

National Challenges for Air Quality

Ed Dearnley
Policy Officer

This morning's presentation

- 4 challenges:
 - Compliance with European law
 - Localism, and connecting national and local action
 - Effective actions to improve air quality
 - Beyond 2015, improving air quality in the longer term

1 – Compliance with EU Law

European Limit Value challenges

- PM₁₀ – daily and annual mean Limit Values, deadline 2005 (or 2011 with extension)
 - Officially only exceeded in small parts of London
- NO₂ – annual mean Limit Value, deadline 2010 (or 2015 with extension)
 - Widely exceeded in many parts of the UK

Why is NO₂ the challenge?

Trends in NO_x and NO₂ emissions and ambient measurements in the UK

Prepared for Defra
version 3rd March 2011

David Carslaw, Sean Beevers, Emily Westmoreland and Martin Williams
King's College London

James Tate
University of Leeds

Tim Murrells, John Stedman, Yvonne Li, Susannah Grice, Andrew Kent and Ioannis Tsagatakis
AEA

- New paper commissioned by Defra, examines why NO₂ concentrations have been falling sluggishly at best
- Real world performance of diesel vehicle emission standards is poor

NO₂ conclusions

- ‘We find that diesel cars and LGV emissions of NO_x have not decreased for the past 15–20 years; even for Euro 5 vehicles’
- ‘NO_x emissions from HGVs were static until Euro IV, where NO_x decreased by about one third. The RSD data does however show that bus emissions of NO_x have been static, or even increasing over the past 10–15 years’
- ‘Evidence from a range of sources strongly suggests that SCR is ineffective on HGVs for urban conditions due to low operating temperatures’

Ramifications

- Technology has failed to reduce diesel NO_x emissions – now locked into this failure until Euro 6 comes in at least (2013 – 2015)
- New vehicles entering the fleet are not going to help the UK meet NO₂ Limit Values (unless there's a big shift to petrol)
- (NO_x) Effectiveness of Low Emission Zones and other policies to reduce NO_x emissions?

But action is not the only way to 'comply'

