



House of Commons
Environmental Audit
Committee

Air Quality

Fifth Report of Session 2009–10

Volume I



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Report, together with formal minutes

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The Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

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A list of Reports of the Committee from the current Parliament is at the back of this volume.

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The current staff of the Committee are: Gordon Clarke (Clerk), Simon Fiander (Second Clerk), Tim Bryant (Committee Specialist), Edward White (Committee Specialist), James Bowman (Senior Committee Assistant), Susan Ramsay (Committee Assistant) and Steven Everett (Sandwich Student)

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Summary

Poor air quality reduces the life expectancy of everyone in the UK by an average of seven to eight months and up to 50,000 people a year may die prematurely because of it. Air pollution also causes significant damage to ecosystems. Despite these facts being known air quality is not seen as a priority across government and the UK is failing to meet a range of domestic and European targets.

The quantified costs of poor air quality that are used to develop policy are out-dated. They do not take account of all the known health effects, treatment costs, and environmental damage, nor do they take account of fines that could be imposed by the EU for failing to meet air quality targets. Many Government departments do not seem fully to understand how their policies affect air quality, the impact poor air quality has, and its cost to the economy. Awareness of the issue needs to be raised at all levels of government, and policies need to take greater account of air quality impacts.

Awareness needs to be raised and behaviour needs to change if air quality targets are to be met. Transport causes the most exposure to harmful air pollutants, and air quality targets will not be met without a significant shift in transport policy. Local authorities need to do more to tackle poor air quality, and they must be given information on how to develop local air quality strategies.

The cost-benefit analysis is clear: what is needed is the political will to make this a priority and to commit the resources to address it now so that we can reap the benefits of improved health.

1 Introduction

Types of pollution

1. Air quality in the UK has improved over recent decades but improvements are now levelling off and are increasingly costly to achieve. A major air quality problem is being caused by three key pollutants where the UK is failing to meet domestic and European targets: nitrogen oxides (NO_x), ozone and particulate matter (PM).

- Nitrogen oxides (NO_x) encompasses two gases—nitrogen oxide (NO) and nitrogen dioxide (NO₂). NO reacts with other chemicals in the air to form NO₂, which is itself involved in the formation of particulate matter.
- Ozone is a pollutant in the lower atmosphere. It is not emitted directly from any man-made source but is formed from chemical reactions between various air pollutants, primarily nitrogen oxides and volatile organic compounds.
- Particulate matter (PM) is made up of tiny particles from a variety of materials, including sulphates, nitrates, ammonia, sodium chloride, carbon, mineral dust, and water. Particulate matter is categorised by particle size, as either smaller than 10 microns in diameter (PM₁₀) or smaller than 2.5 microns (PM_{2.5}).

Sources of pollution

2. Industry and road transport are the main sources of air pollution, though domestic combustion and agriculture are also to blame. Industry is a major source of emissions of NO_x (46%) and PM₁₀ (36%). Road transport contributes to significant emissions of NO₂ (30%) and PM₁₀ (18%). Emissions and exposure vary greatly depending on location. Although polluting, the majority of large combustion plants are located away from major urban centres. Road transport contributes far more to the public's exposure to pollutants and is responsible for up to 70% of air pollution in urban areas.

Regulation

3. European and national air quality legislation is designed to reduce risks to human health and the environment. National emission ceilings are legally-binding, annual, total emission caps set under the EU National Emission Ceilings Directive. Ceilings for each Member State have been set for NO_x emissions. EU limit values are legally-binding, maximum parameters for concentrations of pollutants over specified time periods. These are set by the Air Quality Framework Directive and four daughter directives for pollutants including NO₂, PM₁₀, PM_{2.5}. EU target values are set out in the same way as limit values, but are not legally binding. A target value is set for ozone.

4. The Environment Act 1995 sets national objectives for NO₂, ozone, and particulate matter that are the same as, or in some cases more prescriptive, than corresponding EU limit values. Air quality objectives are defined in the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland, published in July 2007. Environment is a devolved

matter and for some pollutants objectives are set by the administrations in Northern Ireland, Scotland and Wales.

Our inquiry

5. In our inquiry we set out to assess whether the Government was developing an effective strategy for meeting its obligations under the EU air quality directives and whether the strategy would ensure that air pollution was reduced to acceptable levels across the UK. In preparation for its inquiry, the Committee commissioned a briefing on air quality from the National Audit Office to provide an overview of the UK's performance to date in meeting the various targets and limits for each air pollutant.¹ The Committee would like to thank all those who gave evidence.² We note with sadness the passing of Dr Ian McCrae who provided a valuable contribution in this field and who appeared before the Committee shortly before he died. We are indebted to Professor Mike Pilling, our Specialist Adviser, for all his invaluable advice.³

1 NAO, *Air Quality*, January 2010

2 A list of all those who gave evidence can be found on pages 25 and 26.

3 Professor M J Pilling declared an interest on 2 February 2010, that his son works with the Low Emissions Strategies Partnership, who submitted written evidence to the Committee (Ev 84).

2 The air quality problem

Health effects of poor air quality

6. Poor air quality leads to poor human health. There are short-term effects on, for example, the respiratory system, and more serious impacts due to long-term exposure including permanent reductions in lung function. Air pollution has been linked to asthma, chronic bronchitis, heart and circulatory disease, and cancer.⁴

7. Particulate matter is thought to have the most damaging impact on health with adverse effects to health seen at very low concentrations.⁵ Ozone and particulate matter are linked to summer smog episodes; it has been estimated that there were between 225 and 593 additional deaths due to increased ozone in the first 2 weeks of August, during the 2003 heatwave, compared to the year before. 207 additional deaths have been attributed to increased concentrations of particulate matter during the same period. For England and Wales, the deaths due to air pollution accounted for 21–38% of the total reported excess deaths during the 2003 heatwave. Climate change is likely to make air quality problems worse.

