



# Across the pond:

Developing a European Union Strategy to  
reduce air pollution from seagoing ships

Nicola Robinson  
European Commission  
DG Environment  
Unit C1 - Air & Noise



# Background to Strategy

## **Reporting requirements on ship emissions :**

- Directive 2001/81 on National Emission Ceilings (acidification, eutrophication and ground-level ozone)
- Directive 1999/32 on the Sulphur Content of Liquid Fuels (acidification resulting from marine heavy fuel)
- Directive 1994/63 on Stage 1 VOC Vapour Recovery (VOC emissions during ship-loading)

**Propose to respond to these requirements with a Commission Communication on a Community Strategy to reduce emissions**



# Informing the Strategy

Orientation meeting was held on 18 January

- Member States government officials (environment & transport)
- Candidate countries (including big flag states Malta & Cyprus)
- European Parliament
- Shipping, port and oil industry representatives
- Environmental NGOs

Also inviting written responses to a discussion paper by end February. See our website:

<http://www.europa.eu.int/comm/environment/air/background.htm> - transport



# Informing the strategy

## Studies completed:

- BMT study on an EU system to reduce SO<sub>2</sub> and NO<sub>x</sub>
- AEA study on reducing VOCs during ship-loading

## Studies forthcoming:

- quantification of year 2000 ship emissions of SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub> and hydrocarbons in EU waters, plus in-port particulate emissions. Results disaggregated by vessel type, flag state and port of departure/arrival
- advice on reducing sulphur content of marine heavy fuel, including likely price premia and refining costs

<http://www.europa.eu.int/comm/environment/air/background.htm> - transport

# MARPOL Annex VI



- Annex VI concerns Air Pollution from ships
  - » Designates SO<sub>x</sub> emission control areas for the North Sea & the Baltic, where fuels burned must contain less than 1.5% sulphur
- Only enters into force when ratified by 15 Flag States representing 50% of world tonnage
  - » Only 5 countries have ratified representing ~ 12% world tonnage
- European Community itself not a member of IMO
  - » Of the 15 EU Member States and 13 EU candidate countries, only Sweden has ratified.
- Generally no substantive reasons for not ratifying
  - » At our recent meeting, most EU member states said they would ratify by end 2002. Candidate countries said they would follow.



# Strengthening Annex VI

## EU stakeholders generally agree

- » Global sulphur cap of 4.5% is too high
- » NO<sub>x</sub> standards do not go far enough
- » But SO<sub>x</sub> Control Areas are a good thing...

## Most would like tougher rules

- » to be agreed internationally
- » but not before Annex VI enters into force

But political pressure on legislators to act now...



# SOx a priority for Europe

- Acid deposition

Northern Europe very acid-sensitive:

- destroying fish
- destroying forests
- acidifying groundwater

Everywhere in Europe, historic buildings being eroded

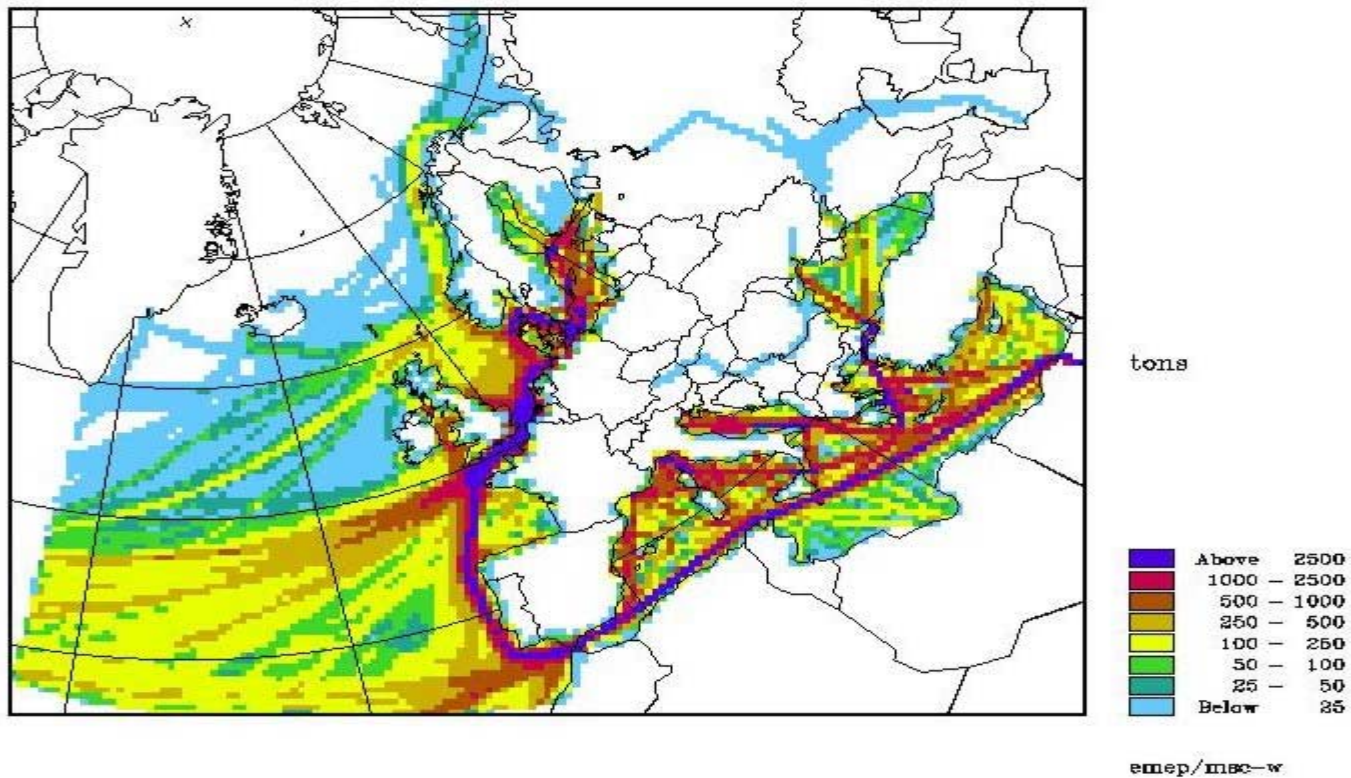
- Particulate matter

- causing respiratory illness
- harming human health



# Map of ship SOx emissions

SOx emission from International ship traffic in All Sea Areas







# Ships' SOx share growing

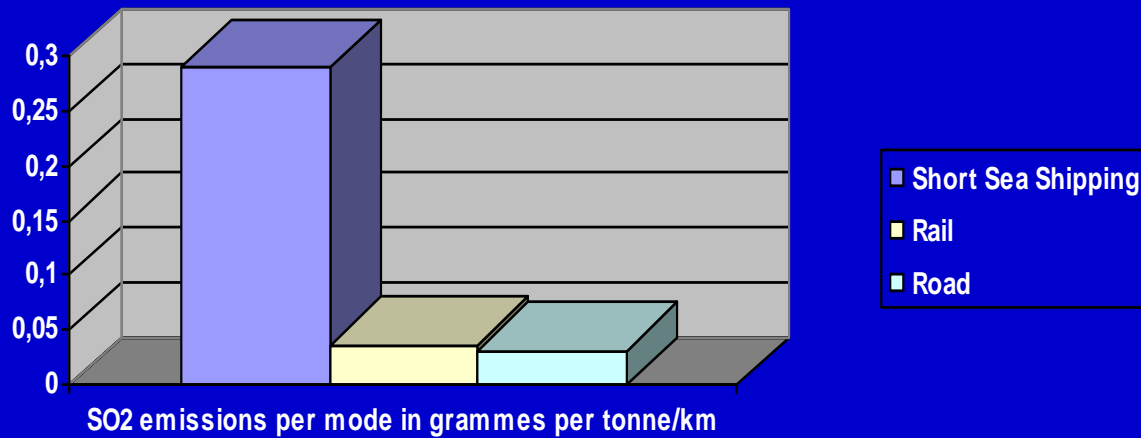
- As land-based sources of SOx emissions are abated (eg from large combustion plants and other modes of transport), ships' contribution is growing.



# Why is ship SOx so high?

High ship SOx emissions are a direct result of the high S content of marine fuel

- » marine heavy fuel oil average 3% or 30,000 ppm
- » c.f. EU petrol and diesel now around 50 ppm





# Reducing ship SOx

- Why?

- » because for most EU countries, reducing ship emissions is now much cheaper than the next possible land-based measure
- » because EU shipowners want to improve their environmental performance - quality shipping

- How?

