

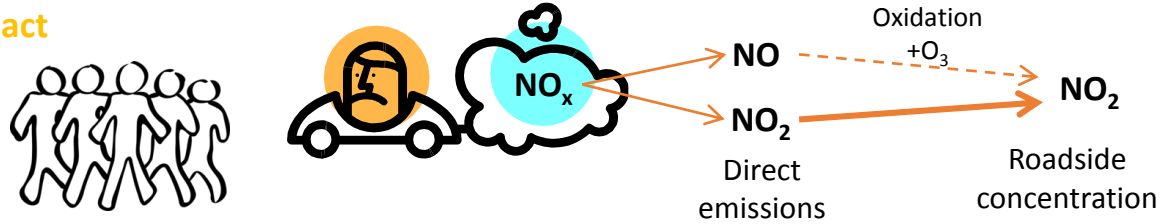
# Air pollutants and emissions you might have heard people voice concerns about...

**Nitrogen oxide (NO<sub>x</sub>)** refers to both **nitrogen monoxide (NO)** and **nitrogen dioxide (NO<sub>2</sub>)**. NO and NO<sub>2</sub> are mainly emitted from the combustion of fossil fuels. In 2014, approximately 44% of NO<sub>x</sub> emissions were from transport. NO<sub>2</sub> can have harmful impacts on human health. It is still important to consider NO emissions as NO can easily undergo chemical reaction with ozone (O<sub>3</sub>) to create more NO<sub>2</sub>. NO and NO<sub>2</sub> are invisible. NO<sub>2</sub> should not be confused with N<sub>2</sub>O (nitrous oxide) a gas commonly used in whipped cream dispensers.

## Sources



## Impact



The UK is split in 43 zones for the purposes of monitoring air quality. In 2015, **37 out of 43 of these zones were not compliant** with the EU Air Quality Directive for annual concentrations of NO<sub>2</sub>.

**Particulate Matter (PM)** is made of very small particles of differing chemical components that can be harmful to human health. Sources include the incomplete combustion of fossil fuels, dust storms, construction works and wear and tear of vehicle tyres, brakes and roads. It can be made up of many different chemicals that can be harmful to human health. PMs are categorised by their size – usually as **PM<sub>10</sub>** or **PM<sub>2.5</sub>** (or **Black Carbon**). Generally, the smallest particles (PM<sub>2.5</sub>) have the most potential to cause harm to human health as they can travel furthest in the body once ingested. In 2014 approximately 18% of PM emissions were from transport. Individually, and at lower concentrations, these particles are invisible, but at higher concentrations they can look like dust or fog suspended in the air.

## Sources



## Impact



Although the UK is currently compliant with the EU Air Quality Directive for PMs, PM emissions are in exceedance of the World Health Organisation guidelines recommended for reducing the health impacts of air pollution.

**Carbon dioxide (CO<sub>2</sub>)** is a greenhouse gas emitted mainly from the burning of fossil fuels. Excessive emissions of greenhouse gases result in climate change due to increases in temperature on the Earth's surface. Greenhouse gases are invisible. In 2014, 27% of CO<sub>2</sub> emissions were from transport.