The Government's advice

8. The Committee on the Medical Effects of Air Pollutants (COMEAP) is an Advisory Committee of independent experts that provides advice to government departments on the health effects of air pollutants. In 1998 COMEAP estimated that on average up to 24,000 people in the UK die prematurely every year as a result of short-term exposure to air pollution and thousands more are hospitalised. This figure has been used in several recent reports including the Cabinet Office report, *The Wider Costs of Transport in English Urban Areas in 2009*, and in the Royal Commission for Environmental Pollution's 2007 report on the urban environment. The Air Quality Management Resource Centre, at the University of the West of England, told us that when this figure was first published there was a general feeling that it was too high and an assumption that over time it would be found to be lower. COMEAP is currently re-quantifying the health effects of air pollution. In June 2009 it published *Long-term Exposure to Air Pollution: Effect on Mortality*. This put forward quantitative estimates of the effects of long-term exposure to particulate pollution on mortality. It suggested that particulate matter has a greater effect on mortality in the UK than previously thought.

9. Professor Frank Kelly from the Environmental Research Group at King's College London explained that if new evidence was taken into account the 1998 figure of 24,000 premature deaths per year would rise to 35,000.⁶ Research by the European Environment Agency suggested that the figure could be as high as 50,000 for the UK. In the case of London, Professor Kelly told us that new evidence would support a figure of around 3,500 early deaths per year. Studies in other countries have suggested that the risks from poor air

4 NAO, *Air Quality*, January 2010

5 NAO, *Air Quality*, January 2010

6 Q 66

quality could be even higher. If the more extreme figures suggested by this work were used the estimate of the number of early deaths in London could be as high as 8,000. Initial concerns that COMEAP's 1998 figure was an over-estimate appear, in the light of new evidence, to have been wrong.

10. The Government's current 2007 Air Quality Strategy estimates that particulate matter reduces life expectancy by around seven to eight months, averaged over the whole population of the UK. This is an average and for individuals who are particularly sensitive and are exposed to the poorest air quality the reduction in life expectancy could be as high as 9 years.⁷ The Department of Health commissioned work from the Institute of Occupational Medicine⁸ to compare the benefits of eliminating man-made PM_{2.5} with the elimination of motor vehicle traffic accidents and the elimination of exposure to passive smoking. The results are shown in table 1.

Table 1: Comparison of the benefits of reducing PM_{2.5} by 10 µg/m³ (equivalent to eliminating man-made PM_{2.5} in 2005), the elimination of motor vehicle traffic accidents and the elimination of exposure to passive smoking

	Reduction in PM _{2.5}	Elimination of road traffic accidents	Elimination of passive smoking
Expected gain in life expectancy	7–8 months	1–3 months	2–3 months
Estimated equivalent gain in life years in England and Wales from 2005–2110 for the whole population (including people born during that time)	39,058,000	8,126,000	13,194,000

Source: Department of Health, Ev 142

EU targets

11. The UK is failing to meet some of its EU and domestic targets, nor is it on course to meet others that will come into force in the future.

Particulate Matter

12. The European Commission has launched infringement proceedings against the UK for failing to comply with the air quality standard for PM₁₀. In April 2009 DEFRA submitted a notification to secure additional time, until 2011, to comply with the limit values for PM₁₀. London is the only part of the UK still failing to meet PM₁₀ limit values. It has the worst air quality in the UK and the worst in Europe for particulate matter and NO₂.⁹ On 11 December 2009 the European Commission refused to grant an extension. DEFRA and the Mayor of London will now be forced to agree a more convincing plan to justify its claim for an extension and avoid potentially significant EU fines. Since limits on PM₁₀ came into

7 Ev 93

8 Institute of Occupational Medicine, *Comparing estimated risks for air pollution with risks for other health effects*, March 2006

9 NAO, *Air Quality*, January 2010

force in 2005, Ireland and Luxembourg are the only EU member states not to have exceeded limit values.

Nitrogen Oxides

13. The UK now also faces proceedings from the EU for failing to meet the limits for NO₂ that came into force in January 2010. Defra said that meeting EU limits values for NO₂ in areas of exceedence presents a much more significant challenge and will require specific actions to limit emissions from transport in urban areas. Rural NO₂ levels across the UK are slightly lower than the EU average but NO₂ concentrations at urban background sites are about 20% higher than the EU averages.¹⁰ Similarly, at roadside sites UK mean NO₂ concentrations are higher than the EU roadside averages by about 20%.

14. The UK is predicted to fail the NO_x emissions ceiling target imposed by the European National Emissions Ceiling Directive. Emissions are projected to be 1,210 ktonnes in 2010, which just exceeds the legal limit. Twelve other EU Member States are also projected to miss the 2010 emission ceiling for NO_x.¹¹

15. Power station emissions will be a significant factor if we fail to meet emission ceiling targets. In a recent assessment of power stations, six of the ten most polluting emitters in the EU were found to be in the UK. This is largely because decisions were made by the Environment Agency—based on the limited life of plants and the costs involved—not to require UK coal fired power stations to fit selective catalytic reduction technologies to reduce NO_x emissions.¹² Such technologies are more widely used in other European countries. Although power stations emissions have little impact on roadside NO₂ and on our failure to meet NO₂ limit values, they do contribute significantly to the formation of particulate matter and damage to ecosystems.

Ozone

16. Ozone concentrations have been steadily increasing over the last decade in urban areas, due to reductions in emissions of NO_x in these areas. If this trend continues future ozone concentrations could exceed target values and long-term objectives will be missed.

