

# 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<sub>x</sub> and SO<sub>2</sub>
- **UNECE Protocols, EU Directives on emissions, air quality objectives, sector/technology specific controls**

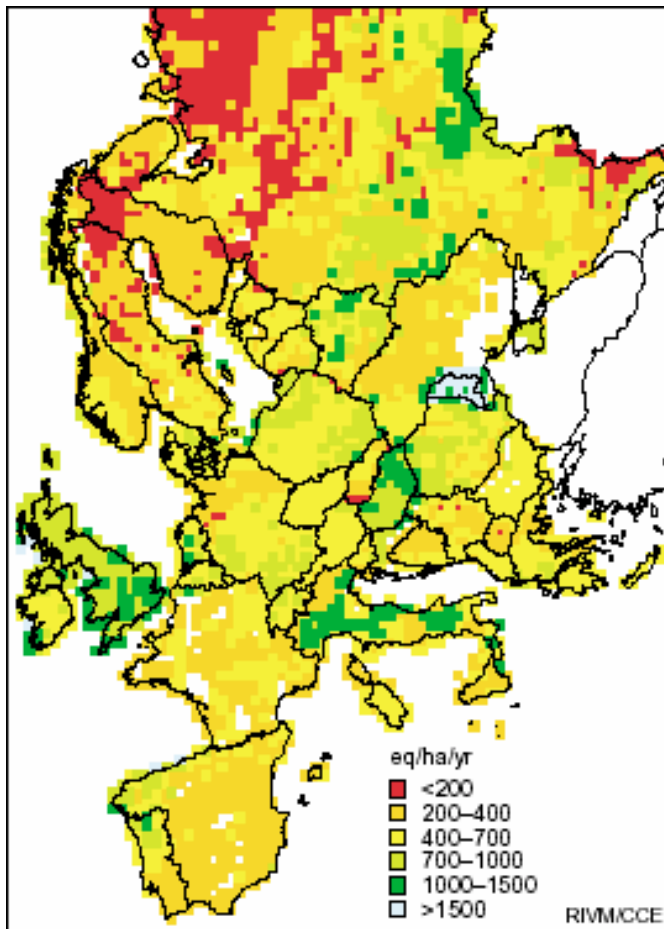
# UNECE



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

# Critical Load Concept

Nut N



- **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<sub>2</sub>)  
Aimed to gradually attain critical loads for acidity
- 1999 **Gothenburg Protocol** (Multi-pollutant, multi-effect Protocol)
- Set ceilings for SO<sub>2</sub>, NO<sub>x</sub>, VOCs and **NH<sub>3</sub>** 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, NO<sub>x</sub>, PM<sub>10</sub>, 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

## ACIDITY

1995-7 66.5% area

2010 40% area

## NUTRIENT N

1995-7 62% area

2010 44% area



# Air Quality Strategy - UK

- 8 objectives on health effects of air pollutants

- 2 Ecosystem and vegetation objectives:

**NO<sub>x</sub>** annual mean **30** micrograms / m<sup>3</sup>

**SO<sub>2</sub>** annual & winter mean **20** micrograms / m<sup>3</sup>

But not in exclusion zones:

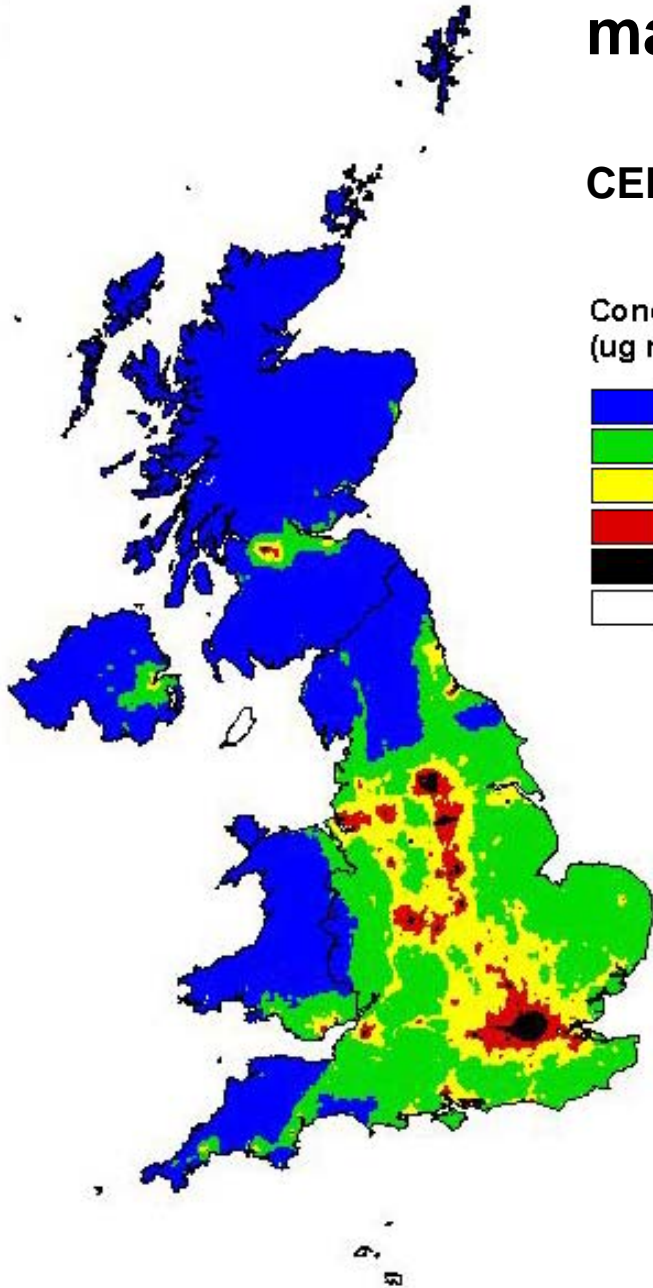
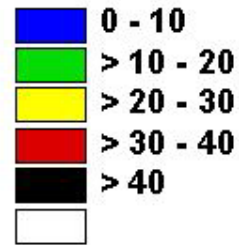
< 20 km from agglomeration

