	NOx	0.3	0.3	0.4	0.4	0.4
Cargo - EU	NOx	34.5	38.0	39.2	38.3	36.5
Cargo - Non EU	NOx	27.5	30.2	31.2	30.5	29.1
Ferry - EU	SO2	0.5	0.6	0.1	0.2	0.2
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	22.0	24.8	5.8	6.6	7.4
Cargo - Non EU	SO2	17.5	19.7	4.6	5.2	5.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	2.9	3.3
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.3	2.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Total	NOx	63.1	69.4	71.9	70.3	67.1
Total	SO2	40.2	45.3	10.6	12.0	13.6
Total	PM2.5	4.6	5.2	4.7	5.4	6.1
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	1.0	1.1	1.1
Ferry - Non EU	NOx	0.3	0.3	0.4	0.4	0.4
Cargo - EU	NOx	34.5	38.0	39.2	38.3	36.5
Cargo - Non EU	NOx	27.5	30.2	31.2	30.5	29.1
Ferry - EU	SO2	0.5	0.6	0.1	0.2	0.2
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	22.0	24.8	5.8	6.6	7.4
Cargo - Non EU	SO2	17.5	19.7	4.6	5.2	5.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	2.9	3.3
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.3	2.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Total	NOx	63.1	69.4	71.9	70.3	67.1
Total	SO2	40.2	45.3	10.6	12.0	13.6
Total	PM2.5	4.6	5.2	4.7	5.4	6.1
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	0.9	1.0	1.0
Ferry - Non EU	NOx	0.3	0.3	0.3	0.4	0.4
Cargo - EU	NOx	34.5	38.0	34.8	34.5	33.5
Cargo - Non EU	NOx	27.5	30.2	27.6	27.3	26.5
Ferry - EU	SO2	0.5	0.6	0.2	0.2	0.2
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	22.0	24.8	6.6	6.6	7.4
Cargo - Non EU	SO2	17.5	19.7	5.2	5.2	5.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	2.9	3.3
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.3	2.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Total	NOx	63.1	69.4	63.7	63.2	61.4
Total	SO2	40.2	45.3	12.0	12.0	13.6
Total	PM2.5	4.6	5.2	4.7	5.4	6.1
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	0.9	0.9	0.9
Ferry - Non EU	NOx	0.3	0.3	0.4	0.4	0.4
Cargo - EU	NOx	34.5	38.3	35.7	34.4	32.0
Cargo - Non EU	NOx	27.5	30.5	27.8	26.7	24.7
Ferry - EU	SO2	0.5	0.5	0.2	0.2	0.2
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	22.0	19.3	6.6	6.6	7.4
Cargo - Non EU	SO2	17.5	15.4	5.2	5.2	5.9
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.6	2.6	2.9	3.3
Cargo - Non EU	PM2.5	2.0	2.1	2.1	2.3	2.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.1	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Total	NOx	63.1	70.0	64.8	62.3	58.1
Total	SO2	40.2	35.4	12.0	12.0	13.6
Total	PM2.5	4.6	4.7	4.7	5.4	6.1
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.7	0.9	0.1	0.1	0.2
Ferry - Non EU	NOx	0.3	0.3	0.0	0.1	0.1
Cargo - EU	NOx	34.5	37.7	4.5	5.0	5.7
Cargo - Non EU	NOx	27.5	30.0	3.5	4.0	4.5
Ferry - EU	SO2	0.5	0.6	0.1	0.2	0.2
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	22.0	24.8	5.3	6.0	6.8
Cargo - Non EU	SO2	17.5	19.7	4.3	4.8	5.4
Ferry - EU	PM2.5	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.5	2.8	2.6	2.9	3.3
Cargo - Non EU	PM2.5	2.0	2.3	2.1	2.3	2.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.1	0.2	0.1	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Total	NOx	63.1	68.9	8.2	9.2	10.5
Total	SO2	40.2	45.3	9.8	11.1	12.6
Total	PM2.5	4.6	5.2	4.7	5.4	6.1
Total	PMcoarse	0.3	0.3	0.3	0.3	0.3

**Table D 5: Emissions of air pollutants by scenario, sea region and year, kilotons.  
Black Sea, outside 12 miles zone**

<b>Scenario:</b>	<b>Baseline</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.6	0.7	0.8
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.6
Cargo - EU	NOx	36.4	39.9	43.7	47.9	52.5
Cargo - Non EU	NOx	33.9	37.2	40.8	44.7	49.0
Ferry - EU	SO2	0.3	0.3	0.2	0.3	0.3
Ferry - Non EU	SO2	0.2	0.2	0.2	0.2	0.2
Cargo - EU	SO2	24.8	28.0	31.6	35.8	40.5
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	37.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	4.6
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	4.3
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	85.5	93.8	102.9
Total	SO2	48.5	54.8	61.6	69.7	78.9
Total	PM2.5	5.5	6.2	7.0	7.9	9.0
Total	PMcoarse	0.3	0.3	0.4	0.4	0.5

<b>Scenario:</b>	<b>Ambition level 1 - EU ships</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.6	0.7	0.7
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.6
Cargo - EU	NOx	36.4	39.9	41.0	44.2	47.7
Cargo - Non EU	NOx	33.9	37.2	40.8	44.7	49.0
Ferry - EU	SO2	0.3	0.3	0.2	0.3	0.3
Ferry - Non EU	SO2	0.2	0.2	0.2	0.2	0.2
Cargo - EU	SO2	24.8	28.0	31.6	35.8	40.5
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	37.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	4.6
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	4.3
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	82.7	90.1	98.0
Total	SO2	48.5	54.8	61.6	69.7	78.9
Total	PM2.5	5.5	6.2	7.0	7.9	9.0
Total	PMcoarse	0.3	0.3	0.4	0.4	0.5

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.6	0.6	0.6
Ferry - Non EU	NOx	0.3	0.3	0.4	0.5	0.6
Cargo - EU	NOx	36.4	39.9	41.0	40.0	38.2
Cargo - Non EU	NOx	33.9	37.2	40.8	44.7	49.0
Ferry - EU	SO2	0.3	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.2	0.2	0.2	0.2	0.2
Cargo - EU	SO2	24.8	28.0	31.6	35.8	40.5
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	37.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	4.6
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	4.3
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	82.7	85.8	88.3
Total	SO2	48.5	54.8	61.4	69.5	78.6
Total	PM2.5	5.5	6.2	7.0	7.9	9.0
Total	PMcoarse	0.3	0.3	0.4	0.4	0.5

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.6	0.7	0.7
Ferry - Non EU	NOx	0.3	0.3	0.4	0.4	0.5
Cargo - EU	NOx	36.4	39.9	41.0	44.2	47.7
Cargo - Non EU	NOx	33.9	37.2	38.2	41.3	44.5
Ferry - EU	SO2	0.3	0.3	0.2	0.3	0.3
Ferry - Non EU	SO2	0.2	0.2	0.2	0.2	0.2
Cargo - EU	SO2	24.8	28.0	31.6	35.8	40.5
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	37.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	4.6
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	4.3
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	80.1	86.6	93.4
Total	SO2	48.5	54.8	61.6	69.7	78.9
Total	PM2.5	5.5	6.2	7.0	7.9	9.0
Total	PMcoarse	0.3	0.3	0.4	0.4	0.5

<b>Scenario:</b>		<b>Ambition level 2 - all ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.4	0.5	0.6	0.6	0.6
Ferry - Non EU	NOx	0.3	0.3	0.4	0.4	0.4
Cargo - EU	NOx	36.4	39.9	41.0	40.0	38.2
Cargo - Non EU	NOx	33.9	37.2	38.2	37.4	35.6
Ferry - EU	SO2	0.3	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	24.8	28.0	31.6	35.8	40.5
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	37.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	4.6
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	4.3
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	80.1	78.4	74.8
Total	SO2	48.5	54.8	61.3	69.4	78.5
Total	PM2.5	5.5	6.2	7.0	7.9	9.0
Total	PMcoarse	0.3	0.3	0.4	0.4	0.5

<b>Scenario:</b>		<b>Ambition level 2 all ships plus measures in 12 mile zone</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.4	0.5	0.6	0.6	0.6
Ferry - Non EU	NOx	0.3	0.3	0.4	0.4	0.4
Cargo - EU	NOx	36.4	39.9	41.0	40.0	38.2
Cargo - Non EU	NOx	33.9	37.2	38.2	37.4	35.6
Ferry - EU	SO2	0.3	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	24.8	28.0	31.6	35.8	40.5
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	37.8
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	4.6
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	4.3
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	80.1	78.4	74.8
Total	SO2	48.5	54.8	61.3	69.4	78.5
Total	PM2.5	5.5	6.2	7.0	7.9	9.0
Total	PMcoarse	0.3	0.3	0.4	0.4	0.5

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.5	0.5	0.6
Ferry - Non EU	NOx	0.3	0.3	0.3	0.4	0.4
Cargo - EU	NOx	36.4	39.9	36.6	36.2	34.9
Cargo - Non EU	NOx	33.9	37.2	34.1	33.7	32.5
Ferry - EU	SO2	0.3	0.3	0.2	0.3	0.1
Ferry - Non EU	SO2	0.2	0.2	0.2	0.2	0.1
Cargo - EU	SO2	24.8	28.0	31.6	35.8	8.3
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	7.7
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	3.7
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	71.5	70.7	68.4
Total	SO2	48.5	54.8	61.6	69.7	16.2
Total	PM2.5	5.5	6.2	7.0	7.9	7.2
Total	PMcoarse	0.3	0.3	0.4	0.4	0.4

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.5	0.5	0.5
Ferry - Non EU	NOx	0.3	0.3	0.3	0.3	0.3
Cargo - EU	NOx	36.4	39.9	36.6	33.6	29.1
Cargo - Non EU	NOx	33.9	37.2	34.1	31.3	27.1
Ferry - EU	SO2	0.3	0.3	0.2	0.3	0.1
Ferry - Non EU	SO2	0.2	0.2	0.2	0.2	0.1
Cargo - EU	SO2	24.8	28.0	31.6	35.8	8.3
Cargo - Non EU	SO2	23.2	26.2	29.5	33.4	7.7
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	3.6	4.1	3.7
Cargo - Non EU	PM2.5	2.6	3.0	3.3	3.8	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.9	71.5	65.7	57.0
Total	SO2	48.5	54.8	61.6	69.7	16.2
Total	PM2.5	5.5	6.2	7.0	7.9	7.2
Total	PMcoarse	0.3	0.3	0.4	0.4	0.4

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.4	0.5	0.1	0.1	0.1
Ferry - Non EU	NOx	0.3	0.3	0.0	0.1	0.1
Cargo - EU	NOx	36.4	39.6	4.7	5.3	6.0
Cargo - Non EU	NOx	33.9	36.9	4.4	4.9	5.6
Ferry - EU	SO2	0.3	0.3	0.1	0.1	0.1
Ferry - Non EU	SO2	0.2	0.2	0.1	0.1	0.1
Cargo - EU	SO2	24.8	28.0	6.0	6.7	7.6
Cargo - Non EU	SO2	23.2	26.2	5.6	6.3	7.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.1
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	2.8	3.2	2.9	3.3	3.7
Cargo - Non EU	PM2.5	2.6	3.0	2.7	3.0	3.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.1	0.2	0.2	0.2	0.2
Total	NOx	71.0	77.4	9.2	10.4	11.7
Total	SO2	48.5	54.8	11.6	13.2	14.9
Total	PM2.5	5.5	6.2	5.6	6.4	7.2
Total	PMcoarse	0.3	0.3	0.3	0.4	0.4

**Table D 6: Emissions of air pollutants by scenario, sea region and year, kilotons.  
Black Sea, inside 12 miles zone**

<b>Scenario:</b>	<b>Baseline</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.1	0.1	0.1
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	6.4	7.0	7.7
Cargo - Non EU	NOx	5.0	5.5	6.1	6.6	7.3
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	5.9
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	5.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.7
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	12.5	13.8	15.1
Total	SO2	7.1	8.0	9.1	10.2	11.6
Total	PM2.5	0.8	0.9	1.0	1.2	1.3
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

<b>Scenario:</b>	<b>Ambition level 1 - EU ships</b>					
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.1	0.1	0.1
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	6.0	6.5	7.0
Cargo - Non EU	NOx	5.0	5.5	6.1	6.6	7.3
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	5.9
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	5.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.7
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	12.1	13.2	14.4
Total	SO2	7.1	8.0	9.1	10.2	11.6
Total	PM2.5	0.8	0.9	1.0	1.2	1.3
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.1	0.1	0.1
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	6.0	5.9	5.6
Cargo - Non EU	NOx	5.0	5.5	6.1	6.6	7.3
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	5.9
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	5.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.7
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	12.1	12.6	13.0
Total	SO2	7.1	8.0	9.0	10.2	11.6
Total	PM2.5	0.8	0.9	1.0	1.2	1.3
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.1	0.1	0.1
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	6.0	6.5	7.0
Cargo - Non EU	NOx	5.0	5.5	5.7	6.1	6.6
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	5.9
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	5.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.7
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	11.8	12.7	13.7
Total	SO2	7.1	8.0	9.1	10.2	11.6
Total	PM2.5	0.8	0.9	1.0	1.2	1.3
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.1	0.1	0.1
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	6.0	5.9	5.6
Cargo - Non EU	NOx	5.0	5.5	5.7	5.6	5.3
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	5.9
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	5.6
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.7
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	11.8	11.5	11.0
Total	SO2	7.1	8.0	9.0	10.2	11.6
Total	PM2.5	0.8	0.9	1.0	1.2	1.3
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.1	0.1	0.1
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	6.0	5.9	5.6
Cargo - Non EU	NOx	5.0	5.5	5.7	5.6	5.3
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	2.6	2.9	3.3
Cargo - Non EU	SO2	3.4	3.9	2.4	2.8	3.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.4	0.5	0.6
Cargo - Non EU	PM2.5	0.4	0.4	0.4	0.5	0.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	11.8	11.5	11.0
Total	SO2	7.1	8.0	5.0	5.7	6.5
Total	PM2.5	0.8	0.9	0.8	1.0	1.1
Total	PMcoarse	0.0	0.1	0.0	0.1	0.1

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	5.4	5.3	5.1
Cargo - Non EU	NOx	5.0	5.5	5.1	5.0	4.8
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	1.2
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	1.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.5
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	10.5	10.4	10.0
Total	SO2	7.1	8.0	9.1	10.2	2.4
Total	PM2.5	0.8	0.9	1.0	1.2	1.1
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	5.4	4.9	4.3
Cargo - Non EU	NOx	5.0	5.5	5.1	4.6	4.0
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	4.6	5.2	1.2
Cargo - Non EU	SO2	3.4	3.9	4.4	5.0	1.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.5	0.6	0.5
Cargo - Non EU	PM2.5	0.4	0.4	0.5	0.6	0.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	10.5	9.6	8.4
Total	SO2	7.1	8.0	9.1	10.2	2.4
Total	PM2.5	0.8	0.9	1.0	1.2	1.1
Total	PMcoarse	0.0	0.1	0.1	0.1	0.1