17. Concentrations of ozone are heavily dependent on the weather and trans-boundary pollution, making it a difficult pollutant to regulate and control. International cooperation is essential to reduce the emissions of the pollutants that react in the atmosphere to form ozone. The European Commission is expected to publish a proposal to revise the National Emission Ceilings Directive.¹³ This is likely to include tighter emission ceilings for ammonia, sulphur dioxide, NO_x and volatile organic compounds that must be met by 2020 and this will indirectly help tackle ozone pollution.

10 NAO, *Air Quality*, January 2010

11 NAO, *Air Quality*, January 2010

12 Q 184

13 NAO, *Air Quality*, January 2010

18. The lives of many people in the UK could be extended by tackling air quality. We recognise that the Government has access to high quality advice from UK experts, such as COMEAP. But warnings about the impact poor air quality has on health are not being widely publicised. More should be done to update the figures the Government uses in its appraisal of policies. Environmental Protection UK, an environmental charity, said that the evidence about the health effects of air pollution was not communicated clearly across Government or to the general public.¹⁴ The Mayor of London agreed that air quality issues were neglected by decision makers at all levels of government, primarily because of ignorance. Information has not been given to relevant stakeholders on the health effects of air pollution in the areas of poorest air quality.¹⁵

19. The scientific evidence suggests that the number of premature deaths caused by air quality has been underestimated. New evidence on the longer-term impacts shows that greater gains in life expectancy could be achieved by tackling air quality than are currently being realised by efforts to eliminate road deaths and passive smoking combined. **Air quality must be a higher priority for Government. Defra must raise the profile of the issue by publicising the latest data on premature deaths more widely and making clear the benefits of improving air quality.**

14 Ev 65

15 Ev 2

3 The costs of poor air quality

20. The 2007 Air Quality Strategy proposed new policy measures to improve air quality based heavily on a cost-benefit analysis. In the analysis some costs were monetised while others were assessed on a qualitative basis. In the next part of this report we examine some of the key costs.

Health costs

21. The main cost of air pollution arises from the adverse health effects on people. The 2007 Air Quality Strategy estimates that the health impact of man-made particulate air pollution experienced in the UK in 2005 cost between £8.5 billion and £20.2 billion a year.¹⁶ These figures were provided by the Interdepartmental Group on Costs and Benefits, which includes Defra, the Department of Health and the Department for Transport. This estimate was based on life-years lost and the monetisation of this reflects estimates of the UK population's 'willingness to pay' to avoid these health impacts.

22. The Air Quality Management Resource Centre note that the health impacts of air quality in the UK are almost twice those of physical inactivity, estimated to be £10.7 billion per annum,¹⁷ yet it fails to receive the same level of attention as the latter within medical and media circles. The costs of poor air quality are comparable to the cost of alcohol misuse to society, estimated to be £12–£18 billion per annum.¹⁸ Isabel Dedring, the Mayor of London's Environmental Advisor, said that there was no link between the funding that was available to tackle air quality and the avoided health costs from improvements to air quality. She thought this was not the case for other social health issues.¹⁹

23. The £8–20 billion total cost of poor air quality is likely to be an under-estimate. The Air Quality Strategy ignores the impact on morbidity, costing only mortality.²⁰ There are additional costs to the NHS from respiratory hospital admissions triggered by air pollution. For example, in 2007/08, there were over 74,000 emergency admissions to hospital because of asthma and the NHS's non-elective spell tariff was £612 million for 2007/08. There are clear links between asthma and air quality; Asthma UK estimate the annual cost of asthma to society at £2.3 billion.²¹

24. Defra recognised that health benefits from policy measures to improve air quality are undervalued, but argued that this was because it was not possible to quantify all health outcomes. Work by COMEAP to review the evidence is ongoing and is expected to show that there are health benefits over and above those that have been monetised. COMEAP will also consider the literature on chronic morbidity effects, an area it has not considered

16 Defra, *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, July 2007

17 Ev 72

18 Ev 145

19 Q 13

20 Q 162

21 Ev 140

before. It also plans to update its estimate of the risks associated with short-term exposure to air pollutants.²²

25. Nitrogen dioxide has not been included in past analysis of costs. Previous attempts to quantify the effects of exposure to this have not been successful, and COMEAP did not believe there was sufficient evidence on which to base any quantification of the health impacts. It has been difficult to disentangle the effects of NO₂ from those of other pollutants.²³ No direct health benefits from measures to reduce NO₂ have been included in the main cost-benefit analyses supporting the 2007 Air Quality Strategy.

26. COMEAP have acknowledged that further work is required in order to understand the health effects associated with exposure to NO₂ and is in discussion with the Health Protection Agency to develop a programme of work in this area.

27. Good air quality makes a key contribution to preventative healthcare. The Government should ensure that local strategic partnerships embed plans to deliver real improvements in local air quality.

Environmental costs

28. Air pollution has wide-ranging environmental impacts including loss of biodiversity, reduced crop yields and a contribution to climate change. Following the very large reductions in sulphur emissions in the UK and across Europe since the 1970s, NO_x, ammonia and ground level ozone now have the most significant impact on the environment. Excess nitrogen from emissions of ammonia and NO_x leads to excessive plant growth and decay (eutrophication) that disturbs the biodiversity of both land-based and water-based ecosystems. Emissions of ammonia and NO_x also contribute to acidification of ecosystems. Ozone has a direct effect on plants, damaging their leaf structure, reducing growth and compromising their defence mechanisms.