- » need to reduce the S content of fuel
- » and/or install flue gas scrubbing
- » and/or reduce amount of fuel being used

# Reducing SOx - international options



- Ensure MARPOL Annex VI is ratified
  - » The SOxECAs under Annex 6 means that all ships in all parts of the North Sea & Baltic will have to use fuels with less than 1.5% sulphur
- Press for stronger Annex VI, including a global sulphur cap less than 4.5%
- Ensure the SOxECAs are effectively implemented



# Implementing SOxECAs

- IMO resolution last November calls on the oil and shipping industries to facilitate the availability and use of low sulphur bunker fuel oil.
  - Asked EU stakeholders this question last week - same could be asked here...
- 4.3 What measures do the oil and shipping industries intend to take to facilitate the availability and use of low sulphur bunker fuel?
- Would welcome responses, here or in writing in response to our discussion document

# Reducing SOx - EU regulatory options



During 2002, the Commission aims to propose an amendment to directive 1999/32 on the sulphur content of liquid fuels. Currently only covers MGO/MDO. Some options (not decided):

- » Clarify exemption for international shipping
- » Limit the use of high S HFO in territorial sea?
- » Limit the sale of high S HFO in EU ports?
- » Allow flue gas scrubbing as an alternative?

Resulting proposal will be subject to “co-decision” with the European Parliament and Council



# NOx environmental impacts

## Acid deposition

- destroying fish
- destroying forests
- acidifying groundwater
- eroding buildings

