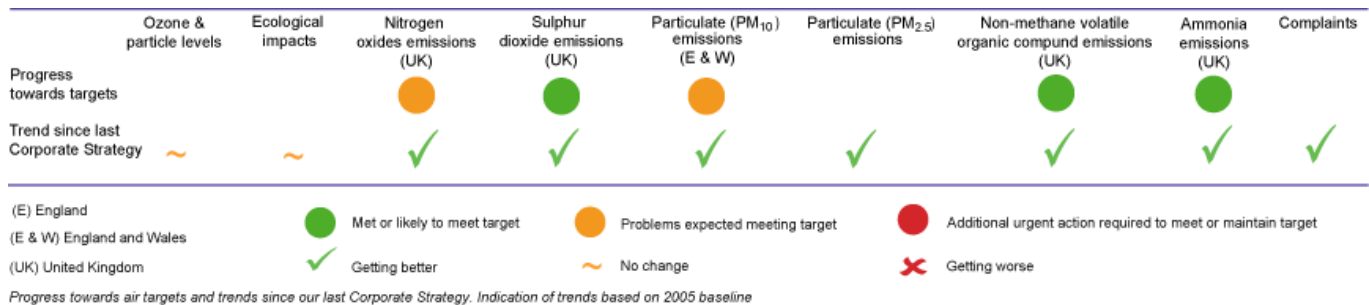


# Our corporate strategy 2010 - 2015

## Evidence: air

See also: business, climate change

### Where are we now?



### Why do we need to act now?

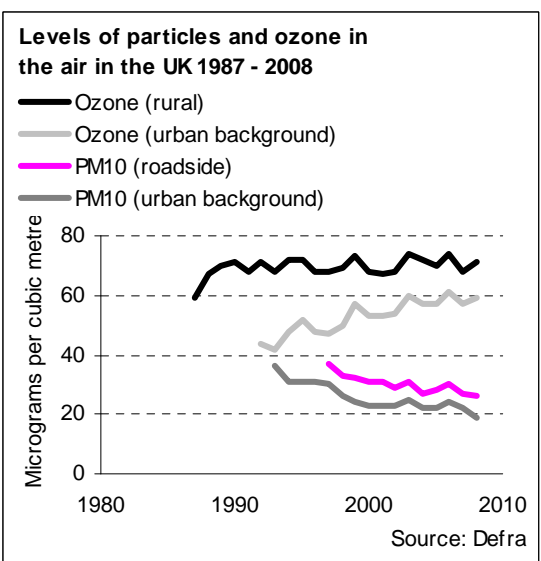
Some air pollutants can impact on human health and the environment:

- Particulates (PM<sub>10</sub> and PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>) and sulphur dioxide (SO<sub>2</sub>) are associated with respiratory and cardiovascular illness and may lead to premature death.
- Ammonia, NO<sub>x</sub> and SO<sub>2</sub> contribute to acidification and/or eutrophication of sensitive habitats leading to biodiversity loss, often at locations far away from the original emissions. They can also damage vegetation through leaf damage, chlorophyll degradation and reduced growth. Nitrogen dioxide (NO<sub>2</sub>) and nitric oxide (NO) are both oxides of nitrogen and together are referred to as NO<sub>x</sub>.
- Ground level ozone occurs naturally but chemical reactions between NO<sub>x</sub>, oxygen, non-methane volatile organic compounds (NMVOCs) and sunlight can increase levels. Ground level ozone can damage plants leading to poorer crop yield and quality, forest damage and impacts on biodiversity.
- NMVOCs also include carcinogens such as benzene and 1,3-butadiene. There is no absolutely safe level of these substances in ambient air.<sup>1</sup>

The two types of air pollution believed to have the most significant impacts on public health are particulate matter and ozone levels. Annual average PM<sub>10</sub> levels have been steadily decreasing since monitoring began in 1993. But there is an upward trend in background urban ozone levels owing to the reduction in urban emissions of NO<sub>x</sub> which destroy ozone close to its source.<sup>2</sup>

The UK is not expected to meet air quality objectives for PM<sub>10</sub> and NO<sub>2</sub>.<sup>3</sup> The UK has applied to the European Commission for a time extension to meet air quality limits for PM<sub>10</sub> in eight areas of the UK.<sup>4</sup> In 2007 the UK was Europe's biggest producer of NO<sub>x</sub>, accounting for 14 per cent of the EU total.<sup>5</sup> 18 per cent of major urban roads are not expected to meet air quality standards for NO<sub>2</sub> in 2010.<sup>6</sup>

Finer particles (PM<sub>2.5</sub>) typically make up around half of PM<sub>10</sub> emissions and two-thirds of ambient PM<sub>10</sub> concentrations. Additional PM<sub>2.5</sub> is formed in the atmosphere mainly from the interaction of



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sulphates, NO<sub>x</sub> and ammonia. There is a stronger link between these finer particles and observed ill health effects than for PM<sub>10</sub>. New air quality objectives for PM<sub>2.5</sub> are being introduced and will need to be met between 2010 and 2020.<sup>7</sup>

We received over 90 serious complaints about nuisances like odour, dust and smoke in 2008. 83 per cent of these were from sites we regulate. Two-thirds were about odour.

