

Air Quality Policy in the UK

DEFRA/USEPA Meeting

6 December 2010

- Legal Framework for UK Air Quality
- Roles and Responsibilities
- Policy and Legal drivers to improve air quality
- Policy Priorities
- Some points for discussion

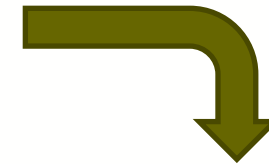
Legal Framework

International

WHO - Health standards
Convention on Long range
Trans-boundary pollutants



Sets international standards and
agreements on limits and emissions
Fed into European Directives



European

IPPC etc.
Emissions Ceilings
Ambient Air Quality

Directive transposed into UK Law
Sets standards for ambient air quality and
emissions reductions



United Kingdom

Environment Act
Air Quality Strategy



Sets National objectives for air quality
related to EU limit values



Regulation and Compliance

National Measures to reduce pollution
Environmental Permitting
Local Pollution Control
Local Air Quality Management

Roles and Responsibilities

Department for Environment, Food and Rural Affairs

Secretary of State
Caroline Spelman

Set Air Quality Strategy

Policy direction and priorities

Manage

Evidence Base Monitor, Model and Research

Coordinate and oversee UK Legislation with Devolved Administrations

Other Government Departments

Health

Transport

Treasury

Energy and Climate Change

Communities and Local Government

Business innovation and skills

Environment Agency

Regulates over 3,000 industrial installations under IPPC

Support local authorities to improve air quality

Operate with reference to Air Quality Strategy and EU legislation

Greater London Authority and Local Authorities

Local air quality management – ambient air quality

Local pollution control – small industrial sites

Policy and Legal Drivers to improve air Quality



- Health risks
- Ecosystem impacts
- Climate change
- Legal Limit values

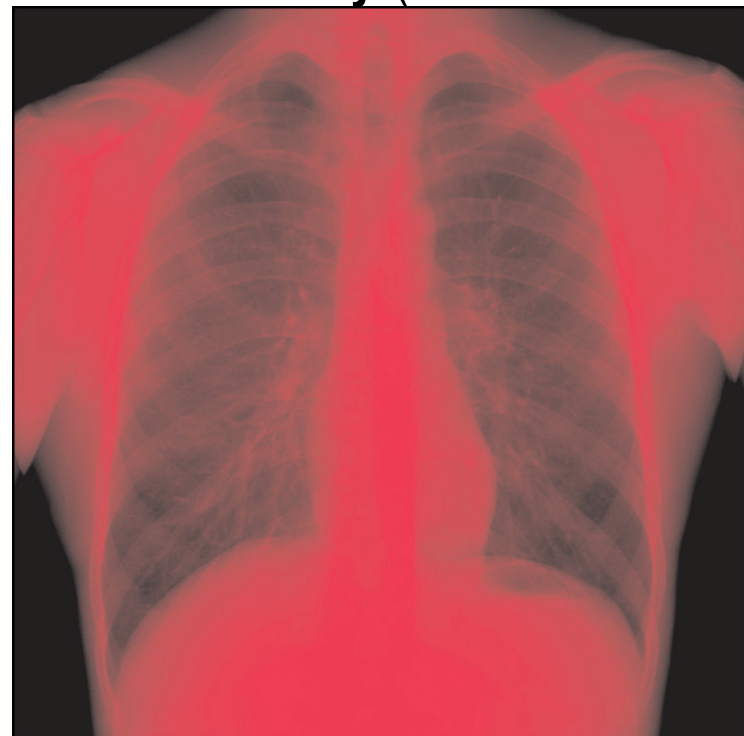
Air Quality is improving but continues to have negative effects on human health and on ecosystems



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- Man-made fine particulate matter (PM_{2.5}) alone **reduces the average life expectancy of people in the UK by 6 months, costing £15 billion annually.**
- This is **comparable to the economic cost of obesity** (in excess of £10 billion) in urban areas.
- Air pollution can cause damage to biodiversity and to **sensitive and valuable habitats.**
- Things have improved since the 'acid rains' but **critical acidity levels** from deposition of sulphur or nitrogen are still **exceeded in many areas.**



Environmental limits - human health

	Air Quality Objective	
	<i>Concentration</i>	<i>Measured as</i>
Nitrogen Dioxide (NO ₂)	200 µg m ⁻³ not to be exceeded more than 18 times a year	1-hr mean
	40 µg m ⁻³	Annual mean
Particles (PM ₁₀)	50 µg m ⁻³ , not to be exceeded more than 35 times a year	24hr mean
	40 µg m ⁻³	Annual mean

These values mirror European Limit Values that the UK reports against to the Commission every year. Monitoring/modelling is done for the whole country to inform the reporting.