29. A 'critical load' is an estimate of the exposure to one or more air pollutants, above which there is risk of damage to certain sensitive elements of the environment. Critical loads for acidity and the fertilising effects of nitrogen are exceeded in over half the UK's natural and semi-natural habitats. Currently 60% of sensitive habitats exceed the critical load for nutrient nitrogen,²⁴ and ammonia is a major source of this. Agricultural activities are the principal source of ammonia, but only a small fraction of national ammonia emissions are subject to any regulatory control. The Environment Agency called for a national ammonia reduction strategy, as was originally proposed in the UK's Air Quality Strategy 2007: it noted that there were still no firm proposals.²⁵

22 Ev 40

23 COMEAP, *Long-term exposure to air pollution: effect on mortality*, June 2009

24 Centre for Ecology and Hydrology, *Review of Transboundary Air Pollution—Draft report*, 2009

25 Ev 121

30. Defra told us that eutrophication problems were being addressed, and that there had been a reduction in emissions and concentrations of nitrogen oxides. But it recognised that further policy action would be required to reduce emissions of ammonia.²⁶

31. Ozone exposures exceed critical loads for effects on crops, forests and semi-natural vegetation over substantial areas of the UK. Defra estimate that ozone reduces the yield of wheat grown in southern Britain by 5% to 15%, which would imply a serious financial loss to agriculture.²⁷ Ground level ozone also contributes to global warming indirectly by reducing carbon take up by vegetation, as well as being a greenhouse gas in its own right.

32. The 2007 Air Quality Strategy does not cost the impact of air pollution on ecosystems. Valuing ecosystems is complex and a methodology is still at the developmental stage. Friends of the Earth, however, believed that the UK's methodology was in line with EU approaches and that the UK was going broadly in the right direction.²⁸ Defra's ecosystems services approach will look at the services a healthy ecosystem provides, including well-being, clean air, clean water. It should enable a cost to be put on any impact on an ecosystem. We welcomed this approach in our report of 2008, *Halting biodiversity loss* and called on the Government to complete it by the earliest opportunity.²⁹ In our current inquiry, however, Defra told us that more research is still needed at both UK and EU levels to reach the point where it is possible to value ecosystems to a satisfactory standard.³⁰

EU fines

33. Defra believe that “there is a pretty good chance” of not being fined for particulate matter limit value exceedences. They recognised that the NO_x emissions ceiling targets and Nitrogen dioxide limit values present a “significantly bigger challenge”.³¹ The size of any fines would depend on rulings from the European Court of Justice but could be a combination of a lump sum payment and a fine levied each day until targets were reached. It has been reported that fines could reach £300 million should the Commission continue to reject the UK's application for an extension,³² but there is no precedent for a similar environmental contravention and the magnitude of any fines cannot be predicted with certainty.

34. The Local Authorities Coordinators of Regulatory Services (LACORS) and the Chartered Institution of Water and Environmental Management (CIWEM) argued that a cost-benefit approach was inappropriate for identifying the best policies for achieving a mandatory requirement. They favoured using cost effectiveness as this would identify the cheapest package of measures to ensure mandatory targets were met.³³

26 Ev 41

27 Ev 42

28 Ev 131

29 Environmental Audit Committee, Thirteenth Report of Session 2007–08, *Halting biodiversity loss*, HC 743

30 Q 168

31 Q 148

32 “Air quality fine is a ‘fantastic’ prospect”, *ENDS Report*, January 2010, p 52

33 Ev 82

35. The Government must assess the most cost effective way of meeting mandatory EU targets rather than relying only on a cost-benefit analysis of possible actions.

36. The cost-benefit analysis undertaken for the Air Quality Strategy did not give sufficient weight to the health and environmental benefits of improving air quality nor did it take any account of likely EU fines. Many of the potential benefits are not monetised and the impacts of poor air quality go much wider than just mortality. A wider evaluation of costs and benefits is needed as costs currently cover only a small part of the impacts. The Interdepartmental Group on Costs and Benefits is introducing a methodology that will account for the cost of abating environmental damage when limit values are likely to be exceeded, but this needs to be developed further and address all environmental damage and take into account the wider health benefits.³⁴

37. The Government's assessment of the costs and benefits of action on air quality does not account for all the health effects of poor air quality, the damage to ecosystems and potential fines. The Government should improve the assessment of the costs and benefits of better air quality. The Government must therefore urgently:

- **quantify the impact on morbidity and the cost to the NHS of poor air quality;**
- **improve understanding of the health effects of exposure to nitrogen dioxide;**
- **estimate the cost of the damage to ecosystems and the environment from poor air quality;**
- **fund the research necessary to fill the gaps in the evidence base; and**
- **take account of the likely fines from missed EU targets in its air policy appraisal.**

4 Reshaping policy

38. Many different policy actions could be used to improve air quality but the most important are:

- raising awareness of air quality issues, especially among policy makers, political decision makers and the public;
- aligning air quality indicators and measures within the local planning framework to reduce air pollution;
- improving the evidence base so that decisions can be based on an assessment of cost effectiveness and a better estimate of costs and benefits; and
- improving cross-departmental working.

These actions should bring about measurable improvements in air quality by enabling changes in, for example, transport policy and by encouraging action at the local authority level.

Raising awareness

39. Often air pollution cannot be detected by the general public and most people do not understand how much it may harm their health.³⁵ Some policies require significant behavioural change, such as a modal shift away from private vehicle use. Others, like low emission zones, depend on public acceptance but, as the referendum on congestion charging in Manchester showed, this is far from easy to establish.

40. Defra established a 'Citizen's Jury' in 2006 to explore public views on air quality.³⁶ The results showed that at the beginning of the exercise there was no understanding of how air quality is measured, of the health impacts, or of how individuals can improve it. At the end of the process the participants agreed that the issue of air quality was more important than originally thought, because of its health impacts. The citizen jurors recommended a public awareness campaign that provided information on the causes and implications of air quality and what individuals could do to make a difference and how they would benefit as a result.

