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Consultation on Air Quality Plans for the achievement of EU air quality limit values for nitrogen dioxide (NO₂) in the UK

We are writing in response to the above consultation. Environmental Protection UK has considered the consultation documents and welcomes the opportunity to comment.

About Environmental Protection UK

Environmental Protection UK is a national charity that provides expert policy analysis and advice on air quality, land quality, waste and noise and their effects on people and communities in terms of a wide range of issues including public health, planning, transport, energy and climate.

We offer clear and critical analysis of UK government and European Union policy proposals through a range of high-quality publications and expert-led events, as well as up-to-date regulatory information through our comprehensive guide to UK and EU environment legislation.

Environmental Protection UK works with and for UK national and devolved governments, local authorities, business, academics and the general public, and with relevant EU institutions and NGOs.

Summary of our Comments

These Plans have been produced in order to secure a time extension (until 2015) for meeting nitrogen dioxide limit values from the European Commission. In order to do so the Plans must meet the requirements set down in Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (the Air Quality Directive). Unfortunately they fail to do so in four key areas:

- The draft Plans do not 'demonstrate how conformity will be achieved with the limit values before the new deadline' (Article 22, 1). Indeed, they state it will take until 2025 until all zones and agglomerations comply.

- The draft Plans do not 'ensure that the limit value ... is not exceeded by more than the maximum margin of tolerance specified in Annex XI' (Article 22, 3).
- The draft Plans do not 'set out appropriate measures, so that the exceedance period can be kept as short as possible' (Article 23). The list of measures the Plans consider is incomplete, and most of the measures listed are ruled out anyway on the grounds of cost to the Government.
- The Government has not taken all possible actions to meet the NO₂ limit values by the original 2010 deadline (as implied by the requirements of Annex XV). Little or no action has been taken by the current or previous Governments to deal with rising volumes of traffic on UK roads and the progressive dieselisation of the light vehicle market seen since 2000.

In view of the above the Plans need to be re-drafted before submission to the European Commission.

Detailed Comments

The key test of the UK's Time Extension Application is that it meets the requirements of Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (the Air Quality Directive). Specifically it must meet the requirements of Articles below (with our highlighting).

Article 22:

*'(1) Where, in a given zone or agglomeration, conformity with the limit values for nitrogen dioxide or benzene cannot be achieved by the deadlines specified in Annex XI, a Member State may postpone those deadlines by a maximum of five years for that particular zone or agglomeration, on condition that an air quality plan is established in accordance with Article 23 for the zone or agglomeration to which the postponement would apply; such air quality plan shall be supplemented by the information listed in Section B of Annex XV related to the pollutants concerned and **shall demonstrate how conformity will be achieved with the limit values before the new deadline**' .*

*'(3) Where a Member State applies paragraphs 1 or 2, **it shall ensure that the limit value for each pollutant is not exceeded by more than the maximum margin of tolerance specified in Annex XI for each of the pollutants concerned**'.*

And Article 23:

'Where, in given zones or agglomerations, the levels of pollutants in ambient air exceed any limit value or target value, plus any relevant margin of tolerance in each case, Member States shall ensure that air quality plans are established for those zones and agglomerations in order to achieve the related limit value or target value specified in Annexes XI and XIV.

In the event of exceedances of those limit values for which the attainment deadline is already expired, the air quality plans shall set out appropriate measures, so that the exceedance period can be kept as short as possible. The air quality plans may additionally include specific measures aiming at the protection of sensitive population groups, including children'.

Our interpretation of the requirements of the Directive is that the Time Extension Notification (TEN) should demonstrate a positive response to the following four key questions:

1. Did the UK Government take all possible actions to meet the NO₂ limit values by the original 2010 deadline (implied by the requirements of Annex XV)?
2. Does the TEN 'set out appropriate measures, so that the exceedance period can be kept as short as possible' (Article 23)?
3. Does the TEN 'demonstrate how conformity will be achieved with the limit values before the new deadline' (Article 22)?
4. Does the TEN 'ensure that the limit value for (nitrogen dioxide) is not exceeded by more than the maximum margin of tolerance specified in Annex XI' (Article 22)?

We provide our response to these key questions below.