All regions currently have areas that exceed NO₂ values, only London typically exceeds PM₁₀.

Environmental limits - ecosystems

	Air Quality Objective	
	<i>Concentration</i>	<i>Measured as</i>
Oxides of nitrogen (NO _x)	30 µg m ⁻³	Annual mean
Sulphur dioxide (SO ₂)	20 µg m ⁻³	Annual mean
	20 µg m ⁻³	Winter average
Ozone (O ₃)	Target value of 18,000µg m ⁻³ based on AOT40 to be calculated from 1 hour values from May to July, and to be achieved, so far as possible, by 2010	Average over 5 years

Policy priorities for air quality

- Agreeing realistic Emissions Ceilings
- Reducing NO₂ transport emissions
- Reducing exposure to PM₁₀ and PM_{2.5}
- Optimising Climate change and air quality benefits

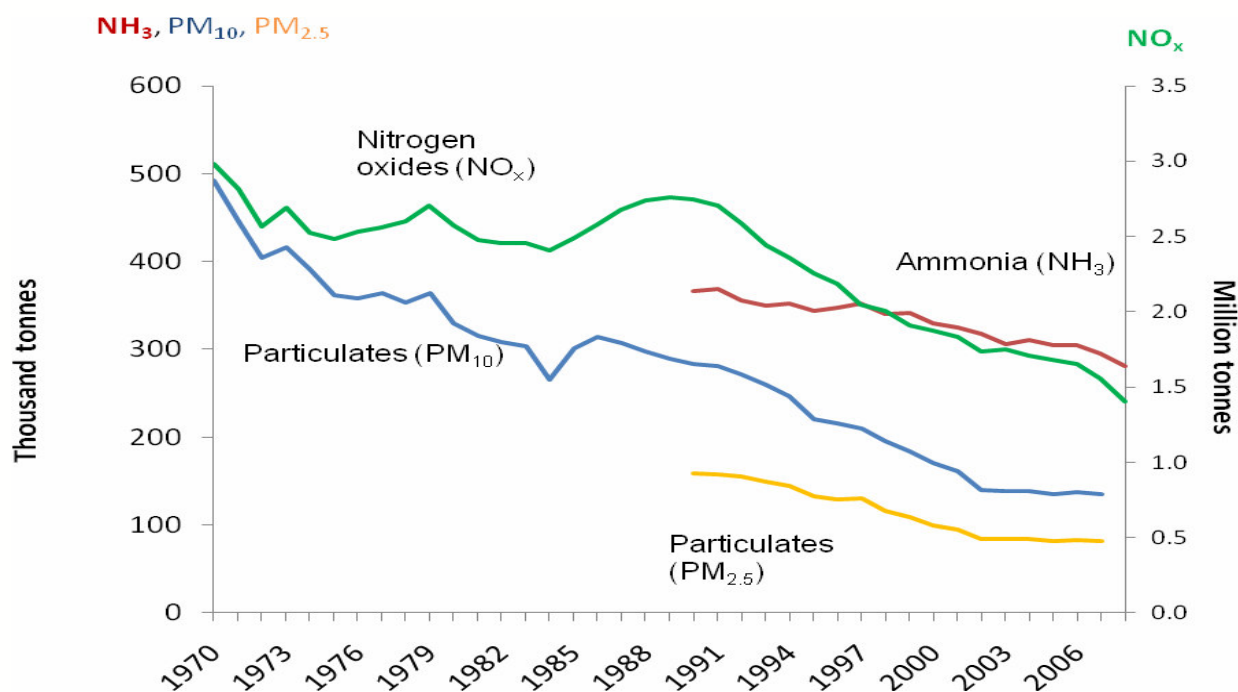
Progress against national emission ceilings

