



Department
for Environment
Food & Rural Affairs



Department
for Transport

UK plan for tackling roadside nitrogen dioxide concentrations

An overview

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The government's ambition for a better environment and cleaner air

1. We pledge to be the first generation to leave the environment in a better state than we inherited it.
2. Clean air is one of the most basic requirements of a healthy environment for us all to live, work, and bring up families. Whilst air quality has improved significantly in recent decades, and will continue to improve thanks to the action we have already taken, there are some parts of our country where there are unacceptable levels of air pollution. This can come from a range of different sources and activities. Many everyday activities such as industrial processes, farming, transport, generating energy and heating homes can have a detrimental effect on air quality. This is a problem we need to tackle.

What the government is doing to deliver clean air

3. The government has already taken significant action to improve air quality. The UK was the first country in the world to announce in 2011 our intention that conventional car and van sales would end by 2040, and for almost every car and van on the road to be a zero emission vehicle by 2050. The UK is already a leader in Europe in terms of electric vehicle manufacture and uptake. In 2016 UK manufactured Nissan Leafs accounted for almost 20% of battery electric car sales across Europe and the UK had the highest sales of battery electric vehicles and plug-in hybrids in the EU.
4. We are already committed to investing over £2.7 billion overall in air quality and cleaner transport. This includes:
 - **£1 billion – ultra low emission vehicles (ULEVs).** This includes investing nearly £100m in the UK's charging infrastructure and funding the Plug In Car and Plug In Van Grant Schemes.
 - **£290 million – National Productivity Investment Fund.** In the Autumn Statement 2016, a further £290 million was committed for reducing transport emissions which includes £60 million for new buses and £40 million for bus retrofits, £50 million for a Plug In Taxi programme and £80 million for ULEV charging infrastructure.
 - **£11 million – Air Quality Grant.** We have awarded over £11 million under our Air Quality Grant scheme to help local authorities improve air quality.

- **£89 million – Green Bus Fund.** The UK government has invested a total of almost £89 million via the Green Bus Fund to help bus companies and local authorities in England to put over 1,200 new low carbon buses on the roads.
- **£27 million – Clean Bus Technology Fund and Clean Vehicle Technology Fund.** Since 2013, government has awarded over £27 million to retrofit almost 3,000 of the oldest vehicles (mainly buses) including through the Clean Bus Technology Fund and the Clean Vehicle Technology Fund.
- **£1.2 billion – Cycling and walking.** In April 2017, the UK government published its Cycling and Walking Investment Strategy which identifies £1.2 billion which may be invested in cycling and walking from 2016-2021.
- **£100 million – National road network.** Through the Road Investment Strategy, the UK government has allocated a ring-fenced £100 million for an Air Quality Fund available through to 2021 for Highways England to help improve air quality on its network.

5. We are developing further measures and will set these out in:

- a. the Clean Growth Plan which the Department for Business, Energy and Industrial Strategy will bring forward in the autumn.
- b. a further strategy on the pathway to zero emission transport for all road vehicles to be published by March 2018.
- c. a wider Clean Air Strategy in 2018 setting out how we will meet our international commitments to significantly reduce emissions of five damaging air pollutants by 2020, and 2030.

Although air pollution has improved, it still poses an urgent health problem

6. The shift to ultra-low and zero emission vehicles is well under way, and will continue to gather pace over the coming years as we move towards 2040, by which point the government will end the sale of all new conventional petrol and diesel cars and vans. This shift will resolve our air quality problem as combustion engines gradually disappear from the streets of our towns and cities, some as soon as the early 2020s. However, this will not happen quickly enough and the impact that air pollution continues to have on the health of this nation means we must do more, sooner.
7. We therefore have a clear ambition and policy agenda to improve air quality, backed up with significant investment. Air quality has improved significantly in recent decades. Since 1970 sulphur dioxide emissions have decreased by 95%, particulate matter by

73%, and nitrogen oxides by 69%. Total UK emissions of nitrogen oxides fell by a further 19% between 2010 and 2015.