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	NOx	0.0	0.0	0.0	0.0	0.0
Cargo - EU	NOx	5.3	5.8	0.7	0.8	0.9
Cargo - Non EU	NOx	5.0	5.5	0.6	0.7	0.8
Ferry - EU	SO2	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	SO2	0.0	0.0	0.0	0.0	0.0
Cargo - EU	SO2	3.6	4.1	0.9	1.0	1.1
Cargo - Non EU	SO2	3.4	3.9	0.8	0.9	1.1
Ferry - EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PM2.5	0.4	0.5	0.4	0.5	0.5
Cargo - Non EU	PM2.5	0.4	0.4	0.4	0.5	0.5
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Total	NOx	10.4	11.4	1.3	1.5	1.7
Total	SO2	7.1	8.0	1.7	1.9	2.2
Total	PM2.5	0.8	0.9	0.8	0.9	1.1
Total	PMcoarse	0.0	0.1	0.0	0.1	0.1

**Table D 7: Emissions of air pollutants by scenario, sea region and year, kilotons.  
Mediterranean Sea, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	96.2	114.3	135.8
Ferry - Non EU	NOx	13.7	16.3	19.3	22.9	27.2
Cargo - EU	NOx	587.4	644.6	706.2	774.6	848.8
Cargo - Non EU	NOx	785.3	861.7	944.0	1035.5	1134.6
Ferry - EU	SO2	47.1	56.8	38.3	46.3	56.1
Ferry - Non EU	SO2	9.4	11.4	7.7	9.3	11.3
Cargo - EU	SO2	401.6	453.1	511.3	578.5	654.6
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	875.0
Ferry - EU	PM2.5	5.3	6.4	6.4	7.7	9.4
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.6	1.9
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	74.1
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	99.1
Ferry - EU	PMcoarse	0.3	0.4	0.4	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	4.2
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	5.5
Total	NOx	1454.6	1603.7	1765.7	1947.3	2146.4
Total	SO2	994.9	1127.1	1240.8	1407.5	1596.9
Total	PM2.5	112.4	127.5	143.0	162.4	184.4
Total	PMcoarse	6.3	7.1	8.0	9.1	10.3

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	95.4	108.7	123.5
Ferry - Non EU	NOx	13.7	16.3	19.3	22.9	27.2
Cargo - EU	NOx	587.4	644.6	661.7	714.8	770.4
Cargo - Non EU	NOx	785.3	861.7	944.0	1035.5	1134.6
Ferry - EU	SO2	47.1	56.8	38.3	46.3	56.1
Ferry - Non EU	SO2	9.4	11.4	7.7	9.3	11.3
Cargo - EU	SO2	401.6	453.1	511.3	578.5	654.6
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	875.0
Ferry - EU	PM2.5	5.3	6.4	6.4	7.7	9.4
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.6	1.9
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	74.1
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	99.1
Ferry - EU	PMcoarse	0.3	0.4	0.4	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	4.2
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	5.5
Total	NOx	1454.6	1603.7	1720.4	1881.9	2055.7
Total	SO2	994.9	1127.1	1240.8	1407.5	1596.9
Total	PM2.5	112.4	127.5	143.0	162.4	184.4
Total	PMcoarse	6.3	7.1	8.0	9.1	10.3

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	95.4	99.0	99.9
Ferry - Non EU	NOx	13.7	16.3	19.3	22.9	27.2
Cargo - EU	NOx	587.4	644.6	661.7	646.9	616.9
Cargo - Non EU	NOx	785.3	861.7	944.0	1035.5	1134.6
Ferry - EU	SO2	47.1	56.8	14.0	17.0	20.6
Ferry - Non EU	SO2	9.4	11.4	7.7	9.3	11.3
Cargo - EU	SO2	401.6	453.1	511.3	578.5	654.6
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	875.0
Ferry - EU	PM2.5	5.3	6.4	6.2	7.6	9.1
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.6	1.9
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	74.1
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	99.1
Ferry - EU	PMcoarse	0.3	0.4	0.3	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	4.2
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	5.5
Total	NOx	1454.6	1603.7	1720.4	1804.3	1878.6
Total	SO2	994.9	1127.1	1216.6	1378.2	1561.4
Total	PM2.5	112.4	127.5	142.8	162.2	184.2
Total	PMcoarse	6.3	7.1	8.0	9.1	10.3

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	95.4	108.7	123.5
Ferry - Non EU	NOx	13.7	16.3	19.1	21.8	24.8
Cargo - EU	NOx	587.4	644.6	661.7	714.8	770.4
Cargo - Non EU	NOx	785.3	861.7	884.6	955.5	1029.9
Ferry - EU	SO2	47.1	56.8	38.3	46.3	56.1
Ferry - Non EU	SO2	9.4	11.4	7.7	9.3	11.3
Cargo - EU	SO2	401.6	453.1	511.3	578.5	654.6
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	875.0
Ferry - EU	PM2.5	5.3	6.4	6.4	7.7	9.4
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.6	1.9
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	74.1
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	99.1
Ferry - EU	PMcoarse	0.3	0.4	0.4	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	4.2
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	5.5
Total	NOx	1454.6	1603.7	1660.8	1800.9	1948.5
Total	SO2	994.9	1127.1	1240.8	1407.5	1596.9
Total	PM2.5	112.4	127.5	143.0	162.4	184.4
Total	PMcoarse	6.3	7.1	8.0	9.1	10.3

<b>Scenario:</b>		<b>Ambition level 2 - all ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	95.4	99.0	99.9
Ferry - Non EU	NOx	13.7	16.3	19.1	19.9	20.0
Cargo - EU	NOx	587.4	644.6	661.7	646.9	616.9
Cargo - Non EU	NOx	785.3	861.7	884.6	864.8	824.6
Ferry - EU	SO2	47.1	56.8	14.0	17.0	20.6
Ferry - Non EU	SO2	9.4	11.4	2.8	3.4	4.1
Cargo - EU	SO2	401.6	453.1	511.3	578.5	654.6
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	875.0
Ferry - EU	PM2.5	5.3	6.4	6.2	7.6	9.1
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.5	1.8
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	74.1
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	99.1
Ferry - EU	PMcoarse	0.3	0.4	0.3	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	4.2
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	5.5
Total	NOx	1454.6	1603.7	1660.8	1630.6	1561.4
Total	SO2	994.9	1127.1	1211.7	1372.3	1554.2
Total	PM2.5	112.4	127.5	142.8	162.1	184.2
Total	PMcoarse	6.3	7.1	8.0	9.1	10.3

<b>Scenario:</b>		<b>Ambition level 2 all ships plus S measures in 12 mile zone</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	95.4	99.0	99.9
Ferry - Non EU	NOx	13.7	16.3	19.1	19.9	20.0
Cargo - EU	NOx	587.4	644.6	661.7	646.9	616.9
Cargo - Non EU	NOx	785.3	861.7	884.6	864.8	824.6
Ferry - EU	SO2	47.1	56.8	14.0	17.0	20.6
Ferry - Non EU	SO2	9.4	11.4	2.8	3.4	4.1
Cargo - EU	SO2	401.6	453.1	511.3	578.5	654.6
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	875.0
Ferry - EU	PM2.5	5.3	6.4	6.2	7.6	9.1
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.5	1.8
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	74.1
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	99.1
Ferry - EU	PMcoarse	0.3	0.4	0.3	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	4.2
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	5.5
Total	NOx	1454.6	1603.7	1660.8	1630.6	1561.4
Total	SO2	994.9	1127.1	1211.7	1372.3	1554.2
Total	PM2.5	112.4	127.5	142.8	162.1	184.2
Total	PMcoarse	6.3	7.1	8.0	9.1	10.3

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	81.0	87.3	92.5
Ferry - Non EU	NOx	13.7	16.3	16.3	17.5	18.6
Cargo - EU	NOx	587.4	644.6	591.7	584.3	564.7
Cargo - Non EU	NOx	785.3	861.7	789.5	779.3	752.8
Ferry - EU	SO2	47.1	56.8	38.3	46.3	20.6
Ferry - Non EU	SO2	9.4	11.4	7.7	9.3	4.1
Cargo - EU	SO2	401.6	453.1	511.3	578.5	133.7
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	178.7
Ferry - EU	PM2.5	5.3	6.4	6.4	7.7	9.1
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.6	1.8
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	59.5
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	79.6
Ferry - EU	PMcoarse	0.3	0.4	0.4	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	3.3
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	4.5
Total	NOx	1454.6	1603.7	1478.5	1468.4	1428.7
Total	SO2	994.9	1127.1	1240.8	1407.5	337.1
Total	PM2.5	112.4	127.5	143.0	162.4	150.1
Total	PMcoarse	6.3	7.1	8.0	9.1	8.4

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	81.0	80.0	75.0
Ferry - Non EU	NOx	13.7	16.3	16.3	16.1	15.1
Cargo - EU	NOx	587.4	644.6	591.7	542.8	471.0
Cargo - Non EU	NOx	785.3	861.7	789.5	724.1	627.7
Ferry - EU	SO2	47.1	56.8	38.3	46.3	20.6
Ferry - Non EU	SO2	9.4	11.4	7.7	9.3	4.1
Cargo - EU	SO2	401.6	453.1	511.3	578.5	133.7
Cargo - Non EU	SO2	536.8	605.8	683.6	773.4	178.7
Ferry - EU	PM2.5	5.3	6.4	6.4	7.7	9.1
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.6	1.8
Cargo - EU	PM2.5	45.4	51.2	57.9	65.5	59.5
Cargo - Non EU	PM2.5	60.6	68.5	77.4	87.6	79.6
Ferry - EU	PMcoarse	0.3	0.4	0.4	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	3.2	3.7	3.3
Cargo - Non EU	PMcoarse	3.4	3.8	4.3	4.9	4.5
Total	NOx	1454.6	1603.7	1478.5	1363.0	1188.8
Total	SO2	994.9	1127.1	1240.8	1407.5	337.1
Total	PM2.5	112.4	127.5	143.0	162.4	150.1
Total	PMcoarse	6.3	7.1	8.0	9.1	8.4

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	68.2	81.0	10.2	12.3	14.9
Ferry - Non EU	NOx	13.7	16.3	2.0	2.5	3.0
Cargo - EU	NOx	587.4	639.8	75.7	85.7	96.9
Cargo - Non EU	NOx	785.3	855.3	101.2	114.5	129.6
Ferry - EU	SO2	47.1	56.8	12.9	15.6	18.9
Ferry - Non EU	SO2	9.4	11.4	2.6	3.1	3.8
Cargo - EU	SO2	401.6	453.1	96.2	108.8	123.1
Cargo - Non EU	SO2	536.8	605.8	128.6	145.5	164.6
Ferry - EU	PM2.5	5.3	6.4	6.2	7.6	9.1
Ferry - Non EU	PM2.5	1.1	1.3	1.3	1.5	1.8
Cargo - EU	PM2.5	45.4	51.2	46.5	52.6	59.5
Cargo - Non EU	PM2.5	60.6	68.5	62.2	70.3	79.6
Ferry - EU	PMcoarse	0.3	0.4	0.3	0.4	0.5
Ferry - Non EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Cargo - EU	PMcoarse	2.5	2.9	2.6	2.9	3.3
Cargo - Non EU	PMcoarse	3.4	3.8	3.5	3.9	4.5
Total	NOx	1454.6	1592.4	189.1	215.0	244.4
Total	SO2	994.9	1127.1	240.2	273.0	310.4
Total	PM2.5	112.4	127.5	116.2	132.0	150.1
Total	PMcoarse	6.3	7.1	6.5	7.4	8.4

**Table D 8: Emissions of air pollutants by scenario, sea region and year, kilotons.  
Mediterranean Sea, inside 12 miles zone**

<b>Scenario: Baseline</b>						
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	18.2	21.6	25.7
Ferry - Non EU	NOx	1.4	1.7	2.0	2.4	2.8
Cargo - EU	NOx	45.1	49.5	54.2	59.5	65.2
Cargo - Non EU	NOx	49.6	54.4	59.6	65.4	71.7
Ferry - EU	SO2	8.9	10.8	7.2	8.8	10.6
Ferry - Non EU	SO2	1.0	1.2	0.8	1.0	1.2
Cargo - EU	SO2	30.8	34.8	39.3	44.4	50.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	55.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.5	1.8
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	5.7
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	6.3
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.4
Total	NOx	109.1	121.0	134.1	148.9	165.4
Total	SO2	74.6	85.0	90.5	103.0	117.3
Total	PM2.5	8.4	9.6	10.7	12.2	13.9
Total	PMcoarse	0.5	0.5	0.6	0.7	0.8

<b>Scenario: Ambition level 1 - EU ships</b>						
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	18.1	20.6	23.4
Ferry - Non EU	NOx	1.4	1.7	2.0	2.4	2.8
Cargo - EU	NOx	45.1	49.5	50.8	54.9	59.2
Cargo - Non EU	NOx	49.6	54.4	59.6	65.4	71.7
Ferry - EU	SO2	8.9	10.8	7.2	8.8	10.6
Ferry - Non EU	SO2	1.0	1.2	0.8	1.0	1.2
Cargo - EU	SO2	30.8	34.8	39.3	44.4	50.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	55.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.5	1.8
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	5.7
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	6.3
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.4
Total	NOx	109.1	121.0	130.5	143.3	157.1
Total	SO2	74.6	85.0	90.5	103.0	117.3
Total	PM2.5	8.4	9.6	10.7	12.2	13.9
Total	PMcoarse	0.5	0.5	0.6	0.7	0.8

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	18.1	18.7	18.9
Ferry - Non EU	NOx	1.4	1.7	2.0	2.4	2.8
Cargo - EU	NOx	45.1	49.5	50.8	49.7	47.4
Cargo - Non EU	NOx	49.6	54.4	59.6	65.4	71.7
Ferry - EU	SO2	8.9	10.8	2.7	3.2	3.9
Ferry - Non EU	SO2	1.0	1.2	0.8	1.0	1.2
Cargo - EU	SO2	30.8	34.8	39.3	44.4	50.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	55.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.4	1.7
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	5.7
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	6.3
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.4
Total	NOx	109.1	121.0	130.5	136.2	140.8
Total	SO2	74.6	85.0	85.9	97.5	110.6
Total	PM2.5	8.4	9.6	10.7	12.2	13.9
Total	PMcoarse	0.5	0.5	0.6	0.7	0.8

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	18.1	20.6	23.4
Ferry - Non EU	NOx	1.4	1.7	2.0	2.3	2.6
Cargo - EU	NOx	45.1	49.5	50.8	54.9	59.2
Cargo - Non EU	NOx	49.6	54.4	55.9	60.4	65.1
Ferry - EU	SO2	8.9	10.8	7.2	8.8	10.6
Ferry - Non EU	SO2	1.0	1.2	0.8	1.0	1.2
Cargo - EU	SO2	30.8	34.8	39.3	44.4	50.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	55.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.5	1.8
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	5.7
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	6.3
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.4
Total	NOx	109.1	121.0	126.8	138.1	150.2
Total	SO2	74.6	85.0	90.5	103.0	117.3
Total	PM2.5	8.4	9.6	10.7	12.2	13.9
Total	PMcoarse	0.5	0.5	0.6	0.7	0.8