Pollutant	2010 Ceiling (kT)	2008 emissions (kT)	2010 projections (kT)
Nitrogen Oxides (NO _x)	1167	1403	1210
Sulphur Dioxide (SO ₂)	585	512	390
Non-Methane Volatile Organic Compounds	1200	942	814
Ammonia (NH ₃)	297	282	289

The UK ceilings above are those set under the EU National Emission Ceilings Directive rather than the UNECE Gothenburg Protocol. The protocol sets slightly less stringent UK ceilings for NO_x (1181kT) and SO₂ (625kT).

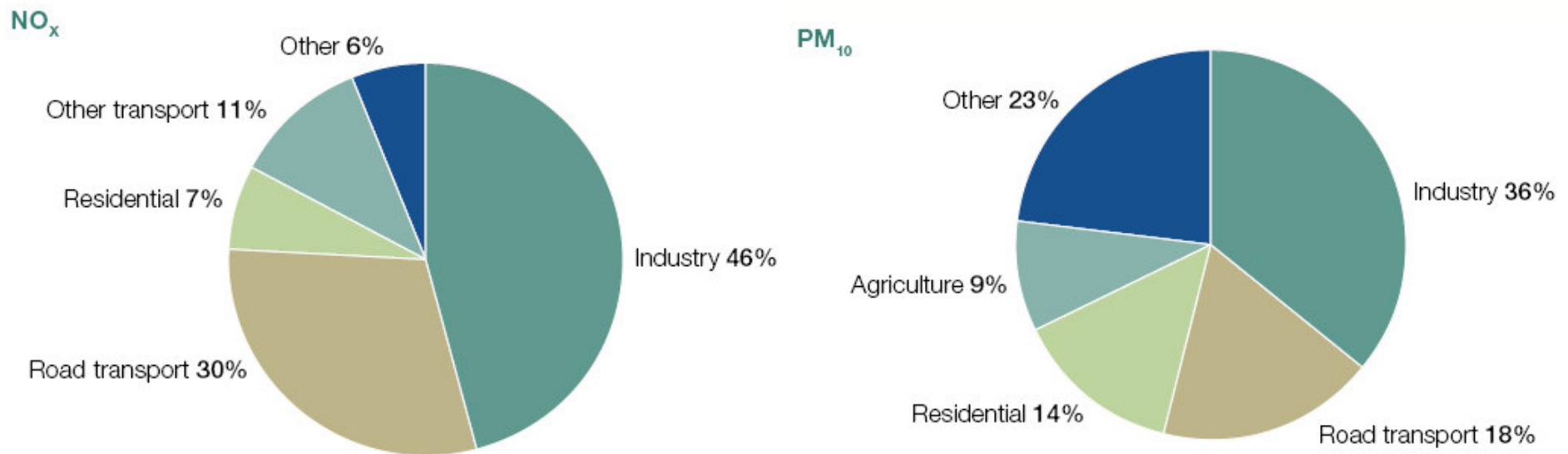
Air quality: trends in emissions

Trends in emissions for oxides of nitrogen (NO_x including nitric oxide (NO) and nitrogen dioxide (NO_2); particulate matter (particle size 10 microns (PM_{10}) and 2.5microns ($\text{PM}_{2.5}$); and ammonia (NH_3))



Emissions of key pollutants harmful to human health and the environment have shown a downward trend since before the 1970s. But recent the trends on concentrations, especially for NO_2 are less reassuring

The main sources of air pollution in the UK are road transport and industry



source: National Audit Office, 2009

Although industry is a major source, **road transport** causes the vast majority of exceedences of air quality standards- and is the main driver of poor air quality in the UK

Reducing Transport Emissions

- **Meeting limit values for NO₂**
 - 27% of urban road network exceeds EU limit value of 40µg/m³
 - Road transport accounts for majority of exceedences
 - Looking at measures to achieve limit value by 2015
- **Measures available**
 - Marginal abatement cost curve has been used to identify the most cost effective measures for achieving the NO₂ limit value
 - This has highlighted Retrofit of HGVs and Buses as a particularly effective measure

