Air Pollution Policy and Implications

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Outline

• The policy framework
• An “effects-based” approach
• European agreements
• National Air Quality Strategy
• Current policy focus
• Where next?
• How the conservation agencies can help
Policy Framework

- Local, national, European, even hemispheric effects of air pollution on health, materials and vegetation

- National **Air Quality Strategy**:  
  - Health objectives for 8 air pollutants
  - Ecosystem objectives for NO$_x$ and SO$_2$

- **UNECE Protocols, EU Directives on emissions, air quality objectives, sector/technology specific controls**
UNECE

• 1979 Convention on Long Range Transboundary Air Pollution
• 1985 – 1991 Protocols (SO$_2$, NO$_x$, VOCs): straightforward % emission cuts
• Simple and intelligible to policy makers, but impacts not quantified
⇒ Effects-based approach
Critical Load Concept

- **Critical Load**: “a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified elements of the environment do not occur according to present knowledge”

- **Exceedance**: deposition above critical load

- ‘**Gap closure**’: identify emission reduction scenarios to reduce exceedance
Effects-based Approach

• 1994 Oslo Protocol (further cuts in SO$_2$) Aimed to gradually attain critical loads for acidity

• 1999 Gothenburg Protocol (Multi-pollutant, multi-effect Protocol)

• Set ceilings for SO$_2$, NO$_x$, VOCs and NH$_3$ to be achieved by 2010

• Scheduled for Review in 2004/5
EU

- EC 1997 Acidification Strategy – effects-based approach
- 2001 **National Emission Ceilings Directive** (Review in 2004/5)

- EC 1996 **Air Quality Framework Directive**
- Daughter Directives: ozone, \( \text{NO}_x \), \( \text{PM}_{10} \), etc. + 2 objectives for ecosystems
What will these commitments bring?

- Reduction in critical load exceedence (%ecosystem area)
- But areas still at risk
- Including many conservation areas

<table>
<thead>
<tr>
<th>ACIDITY</th>
<th>NUTRIENT N</th>
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<tbody>
<tr>
<td>1995-7</td>
<td>62% area</td>
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<tr>
<td>2010</td>
<td>44% area</td>
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<tr>
<td>1995-7</td>
<td>66.5% area</td>
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<td>2010</td>
<td>40% area</td>
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[Logo: DEFRA Department for Environment Food and Rural Affairs]
Air Quality Strategy - UK

- 8 objectives on health effects of air pollutants

- 2 Ecosystem and vegetation objectives:
  \( \text{NO}_x \) annual mean 30 micrograms / m\(^3\)
  \( \text{SO}_2 \) annual & winter mean 20 micrograms / m\(^3\)

But not in exclusion zones:
< 20 km from agglomeration
< 5 km from motorways, built-up areas and industrial plant
2010 concentration map for NOx

CEH, 2001

Concentration (ug m$^{-3}$)

- Blue: 0 - 10
- Green: > 10 - 20
- Yellow: > 20 - 30
- Dark Red: > 30 - 40
- Black: > 40

1998
EXAMPLE: Location of SSSIs in Northern England with 1998 NOx concentrations
Air Quality Strategy

- Current ecosystem objectives are met

- BUT large areas **within exclusion zones** exceed NOx critical level
- Other pollutants and deposition not included

- How to strengthen objectives for ecosystems?
- Targets for conservation sites?
- Priority pollutants?
- Link with Habitats Directive, IPPC, etc
- Site-relevant information needed
Ammonia – a new challenge

- Significant local and long-range effects
- Mainly from livestock manure
- IPPC controls for large pig & poultry units
- Annual emission ceiling for 2010

- Defra research on abatement options
- Abatement difficult - risk of diverting pollution
- “Ammonia in the UK” booklet
Policy relevant issues

- Significant ecosystem areas still “at risk” in 2010
- Damage/recovery intrinsically slow
- Field evidence emerging – CS2000, Plant Atlas
- Condition of conservation sites?
- Habitat management – role and extent?

- Further emission cuts will be costly
- So far, policy focus on national & European scale, need more fine scale information
UK: Where next....?

- **Air Quality Strategy**: strengthen ecosystem objectives (currently $SO_2$, $NO_x$ critical levels)
- A focus on **Conservation sites**
- Evidence, risks, new AQS objectives
- **Ammonia** – potential UK abatement strategies
Europe: Where next....?

- Preparation for Gothenburg/NECD review: focus on ammonia, particles
- Sulphur Emissions from Ships – EU negotiations
- Other controls: solvents, large combustion plant
- Climate change interactions
- Global ozone – hemispheric approach?
How the Agencies can help

- Scale of the problem
- Raise profile
- Link to Habitat Directive, BAPs
- Identify targets, guide air pollution policy
- Site monitoring & management
Thank you for your attention