

# Meeting EU limit values

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# The EU legal framework determines the UK air quality assessment

- ▶ All Member States must undertake air quality assessment and report annually to the European Commission
- ▶ The Directives:
  - ▷ Council Directive on Ambient Air Quality and Cleaner Air for Europe (2008/50/EC). This Directive consolidates the first three Daughter Directives and covers NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, CO, Pb, O<sub>3</sub> and Benzene.
  - ▷ The 4th Daughter Directive (2004/107/EC) which remains in force. This covers PAHs, Cd, As, Ni and Hg.
- ▶ The UK has statutory monitoring networks in place to meet the requirements of these Directives, with air quality modelling used to supplement the monitored data.

## **But there is more to do:**

- ▶ the annual limit value for  $\text{NO}_2$  is exceeded in 40 zones and the hourly limit value exceeded in 3 zones
- ▶ Long term objectives for ozone are exceeded in most zones
- ▶ Target values for Nickel and benzo[a]pyrene are exceeded in a small number of zones
- ▶ National exposure reduction target for  $\text{PM}_{2.5}$  is challenging

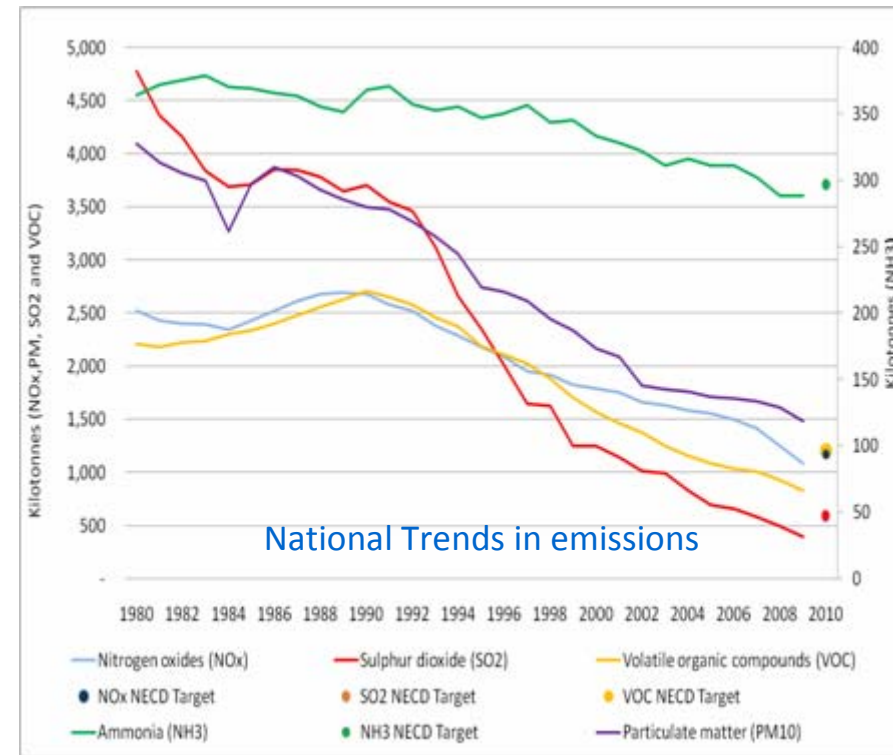
# Comparisons with other countries are complicated by assessment approaches

- ▶ 19 Member States are being infringed for non-compliance with PM<sub>10</sub> limits
- ▶ 22 Member States reported exceedences of the annual NO<sub>2</sub> limit value in 2008
- ▶ Where the NO<sub>2</sub> limit value could not be met by 2010 air quality plans have been prepared and submitted to the Commission
- ▶ UK has submitted air quality plans for 40 zones setting out actions being taken to meet the limit values

# Progress towards the LVs is determined by availability of effective measures

## Atmosphere and Local Environment

- Concentrations of nitrogen dioxide ( $\text{NO}_2$ ) have not followed emissions trends, leaving roadside 'hot spots' as EU diesel vehicle engine standards have underperformed, particularly in urban driving conditions.
- Concentrations particulate matter (PM) and ozone, are particularly influenced by weather conditions.
- Ozone is influenced by hemispheric emissions; background levels are rising.