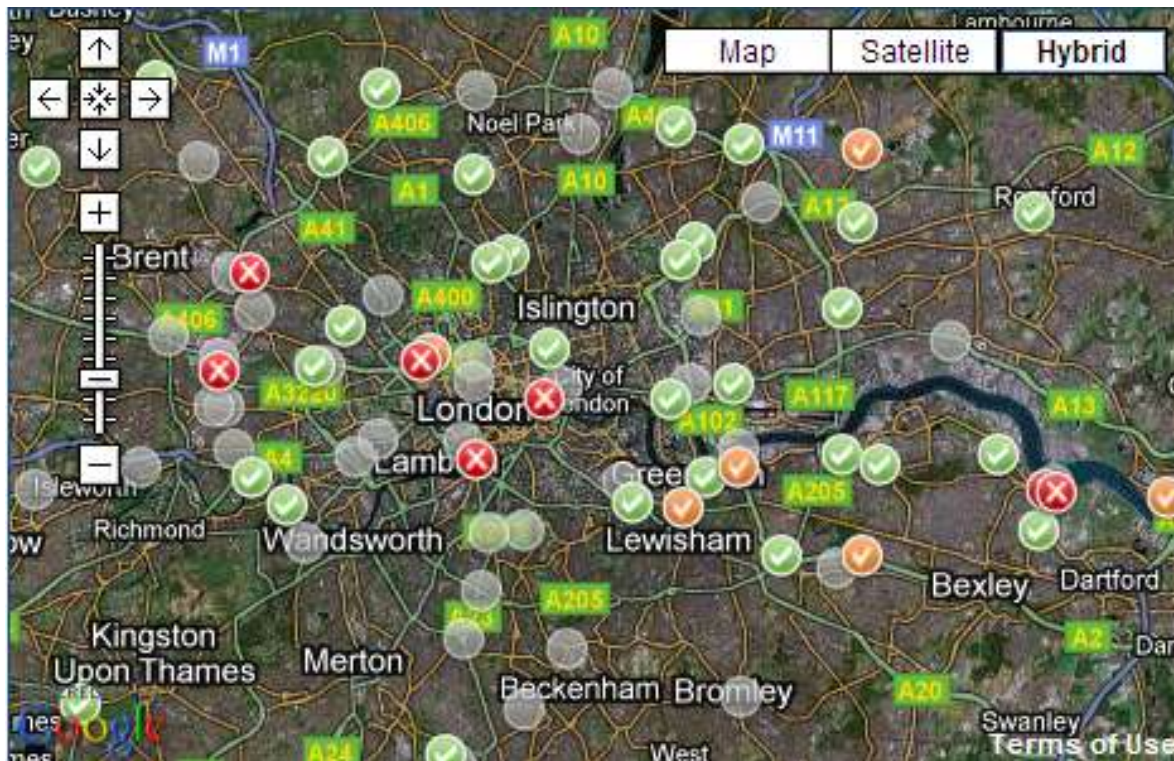


II. ENVIRONMENT, FOOD AND RURAL AFFAIRS

The Government believes that we need to protect the environment for future generations, make our economy more environmentally sustainable, and improve our quality of life and well-being. We also believe that much more needs to be done to support the farming industry, protect biodiversity and encourage sustainable food production.

- We will introduce measures to make the import or possession of illegal timber a criminal offence.
- We will introduce measures to protect wildlife and promote green spaces and wildlife corridors in order to halt the loss of habitats and restore biodiversity.
- We will launch a national tree planting campaign.
- We will review the governance arrangements of National Parks in order to increase local accountability.
- We will work towards full compliance with European Air Quality standards.

You can tweak monitoring and reporting...



Red crosses show monitoring stations in the London Air Quality Network that exceeded the PM₁₀ daily Limit Value in 2010

You can also change the goalposts!



'I also **discussed the transport aspects of transposition of the Air Quality Directive with Mr Kallas.** I pointed out that, although we are fully committed to improving air quality, and we recognise the part that transport has to play, **we are keen to ensure that the air quality targets are properly targeted at improvements in health,** and are consistent with our ambitious goals to reduce carbon and to create growth', *Theresa Villiers, Minister of State for Transport, February 2011*

Are the Government trying to get out of EU air quality commitments?

2 – Localism and connecting national and local action

Local Challenges



Spending on air quality will need to be a political priority!

More local challenges



- Localism agenda means Councils will be increasingly free to decide their own policy priorities –
- Will these include air quality?
- How can Defra (or others) encourage Councils to take action?

3 – Effective actions to improve air quality

Solutions (1) - Making Euro 6 work

- Euro 6 coming in
 - 2013 for heavy duty vehicles
 - 2015 for light vehicles
- 'It will be essential to ensure that Euro 6 vehicles result in a considerable reduction in NO_x emissions, particularly under urban driving conditions. Defra and other relevant agencies should monitor the implementation of Euro 6 vehicles through European emission standards to ensure there is sufficient evidence to support claims of significantly reduced NO_x emissions under 'real world' driving conditions' (*Trends in NO_x and NO₂ emissions and ambient measurements in the UK*)

Solutions (2) – Reconnect air quality and health

- Everyone is concerned about potential negative impacts on their health!
- BUT effects of air quality on health are only dimly understood by the public
- Can we reconnect air quality and health in the public mindset to up the political pressure?

Impacts of air quality on health

- PM_{2.5} – Between 29,000 and 200,000 premature deaths annually in the UK
- Ozone – Premature deaths and severe respiratory illness
- Nitrogen dioxide – ozone precursor, direct health impacts not well quantified

How does this compare?

- PM_{2.5} (29,000 in the UK; average 12 years)
- Alcoholism (15,000 to 20,000 in England; average men 20 years, women 15 years)
- Obesity (9,000 in England; average nine years)
- Smoking (87,000 in England; average 10 years)

(note that these broad brush figures on premature death hide considerable complexity!)