## Eutrophication

- harming sea ecosystems

## Ground level ozone (smog)

- harming human health
- damaging crops & forests

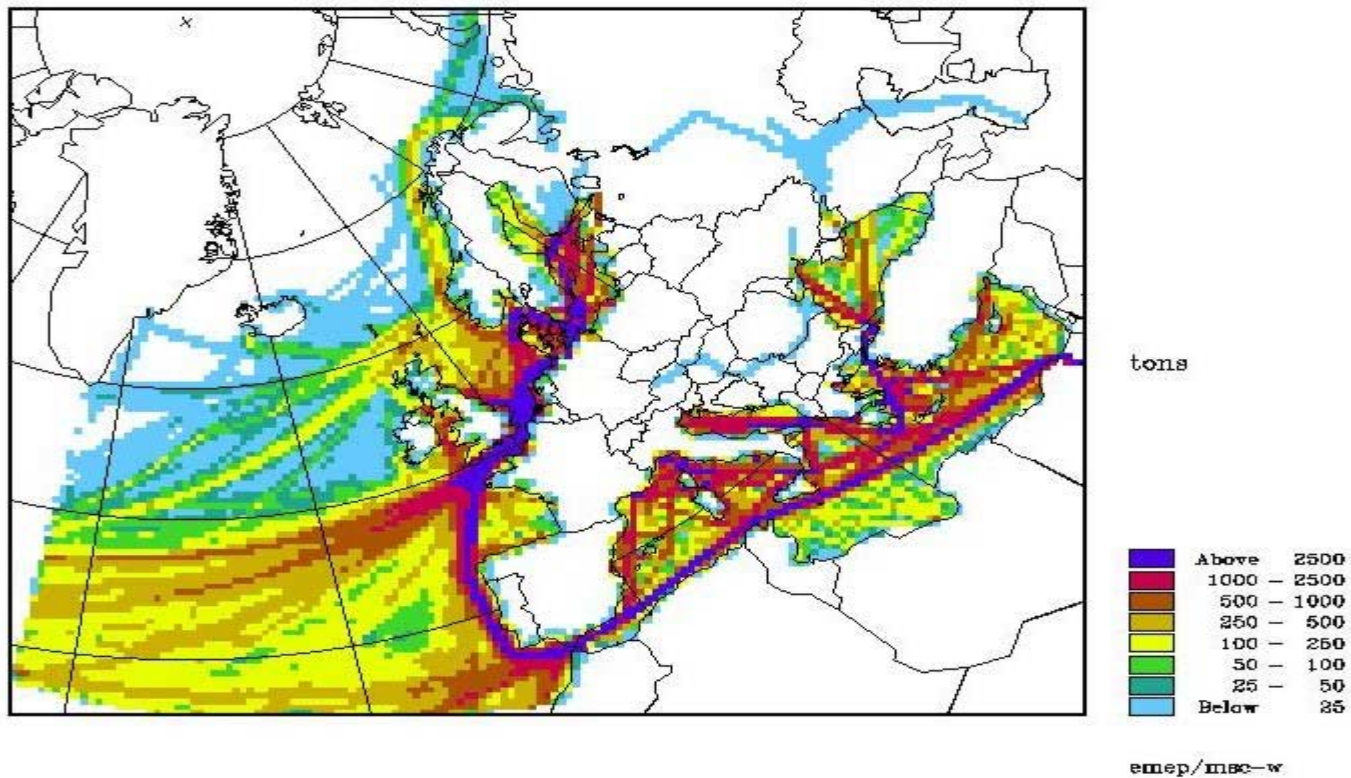
## Particulate matter

- harming human health
- causing respiratory illness



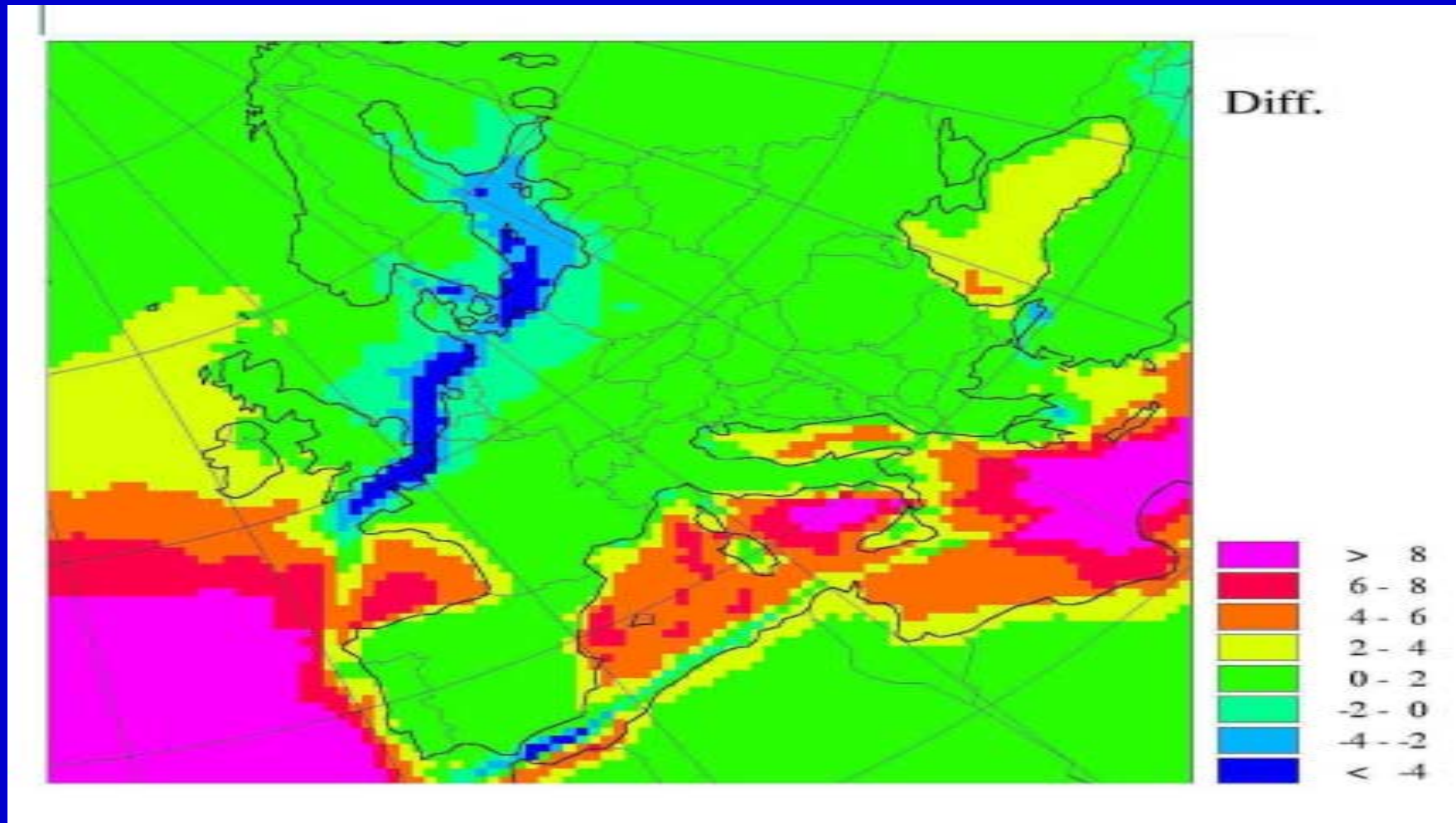
# NOx emissions from Ships

NOx emission from International ship traffic in All Sea Areas





# Ship NO<sub>x</sub>: contribution to ozone levels



# Reducing NOx - international options



...ensure MARPOL Annex VI is ratified

*of course. Though EU stakeholders confirm voluntary engine certification arrangements are already in place, and almost all new engines comply*

... tougher Annex VI NOx standards?

*again, most EU stakeholders agree but would prefer waiting until after entry into force*

... NOx Emission Control Areas a possibility?