8. However, poor air quality persists in certain areas of the country as a direct result of the failure of the European regulatory system to deliver expected improvements in vehicle emissions. Standards on vehicle engines (known as “Euro Standards”), which should have led to major reductions in emissions of nitrogen dioxide (NO₂) from vehicles, failed to deliver, particularly for diesel vehicles, whose “real world” emissions have proven to be many times higher than laboratory tests. Diesel vehicles on our roads are causing harmful emissions far above what was assumed and contributing to pollution levels that continue to be damaging to public health. Additionally, the Volkswagen scandal showed that deliberate cheating of the emissions tests was built into some vehicles. If those Euro standards had delivered as they were supposed to, we would by now have most of the UK within the legal air quality limits. We need to take specific further action in order to address the immediate health risks presented by poor air quality in particular parts of the country.
9. There is increasing evidence that air quality has an important effect on public health, the economy, and the environment. According to Public Health England, poor air quality is the largest environmental risk to public health in the UK¹. Evidence from the World Health Organization (WHO) shows that older people, children, people with pre-existing lung and heart conditions, and people on lower incomes may be most at risk².
10. Evidence collated by Defra, Public Health England and the Local Government Association³ shows that short-term exposure to high levels of air pollution can cause a range of adverse health effects including exacerbation of asthma, effects on lung function, increases in hospital admissions and mortality. A review by the World Health Organization concludes that long-term exposure to air pollution reduces life expectancy by increasing deaths from lung, heart and circulatory conditions. There is emerging evidence from the Royal College of Physicians (amongst others) of possible links with a range of other adverse health effects including diabetes, cognitive decline and dementia, and effects on the unborn child^{4 5}.
11. As well as having an effect on life-expectancy, air quality also impacts other aspects of health, productivity and wellbeing. Although it is difficult to quantify the economic impact of poor air quality with precision, research commissioned by Defra estimated

¹ Public Health England, ‘*Estimating local mortality burdens associated with particulate air pollution*’, 2014, www.gov.uk/government/publications/estimating-local-mortality-burdens-associated-with-particulate-air-pollution

² World Health Organization, ‘*Review of evidence on health aspects of air pollution – REVIHAAP Project*’, 2013 http://www.euro.who.int/_data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf?ua=1

³ www.local.gov.uk/sites/default/files/documents/6.3091_DEFRA_AirQualityGuide_9web_0.pdf

⁴ Ibid.

⁵ Royal College of Physicians ‘*Every breath we take. The lifelong impact of air pollution*’ (2016).

that in 2012, poor air quality had a total cost of up to £2.7 billion through its impact on productivity⁶.

12. In addition to affecting health, air quality also impacts the environment. Between 2013 and 2015, 44% of sensitive habitats across the UK were estimated to be at risk of significant harm from acidity and 63% from nitrogen deposition⁷. It has also been found that ozone effects ecosystems (by reducing carbon uptake and biomass in sensitive plants and trees) and on agriculture (where crop production has been found to be reduced by up to 9%)⁸.
13. Further research continues to improve understanding of the health, economic and environmental effects of air pollution, and although the evidence is subject to change, there is substantial evidence on the health impacts from particulate matter and there is a compelling and growing body of evidence on the effects from other pollutants particularly nitrogen dioxide.
14. We must take action now to tackle NO₂ pollution. Air pollution predominantly affects those living in our major towns and cities due to the concentration of vehicles and other sources of pollution. This continues to have an unnecessary and avoidable impact on people's health, particularly amongst the elderly, people with pre-existing lung and heart conditions, the young, and those on lower incomes.

The government's solution

15. Unlike greenhouse gases, the risk from NO₂ is focused in particular places: it is the build-up of pollution in a particular area that increases the concentration in the air and the associated risks. So intervention needs to be targeted to problem areas, fewer than 100 major roads which national modelling suggests will continue to have air pollution problems in 2021, mostly in cities and towns. The effort to reduce NO₂ also needs to be targeted on the sources that make the biggest contribution to the problem: road vehicles contribute about 80% of NO₂ pollution at the roadside and growth in the number of diesel cars has exacerbated this problem.
16. Given the local nature of the problem, local action is needed to achieve improvements in air quality. As the UK improves air quality nationally, air quality hotspots are going to become even more localised and the importance of action at a local level will increase. Local knowledge is vital to finding solutions for air quality problems that are suited to

⁶ Department for Environment, Food and Rural Affairs, 'Valuing the impacts of air quality on productivity', 2015, https://uk-air.defra.gov.uk/assets/documents/reports/cat19/1511251135_140610_Valuing_the_impacts_of_air_quality_on_productivity_Final_Report_3_0.pdf

⁷ Based on a 2013-2015 three-year average. Department for Environment, Food and Rural Affairs, 'Provision of Mapping and Modelling of Critical Loads and Critical Levels Exceedance 2016-19', 2016.