41. Air alerts established in London³⁷ and Sussex³⁸ provide free alerts of expected air pollution incidents and related health advice to those with medical conditions that are exacerbated by air pollution. Innovations such as the low pollution route option available on www.walkit.com can also help raise awareness.³⁹ In Sheffield, public awareness has

35 Ev 106

36 Defra, *Report on the Citizens' Jury on Air Quality*, July 2006, www.defra.gov.uk/environment/quality/air/airquality/publications/citizens-jury/index.htm

37 See www.airtext.info/

38 See www.sussex-air.net/AirAlert/Default.aspx

39 Ev 106

played a major part in encouraging local action by the public and local authorities to improve air quality by reducing car use and planting trees to abate pollution. The Government has campaigns aimed at eliminating road deaths, reducing exposure to passive smoking and reducing obesity. **Better public understanding of air quality issues is critical. The Government must educate the public about the health risk from poor air quality and about how they can limit their exposure and improve air quality. Any campaign on air quality should raise awareness of the actions people can take to reduce emissions of dangerous pollutants and to reduce their exposure.**

Cross-departmental working

42. Defra, Department of Health, Department for Transport, Department for Communities and Local Government, Department of Energy and Climate Change and HM Treasury all have a role in determining air quality policy. There is evidence of occasional joined-up thinking on this issue. For example, the Cabinet Office Strategy Unit included air pollution in its analysis of the wider costs of transport in urban areas. But more co-operation is required. Defra and DfT are held jointly accountable under Public Service Agreement 28 for reducing air pollution. PSA28 aims to “secure a healthy natural environment for today and the future”.⁴⁰ PSA28’s indicator 3, which requires the Government to meet Air Quality Strategy objectives for eight air pollutants, is not being met.

43. LACORS believed that links between central government departments need to be improved. Defra and DfT appear to be linking up more effectively and undertake quarterly liaison meetings with LACORS officers, but truly consistent joined-up policy across all relevant departments is still lacking. It is essential that DECC, DCLG, DoH and HMT also engage in and prioritise air quality issues, which LACORS argued they have been somewhat reluctant to do.⁴¹ The Institute for Air Quality Management told us that Defra and Department of Health had some understanding of the health effects of air pollution but that other Government departments, like DfT, DCLG, DECC and HMT, appeared to have limited awareness of air quality issues and, often, a total lack of understanding that air quality was a major problem in terms of its health and environmental impacts.⁴²

44. Harmonisation of air quality and climate change policy exposes this lack of a joined up approach. Coordinated policy cuts overall costs. In contrast, uncoordinated policy has unintended consequences, and leads to contradictions within government. Reductions in greenhouse gas emissions and improvements in air quality can be achieved by lower energy demand and better energy efficiency. But some technologies that lower carbon dioxide emissions can increase NO_x and particulate emissions to the detriment of local air quality.

45. In a number of cases the climate change agenda has resulted in measures that increase air pollution. For example, diesel vehicles were promoted because of their fuel efficiency despite having higher emissions of particulate matter and nitrogen dioxide than petrol

40 HM Government, *PSA Delivery Agreement 28: Secure a healthy natural environment for today and the future*, October 2007

41 Ev 105

42 Ev 72

vehicles. Another example has been the promotion of biomass boilers in urban areas already suffering poor air quality.

46. Defra has only very recently published *Air Pollution: Action in a Changing Climate*, which aims to link air quality and climate change action.⁴³ Air quality will only improve if all government departments give it priority and raise the profile of the issue. Unless this happens systematically air quality issues will continue to be ignored as departments focus on their primary objectives at the expense of environmental impacts. Departments are expected to address air quality in policy appraisals but lack the guidance to do this effectively.⁴⁴ The standard impacts assessment form includes a prompt to assess impacts on greenhouse gases but not air quality. **Government must raise the priority attached to air quality in all government departments and provide better guidance on including air quality impacts in policy appraisals. Only Defra and DfT are formally accountable for air quality, under the Public Service Agreements; other departments that contribute to the problem, including DCLG, DoH, DECC and HMT, are not. Ministers must drive this from the top, introduce measures to ensure this becomes routine practice and accept responsibility for policies that conflict with air quality.**

Transport and air quality

47. Air pollution from road transport has fallen by 50% since 1990 but traffic has increased by a fifth and the number of licensed vehicles increased by 77% between 1980 and 2007, from 19 to 34 million.

48. The European Union plays a key role in regulating pollution from road vehicles by setting European wide fuel standards and emission limits. DfT negotiates these European fuel standards and emission limits on behalf of the UK. Evidence suggests that European vehicle and fuel standards will not achieve air quality targets and the reductions in pollutants expected from these standards have not been observed. Leicester City Council told us that the Government's predictions over the last decade of a fall in traffic-generated nitrogen dioxide have been over-optimistic.⁴⁵ This view was echoed by Dr Ian McCrae from the Transport Research Laboratory (TRL), who also said that more research was required to understand how transport emissions affected air quality:⁴⁶

What we have since about 2000 is a levelling off of the air quality in response to those emissions improvements. We do not see the same sort of gradients in terms of the improvements in air quality. My feeling is that is probably a weakness in the emission factors that we use in our models and that is a weakness of the understanding of the technologies and how they perform in real service.