## Sources



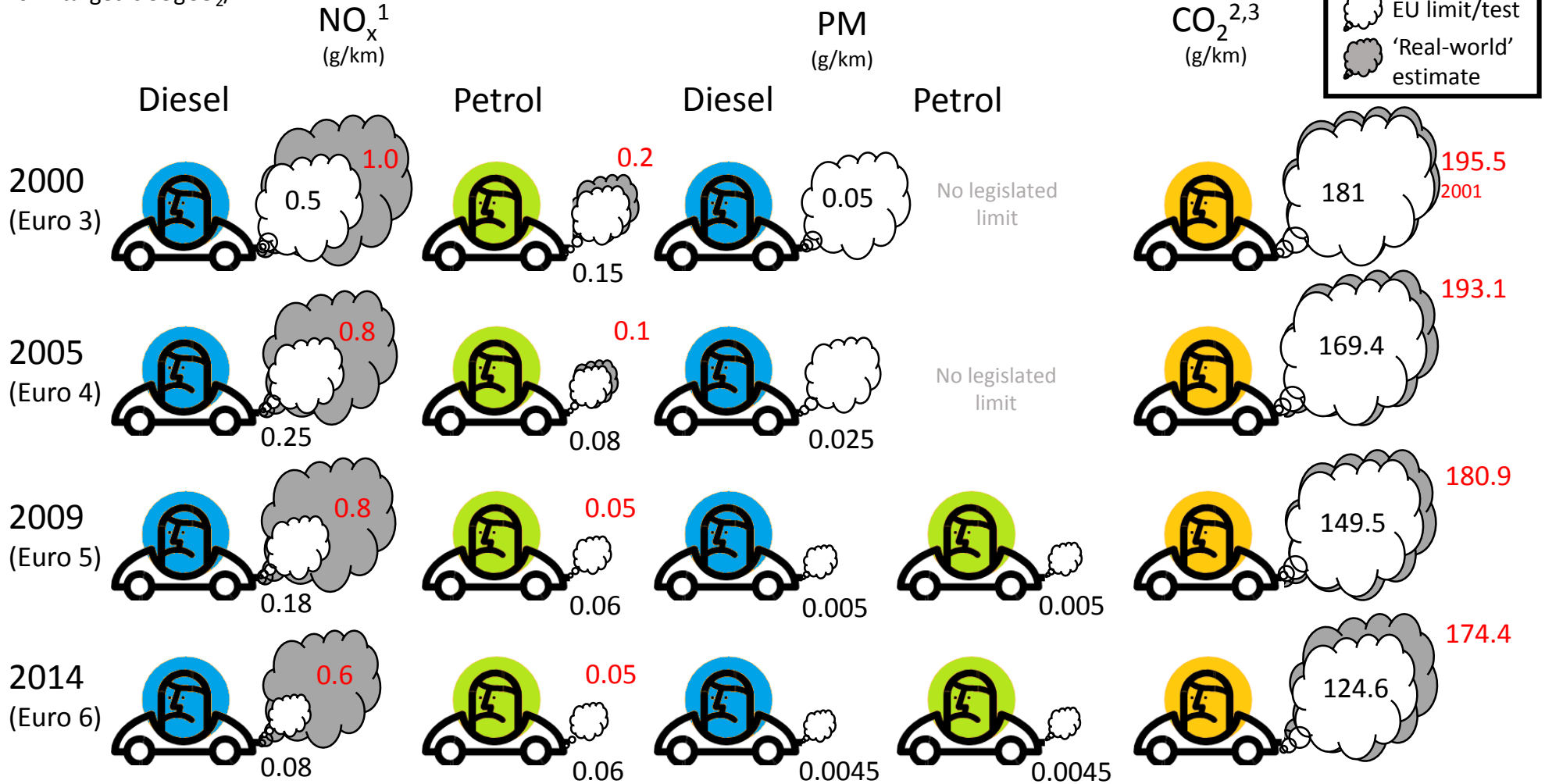
## Impact



The UK has committed to reducing carbon emissions (which are mostly made up of CO<sub>2</sub>) by 80% by 2050 compared to 1990 levels. Currently, carbon emissions are 38% below 1990 levels, ahead of the 2017 interim target for a 29% reduction.

# What is coming out of the tailpipe of your car...

Environmental tests have been more successful in reducing some tailpipe emissions than others. Air pollutant emission limits have generally tightened with each successive Euro Standard. Despite the large decreases in NO<sub>x</sub> limits for diesel cars, 'real-world' driving emissions have remained much higher. Legislation for tailpipe CO<sub>2</sub> is based on the average for all newly registered cars in that year. The 2015 target of 130gCO<sub>2</sub>/km was met early, in 2013. The 2021 target is 95gCO<sub>2</sub>/km.



Note: The proportional sizes of the 'clouds' are comparable between year (Euro standard) and fuels but not between different types of emission.

<sup>1</sup> Real-world NO<sub>x</sub> based on estimates ICCT (2012) *Laboratory versus real world: Discrepancies in NOx emissions in the EU*; ICCT (2014) *Fact Sheet: Real-world Emissions from Modern Diesel Cars*.

<sup>2</sup> EU new car calculations from SMMT New Car CO<sub>2</sub> Reports, found at <https://www.smmt.co.uk/category/reports/environment/>

<sup>3</sup> Real-world CO<sub>2</sub> calculated based on ICCT (2015) *From Laboratory to Road: A 2015 update of official and "real-world" fuel consumption and CO2 values for passenger cars in Europe*.