Improving Air Quality– Joint Select Committee Inquiry

Preamble

The Institute of Air Quality Management (IAQM) represents more than 450 air quality professionals working in the UK and, as such, has a direct interest in the way government at all levels seeks to manage and improve air quality. We aim to be an authoritative voice on matters of air quality, using the expertise of our members. Our members typically work in engineering and scientific consultancies, local authorities and academia. This submission represents the view of the IAQM's committee.

Introduction

Q1 How effectively do government policies take into account the health and environmental impacts of poor air quality?

Government policies have failed to tackle some of the more damaging aspects of poor air quality over a long period of time, even though the health and ecological effects have been understood for many years. The Government's focus has been on achieving the EU limit values for nitrogen dioxide (NO_2) and being satisfied with mere compliance. It is recognised that public health and ecological effects occur below the limit values, e.g. Defra and Public Health England encourages local authorities to take action even where air quality standards are not exceeded[1]. Yet central government policies do not follow this advice.

Pollution from particulate matter (PM) contributed to 5.6% of deaths in England in 2010[2], and the air pollution causes 40,000 premature deaths each year[3]. Despite the scale of this health burden, the Government has consistently adopted a 'wait and see' approach, relying on the next EU vehicle emission standard to solve the problem. The poor 'real world' emissions performance of diesel vehicles was first identified in a 2011 Defra study[4] but successive Air Quality Plans (AQPs) have not adequately addressed the issue.

The mandatory EU nitrogen dioxide (NO_2) limit values, agreed in 1999, were to be achieved by 2010. A problem recognised nearly 20 years ago may not be solved until 2025. Meanwhile, public health continues to be adversely affected. The Government has taken some action recently (i.e. published the 2017 AQP[5];) but only as a result of ClientEarth's successful challenge of the Government's 2011 and 2015 AQPs. It is noteworthy that the principal standards for vehicle emissions and for ambient air quality, as well as the policy frameworks, have been set at the EU level; the UK government has few new policies or instruments of its own.

The World Health Organization (WHO) guidelines for particulate matter (PM) are more stringent than EU limit values/UK objectives and the evidence is stronger for its health effects than for NO_2, yet the UK Government has placed much less emphasis on this important issue in recent years. About half of the fine PM ($PM_{2.5}$) is secondary PM formed in the atmosphere. Ammonia (NH_3) plays a significant role. Whilst the emissions of many pollutants have fallen significantly in recent years, ammonia

[1] Defra, Public Health England and the Local Government Association, 2017. Air quality: A briefing for directors of public health.
[2] Public Health England, 2014, Estimating local mortality burdens associated with particulate air pollution.
[3] Royal College of Physicians and Royal College of Paediatrics and Child Health, 2016. Every breathe we take: the lifelong impact of air pollution.
[4] Carslaw D C, Beevers S D, Westmoreland E and Williams M L (2011) Recent evidence concerning higher NO_x emissions from passenger cars and light duty vehicles *Atmospheric Environment* **45** 7053 – 7063 (work funded by Defra AQ Project AQ0724)
[5] Defra and Department for Transport, 2017, UK plan for tackling roadside nitrogen dioxide Concentrations.

emissions have remained relatively constant and the target reduction is small[6]. The primary source is agricultural. Failure to reduce ammonia emissions further has serious implications for human health and the natural environment.

Wood burning, particularly in the domestic sector, is an increasing source of PM, with its contribution increasing from less than 5% in 1990 to over 17% in 2012. Another area of concern is the use of diesel generators to provide Short Term Operating Reserve (STOR) in urban areas. Both can have a high impact on air quality yet often fall outside the planning and/or emission control systems. Renewable Heat Incentive grants have financially supported biomass systems, often in unsuitable urban locations[7].

The AQP commits the Government to produce a Clean Air Strategy in 2018 which is long overdue. The current Air Quality Strategy was published in 2007. It is vital that this properly addresses the health and environmental effects of air pollution in a coherent, comprehensive and effective manner.