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	18.1	18.7	18.9
Ferry - Non EU	NOx	1.4	1.7	2.0	2.1	2.1
Cargo - EU	NOx	45.1	49.5	50.8	49.7	47.4
Cargo - Non EU	NOx	49.6	54.4	55.9	54.6	52.1
Ferry - EU	SO2	8.9	10.8	2.7	3.2	3.9
Ferry - Non EU	SO2	1.0	1.2	0.3	0.4	0.4
Cargo - EU	SO2	30.8	34.8	39.3	44.4	50.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	55.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.4	1.7
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	5.7
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	6.3
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.4
Total	NOx	109.1	121.0	126.8	125.1	120.5
Total	SO2	74.6	85.0	85.4	96.9	109.9
Total	PM2.5	8.4	9.6	10.6	12.2	13.9
Total	PMcoarse	0.5	0.5	0.6	0.7	0.8

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	18.1	18.7	18.9
Ferry - Non EU	NOx	1.4	1.7	2.0	2.1	2.1
Cargo - EU	NOx	45.1	49.5	50.8	49.7	47.4
Cargo - Non EU	NOx	49.6	54.4	55.9	54.6	52.1
Ferry - EU	SO2	8.9	10.8	2.7	3.2	3.9
Ferry - Non EU	SO2	1.0	1.2	0.3	0.4	0.4
Cargo - EU	SO2	30.8	34.8	21.9	24.8	28.0
Cargo - Non EU	SO2	33.9	38.3	24.1	27.2	30.8
Ferry - EU	PM2.5	1.0	1.2	1.2	1.4	1.7
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	3.7	4.1	4.7
Cargo - Non EU	PM2.5	3.8	4.3	4.0	4.6	5.1
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Total	NOx	109.1	121.0	126.8	125.1	120.5
Total	SO2	74.6	85.0	48.9	55.6	63.2
Total	PM2.5	8.4	9.6	9.0	10.3	11.8
Total	PMcoarse	0.5	0.5	0.5	0.6	0.7

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	15.3	16.5	17.5
Ferry - Non EU	NOx	1.4	1.7	1.7	1.8	1.9
Cargo - EU	NOx	45.1	49.5	45.4	44.9	43.4
Cargo - Non EU	NOx	49.6	54.4	49.9	49.2	47.6
Ferry - EU	SO2	8.9	10.8	7.2	8.8	3.9
Ferry - Non EU	SO2	1.0	1.2	0.8	1.0	0.4
Cargo - EU	SO2	30.8	34.8	39.3	44.4	10.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	11.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.5	1.7
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	4.6
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	5.0
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.3
Total	NOx	109.1	121.0	112.4	112.5	110.4
Total	SO2	74.6	85.0	90.5	103.0	25.9
Total	PM2.5	8.4	9.6	10.7	12.2	11.5
Total	PMcoarse	0.5	0.5	0.6	0.7	0.6

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	15.3	15.2	14.2
Ferry - Non EU	NOx	1.4	1.7	1.7	1.7	1.6
Cargo - EU	NOx	45.1	49.5	45.4	41.7	36.2
Cargo - Non EU	NOx	49.6	54.4	49.9	45.7	39.7
Ferry - EU	SO2	8.9	10.8	7.2	8.8	3.9
Ferry - Non EU	SO2	1.0	1.2	0.8	1.0	0.4
Cargo - EU	SO2	30.8	34.8	39.3	44.4	10.3
Cargo - Non EU	SO2	33.9	38.3	43.2	48.9	11.3
Ferry - EU	PM2.5	1.0	1.2	1.2	1.5	1.7
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	4.4	5.0	4.6
Cargo - Non EU	PM2.5	3.8	4.3	4.9	5.5	5.0
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.3	0.3	0.3
Total	NOx	109.1	121.0	112.4	104.3	91.6
Total	SO2	74.6	85.0	90.5	103.0	25.9
Total	PM2.5	8.4	9.6	10.7	12.2	11.5
Total	PMcoarse	0.5	0.5	0.6	0.7	0.6

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**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	12.9	15.3	1.9	2.3	2.8
Ferry - Non EU	NOx	1.4	1.7	0.2	0.3	0.3
Cargo - EU	NOx	45.1	49.1	5.8	6.6	7.4
Cargo - Non EU	NOx	49.6	54.0	6.4	7.2	8.2
Ferry - EU	SO2	8.9	10.8	2.4	3.0	3.6
Ferry - Non EU	SO2	1.0	1.2	0.3	0.3	0.4
Cargo - EU	SO2	30.8	34.8	7.4	8.4	9.5
Cargo - Non EU	SO2	33.9	38.3	8.1	9.2	10.4
Ferry - EU	PM2.5	1.0	1.2	1.2	1.4	1.7
Ferry - Non EU	PM2.5	0.1	0.1	0.1	0.2	0.2
Cargo - EU	PM2.5	3.5	3.9	3.6	4.0	4.6
Cargo - Non EU	PM2.5	3.8	4.3	3.9	4.4	5.0
Ferry - EU	PMcoarse	0.1	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Cargo - Non EU	PMcoarse	0.2	0.2	0.2	0.2	0.3
Total	NOx	109.1	120.2	14.3	16.4	18.8
Total	SO2	74.6	85.0	18.2	20.8	23.8
Total	PM2.5	8.4	9.6	8.8	10.1	11.5
Total	PMcoarse	0.5	0.5	0.5	0.6	0.6

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**Table D 9: Emissions of air pollutants by scenario, sea region and year, kilotons.**  
**North Sea, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	15.9	18.9	22.4
Ferry - Non EU	NOx	3.2	3.8	4.5	5.4	6.4
Cargo - EU	NOx	238.6	261.8	286.8	314.6	344.7
Cargo - Non EU	NOx	300.7	330.0	361.5	396.6	434.5
Ferry - EU	SO2	7.8	9.4	6.3	7.6	9.3
Ferry - Non EU	SO2	2.2	2.7	1.8	2.2	2.6
Cargo - EU	SO2	163.1	184.1	115.8	131.0	148.3
Cargo - Non EU	SO2	205.6	232.0	146.0	165.2	186.9
Ferry - EU	PM2.5	0.9	1.1	1.1	1.3	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	19.3	21.9	24.8
Cargo - Non EU	PM2.5	23.2	26.2	24.4	27.6	31.2
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.4	1.5	1.7
Total	NOx	553.8	609.0	668.7	735.4	808.0
Total	SO2	378.7	428.1	269.9	306.0	347.0
Total	PM2.5	42.8	48.4	45.1	51.1	58.0
Total	PMcoarse	2.4	2.7	2.5	2.9	3.2

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	15.7	17.9	20.4
Ferry - Non EU	NOx	3.2	3.8	4.5	5.4	6.4
Cargo - EU	NOx	238.6	261.8	268.8	290.3	312.9
Cargo - Non EU	NOx	300.7	330.0	361.5	396.6	434.5
Ferry - EU	SO2	7.8	9.4	6.3	7.6	9.3
Ferry - Non EU	SO2	2.2	2.7	1.8	2.2	2.6
Cargo - EU	SO2	163.1	184.1	115.8	131.0	148.3
Cargo - Non EU	SO2	205.6	232.0	146.0	165.2	186.9
Ferry - EU	PM2.5	0.9	1.1	1.1	1.3	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	19.3	21.9	24.8
Cargo - Non EU	PM2.5	23.2	26.2	24.4	27.6	31.2
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.4	1.5	1.7
Total	NOx	553.8	609.0	650.6	710.2	774.2
Total	SO2	378.7	428.1	269.9	306.0	347.0
Total	PM2.5	42.8	48.4	45.1	51.1	58.0
Total	PMcoarse	2.4	2.7	2.5	2.9	3.2

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	15.7	16.3	16.5
Ferry - Non EU	NOx	3.2	3.8	4.5	5.4	6.4
Cargo - EU	NOx	238.6	261.8	268.8	262.8	250.6
Cargo - Non EU	NOx	300.7	330.0	361.5	396.6	434.5
Ferry - EU	SO2	7.8	9.4	2.3	2.8	3.4
Ferry - Non EU	SO2	2.2	2.7	1.8	2.2	2.6
Cargo - EU	SO2	163.1	184.1	42.4	48.0	54.3
Cargo - Non EU	SO2	205.6	232.0	146.0	165.2	186.9
Ferry - EU	PM2.5	0.9	1.1	1.0	1.2	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	18.9	21.4	24.2
Cargo - Non EU	PM2.5	23.2	26.2	24.4	27.6	31.2
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.4	1.5	1.7
Total	NOx	553.8	609.0	650.6	681.0	707.9
Total	SO2	378.7	428.1	192.5	218.2	247.2
Total	PM2.5	42.8	48.4	44.6	50.6	57.3
Total	PMcoarse	2.4	2.7	2.5	2.8	3.2

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	15.7	17.9	20.4
Ferry - Non EU	NOx	3.2	3.8	4.5	5.1	5.8
Cargo - EU	NOx	238.6	261.8	268.8	290.3	312.9
Cargo - Non EU	NOx	300.7	330.0	338.8	366.0	394.4
Ferry - EU	SO2	7.8	9.4	6.3	7.6	9.3
Ferry - Non EU	SO2	2.2	2.7	1.8	2.2	2.6
Cargo - EU	SO2	163.1	184.1	115.8	131.0	148.3
Cargo - Non EU	SO2	205.6	232.0	146.0	165.2	186.9
Ferry - EU	PM2.5	0.9	1.1	1.1	1.3	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	19.3	21.9	24.8
Cargo - Non EU	PM2.5	23.2	26.2	24.4	27.6	31.2
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.4	1.5	1.7
Total	NOx	553.8	609.0	627.8	679.3	733.5
Total	SO2	378.7	428.1	269.9	306.0	347.0
Total	PM2.5	42.8	48.4	45.1	51.1	58.0
Total	PMcoarse	2.4	2.7	2.5	2.9	3.2

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	15.7	16.3	16.5
Ferry - Non EU	NOx	3.2	3.8	4.5	4.6	4.7
Cargo - EU	NOx	238.6	261.8	268.8	262.8	250.6
Cargo - Non EU	NOx	300.7	330.0	338.8	331.2	315.8
Ferry - EU	SO2	7.8	9.4	2.3	2.8	3.4
Ferry - Non EU	SO2	2.2	2.7	0.7	0.8	1.0
Cargo - EU	SO2	163.1	184.1	42.4	48.0	54.3
Cargo - Non EU	SO2	205.6	232.0	53.5	60.5	68.5
Ferry - EU	PM2.5	0.9	1.1	1.0	1.2	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	18.9	21.4	24.2
Cargo - Non EU	PM2.5	23.2	26.2	23.8	26.9	30.5
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.3	1.5	1.7
Total	NOx	553.8	609.0	627.8	615.0	587.5
Total	SO2	378.7	428.1	98.9	112.1	127.1
Total	PM2.5	42.8	48.4	44.0	49.9	56.6
Total	PMcoarse	2.4	2.7	2.5	2.8	3.2

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	15.7	16.3	16.5
Ferry - Non EU	NOx	3.2	3.8	4.5	4.6	4.7
Cargo - EU	NOx	238.6	261.8	268.8	262.8	250.6
Cargo - Non EU	NOx	300.7	330.0	338.8	331.2	315.8
Ferry - EU	SO2	7.8	9.4	2.3	2.8	3.4
Ferry - Non EU	SO2	2.2	2.7	0.7	0.8	1.0
Cargo - EU	SO2	163.1	184.1	42.4	48.0	54.3
Cargo - Non EU	SO2	205.6	232.0	53.5	60.5	68.5
Ferry - EU	PM2.5	0.9	1.1	1.0	1.2	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	18.9	21.4	24.2
Cargo - Non EU	PM2.5	23.2	26.2	23.8	26.9	30.5
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.3	1.5	1.7
Total	NOx	553.8	609.0	627.8	615.0	587.5
Total	SO2	378.7	428.1	98.9	112.1	127.1
Total	PM2.5	42.8	48.4	44.0	49.9	56.6
Total	PMcoarse	2.4	2.7	2.5	2.8	3.2

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	13.4	14.4	15.3
Ferry - Non EU	NOx	3.2	3.8	3.8	4.1	4.3
Cargo - EU	NOx	238.6	261.8	240.3	237.3	229.4
Cargo - Non EU	NOx	300.7	330.0	302.4	298.5	288.3
Ferry - EU	SO2	7.8	9.4	2.6	2.8	3.4
Ferry - Non EU	SO2	2.2	2.7	0.7	0.8	1.0
Cargo - EU	SO2	163.1	184.1	48.3	48.0	54.3
Cargo - Non EU	SO2	205.6	232.0	60.9	60.5	68.5
Ferry - EU	PM2.5	0.9	1.1	1.0	1.2	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	18.9	21.4	24.2
Cargo - Non EU	PM2.5	23.2	26.2	23.9	26.9	30.5
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.3	1.5	1.7
Total	NOx	553.8	609.0	559.9	554.3	537.3
Total	SO2	378.7	428.1	112.5	112.1	127.1
Total	PM2.5	42.8	48.4	44.1	49.9	56.6
Total	PMcoarse	2.4	2.7	2.5	2.8	3.2

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	13.7	13.8	13.3
Ferry - Non EU	NOx	3.2	3.8	3.9	3.9	3.8
Cargo - EU	NOx	238.6	264.3	242.2	229.2	208.6
Cargo - Non EU	NOx	300.7	333.2	298.3	280.9	253.9
Ferry - EU	SO2	7.8	7.3	2.6	2.8	3.4
Ferry - Non EU	SO2	2.2	2.1	0.7	0.8	1.0
Cargo - EU	SO2	163.1	143.5	48.3	48.0	54.3
Cargo - Non EU	SO2	205.6	180.8	60.9	60.5	68.5
Ferry - EU	PM2.5	0.9	1.0	1.0	1.2	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	19.0	18.9	21.4	24.2
Cargo - Non EU	PM2.5	23.2	23.9	23.9	26.9	30.5
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.1	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.3	1.3	1.5	1.7
Total	NOx	553.8	614.7	558.0	527.8	479.6
Total	SO2	378.7	333.7	112.5	112.1	127.1
Total	PM2.5	42.8	44.1	44.1	49.9	56.6
Total	PMcoarse	2.4	2.5	2.5	2.8	3.2