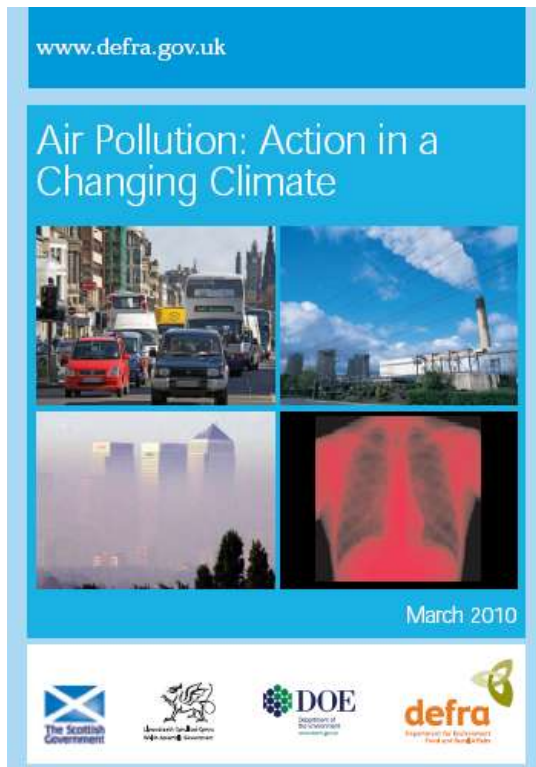
An air quality and public health campaign?

- To reconnect health and air quality we need to get over the beliefs that:
 - Air quality is not a problem as it is improving (seeing air quality from a historic perspective)
 - Air quality is a dry, technical issue about compliance with EU law
- Common statistics used to describe the health impacts of poor air quality are not engaging (e.g. average 6 months loss of life expectancy)
- EPUK planning a big push on air quality and health

Solutions (3) Linking with climate change

- Most action to improve AQ will now come through joint measures (at least in the longer term)
- Doesn't just benefit AQ - health benefits can be a good public driver for action on climate emissions (UK public still not entirely convinced on climate change)
- Build on Defra and EPUK air quality and climate change guidance (just released)

Linking with climate change



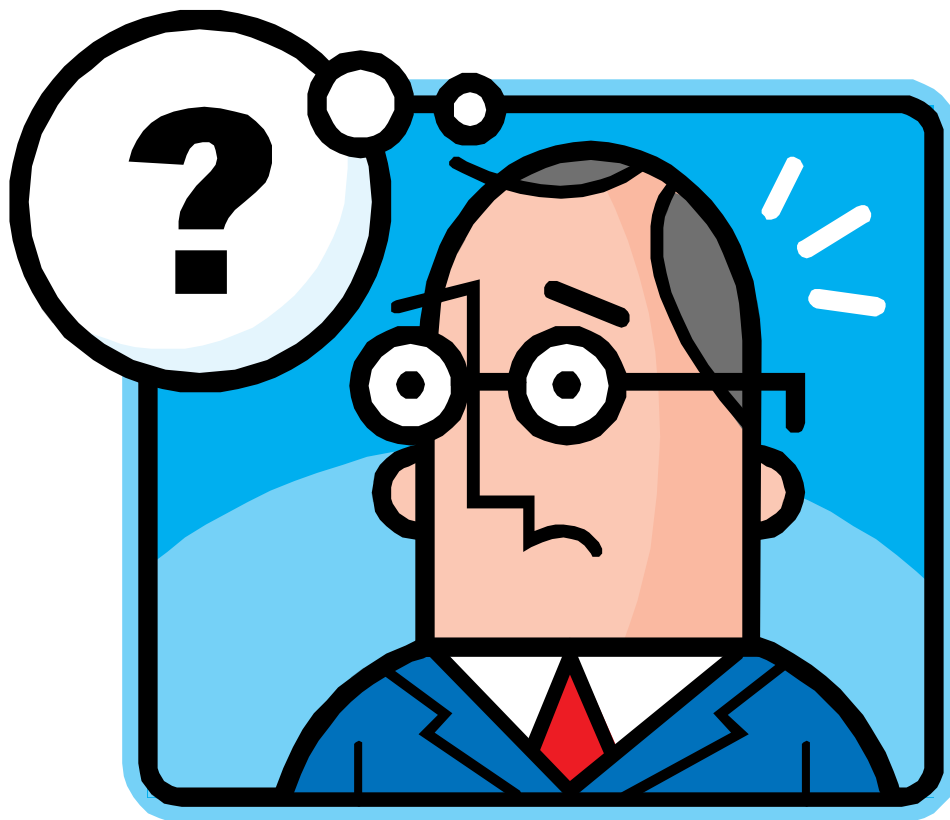
www.defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-pollution.PDF



www.environmental-protection.org.uk/aqclimate



Short term actions



Short term actions

- A case for retrofit?
- Heavy duty engines that meet current emission standards can end up in a wide variety of end uses, for example:
 - HGVs – mainly motorway use
 - Waste vehicles – low speed urban use
- Retrofit exhaust abatement can be tuned to maximise real world performance according to end use