Q2 Do these plans set out effective and <u>proportionate</u> measures to achieve necessary emissions reductions <u>as quickly as possible</u>?

There is a large disparity between Defra's national modelling and what LAs model at a local level. Defra's model (only includes selected road links, and does not include all areas where poor air quality has been identified by local authorities. Focussing on actions to improve air quality adjacent to the Defra road links may not result in a significant reduction in human exposure to pollution (e.g. if people do not spend time there). The focus should be on protecting people's health rather than just meeting the legal requirements of the European Directive.

This disparity is illustrated by the 278 LAs with Air Quality Management Areas for NO_2, up 10% in the last two years[8], and the 81 LAs in which Defra has identified exceedences of the limit value [9] It is important that the solutions are based on local assessment and not on the results of Defra's PCM model, which is unable to account for local circumstances.

There is a dichotomy in the compliance approach. The assessment of non-compliance is undertaken by central government, without using LA data[10]. However, Defra has passed the identification and implementation of compliance solutions on to the LAs – who have to build their own models. Where there is a significant difference between the two modelling approaches an 'expert panel' will decide where the exceedences are ("the determined target value").

The national modelling shows that, in most areas of exceedence, the main measure that can reduce emissions sufficiently and in the shortest possible time is charging Clean Air Zones ('CAZs') although no details are provided as to what type of CAZ will be required where. The AQP requires 28 LAs (including the 5 cities in the 2015 AQP) to undertake a detailed investigation of the cost-effectiveness of a range of other measures. The Secretary of State will only accept charging CAZs where these other measures are shown to be less effective (in terms of compliance date).

The cost benefit analysis is likely to show that charging CAZs are not cost-effective as the payback is over a short period (i.e. until there is compliance). It should be noted that the November 2016 judgement in the ClientEarth case concluded that cost can only be taken into account when choosing between two equally effective measures (i.e. with the same compliance date), but not otherwise.

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[6] Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC.

[7] Air Quality Expert Group, 2017, The potential air quality impacts from biomass combustion.https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1708081027_170807_AQEG_Biomass_report.pdf

[8] Defra, 2017, Air pollution in the UK 201 6 and Defra, 2017, Air pollution in the UK 201 5.

[9] The EU limit values and the national objective have the same numerical values.

[10] LAs cannot challenge the national assessment,

The 2017 AQP provides a fund for these studies, but the experience of the first five cities (from the 2015 AQP) is that they have had to spend significant time seeking access to additional funding, which comes with rigorous requirements for demonstrating value for money. This approach to the development of local plans significantly impedes the UK's ability to achieve compliance in the shortest time possible. The 'shelf life' of CAZ interventions is short[11]. A delay in their introduction makes the business case less persuasive.

Greater and timelier support is required from Defra/DfT including easy/quick access to the Air Quality Fund, and specific guidance on what type of measures should be considered and how effective they might be.

The requirement to assess 'other measures' first must be seen in the context of Local Air Quality Management,[12] which has largely been ineffective at reducing NO_2 concentrations. Measures have been mooted but not implemented due to a lack of political will, or implemented but not effective. Some local authorities have investigated low emission zones, but outside London these have only been implemented for buses. It is recognised that charging older vehicles to enter a CAZ is politically sensitive, but the Greater London Authority (GLA) and many cities across Europe have shown that it can be done. Given the political sensitivity, it is essential that national governments take the lead and mandates the necessary action (based on the local assessment) to protect human health, as they have for other politically sensitive public health issues, such as smoking.

There are no specific actions in the AQP for 45 local authorities that currently exceed the limit value, many of which will continue to do so for several years, but are not regarded as 'persistent' exceedences.

The first five cities [13] are not mandated in the 2017 AQP, which causes problems for those local authorities which face elections in May. In addition, the requirement to assess 'other measures' is thought to have added at least a six month delay to implementation in these cities.