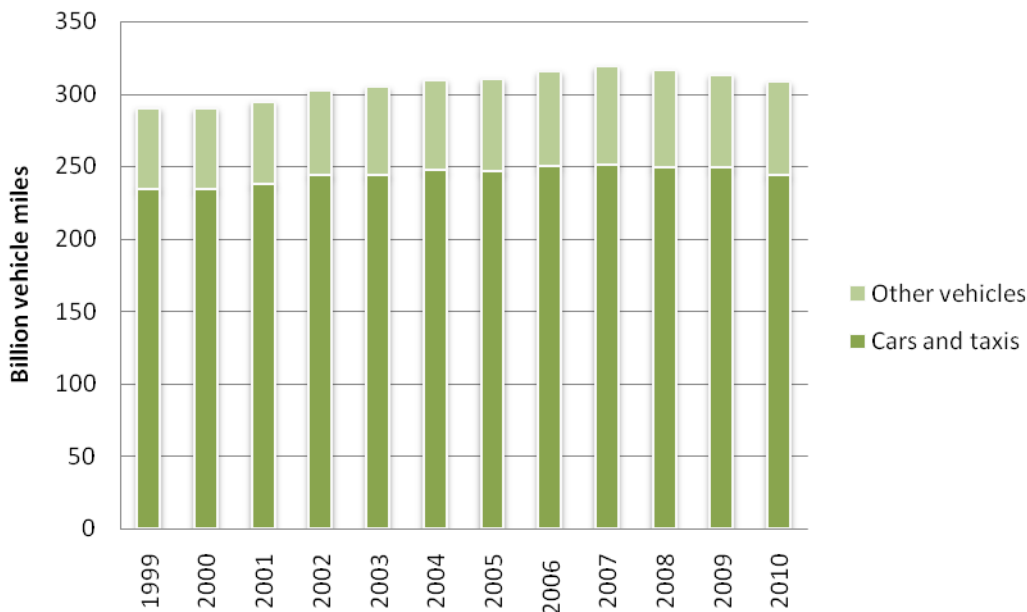
Did the UK Government take all possible actions to meet the NO₂ limit values by the original 2010 deadline?

No. The TEN consultation document states in paragraph 3.10 that *'In conclusion, the main reason why the UK has not been able to achieve full compliance with the NO₂ limit value is that despite the introduction of vehicles meeting increasingly stringent Euro standards, real world emissions of NO_x from many vehicle classes have been considerably higher than anticipated. This, combined with an increase in the fraction of NO_x emitted as NO₂, has led to trends in NO₂ concentrations over the last five years that are, at best, only weakly downwards'*. However, this is only one of the three main reasons why the UK has failed to comply, as detailed below.

a) A failure to control the increasing number of vehicles on the UK's roads

Since the introduction of the nitrogen dioxide limit values in the Council Directive 1999/30/EC (First Daughter Directive) there has been a substantial growth in road traffic. Traffic volumes grew from 290.2 billion miles in 1999 to 308.1 billion miles in 2010, peaking at 318.8 billion miles in 2007. The decline seen since 2007 has been a result of the UK's economic downturn, rather than of Government policies.

Graph 1 - All motor vehicle traffic, Great Britain: 1999 - 2010 (miles)



Source: National Road Traffic Survey, Department for Transport

In this national context of more and more traffic being forced on to the roads air quality management can only seek to limit the air quality impacts that traffic and congestion creates. For example local authorities may re-route traffic from current hotspots, potentially at the risk of creating new ones.

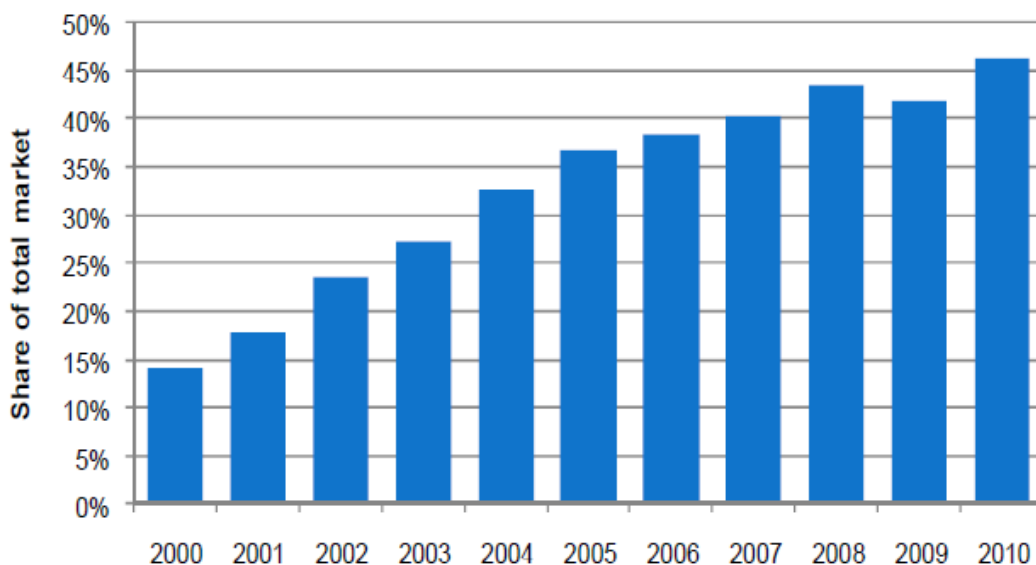
b) Policies that have increased the proportion of the UK's vehicles fuelled by diesel

Since 2000 the proportion of new cars sold fuelled by diesel has increased from 14% to 46%. This has significantly changed the makeup of the UK vehicle fleet (light and heavy vehicles): 10 years ago the majority of motor fuel sold was petrol, but now diesel sales are significantly greater than petrol.