⁸ Ozone factsheets produced by the Natural Environment Research Council, Centre for ecology and Hydrology and the Science & Technology Facilities Council are available at www.ozone-net.org.uk/factsheets

local areas and the communities and businesses affected. A leading role for local authorities is therefore essential.

17. But we also recognise the need for strong national leadership. We will set a clear national framework for the steps that local authorities need to take. We will provide direct financial support to enable local authorities to develop and implement their plans, and pursue national measures to reinforce their efforts. And we will require those local plans to be developed and implemented at pace so that air quality limits are achieved within the shortest time possible.
18. In developing their local plans to tackle the causes of air pollution, local authorities should consider a wide range of innovative options, exploring new technologies and seeking to support the government's industrial strategy so that they can deliver reduced emissions in a way that best meets the needs of their communities and local businesses. Their plans could include a wide range of measures such as: changing road layouts at congestion and air pollution pinch points; encouraging public and private uptake of ULEVs; using innovative retrofitting technologies and new fuels; and, encouraging the use of public transport. If these measures are not sufficient, local plans could include access restrictions on vehicles, such as charging zones or measures to prevent certain vehicles using particular roads at particular times. However, local authorities should bear in mind such access restrictions would only be necessary for a limited period and should be lifted once legal compliance is achieved and there is no risk of legal limits being breached again.
19. We will help local authorities by:
 - **Setting up a £255m Implementation Fund**, available to support local authorities to prepare their plans and deliver targeted action to improve air quality. This funding will support the immediate work to conduct feasibility studies and develop and deliver local plans. **£40 million** will be made available immediately to support local authorities to take action to improve air quality in the shortest time possible.
 - **Establishing a Clean Air Fund**, which will allow local authorities to bid for additional money to support the implementation of measures to improve air quality. This could include interventions such as improvements to local bus fleets, support for concessionary travel and more sustainable modes of transport such as cycling, or infrastructure changes. These interventions could enable local authorities to avoid the imposition of restrictions on vehicles, such as charging zones. To ensure the Fund fits the specific needs of each local area there will be a competitive process through which local authorities bid for support. Further details will be announced later in the year.
 - **£100 million for retrofitting and new low emission buses.** As announced in the 2016 Autumn Statement, the government will provide this funding for a national programme of support for low emission buses in England and Wales, including hundreds of new low emission buses and retrofitting of thousands of older buses.

The government believes that continued development, promotion and implementation of innovative retrofit technology will be an important element of reducing emissions of NO_x and will help bridge the gap in the journey towards zero emissions by 2050. At a local level, the UK government expects local authorities to consider the impact retrofitting could have on their pollution levels and meeting local air quality objectives. We will set out further plans for how local authorities can access this funding later in the summer.

20. The government is clear that we must maintain discipline on public spending. Measures to improve air quality will therefore be funded through changes to the tax treatment for new diesel vehicles, or through reprioritisation within existing departmental budgets. Further details on changes to the tax regime will be announced later in the year.

Delivering cleaner air in the shortest time possible

21. It is vital that action is taken in the shortest time possible to improve air quality in those areas where air pollution is above legal limits. The government has previously said that relevant local authorities will have up to 18 months to produce their plans. In order to inject additional urgency into this process, we will now require local authorities to set out initial plans 8 months from now, by the end of March 2018. These will be followed by final plans by the end of December 2018. To assist local authorities in meeting these timescales, we will ensure they can immediately draw on our Implementation Fund, as well as central government expertise.
22. Government will assess local plans to ensure they are effective, fair, good value, and deliver the necessary air quality compliance. Government will provide feedback on local authorities' initial plans and will decide whether or not to approve final plans. A local plan will only be approved by government, and thus be considered for appropriate funding support, if:
- a. it is likely to cause NO₂ levels in the area to reach legal compliance within the shortest time possible;
 - b. the effects and impacts on local residents and businesses have been assessed, including on disadvantaged groups, and there are no unintended consequences; and,
 - c. proposals that require central government funding demonstrate value for money.
23. If the government deems a local plan not to be sufficient, we will require local authorities to implement the measures necessary in their area to deliver the necessary improvement in the shortest time possible.