49. Particulates from tyre, road and brake wear is one area that has seen little research. Dr McCrae told us that there was some data on brake and tyre wear, but that it was relatively weak in relation to the exhaust pollutants coming from motor vehicles. In addition more

43 Defra, *Air Pollution: Action in a Changing Climate*, March 2010

44 NAO, *Air Quality*, January 2010

45 Ev 74

46 Q 36

research is required to understand the contribution particulate matter lying on the surface of the road makes. It is thought almost 70% of roadside particulate concentrations come from particulate matter on the road that is swept into the air in the wake of passing vehicles.⁴⁷

50. Emissions standards for vehicles have been relied on to cut air pollution from road traffic. But, on their own, the Euro standards will not provide the emissions reductions required to meet UK air quality objectives. **Transport policy must change dramatically if the UK is to meet future targets and reduce exposure to air pollution. Much of this agenda is already being driven by efforts to tackle climate change (like modal shift and smarter travel choices) although some conflicts exist. In addition to improving existing policies, the Government must explain the role played by brake, tyre and road wear in generating particulate matter and research the impact of road surface particulate matter on air quality.**

Assisting local authorities

51. Under the Environment Act 1995, local authorities have a duty to work towards improved air quality. They are required to carry out regular reviews and assessments of air quality in their area against the objectives in the Air Quality Strategy. Where any of these objectives are not being achieved, authorities must designate air quality management areas and then prepare and implement remedial action plans to tackle the problem. Once an air quality action plan has been set, local authorities must report to Defra or the relevant Devolved Administration on delivery against this action plan. In 90% of local authorities with air quality issues, local air quality management areas have been set up to tackle transport-related pollution, although evidence on discernible improvement in many of these is limited.

52. Local authorities are responsible for other functions that may affect air quality and local air quality problems are often an indirect result of measures driven by congestion, road safety or employment. Good cooperation between transport, air quality, climate change, public health and spatial planning departments, as well as with partner organisations, is essential to improving local air quality. Many local authorities lack the resources to develop such strategic thinking by themselves. TRL and Environmental Protection UK told us that in many cases local authorities had limited knowledge and skills with which to tackle air quality issues and had little control over the pollutants and processes causing the problem. Local authorities need help and advice to raise the profile of air quality within their environment departments, where it might lose out to competing demands including climate change, and across other areas of local authority responsibility where awareness of the issue is limited.⁴⁸

53. To assist local authorities DfT has published guidance on Local Transport Plans, which will be applicable from April 2011. This strongly encourages local authorities to integrate air quality action plans with the local transport planning process.

47 Q 40

48 Ev 16

54. The planning process also offers an important opportunity for local and regional authorities to influence air quality. Oral evidence set out that local authorities and the Environment Agency do not adequately consider air quality in the planning process. **The Government must urgently explore how planning guidance can be strengthened and applied to reduce air pollution.**⁴⁹

55. The Government's core policies and principles for planning and pollution control are set out in Planning Policy Statement 23 (PPS23). Planning Authorities must take this into account when preparing Regional Spatial Strategies and Local Development Frameworks. DCLG provides guidance on pollution control in PPS23 and Defra has provided guidance on using the planning system to develop low emission strategies and improve air quality.⁵⁰ Despite this guidance, not all local authorities are developing the required links between the air quality professionals, transport planners, climate change officers and development control planners.⁵¹ There is scope for sharing best practice on developing these links through the Low Emissions Strategies Partnership that provides a forum for examining local authority air quality issues.⁵²

56. Local authorities are key to improving air quality. The Government must raise the profile of air quality with all local authorities, encourage the sharing of best practice and ensure that the issue is given sufficient attention across all areas of local authority responsibility, not just within their environmental departments.

57. Though costly to implement, low emissions zones can be used by local authorities to improve air quality. In Germany a national framework for low emission zones (to which vehicular access can be restricted according to vehicle emissions) has contributed to meeting EU targets. There is no such national legislative framework in the UK. A national framework for low emission zones would establish a nationally recognised standard for emissions and vehicle identification, supported by a national certification scheme of retrofit technologies. This would make it much easier and less expensive for a local authority to establish low emissions zones and to prescribe what standard of vehicles would be allowed to enter them.

58. The London low emission zone has been effective in reducing emissions of particulate matter.⁵³ Nitrogen dioxide pollution in London is more widespread than particulate matter and the Greater London Authority (GLA) plan to extend the low emission zone to cover this.⁵⁴ The GLA argued that it would be easier to do this if a national certification scheme for low emission zones was established.⁵⁵ DfT recognised that the London low emissions zone would provide an important part of the evidence needed to assess the effectiveness of

49 Q 49–50

50 Defra, *Low Emissions Strategies—using the planning system to reduce transport emissions*, January 2010

51 Ev 67

52 Ev 84

53 Ev 12

54 Q 3

55 Ev 13

such schemes. They noted that the London scheme was more costly and technologically complex than many on the continent.⁵⁶

59. The Environmental Industries Commission believe that a national framework for low emission zones would help create many new jobs in the UK's environment industry. Approximately 3,500 people are currently employed in the UK in the retrofit market. Furthermore, an estimated 80% of the UK's retrofit market is supplied by UK owned companies. The UK's share of this market could increase further through effective Government support for the introduction of low emission zones across the UK.⁵⁷ DfT officials told us that this option is being considered.

60. Developing a national framework for low emissions zones would raise the profile of the air quality challenge and help drive down emissions in our cities. The Government must ensure that research into the options for such a framework is completed and published at the earliest opportunity. Low emissions zones are costly and are only likely to be effectively implemented on a longer timescale. They will not be necessary in each local authority. What is needed is for all local authorities to develop wide ranging strategies that reduce emissions and drive down concentrations of key pollutants. Local authorities must develop effective policies, closely linked to planning and coupled with existing monitoring activities.

56 Q 134

57 Ev 126

5 Conclusion

61. Poor air quality probably causes more mortality and morbidity than passive smoking, road traffic accidents or obesity. Yet it receives little or no attention in the media and scant attention in Parliament and within Government.

62. The UK should be ashamed of its poor air quality and the harm this causes. It is likely to breach EU air quality directives. The fines for doing this could be significant.