This change has been almost entirely driven by Government taxation policy that has linked Vehicle Excise Duty and Company Car Tax with CO₂ emissions, with no consideration of the air quality impacts of diesel fuelled vehicles. As a result diesel has become the majority choice for all but the smallest vehicles in the car market.

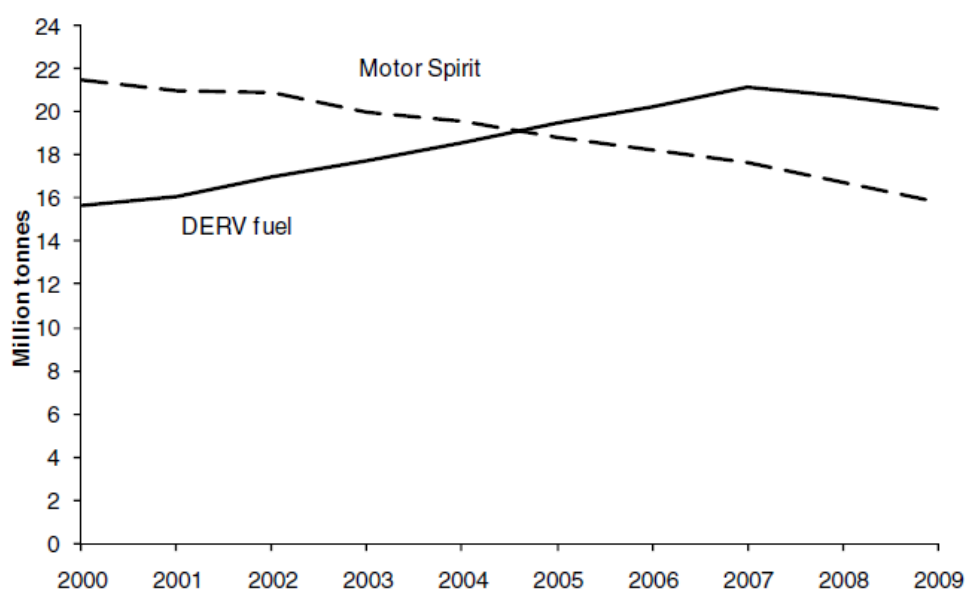
Diesel cars and light vans emit significantly more NO_x (and a higher proportion of primary NO₂) than petrol equivalents, even under the latest Euro 5 standards. The entirely preventable move to diesel fuel would have therefore had a significant air quality impact anyway, even if the Euro standards had controlled diesel NO_x emissions as anticipated (which they have not).

Graph 2 - Diesel penetration of the new car market, 2000 - 2010



Source: Society of Motor Manufacturers and Traders

Graph 3 - Deliveries of Motor Spirit and DERV fuel 2000 to 2009



Source – Digest of UK Energy Statistics (DECC 2010)

c) The failure of the Euro standards to reduce NO_x emissions in ‘real world’ urban driving conditions

As detailed in the TEN consultation document, the (diesel) Euro standards have failed to produce ‘real world’ NO_x emission reductions, as explored in the excellent Defra paper ‘Trends in NO_x and NO₂ emissions and ambient measurements in the UK’. We agree that this is a significant problem and one that needs to be urgently rectified before the introduction of the next Euro 6/VI standards.

We would, however, question why it has taken so long (indeed until after the 2010 deadline has passed) for the UK Government to take this issue seriously. The UK Government was advised of the potential consequences of increasing primary NO₂ emissions, and the introduction of policies to drive the increasing dieselisation of the fleet, as long ago as 2004 in the AQEG report ‘Nitrogen Dioxide in the United Kingdom’. However, until very recently the Government has failed to act on these warning signs with full and thorough research.

2. Does the TEN ‘set out appropriate measures, so that the exceedance period can be kept as short as possible’ (Article 23)?

No. By considering only a limited range of measures and ruling out most of these on cost grounds the TEN fails this key requirement of Article 23. Whilst we are pleased to see the TEN support more Low Emission Zones (LEZs) across the UK (the one measure that the TEN does propose), this places responsibility for dealing with NO₂ exceedances firmly with local authorities. However budget cuts and the Government’s own Localism agenda means that many local authorities may be unwilling or unable to establish LEZs. In addition, given the latest evidence regarding the on-road performance of road vehicles, the effectiveness of LEZs is likely to be substantially diminished if the drive is simply towards higher Euro standards. LEZ proposals will need to be carefully reviewed and focused towards the early introduction of vehicles that will deliver actual improvements.