<b>Scenario:</b>		<b>Maximum technically feasible reduction</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	11.3	13.4	1.7	2.0	2.5
Ferry - Non EU	NOx	3.2	3.8	0.5	0.6	0.7
Cargo - EU	NOx	238.6	259.9	30.8	34.8	39.4
Cargo - Non EU	NOx	300.7	327.6	38.8	43.9	49.6
Ferry - EU	SO2	7.8	9.4	2.1	2.6	3.1
Ferry - Non EU	SO2	2.2	2.7	0.6	0.7	0.9
Cargo - EU	SO2	163.1	184.1	39.1	44.2	50.0
Cargo - Non EU	SO2	205.6	232.0	49.2	55.7	63.0
Ferry - EU	PM2.5	0.9	1.1	1.0	1.2	1.5
Ferry - Non EU	PM2.5	0.2	0.3	0.3	0.4	0.4
Cargo - EU	PM2.5	18.4	20.8	18.9	21.4	24.2
Cargo - Non EU	PM2.5	23.2	26.2	23.8	26.9	30.5
Ferry - EU	PMcoarse	0.0	0.1	0.1	0.1	0.1
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	1.0	1.2	1.1	1.2	1.4
Cargo - Non EU	PMcoarse	1.3	1.5	1.3	1.5	1.7
Total	NOx	553.8	604.6	71.7	81.3	92.1
Total	SO2	378.7	428.1	91.0	103.2	117.0
Total	PM2.5	42.8	48.4	44.0	49.9	56.6
Total	PMcoarse	2.4	2.7	2.5	2.8	3.2

**Table D 10: Emissions of air pollutants by scenario, sea region and year, kilotons.**  
**North Sea, inside 12 miles zone**

<b>Scenario: Baseline</b>						
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.4	2.8	3.3
Ferry - Non EU	NOx	0.5	0.5	0.6	0.8	0.9
Cargo - EU	NOx	38.9	42.6	46.7	51.2	56.2
Cargo - Non EU	NOx	53.7	58.9	64.6	70.8	77.6
Ferry - EU	SO2	1.2	1.4	0.9	1.1	1.4
Ferry - Non EU	SO2	0.3	0.4	0.3	0.3	0.4
Cargo - EU	SO2	26.6	30.0	18.9	21.3	24.1
Cargo - Non EU	SO2	36.7	41.4	26.1	29.5	33.4
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.2	3.6	4.0
Cargo - Non EU	PM2.5	4.1	4.7	4.4	4.9	5.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	114.3	125.6	138.0
Total	SO2	64.8	73.2	46.1	52.3	59.3
Total	PM2.5	7.3	8.3	7.7	8.7	9.9
Total	PMcoarse	0.4	0.5	0.4	0.5	0.6

<b>Scenario: Ambition level 1 - EU ships</b>						
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.3	2.7	3.0
Ferry - Non EU	NOx	0.5	0.5	0.6	0.8	0.9
Cargo - EU	NOx	38.9	42.6	43.8	47.3	51.0
Cargo - Non EU	NOx	53.7	58.9	64.6	70.8	77.6
Ferry - EU	SO2	1.2	1.4	0.9	1.1	1.4
Ferry - Non EU	SO2	0.3	0.4	0.3	0.3	0.4
Cargo - EU	SO2	26.6	30.0	18.9	21.3	24.1
Cargo - Non EU	SO2	36.7	41.4	26.1	29.5	33.4
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.2	3.6	4.0
Cargo - Non EU	PM2.5	4.1	4.7	4.4	4.9	5.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	111.3	121.5	132.5
Total	SO2	64.8	73.2	46.1	52.3	59.3
Total	PM2.5	7.3	8.3	7.7	8.7	9.9
Total	PMcoarse	0.4	0.5	0.4	0.5	0.6

**Scenario: Ambition level 2 - EU ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.3	2.4	2.4
Ferry - Non EU	NOx	0.5	0.5	0.6	0.8	0.9
Cargo - EU	NOx	38.9	42.6	43.8	42.8	40.8
Cargo - Non EU	NOx	53.7	58.9	64.6	70.8	77.6
Ferry - EU	SO2	1.2	1.4	0.3	0.4	0.5
Ferry - Non EU	SO2	0.3	0.4	0.3	0.3	0.4
Cargo - EU	SO2	26.6	30.0	6.9	7.8	8.8
Cargo - Non EU	SO2	36.7	41.4	26.1	29.5	33.4
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.1	3.5	3.9
Cargo - Non EU	PM2.5	4.1	4.7	4.4	4.9	5.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	111.3	116.8	121.8
Total	SO2	64.8	73.2	33.6	38.0	43.1
Total	PM2.5	7.3	8.3	7.6	8.6	9.8
Total	PMcoarse	0.4	0.5	0.4	0.5	0.5

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.3	2.7	3.0
Ferry - Non EU	NOx	0.5	0.5	0.6	0.7	0.8
Cargo - EU	NOx	38.9	42.6	43.8	47.3	51.0
Cargo - Non EU	NOx	53.7	58.9	60.5	65.3	70.4
Ferry - EU	SO2	1.2	1.4	0.9	1.1	1.4
Ferry - Non EU	SO2	0.3	0.4	0.3	0.3	0.4
Cargo - EU	SO2	26.6	30.0	18.9	21.3	24.1
Cargo - Non EU	SO2	36.7	41.4	26.1	29.5	33.4
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.2	3.6	4.0
Cargo - Non EU	PM2.5	4.1	4.7	4.4	4.9	5.6
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	107.3	116.0	125.3
Total	SO2	64.8	73.2	46.1	52.3	59.3
Total	PM2.5	7.3	8.3	7.7	8.7	9.9
Total	PMcoarse	0.4	0.5	0.4	0.5	0.6

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.3	2.4	2.4
Ferry - Non EU	NOx	0.5	0.5	0.6	0.7	0.7
Cargo - EU	NOx	38.9	42.6	43.8	42.8	40.8
Cargo - Non EU	NOx	53.7	58.9	60.5	59.1	56.4
Ferry - EU	SO2	1.2	1.4	0.3	0.4	0.5
Ferry - Non EU	SO2	0.3	0.4	0.1	0.1	0.1
Cargo - EU	SO2	26.6	30.0	6.9	7.8	8.8
Cargo - Non EU	SO2	36.7	41.4	9.5	10.8	12.2
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.1	3.5	3.9
Cargo - Non EU	PM2.5	4.1	4.7	4.3	4.8	5.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	107.3	105.0	100.3
Total	SO2	64.8	73.2	16.9	19.2	21.7
Total	PM2.5	7.3	8.3	7.5	8.5	9.7
Total	PMcoarse	0.4	0.5	0.4	0.5	0.5

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.3	2.4	2.4
Ferry - Non EU	NOx	0.5	0.5	0.6	0.7	0.7
Cargo - EU	NOx	38.9	42.6	43.8	42.8	40.8
Cargo - Non EU	NOx	53.7	58.9	60.5	59.1	56.4
Ferry - EU	SO2	1.2	1.4	0.3	0.4	0.5
Ferry - Non EU	SO2	0.3	0.4	0.1	0.1	0.1
Cargo - EU	SO2	26.6	30.0	6.9	7.8	8.8
Cargo - Non EU	SO2	36.7	41.4	9.5	10.8	12.2
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.1	3.5	3.9
Cargo - Non EU	PM2.5	4.1	4.7	4.3	4.8	5.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	107.3	105.0	100.3
Total	SO2	64.8	73.2	16.9	19.2	21.7
Total	PM2.5	7.3	8.3	7.5	8.5	9.7
Total	PMcoarse	0.4	0.5	0.4	0.5	0.5

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.0	2.1	2.3
Ferry - Non EU	NOx	0.5	0.5	0.5	0.6	0.6
Cargo - EU	NOx	38.9	42.6	39.1	38.7	37.4
Cargo - Non EU	NOx	53.7	58.9	54.0	53.3	51.5
Ferry - EU	SO2	1.2	1.4	0.4	0.4	0.5
Ferry - Non EU	SO2	0.3	0.4	0.1	0.1	0.1
Cargo - EU	SO2	26.6	30.0	7.9	7.8	8.8
Cargo - Non EU	SO2	36.7	41.4	10.9	10.8	12.2
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.1	3.5	3.9
Cargo - Non EU	PM2.5	4.1	4.7	4.3	4.8	5.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	104.1	95.7	94.7	91.7
Total	SO2	64.8	73.2	19.2	19.2	21.7
Total	PM2.5	7.3	8.3	7.5	8.5	9.7
Total	PMcoarse	0.4	0.5	0.4	0.5	0.5

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	2.0	2.0	2.0
Ferry - Non EU	NOx	0.5	0.5	0.6	0.6	0.5
Cargo - EU	NOx	38.9	43.1	39.5	37.3	34.0
Cargo - Non EU	NOx	53.7	59.5	53.3	50.2	45.3
Ferry - EU	SO2	1.2	1.1	0.4	0.4	0.5
Ferry - Non EU	SO2	0.3	0.3	0.1	0.1	0.1
Cargo - EU	SO2	26.6	23.4	7.9	7.8	8.8
Cargo - Non EU	SO2	36.7	32.3	10.9	10.8	12.2
Ferry - EU	PM2.5	0.1	0.1	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.1	3.1	3.5	3.9
Cargo - Non EU	PM2.5	4.1	4.3	4.3	4.8	5.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.2	0.2	0.3	0.3
Total	NOx	94.7	105.1	95.3	90.1	81.8
Total	SO2	64.8	57.0	19.2	19.2	21.7
Total	PM2.5	7.3	7.5	7.5	8.5	9.7
Total	PMcoarse	0.4	0.4	0.4	0.5	0.5

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**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	1.7	2.0	0.2	0.3	0.4
Ferry - Non EU	NOx	0.5	0.5	0.1	0.1	0.1
Cargo - EU	NOx	38.9	42.3	5.0	5.7	6.4
Cargo - Non EU	NOx	53.7	58.5	6.9	7.8	8.9
Ferry - EU	SO2	1.2	1.4	0.3	0.4	0.5
Ferry - Non EU	SO2	0.3	0.4	0.1	0.1	0.1
Cargo - EU	SO2	26.6	30.0	6.4	7.2	8.1
Cargo - Non EU	SO2	36.7	41.4	8.8	9.9	11.3
Ferry - EU	PM2.5	0.1	0.2	0.2	0.2	0.2
Ferry - Non EU	PM2.5	0.0	0.0	0.0	0.1	0.1
Cargo - EU	PM2.5	3.0	3.4	3.1	3.5	3.9
Cargo - Non EU	PM2.5	4.1	4.7	4.3	4.8	5.4
Ferry - EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Ferry - Non EU	PMcoarse	0.0	0.0	0.0	0.0	0.0
Cargo - EU	PMcoarse	0.2	0.2	0.2	0.2	0.2
Cargo - Non EU	PMcoarse	0.2	0.3	0.2	0.3	0.3
Total	NOx	94.7	103.4	12.2	13.9	15.7
Total	SO2	64.8	73.2	15.6	17.6	20.0
Total	PM2.5	7.3	8.3	7.5	8.5	9.7
Total	PMcoarse	0.4	0.5	0.4	0.5	0.5

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## **Appendix E: Emission control costs for international shipping in 2000 and 2020 by scenario and sea region**



**Table E.1: Emission control costs in 2020, all sea regions, million €/year**

Pollutant	Vessel type	2020 - ambition level								Max. techn. feasible reduction
		Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	63	63	106	63	116	116	116	116	133
	Cargo	306	306	481	306	671	728	2238	2238	2567
	Total	369	369	587	369	787	844	2354	2354	2699
NOx	Ferry	1	3	16	3	19	19	24	62	142
	Cargo	25	36	169	50	362	362	485	1156	2676
	Total	27	38	185	53	381	381	509	1218	2819
Total	Ferry	64	65	122	66	135	135	139	177	275
	Cargo	331	342	650	356	1034	1091	2724	3395	5243
	Total	395	407	772	421	1168	1225	2863	3572	5518

**Table E 2: Emission control costs in 2020, Atlantic Ocean, million €/year**

Pollutant	Vessel type	2020 - ambition level								Max. techn. feasible reduction
		Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	3	3	5	3	6	6	6	6	7
	Cargo	11	11	11	11	11	27	507	507	581
	Total	14	14	16	14	16	33	512	512	588
NOx	Ferry	0	0	1	0	1	1	1	3	7
	Cargo	6	8	32	12	82	82	110	283	646
	Total	6	8	32	12	83	83	111	286	654
Total	Ferry	3	3	6	3	7	7	7	9	14
	Cargo	17	19	42	22	93	109	617	789	1227
	Total	20	22	48	26	100	116	624	798	1241

**Table E 3: Emission control costs in 2020, Baltic Sea, million €/year**

Pollutant	Vessel type	2020 - ambition level								Max. techn. feasible reduction
		Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO <sub>2</sub>	Ferry	2	2	3	2	4	4	4	4	4
	Cargo	82	82	145	82	191	191	191	191	219
	Total	84	84	148	84	195	195	195	195	223
NO <sub>x</sub>	Ferry	0	0	0	0	1	1	1	2	4
	Cargo	2	3	19	4	31	31	42	79	192
	Total	2	3	19	4	32	32	43	80	196
Total	Ferry	2	2	4	2	4	4	5	5	8
	Cargo	84	85	164	86	222	222	233	270	411
	Total	86	87	167	88	227	227	237	275	419

**Table E 4: Emission control costs in 2020, Black Sea, million €/year**

Pollutant	Vessel type	2020 - ambition level								Max. techn. feasible reduction
		Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO <sub>2</sub>	Ferry	0	0	1	0	1	1	1	1	1
	Cargo	1	1	1	1	1	5	57	57	65
	Total	2	2	2	2	2	6	58	58	66
NO <sub>x</sub>	Ferry	0	0	0	0	0	0	0	0	1
	Cargo	1	1	5	1	9	9	12	32	73
	Total	1	1	5	1	9	9	13	32	74
Total	Ferry	0	0	1	0	1	1	1	1	2
	Cargo	2	2	6	3	10	14	69	89	138
	Total	2	3	7	3	11	15	70	90	140

**Table E 5: Emission control costs in 2020, Mediterranean Sea, million €/year**

Pollutant	Vessel type	2020 - ambition level								Max. techn. feasible reduction
		Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	51	51	84	51	90	90	90	90	103
	Cargo	22	22	22	22	22	58	1037	1037	1189
	Total	73	73	106	73	112	148	1127	1127	1292
NOx	Ferry	1	2	13	2	15	15	18	50	115
	Cargo	12	17	80	24	168	168	225	578	1322
	Total	14	19	92	26	183	183	243	628	1437
Total	Ferry	52	53	97	53	105	105	108	140	218
	Cargo	34	39	101	45	190	227	1262	1615	2511
	Total	86	92	198	99	295	331	1370	1755	2729

**Table E.6: Emission control costs in 2020, North Sea, million €/year**

Pollutant	Vessel type	2020 - ambition level								Max. techn. feasible reduction
		Baseline	Level 1 EU ships	Level 2 EU ships	Level 1 all ships	Level 2 all ships	Level 2 all + S meas. in 12 miles zone	Level 3 all ships	Level 4 all ships	
SO2	Ferry	7	7	14	7	16	16	16	16	18
	Cargo	190	190	303	190	447	447	447	447	512
	Total	197	197	316	197	462	462	462	462	530
NOx	Ferry	0	0	2	0	2	2	3	6	15
	Cargo	4	6	34	9	71	71	96	185	443
	Total	4	7	36	10	74	74	99	192	458
Total	Ferry	7	7	16	7	18	18	19	22	33
	Cargo	194	197	337	199	518	518	542	632	955
	Total	201	204	352	206	536	536	561	654	988