63. The costs to the country of air pollution are enormous. More comprehensive cost-benefit analysis should drive both changes in policy and better implementation of existing policy. It could also find the most cost effective way of complying with the existing legal limits.

64. Change requires more investment, better co-ordination of policy, increased public awareness and better research to shape policy. The Government needs to achieve these aims quickly.

65. Local authorities have a key role in delivering improved air quality. They need better support from across central government to achieve this.

66. Poor air quality means poor health and environmental degradation, and it has long-term consequences not just for the UK but for the planet. The Government needs to address this major problem much more urgently.

Conclusions and recommendations

The air quality problem

1. Air quality must be a higher priority for Government. Defra must raise the profile of the issue by publicising the latest data on premature deaths more widely and making clear the benefits of improving air quality. (Paragraph 19)

The costs of poor air quality

2. Good air quality makes a key contribution to preventative healthcare. The Government should ensure that local strategic partnerships embed plans to deliver real improvements in local air quality. (Paragraph 27)
3. The Government must assess the most cost effective way of meeting mandatory EU targets rather than relying only on a cost-benefit analysis of possible actions. (Paragraph 35)
4. The Government's assessment of the costs and benefits of action on air quality does not account for all the health effects of poor air quality, the damage to ecosystems and potential fines. The Government should improve the assessment of the costs and benefits of better air quality. The Government must therefore urgently:
 - quantify the impact on morbidity and the cost to the NHS of poor air quality;
 - improve understanding of the health effects of exposure to nitrogen dioxide;
 - estimate the cost of the damage to ecosystems and the environment from poor air quality;
 - fund the research necessary to fill the gaps in the evidence base; and
 - take account of the likely fines from missed EU targets in its air policy appraisal. (Paragraph 37)

Reshaping policy

5. Better public understanding of air quality issues is critical. The Government must educate the public about the health risk from poor air quality and about how they can limit their exposure and improve air quality. Any campaign on air quality should raise awareness of the actions people can take to reduce emissions of dangerous pollutants and to reduce their exposure. (Paragraph 41)
6. Government must raise the priority attached to air quality in all government departments and provide better guidance on including air quality impacts in policy appraisals. Only Defra and DfT are formally accountable for air quality, under the Public Service Agreements; other departments that contribute to the problem, including DCLG, DoH, DECC and HMT, are not. Ministers must drive this from the top, introduce measures to ensure this becomes routine practice and accept responsibility for policies that conflict with air quality. (Paragraph 46)

7. Transport policy must change dramatically if the UK is to meet future targets and reduce exposure to air pollution. Much of this agenda is already being driven by efforts to tackle climate change (like modal shift and smarter travel choices) although some conflicts exist. In addition to improving existing policies, the Government must explain the role played by brake, tyre and road wear in generating particulate matter and research the impact of road surface particulate matter on air quality. (Paragraph 50)
8. The Government must urgently explore how planning guidance can be strengthened and applied to reduce air pollution. (Paragraph 54)
9. Local authorities are key to improving air quality. The Government must raise the profile of air quality with all local authorities, encourage the sharing of best practice and ensure that the issue is given sufficient attention across all areas of local authority responsibility, not just within their environmental departments. (Paragraph 56)
10. Developing a national framework for low emissions zones would raise the profile of the air quality challenge and help drive down emissions in our cities. The Government must ensure that research into the options for such a framework is completed and published at the earliest opportunity. Low emissions zones are costly and are only likely to be effectively implemented on a longer timescale. They will not be necessary in each local authority. What is needed is for all local authorities to develop wide ranging strategies that reduce emissions and drive down concentrations of key pollutants. Local authorities must develop effective policies, closely linked to planning and coupled with existing monitoring activities. (Paragraph 60)

Formal Minutes

The following declaration of interest relating to the inquiry was made:

5 January 2010

The Chair declared a pecuniary interest as chairman and non-executive director of Eco City Vehicles plc, which distributes and services London taxis.

Tuesday 16 March 2010

Members present:

Mr Tim Yeo, in the Chair

Colin Challen

Mr David Chaytor

Jo Swinson

Dr Desmond Turner

Joan Walley

Draft Report (*Air Quality*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 66 read and agreed to.

Summary agreed to.

Resolved, That the Report be the Fifth Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

Written evidence was ordered to be reported to the House for printing with the Report, together with written evidence reported and ordered to be published on 8 December, 5 and 26 January, 2, 9 and 23 February.

[Adjourned to a day and time to be fixed by the Chairman.]

Witnesses (Volume II)

Tuesday 5 January 2010

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Ms Isabel Dedring, Mayoral Adviser on the Environment, and **Mr Simon Cousins**, Environment Programme Officer, Greater London Authority Ev 5

Tuesday 9 February 2010

Dr Ian S McCrae, Senior Technical Manager, Energy, Emissions and Air Pollution Group, Transport Research Laboratory Ev 17

Professor Frank Kelly and **Dr Gary Fuller**, Environmental Research Group, King's College London Ev 24

Mr Graham Pendlebury, Director, Environment and International Directorate, **Mr Iain Forbes**, Head of Air Quality Branch, and **Mr Chris Parkin**, Head of Engineering Standards Branch, Department for Transport Ev 29

Tuesday 23 February 2010

Jim Fitzpatrick MP, Minister for Food, Farming and Environment, **Mr Daniel Instone**, Deputy Director, Air, Noise and Local Environmental Quality, **Mr Robert Vaughan**, Head of National and Local Air Quality, Atmosphere and Local Environment, and **Mr Tim Williamson**, Head of Science and Evidence, Atmosphere and Local Environment, Department for Environment, Food and Rural Affairs Ev 45

List of written evidence (Volume II)