Measures considered within the TEN primarily centre on replacing or upgrading heavy diesel vehicles, and most of these measures have been rejected on cost grounds. Measures to provide greater support for alternative fuels, for cleaner vehicles in the light vehicle market and support for ‘smarter choices’ are all conspicuous by their absence from the analysis.

The final TEN should, at a very minimum, make additional analysis (and propose actions) in the following areas:

- a) **Gas (compressed natural gas or biomethane) powered vehicles.** This is an inherently clean technology and tailpipe emissions of particulate, NO_x and CO₂ are very low¹. Gas buses can be run on biomethane – natural gas produced from the decomposition of organic waste – which results in extremely low ‘well to wheel’ CO₂ emissions. This technology is mature and many countries have large gas vehicle fleets² (with several using biomethane). However, in the UK the technology is largely unsupported and unrecognised by the Government. A concerted effort to move UK HGV and bus fleets onto CNG/ biomethane could have a significant impact on NO_x emissions by the 2015 deadline.
- b) **Scrappage scheme for older diesel cars and light vans.** Whilst it had no environmental objectives, the previous Government’s scrappage scheme was still effective at replacing older vehicles with modern, small petrol cars (more than 82% of cars bought through the scrappage scheme were petrol fuelled). A new scrappage scheme aimed at replacing elderly, diesel powered vehicles with modern low emission (air pollution and CO₂) vehicles would improve air quality and also assist a vehicle industry still badly affected by the economic downturn.
- c) **Policy measures to increase the proportion of petrol cars and light vans sold.** Currently Vehicle Excise Duty, Company Car Tax and Fuel Tax policy all conspire to make diesel the de-facto choice for car buyers in all but the smallest car market segments. Changes to these taxation systems to penalise the greater air pollutant emissions associated with diesel vehicles would help reverse this situation. Modern high efficiency petrol vehicles with downsized engines have significantly better air quality performance compared to equivalent diesels with only a modest fuel economy/ carbon penalty.
- d) **Accelerated ‘Smarter Choices’ measures.** These measures do not just help to improve air quality, they also fit with the Government’s ambitions to reduce carbon emissions and promote healthy lifestyle choices. While we note that the modelling for the TEN has included a 2% reduction in traffic levels associated with greater uptake of these measures, pilot projects in this area such as the Sustrans Travel Smart initiative have demonstrated that far more significant modal shifts are possible through a ‘nudge’ style process. However, despite some consideration in the recent Local Transport White Paper the Government is yet to show any significant support for these types of interventions. More research is needed to ascertain how Smarter Choices measures can impact on air quality, and greater support is needed for local authorities and NGOs in order to roll out programmes on a UK basis.
- e) **Rail electrification.** Emissions from diesel railway engines can have a significant impact on air quality. For example, we note from the Mayor’s (of London) Air Quality Strategy that 12% of all NO_x emissions in London are expected to come from the rail network in 2015.

¹ See www.biogasmx.eu/media/5t4_manuel_lage__073402300_0657_30092009.pdf

² For example the Los Angeles (USA) bus fleet is almost entirely fuelled by CNG, see <http://articles.latimes.com/2011/jan/13/local/la-me-buses-20110112>

3. Does the TEN ‘demonstrate how conformity will be achieved with the limit values before the new deadline’ (Article 22)?

No, the draft TEN states that compliance will not be achieved in every zone until 2025. The draft TEN therefore quite clearly fails to meet this key requirement of Article 22.

We also understand that the reliability of the emission factors used for the TEN modelling are in doubt following the Defra paper ‘Trends in NO_x and NO₂ emissions and ambient measurements in the UK’. Emissions factors are likely to be overly optimistic for both light and heavy diesel vehicles. The modelling for the TEN therefore needs to be repeated as soon as new emissions factors are available.

4. Does the TEN ‘ensure that the limit value for (nitrogen dioxide) is not exceeded by more than the maximum margin of tolerance specified in Annex XI’ (Article 22)?

No. In the case of NO₂ the margin of tolerance in 2010 (if a time extension was given) would be 50% of the limit values; 60 µg m⁻³ for the annual average and 300 µg m⁻³ for the hourly average on more than 18 occasions. It is now unlikely that hourly average concentrations at any relevant location are likely to exceed 300 µg m⁻³ for more than 18 hours in a given year. However, annual average NO₂ currently exceeds 60 µg m⁻³ at a large number of monitoring sites in London and elsewhere in the UK, and will continue to do so for a number of years. In order for the time extension to be approved the limit value plus margin of tolerance should have been achieved in 2010.

Contact Us

If you require any further information on the views expressed in this response please contact in the first instance:

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