## **Appendix F: Emission Control Costs by Scenario, Sea Area, Flag, and Vessel Type**



**Table F 1: Emissions control costs by scenario, sea area and year, Million Euro/a.****Atlantic Ocean, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.04	0.05	0.06
Ferry - Non EU	NOx	0.01	0.01	0.01	0.01	0.01
Cargo - EU	NOx	0.01	0.35	0.78	1.28	1.91
Cargo - Non EU	NOx	0.03	0.70	1.56	2.56	3.81
Ferry - EU	SO2	0.00	0.03	1.64	1.99	2.41
Ferry - Non EU	SO2	0.00	0.01	0.41	0.50	0.61
Cargo - EU	SO2	0.00	1.15	2.60	2.94	3.33
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	6.64
Total	NOx	0.07	1.10	2.39	3.91	5.78
Total	SO2	0.00	3.47	9.85	11.30	12.99

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.04	0.07	0.10
Ferry - Non EU	NOx	0.01	0.01	0.01	0.01	0.01
Cargo - EU	NOx	0.01	0.35	0.94	2.15	3.65
Cargo - Non EU	NOx	0.03	0.70	1.56	2.56	3.81
Ferry - EU	SO2	0.00	0.03	1.64	1.99	2.41
Ferry - Non EU	SO2	0.00	0.01	0.41	0.50	0.61
Cargo - EU	SO2	0.00	1.15	2.60	2.94	3.33
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	6.64
Total	NOx	0.07	1.10	2.55	4.79	7.58
Total	SO2	0.00	3.47	9.85	11.30	12.99

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.04	0.31	0.70
Ferry - Non EU	NOx	0.01	0.01	0.01	0.01	0.01
Cargo - EU	NOx	0.01	0.35	0.94	11.94	25.81
Cargo - Non EU	NOx	0.03	0.70	1.56	2.56	3.81
Ferry - EU	SO2	0.00	0.03	2.90	3.51	4.25
Ferry - Non EU	SO2	0.00	0.01	0.41	0.50	0.61
Cargo - EU	SO2	0.00	1.15	2.60	2.94	3.33
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	6.64
Total	NOx	0.07	1.10	2.55	14.83	30.33
Total	SO2	0.00	3.47	11.10	12.82	14.83

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.04	0.07	0.10
Ferry - Non EU	NOx	0.01	0.01	0.01	0.02	0.03
Cargo - EU	NOx	0.01	0.35	0.94	2.15	3.65
Cargo - Non EU	NOx	0.03	0.70	1.88	4.29	7.29
Ferry - EU	SO2	0.00	0.03	1.64	1.99	2.41
Ferry - Non EU	SO2	0.00	0.01	0.41	0.50	0.61
Cargo - EU	SO2	0.00	1.15	2.60	2.94	3.33
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	6.64
Total	NOx	0.07	1.10	2.88	6.52	11.07
Total	SO2	0.00	3.47	9.85	11.30	12.99

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.04	0.31	0.70
Ferry - Non EU	NOx	0.01	0.01	0.01	0.08	0.17
Cargo - EU	NOx	0.01	0.35	0.94	11.94	25.81
Cargo - Non EU	NOx	0.03	0.70	1.88	23.84	51.54
Ferry - EU	SO2	0.00	0.03	2.90	3.51	4.25
Ferry - Non EU	SO2	0.00	0.01	0.73	0.88	1.07
Cargo - EU	SO2	0.00	1.15	2.60	2.94	3.33
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	6.64
Total	NOx	0.07	1.10	2.88	36.17	78.23
Total	SO2	0.00	3.47	11.42	13.21	15.29

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.04	0.31	0.70
Ferry - Non EU	NOx	0.01	0.01	0.01	0.08	0.17
Cargo - EU	NOx	0.01	0.35	0.94	11.94	25.81
Cargo - Non EU	NOx	0.03	0.70	1.88	23.84	51.54
Ferry - EU	SO2	0.00	0.03	2.90	3.51	4.25
Ferry - Non EU	SO2	0.00	0.01	0.73	0.88	1.07
Cargo - EU	SO2	0.00	1.15	2.60	2.94	3.33
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	6.64
Total	NOx	0.07	1.10	2.88	36.17	78.23
Total	SO2	0.00	3.47	11.42	13.21	15.29

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.35	0.57	0.87
Ferry - Non EU	NOx	0.01	0.01	0.09	0.14	0.22
Cargo - EU	NOx	0.01	0.35	14.25	23.25	34.37
Cargo - Non EU	NOx	0.03	0.70	28.84	46.88	69.16
Ferry - EU	SO2	0.00	0.03	1.64	1.99	4.25
Ferry - Non EU	SO2	0.00	0.01	0.41	0.50	1.07
Cargo - EU	SO2	0.00	1.15	2.60	2.94	159.05
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	317.64
Total	NOx	0.07	1.10	43.52	70.84	104.62
Total	SO2	0.00	3.47	9.85	11.30	482.01

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	0.35	1.19	2.37
Ferry - Non EU	NOx	0.01	0.01	0.09	0.30	0.60
Cargo - EU	NOx	0.01	0.35	14.25	47.19	88.54
Cargo - Non EU	NOx	0.03	0.70	28.84	94.66	177.29
Ferry - EU	SO2	0.00	0.03	1.64	1.99	4.25
Ferry - Non EU	SO2	0.00	0.01	0.41	0.50	1.07
Cargo - EU	SO2	0.00	1.15	2.60	2.94	159.05
Cargo - Non EU	SO2	0.00	2.29	5.19	5.87	317.64
Total	NOx	0.07	1.10	43.52	143.34	268.80
Total	SO2	0.00	3.47	9.85	11.30	482.01

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.03	0.03	3.83	4.56	5.42
Ferry - Non EU	NOx	0.01	0.01	0.96	1.14	1.36
Cargo - EU	NOx	0.01	0.35	164.01	182.41	202.82
Cargo - Non EU	NOx	0.03	0.70	327.53	364.28	405.04
Ferry - EU	SO2	0.00	0.03	3.32	4.03	4.87
Ferry - Non EU	SO2	0.00	0.01	0.84	1.01	1.23
Cargo - EU	SO2	0.00	1.15	142.48	161.21	182.39
Cargo - Non EU	SO2	0.00	2.29	284.55	321.94	364.24
Total	NOx	0.07	1.10	496.33	552.39	614.64
Total	SO2	0.00	3.47	431.19	488.18	552.73

**Table F 2: Emissions control costs by scenario, sea area and year, Million Euro/a.  
Atlantic Ocean, inside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.02	0.05	0.09	0.13
Cargo - Non EU	NOx	0.00	0.04	0.09	0.15	0.23
Ferry - EU	SO2	0.00	0.00	0.11	0.14	0.17
Ferry - Non EU	SO2	0.00	0.00	0.04	0.05	0.06
Cargo - EU	SO2	0.00	0.08	0.18	0.21	0.23
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	0.39
Total	NOx	0.01	0.07	0.15	0.25	0.37
Total	SO2	0.00	0.22	0.65	0.75	0.86

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.02	0.07	0.15	0.26
Cargo - Non EU	NOx	0.00	0.04	0.09	0.15	0.23
Ferry - EU	SO2	0.00	0.00	0.11	0.14	0.17
Ferry - Non EU	SO2	0.00	0.00	0.04	0.05	0.06
Cargo - EU	SO2	0.00	0.08	0.18	0.21	0.23
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	0.39
Total	NOx	0.01	0.07	0.16	0.31	0.49
Total	SO2	0.00	0.22	0.65	0.75	0.86

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.02	0.05
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.02	0.07	0.84	1.81
Cargo - Non EU	NOx	0.00	0.04	0.09	0.15	0.23
Ferry - EU	SO2	0.00	0.00	0.20	0.24	0.30
Ferry - Non EU	SO2	0.00	0.00	0.04	0.05	0.06
Cargo - EU	SO2	0.00	0.08	0.18	0.21	0.23
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	0.39
Total	NOx	0.01	0.07	0.16	1.01	2.09
Total	SO2	0.00	0.22	0.74	0.85	0.99

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.02	0.07	0.15	0.26
Cargo - Non EU	NOx	0.00	0.04	0.11	0.26	0.43
Ferry - EU	SO2	0.00	0.00	0.11	0.14	0.17
Ferry - Non EU	SO2	0.00	0.00	0.04	0.05	0.06
Cargo - EU	SO2	0.00	0.08	0.18	0.21	0.23
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	0.39
Total	NOx	0.01	0.07	0.18	0.41	0.70
Total	SO2	0.00	0.22	0.65	0.75	0.86

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.02	0.05
Ferry - Non EU	NOx	0.00	0.00	0.00	0.01	0.02
Cargo - EU	NOx	0.00	0.02	0.07	0.84	1.81
Cargo - Non EU	NOx	0.00	0.04	0.11	1.42	3.07
Ferry - EU	SO2	0.00	0.00	0.20	0.24	0.30
Ferry - Non EU	SO2	0.00	0.00	0.08	0.09	0.11
Cargo - EU	SO2	0.00	0.08	0.18	0.21	0.23
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	0.39
Total	NOx	0.01	0.07	0.18	2.29	4.95
Total	SO2	0.00	0.22	0.77	0.89	1.04

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.02	0.05
Ferry - Non EU	NOx	0.00	0.00	0.00	0.01	0.02
Cargo - EU	NOx	0.00	0.02	0.07	0.84	1.81
Cargo - Non EU	NOx	0.00	0.04	0.11	1.42	3.07
Ferry - EU	SO2	0.00	0.00	0.20	0.24	0.30
Ferry - Non EU	SO2	0.00	0.00	0.08	0.09	0.11
Cargo - EU	SO2	0.00	0.08	4.95	5.60	6.34
Cargo - Non EU	SO2	0.00	0.14	8.37	9.47	10.71
Total	NOx	0.01	0.07	0.18	2.29	4.95
Total	SO2	0.00	0.22	13.60	15.41	17.46

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.02	0.04	0.06
Ferry - Non EU	NOx	0.00	0.00	0.01	0.02	0.02
Cargo - EU	NOx	0.00	0.02	1.00	1.63	2.42
Cargo - Non EU	NOx	0.00	0.04	1.72	2.79	4.11
Ferry - EU	SO2	0.00	0.00	0.11	0.14	0.30
Ferry - Non EU	SO2	0.00	0.00	0.04	0.05	0.11
Cargo - EU	SO2	0.00	0.08	0.18	0.21	11.18
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	18.90
Total	NOx	0.01	0.07	2.75	4.48	6.62
Total	SO2	0.00	0.22	0.65	0.75	30.49

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.02	0.08	0.17
Ferry - Non EU	NOx	0.00	0.00	0.01	0.03	0.06
Cargo - EU	NOx	0.00	0.02	1.00	3.32	6.22
Cargo - Non EU	NOx	0.00	0.04	1.72	5.63	10.55
Ferry - EU	SO2	0.00	0.00	0.11	0.14	0.30
Ferry - Non EU	SO2	0.00	0.00	0.04	0.05	0.11
Cargo - EU	SO2	0.00	0.08	0.18	0.21	11.18
Cargo - Non EU	SO2	0.00	0.14	0.31	0.35	18.90
Total	NOx	0.01	0.07	2.75	9.06	17.00
Total	SO2	0.00	0.22	0.65	0.75	30.49

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.27	0.32	0.38
Ferry - Non EU	NOx	0.00	0.00	0.10	0.12	0.15
Cargo - EU	NOx	0.00	0.11	11.53	12.82	14.26
Cargo - Non EU	NOx	0.00	0.18	19.49	21.67	24.10
Ferry - EU	SO2	0.00	0.00	0.23	0.28	0.34
Ferry - Non EU	SO2	0.00	0.00	0.09	0.11	0.13
Cargo - EU	SO2	0.00	0.08	10.02	11.33	12.82
Cargo - Non EU	SO2	0.00	0.14	16.93	19.15	21.67
Total	NOx	0.01	0.29	31.39	34.94	38.88
Total	SO2	0.00	0.22	27.27	30.87	34.96

**Table F 3: Emissions control costs by scenario, sea area and year, Million Euro/a. Baltic Sea, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.01	0.01	0.01	0.02	0.02
Ferry - Non EU	NOx	0.00	0.01	0.01	0.01	0.01
Cargo - EU	NOx	0.01	0.16	0.35	0.57	0.85
Cargo - Non EU	NOx	0.01	0.11	0.25	0.41	0.61
Ferry - EU	SO2	0.00	0.01	0.57	0.69	0.83
Ferry - Non EU	SO2	0.00	0.00	0.25	0.30	0.37
Cargo - EU	SO2	0.00	0.63	28.98	32.78	37.09
Cargo - Non EU	SO2	0.00	0.45	20.80	23.53	26.62
<b>Total</b>	<b>NOx</b>	<b>0.03</b>	<b>0.29</b>	<b>0.62</b>	<b>1.01</b>	<b>1.48</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>1.10</b>	<b>50.59</b>	<b>57.30</b>	<b>64.91</b>

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.01	0.01	0.01	0.03	0.04
Ferry - Non EU	NOx	0.00	0.01	0.01	0.01	0.01
Cargo - EU	NOx	0.01	0.16	0.44	1.04	1.80
Cargo - Non EU	NOx	0.01	0.11	0.25	0.41	0.61
Ferry - EU	SO2	0.00	0.01	0.57	0.69	0.83
Ferry - Non EU	SO2	0.00	0.00	0.25	0.30	0.37
Cargo - EU	SO2	0.00	0.63	28.98	32.78	37.09
Cargo - Non EU	SO2	0.00	0.45	20.80	23.53	26.62
<b>Total</b>	<b>NOx</b>	<b>0.03</b>	<b>0.29</b>	<b>0.71</b>	<b>1.49</b>	<b>2.46</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>1.10</b>	<b>50.59</b>	<b>57.30</b>	<b>64.91</b>

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.01	0.01	0.01	0.14	0.32
Ferry - Non EU	NOx	0.00	0.01	0.01	0.01	0.01
Cargo - EU	NOx	0.01	0.16	0.44	6.41	13.94
Cargo - Non EU	NOx	0.01	0.11	0.25	0.41	0.61
Ferry - EU	SO2	0.00	0.01	1.34	1.62	1.96
Ferry - Non EU	SO2	0.00	0.00	0.25	0.30	0.37
Cargo - EU	SO2	0.00	0.63	68.04	76.99	87.10
Cargo - Non EU	SO2	0.00	0.45	20.80	23.53	26.62
<b>Total</b>	<b>NOx</b>	<b>0.03</b>	<b>0.29</b>	<b>0.71</b>	<b>6.96</b>	<b>14.87</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>1.10</b>	<b>90.43</b>	<b>102.44</b>	<b>116.05</b>