Reducing Transport Emissions

- **Looking at ways to deliver these measures through**
 - Low Emission Zones and similar measures
 - Incentives for cleaner vehicles/technologies
 - Corporate responsibility and voluntary measures
- **Other measures**
 - Sustainability measures – cycling, walking etc
 - Modal shift from road to rail or water
 - Freight distribution measures

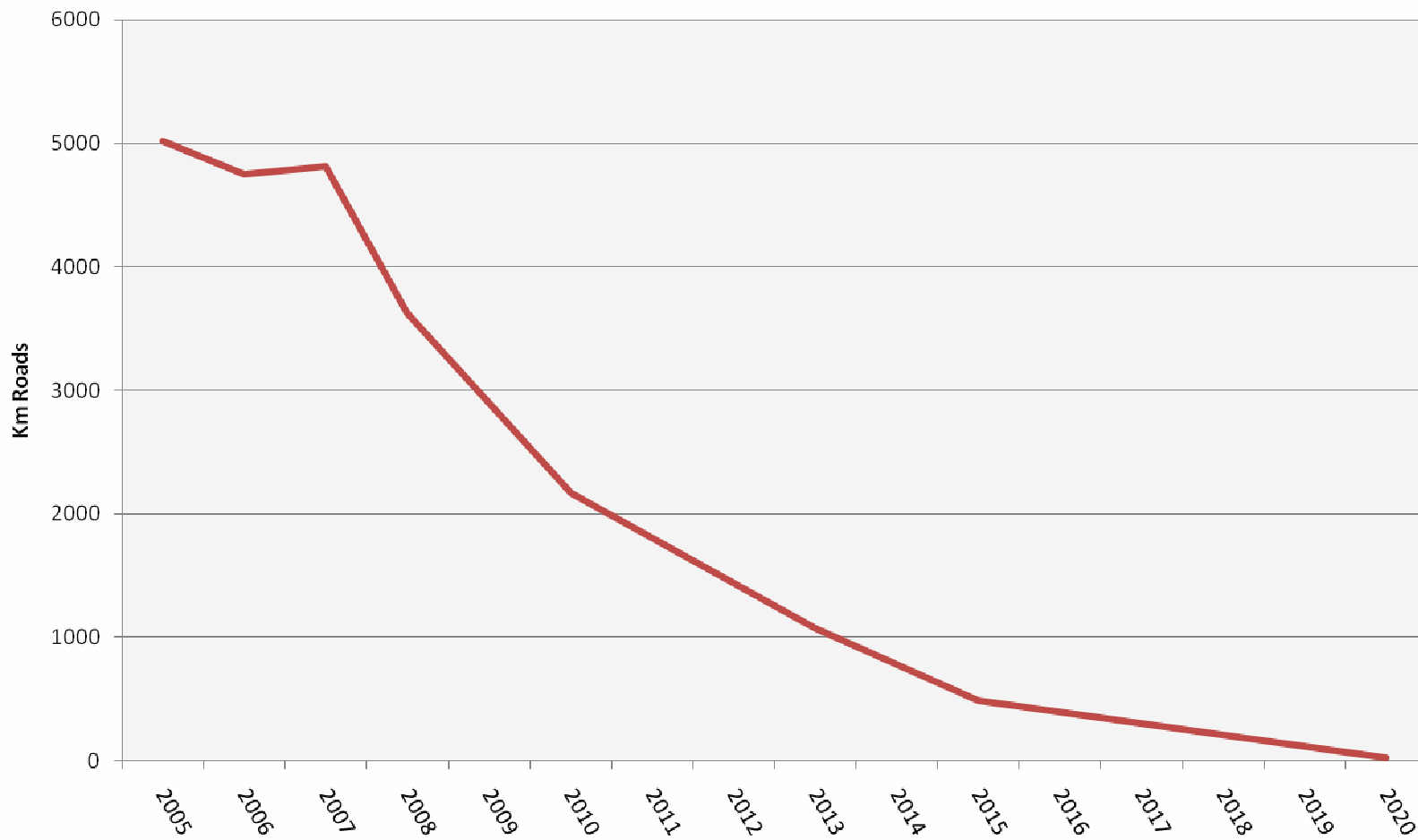
Issues and risks for achieving NO₂ limit values