Impact on individuals

24. This package of measures will support delivery of our obligations on air quality in the shortest time possible. We are clear, however, that this must be done in a way that does not unfairly penalise ordinary working families who bought diesel vehicles in good faith. This includes those people who purchased diesel vehicles following tax changes made by previous governments which focused on fuel economy and carbon dioxide (CO₂) emissions, rather than NO₂ emissions.
25. Our evidence suggests that exceedances in NO₂ are highly localised – limited, for the most part, to a few problem roads rather than an entire town or city centre. The plans put forward by local authorities should reflect this, ensuring that measures are carefully targeted to minimise their impact on local residents and businesses – and government will be scrutinising local authority plans on this basis.
26. Where there are no other viable options to reduce air pollution to legally-permissible levels in the shortest possible time, some local authorities may decide to introduce access restrictions on vehicles, such as charging zones or other measures to prevent certain vehicles using particular roads at particular times. The Mayor of London has already announced that the GLA will introduce new charges on those using diesel vehicles in central London. While local authorities may deem such action to be necessary, support should be available to the owners of affected vehicles.
27. We will not know the degree to which local plans will impact residents and individuals until local authorities come forward with their plans. In the meantime, the government will work with local authorities and others to consider how to help minimise the impact of such measures on local businesses, residents and those travelling into towns and cities to work where such action is necessary; and will issue a further consultation in autumn to aid development and assessment of options. The measures considered in that consultation will include options to support motorists: in particular private car drivers on lower incomes, or those who may have to switch to a cleaner vehicle. Options considered could include retrofitting, subsidised car club membership, exemptions and discounts from any restrictions, permit schemes for vans or concessionary bus travel.
28. A targeted scrappage scheme will also be considered in this consultation focussing on certain groups of drivers who most need support (such as those on lower incomes or those living in the immediate vicinity of a Clean Air Zone) and providing an incentive to switch to a cleaner vehicle.
29. Following the consultation on the draft Plan, it is clear that a number of issues remain with such mitigation options and in particular with scrappage schemes – analysis of previous schemes has shown poor value for the taxpayer and that they are open to a degree of fraud. We welcome views from stakeholders in the forthcoming consultation on whether it is possible to overcome these issues, alongside any wider options that should be considered. All proposals considered for government support would need to

demonstrate that support can be targeted to those who need it most and that any scheme could be delivered effectively with minimal risk of fraud or abuse. Proposals considered would also need to demonstrate that they offer clear value for taxpayer's money. Finally, given all measures will be funded by relevant taxes on new diesel cars alongside existing departmental budgets, proposals put forward would need to be fair to the taxpayers who would fund any measures.

Making the UK a global leader in air quality

30. We want vehicle manufacturers to show that they can be part of the solution as well as the problem. The UK led the way in Europe in pushing for tough new type approval standards for cars and vans, including the 'real world' driving emissions tests that start to take effect from September this year, alongside tougher laboratory tests. We want to be absolutely sure that these new standards will deliver, and that we see a significant reduction in harmful emissions from new models of cars and vans.
31. These new standards have no effect on existing vehicles on the road, many of which – even some of the newest models – show harmful emissions levels many times greater than the test limits. We have set up a Market Surveillance Unit to increase the checks that we carry out to ensure that new and existing vehicles on UK roads meet the standards that they were approved to. We will continue to examine all steps that could be taken to ensure manufacturers rectify these failings.
32. As we leave the EU, we want the UK to be a world leader in low emission transport, and will look for opportunities to strengthen further the controls on vehicle emissions which deliver both for the environment and for drivers.
33. We will also move forward with the transition to cleaner technologies and electric vehicles. Our new Automated and Electric Vehicles Bill will enable the UK to retain its position as a global leader in the market for electric vehicles. This will allow the government to require the installation of charge points for electric vehicles at motorway service areas and large fuel retailers, and to make it even easier to use electric vehicle chargepoints across the UK. This drive towards cleaner technology and zero emission transport will be reinforced by both the Clean Growth Plan and the Industrial Strategy, including investment in science and innovation through the Industrial Strategy Challenge Fund.