*some concerns about cost and enforceability, but would welcome views*

# Reducing NOx - some other options

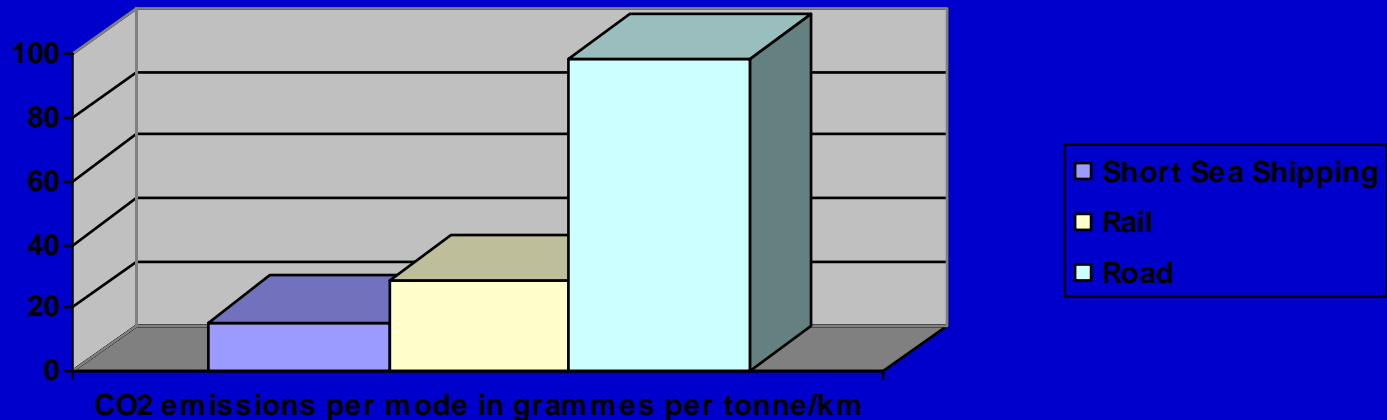


- EU NOx control measures for EU flagged ships on intra-EU routes?
- National control measures?
- Market-based measures?



# CO2 emissions

- Ships perform relatively well compared to other modes (per tonne km)



- Nonetheless ship emissions of CO2 are 1.8% of world total - more than Norway, Sweden, Denmark, Finland and Latvia combined



# Greenhouse Gases

- IMO aiming to approve a strategy for reducing greenhouse gases. If no strategy is approved by 2003, European Commission has political mandate to propose EU action.
- IMO's Marine Environment Protection Committee due to discuss greenhouse gas emissions at an ad-hoc Working Group during their next meeting in March (MEPC 47)
- EU Member States, Candidate Countries committed to engaging in discussions during MEPC 47 and MEPC 48. Commission will attend.
- Greenhouse Gases another candidate for market-based measures (eg emissions trading) or operational measures (eg speed reductions).



# Market-based measures

Some existing schemes:

- Sweden - differentiated fairway and port dues
- Green Award - differentiated dues in 35 ports
- Hamburg - differentiated port dues
- Norway - environmental indexing, bunker tax
- US - SO<sub>x</sub> emissions trading for industry



# Market-based measures:

## Discussion of future options

- Considering existing schemes, and possibility of extending to other / all EU countries
- Could be an opportunity for collaboration with other ports worldwide. Would be useful if there was just one global certification / indexing procedure. **What do you think?**
- Emissions trading a possibility?
  - » Two separate projects exploring possibilities of EU trading schemes, including between land-based emitters and ships.
  - » Accurate monitoring and verification essential to assure transparency. Technology not quite there...
- Letting a study contract to explore all market-based measures.



# Operational Measures

- **Speed Reduction on run-in to ports**
  - » Good compliance with Los Angeles voluntary scheme
  - » Safety benefits as well as emissions reductions
  - » As an alternative to low sulphur fuel or NOx reduction?
- **Shore-side electricity**
  - » Power source generally cleaner than high sulphur heavy fuel oil
  - » Expensive?
  - » Practical difficulties?





# What happens next?

- **End February:** look forward to responses to discussion paper. Would welcome input from US stakeholders, particularly on possibilities for collaboration (eg on environmental indexing, differentiated port dues, trading).
- **April:** aim to hold meeting of key EU stakeholders to advise on draft proposal to revise sulphur directive
- **Summer:** results of year 2000 EU ship emission quantification study should be available
- **After that:** Commission intends to publish a *Communication to the European Parliament and Council on a Community strategy to reduce air pollution from seagoing ships (covering SO<sub>x</sub>, NO<sub>x</sub>, CO<sub>2</sub> and VOCs)*