The AQP only addresses the issue of *roadside* NO_2 concentrations. Emissions from diesel vehicles are also a very important emission source that adds to the *background* levels of pollution, which is not explicitly addressed.

Electrifying the vehicle fleet, although good news for urban air quality in the longer term, will not have a significant role in meeting the NO_2 limit values in the shortest possible time, due to the time it will take for electric vehicles to become a significant proportion of the vehicle fleet. The announced ban on sales of diesel and petrol cars and vans from 2040 will be too late to address NO_2 compliance.

Electric vehicles are not zero emission, not least because brake and tyre wear will still contribute to PM emissions and because of emissions during the production of electricity from non-renewable energy sources.

Q3 Are other nations or cities taking more effective action that the UK can learn from?

The problem of poor air quality is a global one and the UK is far from unique in failing to address it adequately. It is also a problem that has different characteristics in different places, with severity dependent on many external factors, such as climate. Within Europe, and especially southern Europe, the problems are dominated more by particulate matter and ozone than NO_2. Road traffic related pollution in urban areas is a common problem, however, and government at all levels has sought to introduce measures to improve air quality, with municipal government taking the lead in many cases. There are, however, few examples of states and cities with more aggressive measures for reducing road traffic emissions in the very near future than London. Although German cities have had low emission zones for many years, these have not been especially stringent to date. Perhaps

[11] This is because charging CAZs will accelerate the take up of cleaner vehicles and, eventually, due to normal fleet turnover, the fleet will be the same with or without the CAZ.
[12] Local Air Quality Management was established by Part IV, Environment Act
[13] This refers to the five cities that were to be mandated to have charging CAZs in the 2015 AQP.

for this reason, they have not had much impact on pollutant concentrations. Paris is considering a diesel ban by 2024, when it will host the Olympics. It already has measures in place to reduce car use using short-term pollution episodes, including free public transport.

The most advanced European countries for air quality related policies are, arguably, the Netherlands and Norway. The latter has implemented a successful policy of electrifying the vehicle fleet using fiscal measures that are not easily replicated elsewhere. The Netherlands is a densely populated country with many similar problems to the UK and has long had forward thinking and integrated policies (and regulation) to protect the environment. Despite this, it still finds itself in a similar position to the UK in respect of non-compliance with the NO_2 limit value. One area where the Netherlands (and Denmark) is making a difference is in the control of ammonia emissions from agriculture, where significant reductions have been achieved despite the initial reluctance of farmers to comply.

The most advanced region of the world for air quality policies and regulation is California, where the Air Resources Board has, for many decades, had the authority and resources to implement measures that reduce air pollution substantially. Many of the emission standards set by the Board for industry and vehicles have been more stringent than anywhere else. In turn, this has stimulated manufacturers to produce cleaner vehicles and combustion processes. It is very noticeable that diesel cars in the US, although a small minority of the overall fleet, have much lower real world NO_x emissions than their European counterparts.

Q4 Is there enough <u>cross-government collaboration</u> to set in place the right <u>fiscal and policy</u> incentives?

Defra's concerns regarding air quality are not reflected by other government departments, with the possible exception of DfT The Treasury, BEIS and DCLG seem to regarding air pollution as unimportant and any solution costing too much money. It is easier to ignore or minimise the extent of the problem

Effective cross government collaboration is needed to ensure that the most vulnerable are protected from the adverse effects of air pollution. The problem is summarised by the fact that Defra may have responsibility for achieving the air quality standards, but it has none of the powers over some of the key emission sources that would enable it to deliver better air quality.

The Local Air Quality Management regime, in place since 1995, has failed to deliver good air quality. It is hard to see (for the parallel problem of limit value compliance) what can radically change in the near future through the efforts of local authorities, weakened by lack of technical resource and diminished funding.