### The benefits of action

Better air quality means better health. Reducing industrial releases to air in the UK through regulation between 1990 and 2005 brought about £1 billion of health benefits. Reductions in emissions of SO<sub>2</sub> and PM<sub>10</sub> from industrial releases between 1990 and 2005 led to about 1,850 fewer premature deaths and reduced hospital admissions by 1,800 in 2005.<sup>8</sup>

But air pollution is still estimated to reduce life expectancy of every person in the UK by an average of 7-8 months with estimated equivalent health costs of up to £20 billion each year.<sup>9</sup>

About one-third of UK land area is sensitive to acidification and one-third to eutrophication (with some sensitive to both). In 2005, 58 per cent and 61 per cent of sensitive habitat area experienced harmful levels of acid deposition and nutrient nitrogen respectively. Since 1996 the total area of sensitive habitats being harmed by air pollution has fallen, though there has been little change since 2000.<sup>10</sup>

### The source of the problem

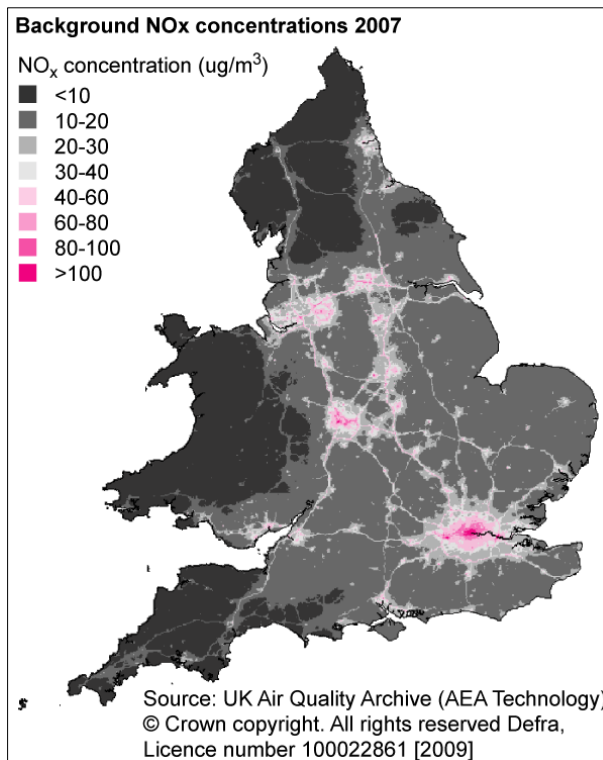
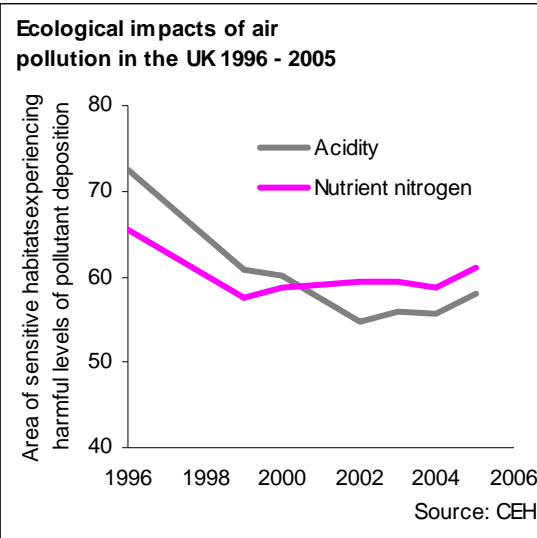
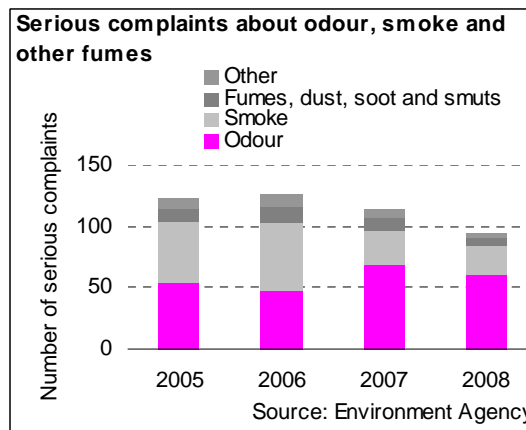
In 2007:

- Road transport was the single main source (30 per cent) of NO<sub>x</sub> emissions. The energy and manufacturing sectors combined released a further 46 per cent. 28 per cent of all emissions came from the industries we regulate.
- The industry we regulate, mainly the power sector, was the major source (68 per cent) of SO<sub>2</sub> emissions.
- Coal burning, diesel combustion, construction, mining and quarrying were the major sources of particulates. We regulate sites emitting 16 per cent of PM<sub>10</sub> emissions and 11 per cent of PM<sub>2.5</sub> emissions.
- 91 per cent of ammonia was from farming. We regulate sites that contribute 6 per cent per cent of these releases.
- The two major sources of NMVOC emissions were the use of solvents (43 per cent) and the extraction and distribution of fossil fuels (22 per cent). We regulate sites that contribute 6 per cent of these emissions.<sup>11</sup>

### Successes

We regulate releases to air from major industry to protect human health and the environment. We work to national and international targets, and ensure that the sites we regulate do not breach local air quality standards. We have prioritised SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>10</sub> in the past because these pollutants have the greatest impact on human health and the natural environment.

Releases to air in the UK have decreased. Since 1990 the businesses we directly regulate have cut releases of:



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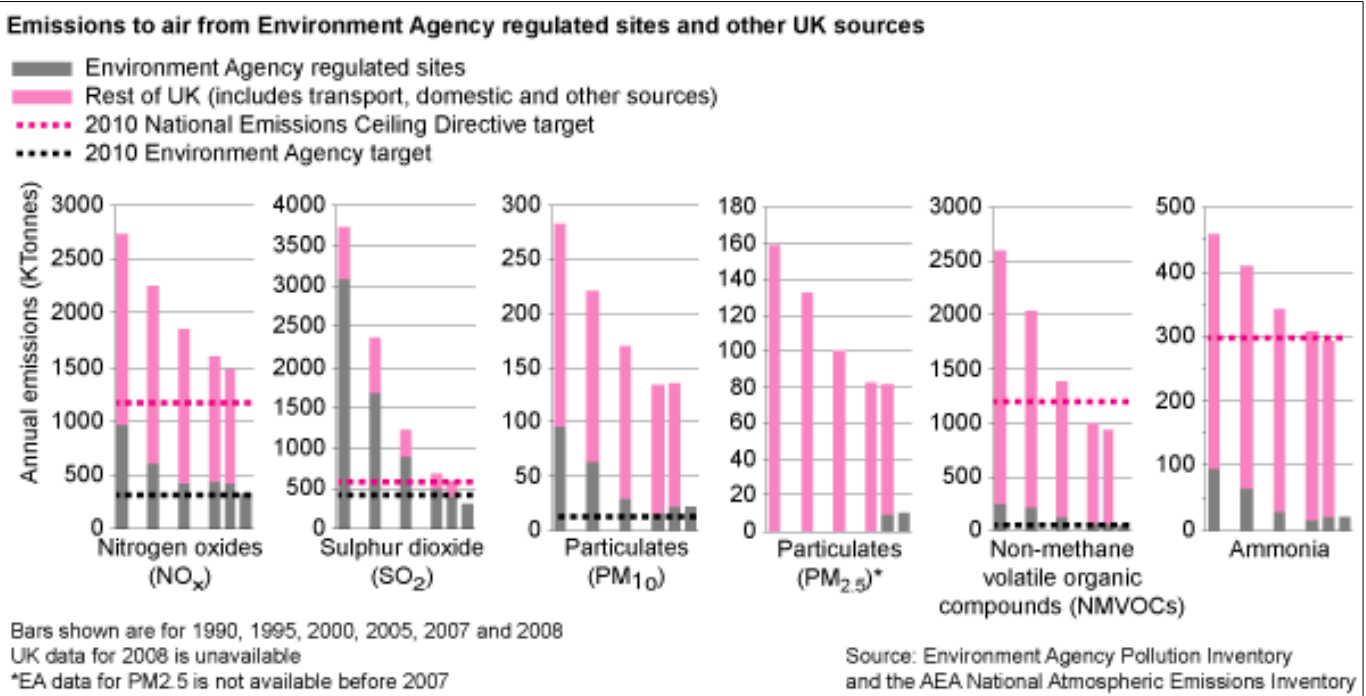
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- PM<sub>10</sub> by over three-quarters
- NO<sub>x</sub> by two-thirds
- SO<sub>2</sub> by 90 per cent.