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.03	0.04
Ferry - Non EU	NOx	0.00	0.01	0.01	0.01	0.02
Cargo - EU	NOx	0.01	0.16	0.44	1.04	1.80
Cargo - Non EU	NOx	0.01	0.11	0.32	0.75	1.29
Ferry - EU	SO2	0.00	0.01	0.57	0.69	0.83
Ferry - Non EU	SO2	0.00	0.00	0.25	0.30	0.37
Cargo - EU	SO2	0.00	0.63	28.98	32.78	37.09
Cargo - Non EU	SO2	0.00	0.45	20.80	23.53	26.62
Total	NOx	0.03	0.29	0.78	1.83	3.16
Total	SO2	0.00	1.10	50.59	57.30	64.91

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.14	0.32
Ferry - Non EU	NOx	0.00	0.01	0.01	0.06	0.14
Cargo - EU	NOx	0.01	0.16	0.44	6.41	13.94
Cargo - Non EU	NOx	0.01	0.11	0.32	4.60	10.00
Ferry - EU	SO2	0.00	0.01	1.34	1.62	1.96
Ferry - Non EU	SO2	0.00	0.00	0.59	0.72	0.87
Cargo - EU	SO2	0.00	0.63	68.04	76.99	87.10
Cargo - Non EU	SO2	0.00	0.45	48.84	55.25	62.51
Total	NOx	0.03	0.29	0.78	11.21	24.39
Total	SO2	0.00	1.10	118.81	134.57	152.44

**Scenario: Ambition level 2 all ships plus measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.14	0.32
Ferry - Non EU	NOx	0.00	0.01	0.01	0.06	0.14
Cargo - EU	NOx	0.01	0.16	0.44	6.41	13.94
Cargo - Non EU	NOx	0.01	0.11	0.32	4.60	10.00
Ferry - EU	SO2	0.00	0.01	1.34	1.62	1.96
Ferry - Non EU	SO2	0.00	0.00	0.59	0.72	0.87
Cargo - EU	SO2	0.00	0.63	68.04	76.99	87.10
Cargo - Non EU	SO2	0.00	0.45	48.84	55.25	62.51
Total	NOx	0.03	0.29	0.78	11.21	24.39
Total	SO2	0.00	1.10	118.81	134.57	152.44

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.16	0.26	0.39
Ferry - Non EU	NOx	0.00	0.01	0.07	0.11	0.17
Cargo - EU	NOx	0.01	0.16	7.73	12.60	18.62
Cargo - Non EU	NOx	0.01	0.11	5.62	9.13	13.47
Ferry - EU	SO2	0.00	0.01	1.42	1.62	1.96
Ferry - Non EU	SO2	0.00	0.00	0.63	0.72	0.87
Cargo - EU	SO2	0.00	0.63	72.14	76.99	87.10
Cargo - Non EU	SO2	0.00	0.45	51.78	55.25	62.51
Total	NOx	0.03	0.29	13.57	22.10	32.66
Total	SO2	0.00	1.10	125.96	134.57	152.44

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.14	0.41	0.79
Ferry - Non EU	NOx	0.00	0.01	0.06	0.18	0.35
Cargo - EU	NOx	0.01	0.14	7.88	20.14	35.50
Cargo - Non EU	NOx	0.01	0.10	6.32	15.21	26.33
Ferry - EU	SO2	0.00	0.24	1.42	1.62	1.96
Ferry - Non EU	SO2	0.00	0.10	0.63	0.72	0.87
Cargo - EU	SO2	0.00	12.80	72.14	76.99	87.10
Cargo - Non EU	SO2	0.00	9.19	51.78	55.25	62.51
Total	NOx	0.03	0.25	14.39	35.94	62.96
Total	SO2	0.00	22.33	125.96	134.57	152.44

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	1.39	1.64	1.94
Ferry - Non EU	NOx	0.00	0.01	0.61	0.72	0.86
Cargo - EU	NOx	0.01	0.66	70.53	78.07	86.38
Cargo - Non EU	NOx	0.01	0.47	50.62	56.03	61.99
Ferry - EU	SO2	0.00	0.01	1.53	1.86	2.25
Ferry - Non EU	SO2	0.00	0.00	0.68	0.82	0.99
Cargo - EU	SO2	0.00	0.63	78.03	88.28	99.88
Cargo - Non EU	SO2	0.00	0.45	56.00	63.36	71.69
Total	NOx	0.03	1.15	123.14	136.47	151.17
Total	SO2	0.00	1.10	136.24	154.32	174.81

**Table F 4: Emissions control costs by scenario, sea area and year, Million Euro/a. Baltic Sea, inside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.03	0.05
Cargo - Non EU	NOx	0.00	0.01	0.02	0.03	0.04
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.02
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.06	0.09
Total	SO2	0.00	0.05	0.14	0.16	0.18

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.05	0.09
Cargo - Non EU	NOx	0.00	0.01	0.02	0.03	0.04
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.02
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.08	0.13
Total	SO2	0.00	0.05	0.14	0.16	0.18

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.28	0.61
Cargo - Non EU	NOx	0.00	0.01	0.02	0.03	0.04
Ferry - EU	SO2	0.00	0.00	0.02	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.31	0.66
Total	SO2	0.00	0.05	0.15	0.17	0.20

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.05	0.09
Cargo - Non EU	NOx	0.00	0.01	0.02	0.05	0.08
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.02
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.10	0.17
Total	SO2	0.00	0.05	0.14	0.16	0.18

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.28	0.61
Cargo - Non EU	NOx	0.00	0.01	0.02	0.27	0.58
Ferry - EU	SO2	0.00	0.00	0.02	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.02
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.55	1.20
Total	SO2	0.00	0.05	0.16	0.18	0.21

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.28	0.61
Cargo - Non EU	NOx	0.00	0.01	0.02	0.27	0.58
Ferry - EU	SO2	0.00	0.00	0.02	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.02
Cargo - EU	SO2	0.00	0.03	1.67	1.89	2.13
Cargo - Non EU	SO2	0.00	0.03	1.58	1.79	2.02
Total	NOx	0.00	0.02	0.04	0.55	1.20
Total	SO2	0.00	0.05	3.28	3.72	4.21

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.06	0.09	0.14
Ferry - Non EU	NOx	0.00	0.00	0.02	0.04	0.06
Cargo - EU	NOx	0.00	0.04	2.28	3.65	5.35
Cargo - Non EU	NOx	0.00	0.04	1.86	2.96	4.33
Ferry - EU	SO2	0.00	0.01	0.48	0.55	0.66
Ferry - Non EU	SO2	0.00	0.00	0.18	0.21	0.25
Cargo - EU	SO2	0.00	0.37	19.09	20.41	23.09
Cargo - Non EU	SO2	0.00	0.29	15.20	16.25	18.38
Total	NOx	0.01	0.09	4.21	6.75	9.87
Total	SO2	0.00	0.67	34.95	37.41	42.38

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.05	0.14	0.26
Ferry - Non EU	NOx	0.00	0.00	0.02	0.05	0.10
Cargo - EU	NOx	0.00	0.04	2.04	5.22	9.19
Cargo - Non EU	NOx	0.00	0.03	1.82	4.37	7.56
Ferry - EU	SO2	0.00	0.08	0.48	0.55	0.66
Ferry - Non EU	SO2	0.00	0.03	0.18	0.21	0.25
Cargo - EU	SO2	0.00	3.51	19.09	20.41	23.09
Cargo - Non EU	SO2	0.00	2.79	15.20	16.25	18.38
Total	NOx	0.01	0.08	3.92	9.77	17.11
Total	SO2	0.00	6.42	34.95	37.41	42.38

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.03	0.04	0.04
Ferry - Non EU	NOx	0.00	0.00	0.02	0.02	0.02
Cargo - EU	NOx	0.00	0.04	3.88	4.32	4.80
Cargo - Non EU	NOx	0.00	0.03	3.67	4.09	4.54
Ferry - EU	SO2	0.00	0.00	0.03	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.02	0.02
Cargo - EU	SO2	0.00	0.03	3.37	3.81	4.31
Cargo - Non EU	SO2	0.00	0.03	3.19	3.61	4.09
Total	NOx	0.00	0.07	7.60	8.46	9.41
Total	SO2	0.00	0.05	6.60	7.47	8.46

**Table F 5: Emissions control costs by scenario, sea area and year, Million Euro/a. Black Sea, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.06	0.13	0.21	0.31
Cargo - Non EU	NOx	0.00	0.05	0.12	0.19	0.29
Ferry - EU	SO2	0.00	0.00	0.15	0.18	0.22
Ferry - Non EU	SO2	0.00	0.00	0.10	0.12	0.15
Cargo - EU	SO2	0.00	0.19	0.42	0.48	0.54
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	0.50
<b>Total</b>	<b>NOx</b>	<b>0.01</b>	<b>0.11</b>	<b>0.25</b>	<b>0.41</b>	<b>0.60</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>0.36</b>	<b>1.06</b>	<b>1.22</b>	<b>1.41</b>

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.00	0.00	0.00	0.01	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.06	0.15	0.35	0.59
Cargo - Non EU	NOx	0.00	0.05	0.12	0.19	0.29
Ferry - EU	SO2	0.00	0.00	0.15	0.18	0.22
Ferry - Non EU	SO2	0.00	0.00	0.10	0.12	0.15
Cargo - EU	SO2	0.00	0.19	0.42	0.48	0.54
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	0.50
<b>Total</b>	<b>NOx</b>	<b>0.01</b>	<b>0.11</b>	<b>0.28</b>	<b>0.55</b>	<b>0.89</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>0.36</b>	<b>1.06</b>	<b>1.22</b>	<b>1.41</b>

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.00	0.00	0.00	0.03	0.06
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.06	0.15	1.93	4.17
Cargo - Non EU	NOx	0.00	0.05	0.12	0.19	0.29
Ferry - EU	SO2	0.00	0.00	0.26	0.32	0.39
Ferry - Non EU	SO2	0.00	0.00	0.10	0.12	0.15
Cargo - EU	SO2	0.00	0.19	0.42	0.48	0.54
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	0.50
<b>Total</b>	<b>NOx</b>	<b>0.01</b>	<b>0.11</b>	<b>0.28</b>	<b>2.15</b>	<b>4.52</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>0.36</b>	<b>1.18</b>	<b>1.36</b>	<b>1.57</b>

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.01	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.01
Cargo - EU	NOx	0.00	0.06	0.15	0.35	0.59
Cargo - Non EU	NOx	0.00	0.05	0.14	0.32	0.55
Ferry - EU	SO2	0.00	0.00	0.15	0.18	0.22
Ferry - Non EU	SO2	0.00	0.00	0.10	0.12	0.15
Cargo - EU	SO2	0.00	0.19	0.42	0.48	0.54
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	0.50
Total	NOx	0.01	0.11	0.30	0.68	1.16
Total	SO2	0.00	0.36	1.06	1.22	1.41

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.03	0.06
Ferry - Non EU	NOx	0.00	0.00	0.00	0.02	0.04
Cargo - EU	NOx	0.00	0.06	0.15	1.93	4.17
Cargo - Non EU	NOx	0.00	0.05	0.14	1.80	3.89
Ferry - EU	SO2	0.00	0.00	0.26	0.32	0.39
Ferry - Non EU	SO2	0.00	0.00	0.18	0.21	0.26
Cargo - EU	SO2	0.00	0.19	0.42	0.48	0.54
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	0.50
Total	NOx	0.01	0.11	0.30	3.78	8.16
Total	SO2	0.00	0.36	1.25	1.45	1.69

**Scenario: Ambition level 2 all ships plus measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.03	0.06
Ferry - Non EU	NOx	0.00	0.00	0.00	0.02	0.04
Cargo - EU	NOx	0.00	0.06	0.15	1.93	4.17
Cargo - Non EU	NOx	0.00	0.05	0.14	1.80	3.89
Ferry - EU	SO2	0.00	0.00	0.26	0.32	0.39
Ferry - Non EU	SO2	0.00	0.00	0.18	0.21	0.26
Cargo - EU	SO2	0.00	0.19	0.42	0.48	0.54
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	0.50
Total	NOx	0.01	0.11	0.30	3.78	8.16
Total	SO2	0.00	0.36	1.25	1.45	1.69

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.03	0.05	0.08
Ferry - Non EU	NOx	0.00	0.00	0.02	0.04	0.05
Cargo - EU	NOx	0.00	0.06	2.30	3.76	5.55
Cargo - Non EU	NOx	0.00	0.05	2.18	3.54	5.22
Ferry - EU	SO2	0.00	0.00	0.15	0.18	0.39
Ferry - Non EU	SO2	0.00	0.00	0.10	0.12	0.26
Cargo - EU	SO2	0.00	0.19	0.42	0.48	25.69
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	23.97
Total	NOx	0.01	0.11	4.53	7.38	10.90
Total	SO2	0.00	0.36	1.06	1.22	50.30

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.03	0.11	0.21
Ferry - Non EU	NOx	0.00	0.00	0.02	0.07	0.15
Cargo - EU	NOx	0.00	0.06	2.30	7.62	14.30
Cargo - Non EU	NOx	0.00	0.05	2.18	7.14	13.38
Ferry - EU	SO2	0.00	0.00	0.15	0.18	0.39
Ferry - Non EU	SO2	0.00	0.00	0.10	0.12	0.26
Cargo - EU	SO2	0.00	0.19	0.42	0.48	25.69
Cargo - Non EU	SO2	0.00	0.17	0.39	0.44	23.97
Total	NOx	0.01	0.11	4.53	14.95	28.04
Total	SO2	0.00	0.36	1.06	1.22	50.30

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.35	0.41	0.49
Ferry - Non EU	NOx	0.00	0.00	0.24	0.28	0.34
Cargo - EU	NOx	0.00	0.24	26.49	29.46	32.76
Cargo - Non EU	NOx	0.00	0.23	24.71	27.49	30.56
Ferry - EU	SO2	0.00	0.00	0.30	0.37	0.44
Ferry - Non EU	SO2	0.00	0.00	0.20	0.25	0.30
Cargo - EU	SO2	0.00	0.19	23.01	26.04	29.46
Cargo - Non EU	SO2	0.00	0.17	21.47	24.29	27.49
Total	NOx	0.01	0.48	51.79	57.64	64.15
Total	SO2	0.00	0.36	44.99	50.94	57.68

**Table F 6: Emissions control costs by scenario, sea area and year, Million Euro/a.  
Black Sea, inside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.03	0.05
Cargo - Non EU	NOx	0.00	0.01	0.02	0.03	0.04
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.02
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.06	0.09
Total	SO2	0.00	0.05	0.14	0.16	0.18

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.05	0.09
Cargo - Non EU	NOx	0.00	0.01	0.02	0.03	0.04
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.02
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.08	0.13
Total	SO2	0.00	0.05	0.14	0.16	0.18