# EU air quality legislation is being reviewed



*Atmosphere and Local Environment*

- The Commission aims to publish proposals by 2013 to revise the ambient air quality and national emission ceilings directives;
- The UK's response to the Commission's initial consultation included the following high level aims:
  - It is important that the Review explores **further scope for reducing negative health and environmental impacts of air pollution** in the context of sustainable development, taking account of the costs and feasibility of additional actions.
  - We think the time is right to **look again at the interpretation of health evidence for NO<sub>2</sub> into the legal framework** and the approach to controlling this pollutant, taking into account other international standards and frameworks.
  - We believe that **opportunities for simplification** and reduction of cost and administrative burdens need to be investigated.

# What could simplification mean?

- ▶ The air quality regime is complex, technocratic and difficult to understand.
- ▶ This could be simplified by:
  - ▷ only having targets where action is needed
  - ▷ minimising the number of targets per pollutant: only one?
  - ▷ review the zonal approach for reporting – it doesn't reflect the extent of the problem nor actions to reduce it
  - ▷ Reducing the complexity of the reporting framework
- ▶ Compliance deadlines have brought into sharp focus the implications of variations in the assessment regime
- ▶ Uncertainties around exposure reduction for PM<sub>2.5</sub>

# Can we assess the NERT?

- ▶ Member States required to assess and reduce population exposure to PM<sub>2.5</sub> by 2020.
- ▶ Magnitude of the required reduction depends on the value of an Average Exposure Indicator (AEI).
  - ▷ PM<sub>2.5</sub> measurements in urban background locations
  - ▷ Assessed as a three year running annual mean concentration.

Exposure Reduction Target	
Initial Concentration in $\mu\text{g}/\text{m}^3$	Reduction Target %
< 8.5, = 8.5	0 %
>8.5, < 13	10 %
=13, < 18	15 %
=18, < 22	20 %
> 22	All appropriate actions to achieve 18 $\mu\text{g}/\text{m}^3$



# The uncertainty can be calculated...

- ▶ The UK has undertaken an GUM\* based assessment of the factors that are likely to make a contribution to the uncertainty of measurement of PM<sub>2.5</sub> AEI now and in 2020, including:
  - ▷ Analyser measurement uncertainty
  - ▷ Combining analyser uncertainties into AEI
  - ▷ Effect of meteorology on measured concentrations
  - ▷ Effect of analyser maintenance
  - ▷ Effect of analyser replacement
  - ▷ Relationship between automatic and manual methods
  - ▷ Changes to Reference Method
  - ▷ Relocation of monitoring stations

\*Guide to the Expression of Uncertainty in Measurement, <http://www.iso.org/sites/JCGM/GUM-JCGM100.htm>

# ...and is larger than the NERT

▶ **Uncertainty in the AEI over 3 years:**

- ▷ Measurement of the AEI for the period 2009-2011 is likely to yield a result with an uncertainty in the order of  $\pm 0.2 \mu\text{g}/\text{m}^3$ .

▶ **Uncertainty in calculating the achievement of the NERT over ten years:**

- ▷ Depending on changes in conditions between now and 2020, the scale of this expanded uncertainty could be between  $\pm 2.5$  and  $8.6 \mu\text{g}/\text{m}^3$ .

- ▶ This would not produce data with a low enough uncertainty to robustly assess a reduction of  **$2.0 \mu\text{g}/\text{m}^3$**  in  $\text{PM}_{2.5}$  concentrations between 2010 and 2020.

**Is there another way to represent population exposure?**

- ▶ Assessment framework is complex and legally driven but open to interpretation: international comparisons are difficult
- ▶ Progress towards compliance is determined by available measures: there is a lack of real “game changers”
- ▶ 2013 review needs to maintain credibility: long term aspirations need to be reality checked
- ▶ The regime needs to be simplified if key messages around air quality are to be understood by non-experts
- ▶ Exposure reduction is still the right philosophy but many practical issues exist

# THANK YOU!

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