- Evidence for health impacts
 - Uncertain health impacts – association with PM difficult to disentangle
 - Makes it difficult to argue cost benefit case
- Real world emission trends

Projection of km of road length exceeding the NO₂ annual average limit value in the UK

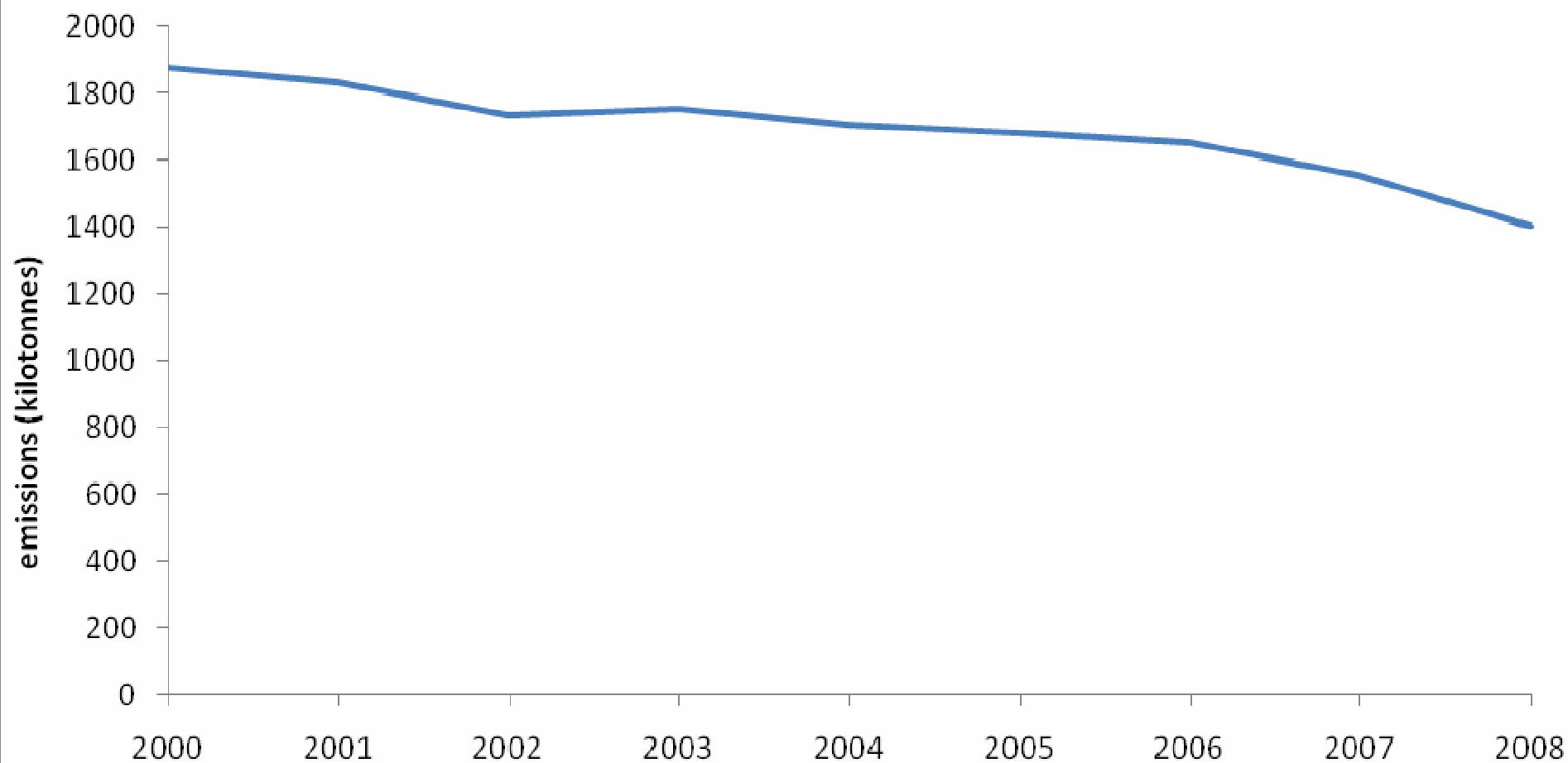