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.28	0.61
Cargo - Non EU	NOx	0.00	0.01	0.02	0.03	0.04
Ferry - EU	SO2	0.00	0.00	0.02	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.31	0.66
Total	SO2	0.00	0.05	0.15	0.17	0.20

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.00
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.05	0.09
Cargo - Non EU	NOx	0.00	0.01	0.02	0.05	0.08
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.02
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.01
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.10	0.17
Total	SO2	0.00	0.05	0.14	0.16	0.18

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.28	0.61
Cargo - Non EU	NOx	0.00	0.01	0.02	0.27	0.58
Ferry - EU	SO2	0.00	0.00	0.02	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.02
Cargo - EU	SO2	0.00	0.03	0.06	0.07	0.08
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	0.07
Total	NOx	0.00	0.02	0.04	0.55	1.20
Total	SO2	0.00	0.05	0.16	0.18	0.21

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.02	0.28	0.61
Cargo - Non EU	NOx	0.00	0.01	0.02	0.27	0.58
Ferry - EU	SO2	0.00	0.00	0.02	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.02
Cargo - EU	SO2	0.00	0.03	1.67	1.89	2.13
Cargo - Non EU	SO2	0.00	0.03	1.58	1.79	2.02
Total	NOx	0.00	0.02	0.04	0.55	1.20
Total	SO2	0.00	0.05	3.28	3.72	4.21

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.00	0.01
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.01	0.34	0.55	0.81
Cargo - Non EU	NOx	0.00	0.01	0.32	0.53	0.78
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.02
Cargo - EU	SO2	0.00	0.03	0.06	0.07	3.76
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	3.56
Total	NOx	0.00	0.02	0.66	1.08	1.60
Total	SO2	0.00	0.05	0.14	0.16	7.38

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.00	0.01	0.02
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.01
Cargo - EU	NOx	0.00	0.01	0.34	1.12	2.09
Cargo - Non EU	NOx	0.00	0.01	0.32	1.06	1.99
Ferry - EU	SO2	0.00	0.00	0.01	0.02	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.01	0.02
Cargo - EU	SO2	0.00	0.03	0.06	0.07	3.76
Cargo - Non EU	SO2	0.00	0.03	0.06	0.07	3.56
Total	NOx	0.00	0.02	0.66	2.19	4.11
Total	SO2	0.00	0.05	0.14	0.16	7.38

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.00	0.00	0.03	0.04	0.04
Ferry - Non EU	NOx	0.00	0.00	0.02	0.02	0.02
Cargo - EU	NOx	0.00	0.04	3.88	4.32	4.80
Cargo - Non EU	NOx	0.00	0.03	3.67	4.09	4.54
Ferry - EU	SO2	0.00	0.00	0.03	0.03	0.04
Ferry - Non EU	SO2	0.00	0.00	0.01	0.02	0.02
Cargo - EU	SO2	0.00	0.03	3.37	3.81	4.31
Cargo - Non EU	SO2	0.00	0.03	3.19	3.61	4.09
Total	NOx	0.00	0.07	7.60	8.46	9.41
Total	SO2	0.00	0.05	6.60	7.47	8.46

**Table F 7: Emissions control costs by scenario, sea area and year, Million Euro/a. Mediterranean Sea, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.40	0.48	0.59	0.70	0.84
Ferry - Non EU	NOx	0.08	0.10	0.12	0.14	0.17
Cargo - EU	NOx	0.03	0.92	2.04	3.35	4.98
Cargo - Non EU	NOx	0.05	1.23	2.72	4.48	6.65
Ferry - EU	SO2	0.00	0.38	24.68	29.88	36.18
Ferry - Non EU	SO2	0.00	0.08	4.95	5.99	7.26
Cargo - EU	SO2	0.00	3.00	6.78	7.67	8.68
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	11.61
<b>Total</b>	<b>NOx</b>	<b>0.56</b>	<b>2.73</b>	<b>5.47</b>	<b>8.67</b>	<b>12.63</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>7.46</b>	<b>45.47</b>	<b>53.80</b>	<b>63.72</b>

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.40	0.48	0.59	1.00	1.56
Ferry - Non EU	NOx	0.08	0.10	0.12	0.14	0.17
Cargo - EU	NOx	0.03	0.92	2.46	5.60	9.53
Cargo - Non EU	NOx	0.05	1.23	2.72	4.48	6.65
Ferry - EU	SO2	0.00	0.38	24.68	29.88	36.18
Ferry - Non EU	SO2	0.00	0.08	4.95	5.99	7.26
Cargo - EU	SO2	0.00	3.00	6.78	7.67	8.68
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	11.61
<b>Total</b>	<b>NOx</b>	<b>0.56</b>	<b>2.73</b>	<b>5.90</b>	<b>11.23</b>	<b>17.91</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>7.46</b>	<b>45.47</b>	<b>53.80</b>	<b>63.72</b>

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
<b>Ship category</b>	<b>Pollutant</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
Ferry - EU	NOx	0.40	0.48	0.59	4.67	10.45
Ferry - Non EU	NOx	0.08	0.10	0.12	0.14	0.17
Cargo - EU	NOx	0.03	0.92	2.46	31.16	67.36
Cargo - Non EU	NOx	0.05	1.23	2.72	4.48	6.65
Ferry - EU	SO2	0.00	0.38	43.52	52.70	63.80
Ferry - Non EU	SO2	0.00	0.08	4.95	5.99	7.26
Cargo - EU	SO2	0.00	3.00	6.78	7.67	8.68
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	11.61
<b>Total</b>	<b>NOx</b>	<b>0.56</b>	<b>2.73</b>	<b>5.90</b>	<b>40.46</b>	<b>84.63</b>
<b>Total</b>	<b>SO2</b>	<b>0.00</b>	<b>7.46</b>	<b>64.32</b>	<b>76.62</b>	<b>91.35</b>

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.40	0.48	0.59	1.00	1.56
Ferry - Non EU	NOx	0.08	0.10	0.12	0.20	0.31
Cargo - EU	NOx	0.03	0.92	2.46	5.60	9.53
Cargo - Non EU	NOx	0.05	1.23	3.29	7.49	12.74
Ferry - EU	SO2	0.00	0.38	24.68	29.88	36.18
Ferry - Non EU	SO2	0.00	0.08	4.95	5.99	7.26
Cargo - EU	SO2	0.00	3.00	6.78	7.67	8.68
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	11.61
Total	NOx	0.56	2.73	6.46	14.30	24.14
Total	SO2	0.00	7.46	45.47	53.80	63.72

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.40	0.48	0.59	4.67	10.45
Ferry - Non EU	NOx	0.08	0.10	0.12	0.94	2.10
Cargo - EU	NOx	0.03	0.92	2.46	31.16	67.36
Cargo - Non EU	NOx	0.05	1.23	3.29	41.66	90.05
Ferry - EU	SO2	0.00	0.38	43.52	52.70	63.80
Ferry - Non EU	SO2	0.00	0.08	8.73	10.57	12.80
Cargo - EU	SO2	0.00	3.00	6.78	7.67	8.68
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	11.61
Total	NOx	0.56	2.73	6.46	78.43	169.96
Total	SO2	0.00	7.46	68.10	81.20	96.89

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.40	0.48	0.59	4.67	10.45
Ferry - Non EU	NOx	0.08	0.10	0.12	0.94	2.10
Cargo - EU	NOx	0.03	0.92	2.46	31.16	67.36
Cargo - Non EU	NOx	0.05	1.23	3.29	41.66	90.05
Ferry - EU	SO2	0.00	0.38	43.52	52.70	63.80
Ferry - Non EU	SO2	0.00	0.08	8.73	10.57	12.80
Cargo - EU	SO2	0.00	3.00	6.78	7.67	8.68
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	11.61
Total	NOx	0.56	2.73	6.46	78.43	169.96
Total	SO2	0.00	7.46	68.10	81.20	96.89

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.40	0.48	5.21	8.53	13.01
Ferry - Non EU	NOx	0.08	0.10	1.05	1.71	2.61
Cargo - EU	NOx	0.03	0.92	37.20	60.68	89.70
Cargo - Non EU	NOx	0.05	1.23	50.38	81.90	120.83
Ferry - EU	SO2	0.00	0.38	24.68	29.88	63.80
Ferry - Non EU	SO2	0.00	0.08	4.95	5.99	12.80
Cargo - EU	SO2	0.00	3.00	6.78	7.67	415.12
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	554.93
Total	NOx	0.56	2.73	93.83	152.82	226.15
Total	SO2	0.00	7.46	45.47	53.80	1046.66

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.40	0.48	5.21	17.86	35.60
Ferry - Non EU	NOx	0.08	0.10	1.05	3.58	7.14
Cargo - EU	NOx	0.03	0.92	37.20	123.16	231.08
Cargo - Non EU	NOx	0.05	1.23	50.38	165.38	309.74
Ferry - EU	SO2	0.00	0.38	24.68	29.88	63.80
Ferry - Non EU	SO2	0.00	0.08	4.95	5.99	12.80
Cargo - EU	SO2	0.00	3.00	6.78	7.67	415.12
Cargo - Non EU	SO2	0.00	4.01	9.07	10.26	554.93
Total	NOx	0.56	2.73	93.83	309.98	583.56
Total	SO2	0.00	7.46	45.47	53.80	1046.66

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.40	0.48	57.45	68.38	81.36
Ferry - Non EU	NOx	0.08	0.10	11.53	13.72	16.32
Cargo - EU	NOx	0.03	3.95	428.05	476.08	529.34
Cargo - Non EU	NOx	0.05	5.28	572.22	636.43	707.62
Ferry - EU	SO2	0.00	0.38	49.91	60.43	73.17
Ferry - Non EU	SO2	0.00	0.08	10.01	12.12	14.68
Cargo - EU	SO2	0.00	3.00	371.87	420.74	476.03
Cargo - Non EU	SO2	0.00	4.01	497.12	562.45	636.36
Total	NOx	0.56	9.80	1069.24	1194.60	1334.65
Total	SO2	0.00	7.46	928.91	1055.74	1200.23

**Table F 8: Emissions control costs by scenario, sea area and year, Million Euro/a. Mediterranean Sea, inside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.11	0.13	0.16
Ferry - Non EU	NOx	0.01	0.01	0.01	0.01	0.02
Cargo - EU	NOx	0.00	0.07	0.16	0.26	0.38
Cargo - Non EU	NOx	0.00	0.08	0.17	0.28	0.42
Ferry - EU	SO2	0.00	0.07	4.67	5.66	6.85
Ferry - Non EU	SO2	0.00	0.01	0.51	0.62	0.75
Cargo - EU	SO2	0.00	0.23	0.52	0.59	0.67
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	0.73
Total	NOx	0.09	0.25	0.45	0.69	0.98
Total	SO2	0.00	0.56	6.28	7.52	9.01

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.11	0.19	0.30
Ferry - Non EU	NOx	0.01	0.01	0.01	0.01	0.02
Cargo - EU	NOx	0.00	0.07	0.19	0.43	0.73
Cargo - Non EU	NOx	0.00	0.08	0.17	0.28	0.42
Ferry - EU	SO2	0.00	0.07	4.67	5.66	6.85
Ferry - Non EU	SO2	0.00	0.01	0.51	0.62	0.75
Cargo - EU	SO2	0.00	0.23	0.52	0.59	0.67
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	0.73
Total	NOx	0.09	0.25	0.49	0.92	1.47
Total	SO2	0.00	0.56	6.28	7.52	9.01

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.11	0.89	1.98
Ferry - Non EU	NOx	0.01	0.01	0.01	0.01	0.02
Cargo - EU	NOx	0.00	0.07	0.19	2.39	5.17
Cargo - Non EU	NOx	0.00	0.08	0.17	0.28	0.42
Ferry - EU	SO2	0.00	0.07	8.24	9.98	12.08
Ferry - Non EU	SO2	0.00	0.01	0.51	0.62	0.75
Cargo - EU	SO2	0.00	0.23	0.52	0.59	0.67
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	0.73
Total	NOx	0.09	0.25	0.49	3.58	7.59
Total	SO2	0.00	0.56	9.85	11.84	14.24

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.11	0.19	0.30
Ferry - Non EU	NOx	0.01	0.01	0.01	0.02	0.03
Cargo - EU	NOx	0.00	0.07	0.19	0.43	0.73
Cargo - Non EU	NOx	0.00	0.08	0.21	0.47	0.80
Ferry - EU	SO2	0.00	0.07	4.67	5.66	6.85
Ferry - Non EU	SO2	0.00	0.01	0.51	0.62	0.75
Cargo - EU	SO2	0.00	0.23	0.52	0.59	0.67
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	0.73
Total	NOx	0.09	0.25	0.52	1.11	1.87
Total	SO2	0.00	0.56	6.28	7.52	9.01

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.11	0.89	1.98
Ferry - Non EU	NOx	0.01	0.01	0.01	0.10	0.22
Cargo - EU	NOx	0.00	0.07	0.19	2.39	5.17
Cargo - Non EU	NOx	0.00	0.08	0.21	2.63	5.69
Ferry - EU	SO2	0.00	0.07	8.24	9.98	12.08
Ferry - Non EU	SO2	0.00	0.01	0.91	1.10	1.33
Cargo - EU	SO2	0.00	0.23	0.52	0.59	0.67
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	0.73
Total	NOx	0.09	0.25	0.52	6.01	13.06
Total	SO2	0.00	0.56	10.24	12.32	14.81

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.11	0.89	1.98
Ferry - Non EU	NOx	0.01	0.01	0.01	0.10	0.22
Cargo - EU	NOx	0.00	0.07	0.19	2.39	5.17
Cargo - Non EU	NOx	0.00	0.08	0.21	2.63	5.69
Ferry - EU	SO2	0.00	0.07	8.24	9.98	12.08
Ferry - Non EU	SO2	0.00	0.01	0.91	1.10	1.33
Cargo - EU	SO2	0.00	0.23	14.12	15.98	18.08
Cargo - Non EU	SO2	0.00	0.25	15.53	17.57	19.87
Total	NOx	0.09	0.25	0.52	6.01	13.06
Total	SO2	0.00	0.56	38.80	44.62	51.37

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.99	1.62	2.46
Ferry - Non EU	NOx	0.01	0.01	0.11	0.18	0.27
Cargo - EU	NOx	0.00	0.07	2.86	4.66	6.89
Cargo - Non EU	NOx	0.00	0.08	3.18	5.17	7.63
Ferry - EU	SO2	0.00	0.07	4.67	5.66	12.08
Ferry - Non EU	SO2	0.00	0.01	0.51	0.62	1.33
Cargo - EU	SO2	0.00	0.23	0.52	0.59	31.88
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	35.05
Total	NOx	0.09	0.25	7.14	11.63	17.26
Total	SO2	0.00	0.56	6.28	7.52	80.35

