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EDITORIALS

Diesel in the dock

Time for society to commit to a decisive break with fossil fuel combustion

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The recent revelations that, apparently from 2008,[1] Volkswagen installed software in its diesel cars to evade US emissions tests has thrown a spotlight both on corporate responsibility and on the dual environmental challenges of outdoor air pollution and climate change. The failure of regulators to detect this breach of regulations calls into question society's collective commitment to tackling air pollution and suggests that policies to address climate change and air pollution must be harmonised.

The irony is that diesel engines have been promoted in Europe because they are more efficient than petrol engines and therefore thought to benefit climate change. In 1998, in the wake of the Kyoto climate change protocol, the European Automobile Manufacturers Association agreed with the European Commission to reduce carbon dioxide emissions from passenger cars by 25% over 10 years. While American and Japanese manufacturers invested in the development of hybrid and electric cars, the European car industry persuaded the Commission to promote diesel. Consequently, through subsidies and tax incentives, ownership of diesel cars in the UK and Europe has grown substantially, from less than 10% in the mid-1990s to around 50% now.[2]

Diesel cars can achieve 15-20% lower emissions of CO_2 per kilometre than a conventional petrol car—a potentially worthwhile environmental saving, though still far short of the reduction needed to meet climate change obligations. Unfortunately these lower CO_2 emissions come at a cost of more harmful local emissions, especially of small particles (including black carbon or soot) and nitrogen oxides (NOx). Moreover, black carbon also contributes to global warming, and to a greater degree per unit mass than does CO_2. Reducing black carbon and other short lived climate pollutants may be one of the most effective ways of slowing global warming in the near term.[3]

Newer diesel technology and tightened regulations were introduced to reduce emissions of harmful pollutants, but for some time there has been concern that the expected benefits to air quality are not being achieved because emission levels under real world operation do not match those achieved under test conditions. This partly reflects the inadequacy of official tests, which need to be replaced by more realistic assessments, but we now learn that it may also in part be because of deliberate manipulation. For the first time a manufacturer has admitted to using software to alter engine performance under test conditions specifically to meet the increasingly stringent emissions standards. The cars currently under scrutiny are thought to be emitting anything up to 35 times the NOx emissions standard set by the US Environmental Protection Agency,[4] and evidence is emerging that nitrogen oxides may be responsible for some of the health risk of air pollution.[5]

This breach is more than just an issue of corporate integrity. Outdoor air pollution remains one of the greatest threats to public health, and traffic emissions are a substantial contributor, especially in urban environments. The World Health Organization estimates that outdoor air pollution contributed to around 3.7 million premature deaths globally in 2012.[6] Although exposures are generally lower in Europe than in the highest exposure environments, pollution of the ambient air remains one of the leading environmental causes of premature mortality and illness. The UK Committee on Medical Effects of Air Pollution has estimated that the average UK person loses about six months of life expectancy from birth as a result of exposure to current particle pollution concentrations.[7]

The main effects are on cardiorespiratory illness, for which there are well established exposure-response relations based on a wealth of epidemiological studies from decades of research worldwide. The WHO International Agency for Research on Cancer classified diesel exhaust as a group 1 ("sufficient evidence") carcinogen in 2012[8]; it classified air pollution in general as carcinogenic to humans in October 2013,[9] with the main concern being particle components.

But the debate should not just be about the relative merits of diesel technology and whether manufacturers can be trusted to deliver required emissions control. It should also be about the steps necessary for society to meet the formidable challenges to control air pollution and mitigate climate change. Even if properly implemented, advances in engine technology, whether for diesel or petrol cars, still achieve only incremental benefits because they are based on the combustion of fossil fuels. Increased sales and distance travelled will rapidly outweigh any modest reductions in emissions. The quantum leap for the environment and health will come with the transition to

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alternative fuel sources generated by renewable means. There is increasing evidence that the transition to a low carbon economy is not only essential to prevent dangerous climate change but also carries potential for substantial benefits for health, including through improvements in air quality.[10-12]

Perhaps the lesson from the Volkswagen episode is not just whether manufacturers will comply with the legislation aimed at cleaning an inherently polluting fuel source. It may be time for society to commit to a decisive break with fossil fuel combustion. This requires us to proceed rapidly on a pathway towards a future based on increased active travel (walking and cycling) as well as cleaner, more sustainable energy sources in transport and all sectors of the economy.

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