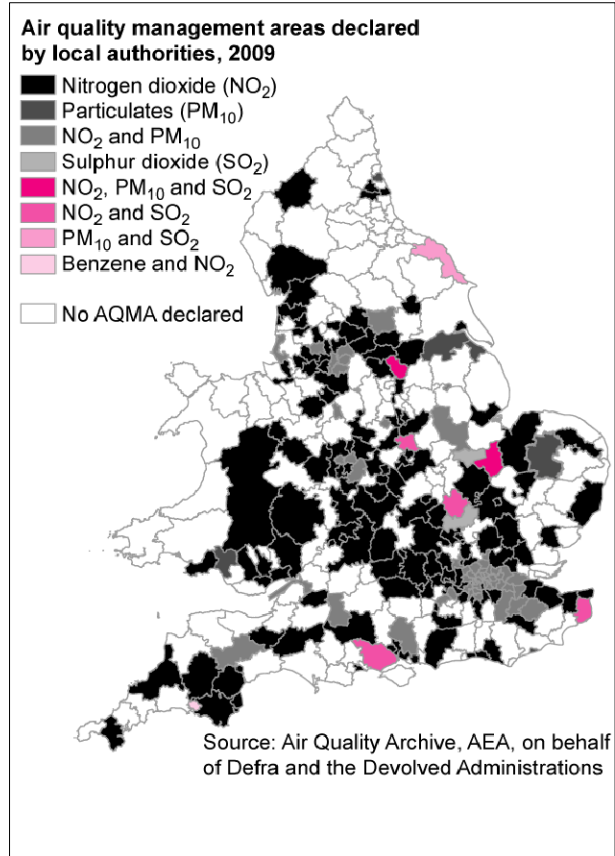
The UK has developed an air quality strategy for dealing with the set of pollutants of greatest concern.

Local authorities (LAs) review and assess local air quality. If it is likely to exceed health based standards LAs must declare air quality management areas (AQMAs) and have action plans that work towards improvements. LAs also regulate less polluting industry. Most AQMAs in England and Wales are designated for NO<sub>2</sub> and PM<sub>10</sub>.<sup>12</sup> 95 per cent are affected by traffic.<sup>13</sup> Less than 2 per cent are affected by sites we regulate.

We received 22 per cent fewer serious complaints about nuisances like odour, dust and smoke in 2008 than in 2005. When we receive a complaint about a site we regulate we determine its severity and impact and take appropriate action. Where the site has the potential for odour it must have an odour management plan. If we receive lots of complaints it suggests the plan is not working properly so we would require the operator to review their plan to deal with the problem.

**Our response: the future**

Our Corporate Strategy describes how we will work with others to protect and improve air quality by reducing NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub> and ammonia to benefit health, the environment and wellbeing (less nuisance).



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- <sup>1</sup> Defra, Scottish Executive, Welsh Assembly Government and DoENI (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Volume 1. [www.defra.gov.uk/environment/airquality/strategy](http://www.defra.gov.uk/environment/airquality/strategy)
- <sup>2</sup> Defra (2008) The environment in your pocket 2008
- <sup>3</sup> Defra, Scottish Executive, Welsh Assembly Government and DoENI (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Volume 1. [www.defra.gov.uk/environment/airquality/strategy](http://www.defra.gov.uk/environment/airquality/strategy)
- <sup>4</sup> Defra (2009) <http://www.defra.gov.uk/environment/quality/air/airquality/eu-int/eu-directives/airqual-directives/notification.htm>
- <sup>5</sup> European Environment Agency (2009) European Community emission inventory report 1990–2007 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP)
- <sup>6</sup> Defra, Scottish Executive, Welsh Assembly Government and DoENI (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Volume 2. [www.defra.gov.uk/environment/airquality/strategy](http://www.defra.gov.uk/environment/airquality/strategy)
- <sup>7</sup> Defra, Scottish Executive, Welsh Assembly Government and DoENI (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Volume 1. [www.defra.gov.uk/environment/airquality/strategy](http://www.defra.gov.uk/environment/airquality/strategy)
- <sup>8</sup> Environment Agency (2008) Air quality and deposition benefits from Environment Agency regulation Science Report SC060108
- <sup>9</sup> Defra, Scottish Executive, Welsh Assembly Government and DoENI (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Volume 1. [www.defra.gov.uk/environment/airquality/strategy/](http://www.defra.gov.uk/environment/airquality/strategy/)
- <sup>10</sup> Defra (2009) Sustainable development Indicator 28 [www.defra.gov.uk/sustainable/government/progress/national/28.htm](http://www.defra.gov.uk/sustainable/government/progress/national/28.htm)
- <sup>11</sup> National Atmospheric Emissions Inventory (2009) [http://www.naei.org.uk/datachunk.php?f\\_datachunk\\_id=225](http://www.naei.org.uk/datachunk.php?f_datachunk_id=225), and Environment Agency data
- <sup>12</sup> UK Air Quality Archive (2009) <http://www.airquality.co.uk/laqm/list.php>
- <sup>13</sup> Environment Agency (2008) Spotlight on business: 10 years of improving the environment

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