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	0.99	3.38	6.74
Ferry - Non EU	NOx	0.01	0.01	0.11	0.37	0.74
Cargo - EU	NOx	0.00	0.07	2.86	9.46	17.75
Cargo - Non EU	NOx	0.00	0.08	3.18	10.45	19.57
Ferry - EU	SO2	0.00	0.07	4.67	5.66	12.08
Ferry - Non EU	SO2	0.00	0.01	0.51	0.62	1.33
Cargo - EU	SO2	0.00	0.23	0.52	0.59	31.88
Cargo - Non EU	SO2	0.00	0.25	0.57	0.65	35.05
Total	NOx	0.09	0.25	7.14	23.66	44.80
Total	SO2	0.00	0.56	6.28	7.52	80.35

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.07	0.09	10.88	12.95	15.41
Ferry - Non EU	NOx	0.01	0.01	1.20	1.43	1.70
Cargo - EU	NOx	0.00	0.30	32.88	36.57	40.66
Cargo - Non EU	NOx	0.00	0.33	36.15	40.20	44.70
Ferry - EU	SO2	0.00	0.07	9.45	11.44	13.85
Ferry - Non EU	SO2	0.00	0.01	1.04	1.26	1.53
Cargo - EU	SO2	0.00	0.23	28.56	32.32	36.56
Cargo - Non EU	SO2	0.00	0.25	31.40	35.53	40.20
Total	NOx	0.09	0.74	81.11	91.15	102.47
Total	SO2	0.00	0.56	70.45	80.55	92.14

**Table F 9: Emissions control costs by scenario, sea area and year, Million Euro/a.  
North Sea, outside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.08	0.09	0.11
Ferry - Non EU	NOx	0.01	0.02	0.02	0.03	0.03
Cargo - EU	NOx	0.01	0.31	0.68	1.11	1.64
Cargo - Non EU	NOx	0.02	0.39	0.86	1.40	2.07
Ferry - EU	SO2	0.00	0.06	3.06	3.70	4.48
Ferry - Non EU	SO2	0.00	0.02	0.87	1.05	1.27
Cargo - EU	SO2	0.00	1.22	56.09	63.46	71.80
Cargo - Non EU	SO2	0.00	1.53	70.70	79.99	90.50
Total	NOx	0.10	0.78	1.63	2.62	3.84
Total	SO2	0.00	2.83	130.72	148.21	168.06

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.08	0.14	0.23
Ferry - Non EU	NOx	0.01	0.02	0.02	0.03	0.03
Cargo - EU	NOx	0.01	0.31	0.85	2.02	3.49
Cargo - Non EU	NOx	0.02	0.39	0.86	1.40	2.07
Ferry - EU	SO2	0.00	0.06	3.06	3.70	4.48
Ferry - Non EU	SO2	0.00	0.02	0.87	1.05	1.27
Cargo - EU	SO2	0.00	1.22	56.09	63.46	71.80
Cargo - Non EU	SO2	0.00	1.53	70.70	79.99	90.50
Total	NOx	0.10	0.78	1.80	3.59	5.81
Total	SO2	0.00	2.83	130.72	148.21	168.06

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.08	0.75	1.69
Ferry - Non EU	NOx	0.01	0.02	0.02	0.03	0.03
Cargo - EU	NOx	0.01	0.31	0.85	12.40	26.98
Cargo - Non EU	NOx	0.02	0.39	0.86	1.40	2.07
Ferry - EU	SO2	0.00	0.06	7.18	8.70	10.53
Ferry - Non EU	SO2	0.00	0.02	0.87	1.05	1.27
Cargo - EU	SO2	0.00	1.22	131.72	149.03	168.61
Cargo - Non EU	SO2	0.00	1.53	70.70	79.99	90.50
Total	NOx	0.10	0.78	1.80	14.57	30.77
Total	SO2	0.00	2.83	210.47	238.77	270.92

**Ambition level 1 - all ships****Scenario:**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.08	0.14	0.23
Ferry - Non EU	NOx	0.01	0.02	0.02	0.04	0.06
Cargo - EU	NOx	0.01	0.31	0.85	2.02	3.49
Cargo - Non EU	NOx	0.02	0.39	1.07	2.55	4.40
Ferry - EU	SO2	0.00	0.06	3.06	3.70	4.48
Ferry - Non EU	SO2	0.00	0.02	0.87	1.05	1.27
Cargo - EU	SO2	0.00	1.22	56.09	63.46	71.80
Cargo - Non EU	SO2	0.00	1.53	70.70	79.99	90.50
Total	NOx	0.10	0.78	2.02	4.75	8.18
Total	SO2	0.00	2.83	130.72	148.21	168.06

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.08	0.75	1.69
Ferry - Non EU	NOx	0.01	0.02	0.02	0.21	0.48
Cargo - EU	NOx	0.01	0.31	0.85	12.40	26.98
Cargo - Non EU	NOx	0.02	0.39	1.07	15.63	34.01
Ferry - EU	SO2	0.00	0.06	7.18	8.70	10.53
Ferry - Non EU	SO2	0.00	0.02	2.04	2.47	2.99
Cargo - EU	SO2	0.00	1.22	131.72	149.03	168.61
Cargo - Non EU	SO2	0.00	1.53	166.02	187.84	212.53
Total	NOx	0.10	0.78	2.02	29.00	63.16
Total	SO2	0.00	2.83	306.97	348.04	394.66

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.08	0.75	1.69
Ferry - Non EU	NOx	0.01	0.02	0.02	0.21	0.48
Cargo - EU	NOx	0.01	0.31	0.85	12.40	26.98
Cargo - Non EU	NOx	0.02	0.39	1.07	15.63	34.01
Ferry - EU	SO2	0.00	0.06	7.18	8.70	10.53
Ferry - Non EU	SO2	0.00	0.02	2.04	2.47	2.99
Cargo - EU	SO2	0.00	1.22	131.72	149.03	168.61
Cargo - Non EU	SO2	0.00	1.53	166.02	187.84	212.53
Total	NOx	0.10	0.78	2.02	29.00	63.16
Total	SO2	0.00	2.83	306.97	348.04	394.66

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.84	1.38	2.12
Ferry - Non EU	NOx	0.01	0.02	0.24	0.39	0.60
Cargo - EU	NOx	0.01	0.31	14.96	24.39	36.05
Cargo - Non EU	NOx	0.02	0.39	19.11	31.05	45.80
Ferry - EU	SO2	0.00	0.06	7.61	8.70	10.53
Ferry - Non EU	SO2	0.00	0.02	2.16	2.47	2.99
Cargo - EU	SO2	0.00	1.22	139.65	149.03	168.61
Cargo - Non EU	SO2	0.00	1.53	176.02	187.84	212.53
Total	NOx	0.10	0.78	35.14	57.22	84.56
Total	SO2	0.00	2.83	325.45	348.04	394.66

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	0.74	2.21	4.26
Ferry - Non EU	NOx	0.01	0.02	0.21	0.63	1.21
Cargo - EU	NOx	0.01	0.26	15.25	38.99	68.71
Cargo - Non EU	NOx	0.02	0.33	21.48	51.70	89.50
Ferry - EU	SO2	0.00	1.26	7.61	8.70	10.53
Ferry - Non EU	SO2	0.00	0.36	2.16	2.47	2.99
Cargo - EU	SO2	0.00	24.79	139.65	149.03	168.61
Cargo - Non EU	SO2	0.00	31.24	176.02	187.84	212.53
Total	NOx	0.10	0.68	37.67	93.53	163.68
Total	SO2	0.00	57.65	325.45	348.04	394.66

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.05	0.06	7.44	8.81	10.44
Ferry - Non EU	NOx	0.01	0.02	2.12	2.51	2.97
Cargo - EU	NOx	0.01	1.27	136.53	151.13	167.21
Cargo - Non EU	NOx	0.02	1.60	172.09	190.49	210.76
Ferry - EU	SO2	0.00	0.06	8.23	9.97	12.07
Ferry - Non EU	SO2	0.00	0.02	2.34	2.83	3.43
Cargo - EU	SO2	0.00	1.22	151.05	170.90	193.35
Cargo - Non EU	SO2	0.00	1.53	190.38	215.40	243.71
Total	NOx	0.10	2.96	318.17	352.94	391.38
Total	SO2	0.00	2.83	352.01	399.10	452.57

**Table F 10: Emissions control costs by scenario, sea area and year, Million Euro/a.****North Sea, inside 12 miles zone**

<b>Scenario:</b>		<b>Baseline</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.01	0.02
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.05	0.11	0.18	0.27
Cargo - Non EU	NOx	0.00	0.07	0.15	0.25	0.37
Ferry - EU	SO2	0.00	0.01	0.46	0.55	0.67
Ferry - Non EU	SO2	0.00	0.00	0.12	0.15	0.18
Cargo - EU	SO2	0.00	0.20	9.14	10.34	11.69
Cargo - Non EU	SO2	0.00	0.27	12.62	14.28	16.16
Total	NOx	0.02	0.13	0.28	0.45	0.66
Total	SO2	0.00	0.48	22.34	25.32	28.71

<b>Scenario:</b>		<b>Ambition level 1 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.02	0.03
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.05	0.14	0.33	0.57
Cargo - Non EU	NOx	0.00	0.07	0.15	0.25	0.37
Ferry - EU	SO2	0.00	0.01	0.46	0.55	0.67
Ferry - Non EU	SO2	0.00	0.00	0.12	0.15	0.18
Cargo - EU	SO2	0.00	0.20	9.14	10.34	11.69
Cargo - Non EU	SO2	0.00	0.27	12.62	14.28	16.16
Total	NOx	0.01	0.13	0.31	0.60	0.98
Total	SO2	0.00	0.48	22.34	25.32	28.71

<b>Scenario:</b>		<b>Ambition level 2 - EU ships</b>				
Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.11	0.25
Ferry - Non EU	NOx	0.00	0.00	0.00	0.00	0.00
Cargo - EU	NOx	0.00	0.05	0.14	2.02	4.39
Cargo - Non EU	NOx	0.00	0.07	0.15	0.25	0.37
Ferry - EU	SO2	0.00	0.01	1.07	1.30	1.57
Ferry - Non EU	SO2	0.00	0.00	0.12	0.15	0.18
Cargo - EU	SO2	0.00	0.20	21.45	24.27	27.46
Cargo - Non EU	SO2	0.00	0.27	12.62	14.28	16.16
Total	NOx	0.02	0.13	0.31	2.38	5.02
Total	SO2	0.00	0.48	35.27	40.00	45.37

**Scenario: Ambition level 1 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.02	0.03
Ferry - Non EU	NOx	0.00	0.00	0.00	0.01	0.01
Cargo - EU	NOx	0.00	0.05	0.14	0.33	0.57
Cargo - Non EU	NOx	0.00	0.07	0.19	0.46	0.79
Ferry - EU	SO2	0.00	0.01	0.46	0.55	0.67
Ferry - Non EU	SO2	0.00	0.00	0.12	0.15	0.18
Cargo - EU	SO2	0.00	0.20	9.14	10.34	11.69
Cargo - Non EU	SO2	0.00	0.27	12.62	14.28	16.16
Total	NOx	0.02	0.13	0.34	0.81	1.40
Total	SO2	0.00	0.48	22.34	25.32	28.71

**Scenario: Ambition level 2 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.11	0.25
Ferry - Non EU	NOx	0.00	0.00	0.00	0.03	0.07
Cargo - EU	NOx	0.00	0.05	0.14	2.02	4.39
Cargo - Non EU	NOx	0.00	0.07	0.19	2.79	6.07
Ferry - EU	SO2	0.00	0.01	1.07	1.30	1.57
Ferry - Non EU	SO2	0.00	0.00	0.29	0.35	0.43
Cargo - EU	SO2	0.00	0.20	21.45	24.27	27.46
Cargo - Non EU	SO2	0.00	0.27	29.65	33.54	37.95
Total	NOx	0.02	0.13	0.34	4.95	10.79
Total	SO2	0.00	0.48	52.46	59.46	67.41

**Scenario: Ambition level 2 all ships plus S measures in 12 mile zone**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.01	0.11	0.25
Ferry - Non EU	NOx	0.00	0.00	0.00	0.03	0.07
Cargo - EU	NOx	0.00	0.05	0.14	2.02	4.39
Cargo - Non EU	NOx	0.00	0.07	0.19	2.79	6.07
Ferry - EU	SO2	0.00	0.01	1.07	1.30	1.57
Ferry - Non EU	SO2	0.00	0.00	0.29	0.35	0.43
Cargo - EU	SO2	0.00	0.20	21.45	24.27	27.46
Cargo - Non EU	SO2	0.00	0.27	29.65	33.54	37.95
Total	NOx	0.02	0.13	0.34	4.95	10.79
Total	SO2	0.00	0.48	52.46	59.46	67.41

**Scenario: Ambition level 3 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.12	0.21	0.31
Ferry - Non EU	NOx	0.00	0.00	0.03	0.06	0.09
Cargo - EU	NOx	0.00	0.05	2.44	3.97	5.87
Cargo - Non EU	NOx	0.00	0.07	3.41	5.54	8.18
Ferry - EU	SO2	0.00	0.01	1.13	1.30	1.57
Ferry - Non EU	SO2	0.00	0.00	0.31	0.35	0.43
Cargo - EU	SO2	0.00	0.20	22.75	24.27	27.46
Cargo - Non EU	SO2	0.00	0.27	31.43	33.54	37.95
Total	NOx	0.02	0.13	6.01	9.78	14.45
Total	SO2	0.00	0.48	55.62	59.46	67.41

**Scenario: Ambition level 4 - all ships**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	0.11	0.33	0.63
Ferry - Non EU	NOx	0.00	0.00	0.03	0.09	0.17
Cargo - EU	NOx	0.00	0.04	2.48	6.35	11.19
Cargo - Non EU	NOx	0.00	0.06	3.84	9.23	15.98
Ferry - EU	SO2	0.00	0.19	1.13	1.30	1.57
Ferry - Non EU	SO2	0.00	0.05	0.31	0.35	0.43
Cargo - EU	SO2	0.00	4.04	22.75	24.27	27.46
Cargo - Non EU	SO2	0.00	5.58	31.43	33.54	37.95
Total	NOx	0.02	0.11	6.46	16.00	27.98
Total	SO2	0.00	9.86	55.62	59.46	67.41

**Scenario: Maximum technically feasible reduction**

Ship category	Pollutant	2000	2005	2010	2015	2020
Ferry - EU	NOx	0.01	0.01	1.11	1.31	1.55
Ferry - Non EU	NOx	0.00	0.00	0.30	0.36	0.43
Cargo - EU	NOx	0.00	0.21	22.24	24.62	27.24
Cargo - Non EU	NOx	0.00	0.29	30.73	34.01	37.63
Ferry - EU	SO2	0.00	0.01	1.23	1.49	1.80
Ferry - Non EU	SO2	0.00	0.00	0.33	0.40	0.49
Cargo - EU	SO2	0.00	0.20	24.60	27.83	31.49
Cargo - Non EU	SO2	0.00	0.27	34.00	38.47	43.52
Total	NOx	0.02	0.51	54.38	60.30	66.85
Total	SO2	0.00	0.48	60.16	68.19	77.30