1	Air Quality Management Resource Centre, University of the West of England, Bristol	Ev 71
2	Asthma UK	Ev 139
3	Barry & Vale Friends of the Earth	Ev 119
4	Dr Mark Broomfield	Ev 107
5	Calor Gas Ltd	Ev 58: Ev 138
6	Campaign for Clean Air in London (CCAL)	Ev 89
7	Chartered Institution of Water and Environmental Management (CIWEM)	Ev 80
8	ClientEarth	Ev 115
9	Department for Environment, Food and Rural Affairs (Defra)	Ev 39
10	Department of Health	Ev 142
11	Environment Agency	Ev 121: Ev 141
12	Environmental Industries Commission (EIC)	Ev 124
13	Environmental Protection UK	Ev 65
14	Environmental Research Group, King's College London	Ev 21
15	Friends of the Earth (England, Wales and Northern Ireland)	Ev 130
16	Joanna Guske	Ev 62
17	Institute of Air Quality Management	Ev 60
18	Johnson Matthey Catalysts	Ev 112
19	Joint Nature Conservation Committee	Ev 99
20	Leicester City Council	Ev 74
21	Local Authorities Coordinators of Regulatory Services (LACORS)	Ev 103
22	Low Emission Strategies Partnership	Ev 84
23	Natural Environment Research Council	Ev 77
24	Allan G Norman	Ev 76
25	Office of the Mayor of London	Ev 1: Ev 11
26	Royal Borough of Kensington and Chelsea	Ev 110
27	Transport Research Laboratory (TRL)	Ev 15: Ev 21
28	Mr Peter Wilson	Ev 85
29	Woodland Trust	Ev 68

List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2009–10

First Report	The work of the Committee in 2008–09	HC 58
Second Report	Green Jobs and Skills	HC 159-I and -II (HC 435)
Third Report	Carbon budgets	HC 228-I and -II
Fourth Report	The role of carbon markets in preventing dangerous climate change	HC 290

Session 2008–09

First Report	Work of the Committee in 2007–08	HC 108
Second Report	Environmental Labelling	HC 243 (HC 861)
Third Report	Pre-Budget Report 2008: Green fiscal policy in a recession	HC 202 (HC 563)
Fourth Report	Reducing CO ₂ and other emissions from shipping	HC 528 (HC 1015)
Fifth Report	Reducing greenhouse gas emissions from deforestation: No hope without forests	HC 30 (HC 1063)
Sixth Report	Greening Government	HC 503 (HC 1014)

Session 2007–08

First Report	Are biofuels sustainable?	HC 76-I & -II (HC 528)
Second Report	Reducing Carbon Emissions from UK Business: The Role of the Climate Change Levy and Agreements	HC 354 (HC 590)
Third Report	The 2007 Pre-Budget Report and Comprehensive Spending Review: An environmental analysis	HC 149-I & -II (HC 591)
Fourth Report	Are Biofuels Sustainable? The Government Response	HC 528 (HC 644)
Fifth Report	Personal Carbon Trading	HC 565 (HC 1125)
Sixth Report	Reaching an international agreement on climate change	HC 355 (HC 1055)
Seventh Report	Making Government operations more sustainable: A progress report	HC 529 (HC 1126)
Eighth Report	Climate change and local, regional and devolved government	HC 225 (HC 1189)
Ninth Report	Carbon capture and storage	HC 654 (Cm 7605)
Tenth Report	Vehicle Excise Duty as an environmental tax	HC 907 (HC 72)
Eleventh Report	The Exports Credit Guarantee Department and Sustainable Development	HC 929 (HC 283)
Twelfth Report	Greener homes for the future? An environmental analysis of the Government's house-building plans	HC 566 (Cm 7615)

Thirteenth Report	Halting biodiversity loss	HC 743 (HC 239)
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Session 2006–07

First Report	The UN Millennium Ecosystem Assessment	HC 77 (HC 848)
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Second Report	The EU Emissions Trading Scheme: Lessons for the Future	HC 70 (HC 1072)
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Third Report	Regulatory Impact Assessments and Policy Appraisal	HC 353 (HC 849)
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Fourth Report	Pre-Budget 2006 and the Stern Review	HC 227 (HC 739)
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Fifth Report	Trade, Development and Environment: The Role of FCO	HC 289 (HC 1046)
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Sixth Report	The Voluntary Carbon Offset Market	HC 331 (HC 418)
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Seventh Report	Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill	HC 460 (HC 1110)
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Eighth Report	Emissions Trading: Government Response to the Committee's Second Report of Session 2006–07 on the EU ETS	HC 1072
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Ninth Report	The Structure of Government and the challenge of climate change	HC 740 (HC 276)
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Session 2005–06

First Report	Greening Government: the 2004 Sustainable Development in Government Report	HC 698
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Second Report	Sustainable Timber	HC 607 (HC 1078)
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Third Report	Sustainable Procurement: the Way Forward	HC 740
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Fourth Report	Pre-Budget 2005: Tax, economic analysis, and climate change	HC 882 (HC 195)
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Fifth Report	Sustainable Housing: A follow-up report	HC 779
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Sixth Report	Keeping the lights on: Nuclear, Renewables, and Climate Change	HC 584 (HC 196)
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Seventh Report	Sustainable Development Reporting by Government Departments	HC 1322 (HC 1681)
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Eighth Report	Proposals for a draft Marine Bill	HC 1323 (HC 1682)
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Ninth Report	Reducing Carbon Emissions from Transport	HC 981
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Tenth Report	Trade, Development and Environment: The Role of DFID	HC 1014 (HC 197)
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Eleventh Report	Outflanked: The World Trade Organisation, International Trade and Sustainable Development	HC 1455 (HC 354)
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Twelfth Report	Transport Emissions: Government Response to the Committee's Ninth Report of Session 2005–06 on Reducing Carbon Emissions from Transport	HC 1718
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