4 – Beyond 2015, improving air quality in the longer term

Longer Term - Electric vehicles

- ‘The Government is convinced that in the longer term, progressive electrification of the passenger car fleet will an important role...’, *Local Transport White Paper*
- Peugeot have a target of 10% of car sales by 2010
- Is this realistic? Will you be buying one?



Longer Term - Electric vehicles

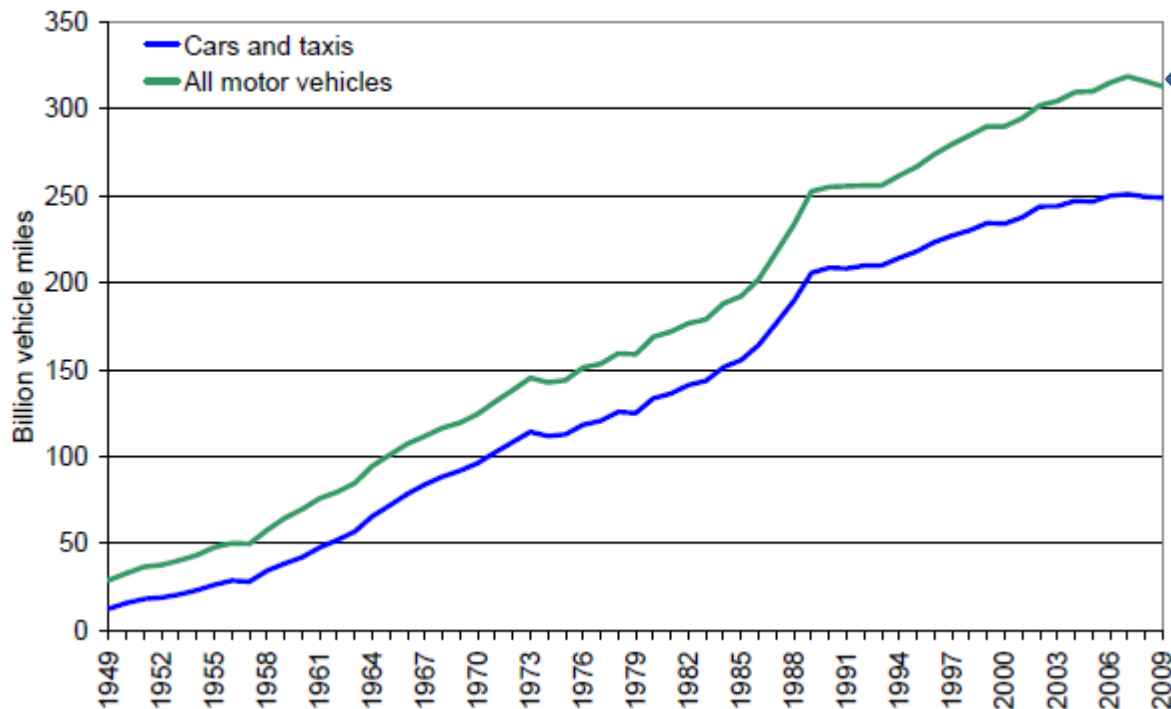
- Also conventional vehicle technology will not stand still – the superiority of conventional petrol/ diesel vehicles is still the main barrier for electric vehicles to overcome!
- EU targets for vehicle CO₂ emissions (fuel efficiency) ironically do not help matters!



Demand reduction

Conventional view is the traffic growth is inevitable.....

Source: National Road Traffic Survey, DfT



Conclusions

- Biggest near term challenge is meeting NO₂ Limit Values
- Research shows that vehicle fleet turnover will be of little help until Euro 6 (2013/15)
- Potential solutions:
 - Retrofit
 - Traffic reduction (oil price?)
 - New technology/ linking with climate actions

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