The National Planning Policy Framework (NPPF), which provides the framework for planning policy, does not require LAs to meet the mandatory EU limit value; only to consider it in the development of local policy. Having two parallel systems (EU limit values and National air quality objectives), only one of which LAs have control over, has meant that in most planning applications the impact of new development is assessed against the national air quality objectives only (which are targets). Even if there is a risk of non-compliance with EU limit values, local authority planners are not obliged to refuse development, as there is a need to balance the adverse and beneficial impacts, e.g. housing need or employment vs health effects. Consequently, adverse air quality impacts are traded-off against the perceived benefits of development.

A Local Plan takes primacy over the NPPF. Many Local Plans are currently going through the examination process and even if the NPPF was updated with good air quality protection policies it may be many years before there will be a real difference to the weight given by local planning authorities and the Planning Inspectorate to air quality issues. In the absence of strong guidance from DCLG the planning system will remain an ineffective mechanism for improving air quality. An obvious example is encouraging the uptake of electric vehicles through the provision of charging points, but the reality is that LA planning departments often do not insist on their inclusion in developments, even when it is a local plan policy.

Making progress in the decarbonisation of the transport system and the electricity generating industry will have benefits for air quality. It is vital that policies to reduce dependence on fossil fuels are also examined for their impact on air quality. There have been too many examples in the past where measures aimed at reducing greenhouse gas emissions have had adverse consequences for local air quality.

DfT should take more responsibility for ensuring good regulation and enforcement of the vehicle emissions legislation, but ensuring that the vehicle manufacturers produce product that performs well in use as well as under laboratory test conditions. It is well recognised that the high emissions of nitrogen oxides from diesel vehicles when driven on the road is the result of emission control systems not working. Different strategies have been adopted by manufacturers resulting in the emission control system being ineffective under certain conditions. The UK Government has not required manufacturers to recall any cars.

The AQP assumes that EU standards that address the real driving emissions (RDE) issue will be effective at reducing emissions. Until these vehicles are on the road, however, and independently tested there must be significant uncertainty about their performance. There is evidence from Emission Analytics, an independent UK testing company, that some new types of Euro 6 diesel cars, prior to the introduction in September of the stage 1 RDE requirements perform worse than existing vehicles. These vehicles will be on the road for approximately 12 years.

The Government could choose to intervene more strongly in the ownership and use of diesel cars on a national basis, despite the potential political implications. A “retrofit or replace” scheme to help those most deprived who have no choice in the car they drive and are unable to take advantage of lighter touch incentives.

Q5 How can those charged with <u>delivering national plans at local level</u> be best supported and challenged?

Defra and the Department of Transport’s Joint Air Quality Unit (JAQU) are now providing guidance to assist LAs in assessing local level delivery, but for the first five cities it has been too slow and issued piecemeal.

The air quality fund will provide support for the 28 LAs required to assess measures against the CAZ benchmark. It is important that the ‘determined target value’ ensures that areas with high exposure are included in the assessment of options. There is a fear amongst LA staff that the PCM model will take precedence over local modelling and that measures will be required for areas of low exposure, (i.e. where there are few people) while areas of high exposure identified in local modelling will be ignored, as these are likely to require action over a much large area.

Currently LAs identified as having a non-persistent exceedence are not eligible to apply to the Air Quality Fund. Therefore, it is unlikely that these LAs will introduce any new measures. A wider rollout would provide a wider benefit in reducing background levels.

Often a non-compliant link may be in a LA’s area, but outside its direct control (e.g. a responsibility of Highways England or a County Council). A mechanism to allow open collaboration and cooperation is needed, which in many areas is seen to be woefully lacking.

Where they exist, the focus on intervention should be at the Combined Authority level, allows the development of a strategic approach rather than piecemeal local measures, and lends itself to bigger picture solutions which are likely to be needed to genuinely improve air quality in the UK.

A strategic central government led approach is needed for the location of, and funding for, low emission infrastructure (e.g. EV charging points) and a targeted approach should be adopted for areas with poor air quality.

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