< 5 km from motorways, built-up areas and industrial plant

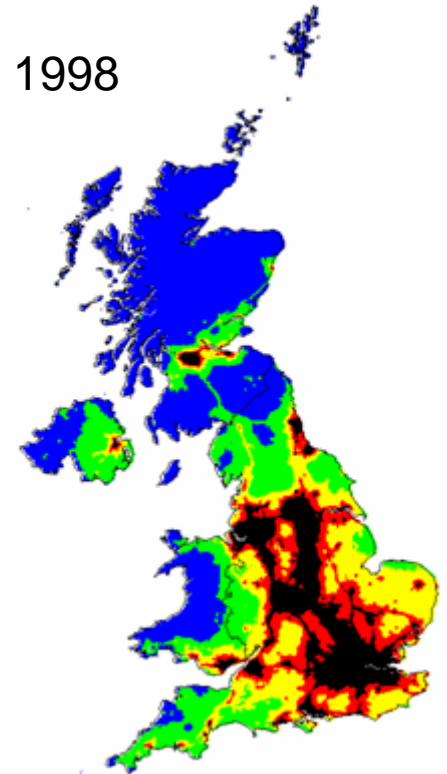
# 2010 concentration map for NOx

CEH, 2001

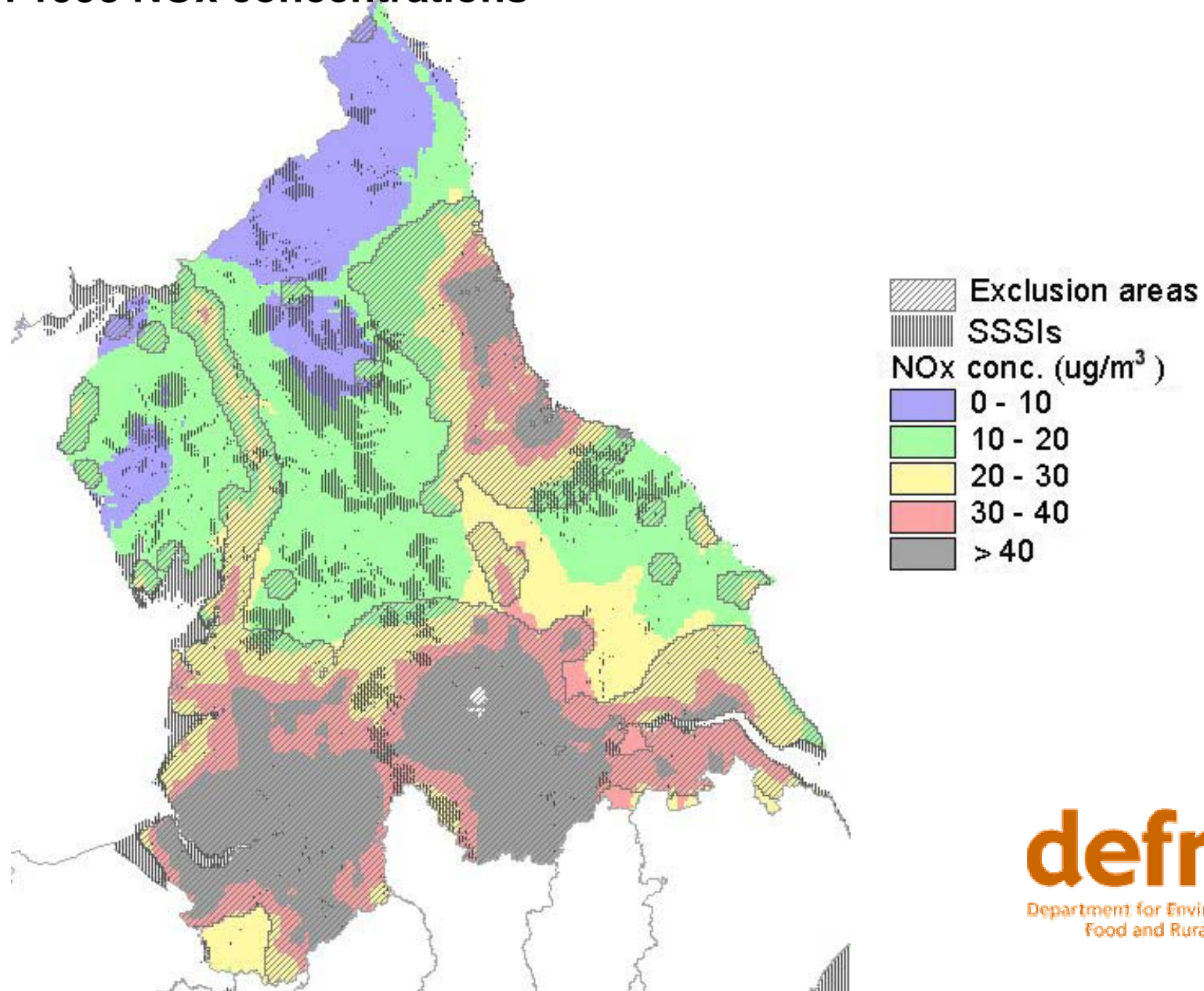
Concentration  
( $\mu\text{g m}^{-3}$ )



1998



## EXAMPLE: Location of SSSIs in Northern England with 1998 NO<sub>x</sub> 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<sub>2</sub>, NO<sub>x</sub> 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**

**Identify targets,  
guide air  
pollution policy**

**Link to Habitat  
Directive, BAPs**

**Site monitoring  
& management**

**Thank you for  
your attention**