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Real world trends in NO_x

Nitrogen oxides emissions: 2000-2008



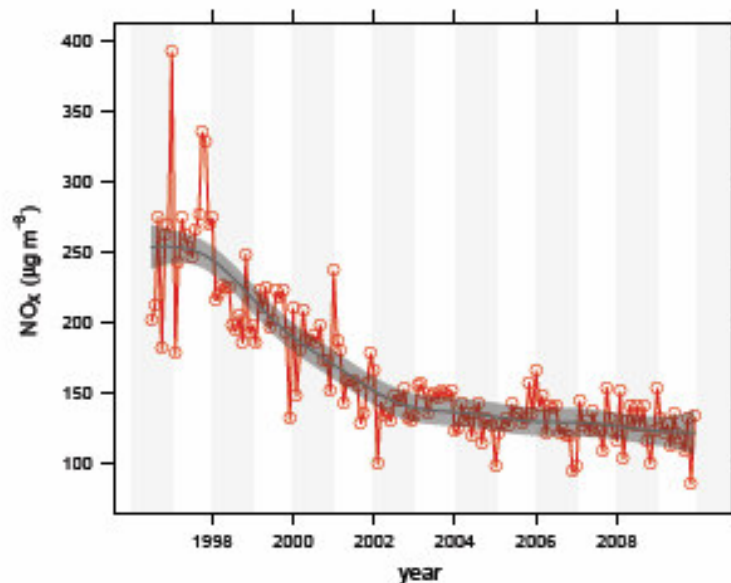
Recent trends in roadside NO_x

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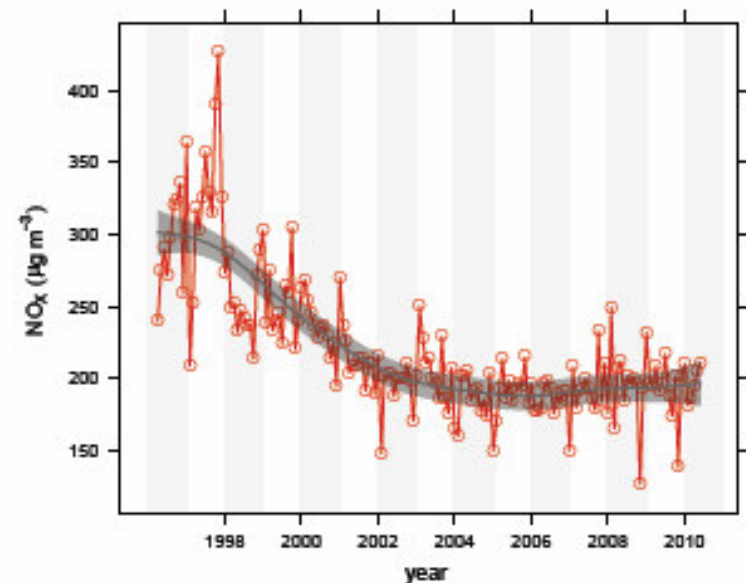
Recent trends in roadside NO_x concentrations

UK and London

12 UK sites



10 Inner London sites



- Generally concentrations have been weakly downward over the past 6–8 years

Issues and risks for achieving NO₂ limit values

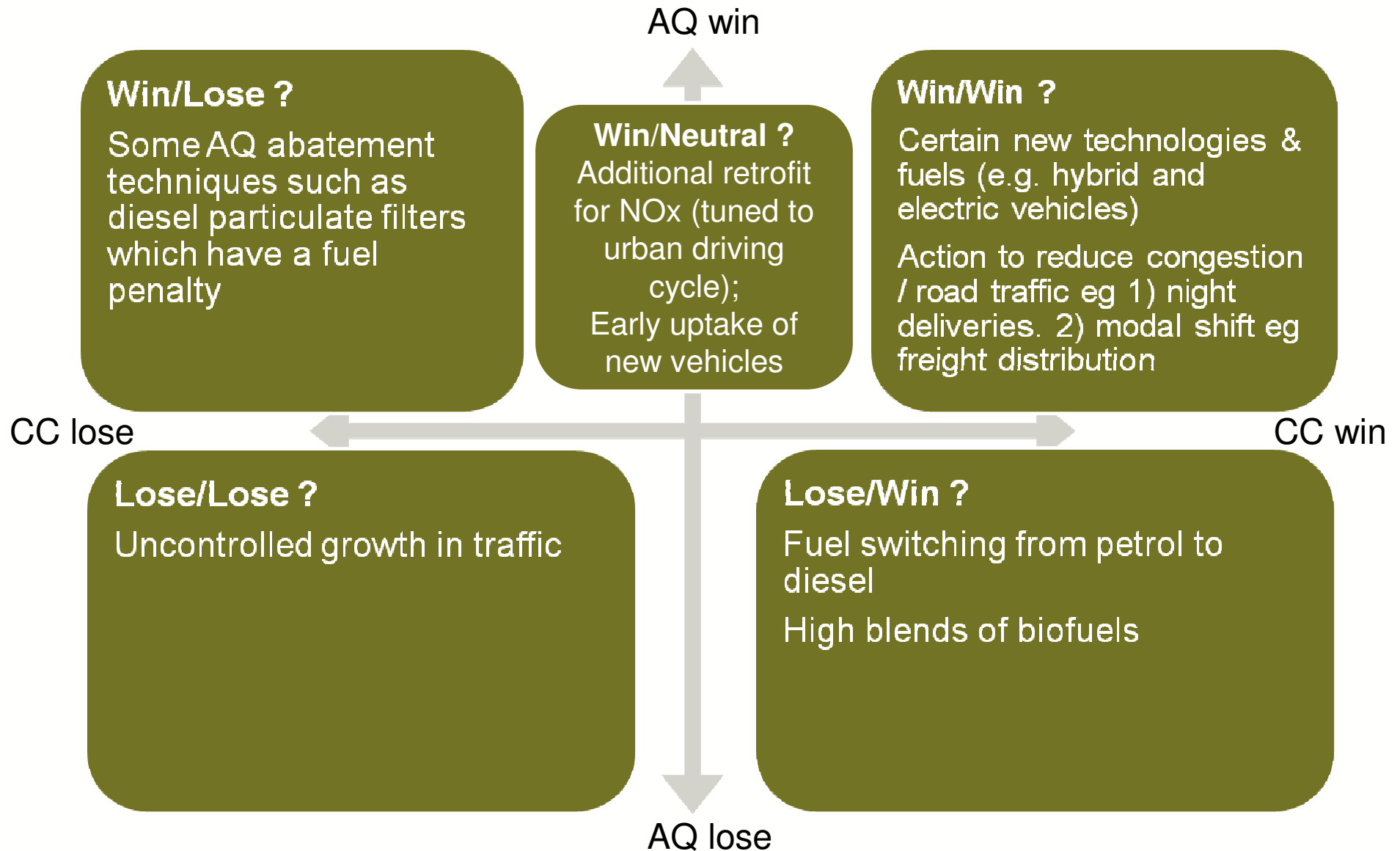
- Evidence for health impacts
 - Uncertain health impacts – association with PM difficult to disentangle
 - Makes it difficult to argue cost benefit case
- Real world emission trends
 - Projections based on emission standards not born out by real world trends in emissions
 - Some euro standards may not be achieving expected reductions in NO_x
 - Research underway to establish causes and to advice policy approaches

Optimising Air Quality and Climate Change

- **Greenhouse gases and air pollutants often come from the same sources** – e.g. electricity generation and road transport .
- They interact and mix in the atmosphere in complex ways, creating policy trade-offs.
- It therefore makes sense to join up climate change and air pollution mitigation policies to **maximise the total benefits and improve overall cost effectiveness** of the measures.
- Delivering the UK's Climate Change Act targets will give benefits for air quality worth £15 billion by 2050. However, if we design the policy measures to take into account air quality impacts, we can get air quality (health) benefits worth nearly £40 billion – so an **extra £24 billion** .



Possible measures – Impacts on Air Quality and Climate Change



Points for discussion

- Views on control of NO₂
- Approaches to reducing transport emissions
- Ceilings and trans-boundary pollutants
- Climate change and air quality interaction