

Air quality and climate change: How can both win?



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Although climate change and air quality are often seen as two different issues, they are in fact interlinked and therefore should be viewed as two sides of the same coin. For example, both greenhouse gas emissions and air pollutants are produced from fossil fuel power generation and industrial manufacturing. The AQEG report “Impacts of Net Zero Pathways on Future Air Quality in the UK” has presented key areas of interaction between net zero strategies and UK air quality. These include road and rail transport, food production and agriculture, forestry, bio-corps and biogenic emissions, hydrogen as a fuel, carbon capture and storage, and building energy efficiency.

The UK Climate Change Act (CCA) commits the UK to cut carbon emissions by 80% by the year 2050 and in order to achieve this, Construction 2025 has set a 50% reduction target for both infrastructure and property schemes. In addition, the UK passed a more stringent net zero emissions law in June 2019 to bring all greenhouse gas emissions to net zero by 2050, as such, much further reductions in carbon emissions will be required for both infrastructure and property schemes.

The UK National Infrastructure Commission (NIC) published its Design Principles for National Infrastructure in 2020, to inform the design of infrastructure in the UK. One of the core design principles is the aim for UK infrastructure to be designed in such a way that helps set the trajectory for the UK to achieve net zero greenhouse gas emissions by 2050 or sooner.

A large proportion of carbon emissions from infrastructure and property come from the burning of fossil fuels for the purpose of providing heating and power during construction and operation as well as in the production of materials used in construction. Ultimately, replacing fossil-based fuels with more renewable energy sources would reduce carbon emissions as well as the air pollutants associated with the combustion process.

The UK’s 2020 lockdown saw a huge leap in air quality, with measurements of NO₂ pollutant down by as much as 60% in some major cities during parts of the lockdown period. London’s Ultra-Low Emission Zone (ULEZ) expanded on 25th October 2021 from central London to cover all areas within the North and South Circular Roads, covering an area 18 times larger than the previous ULEZ. Air pollutants and carbon emissions from traffic have both been reduced.

The new London Plan 2021 has set out a framework for how London will develop over the next 20-25 years, including the Mayor’s vision for Good Growth. Notably, it requires a whole life carbon assessment (WLC) as well as an Air Quality Positive Statement (AQP) for large developments.

A WLC assessment requires applicants to show how they have calculated and reduced the carbon emissions of their proposal and encourages the retention and reuse of existing materials and structures to promote sustainable building practices. Similarly, the new London Plan also requires proposed large-scale developments subject to an Environmental Impact Assessment (EIA) to submit an AQP Statement at the planning application stage. The air quality positive approach outlines how new developments can minimise exposure to poor air quality while also improving and benefiting local air quality. It is important to note that measures aimed at improving air quality or reducing exposure to poor air quality must now be designed into the scheme in its early stages, rather than recommended as mitigation measures, to reduce a development’s potentially negative impacts.

If we can reduce air pollution, we will also protect the climate. However, some measures to reduce climate change impacts have had a negative impact on air quality (for example diesel engines, tight houses, biomass burning etc.). In many cases good



air quality and climate impacts can be achieved simultaneously, but there needs to be balanced and equal consideration of the two to avoid conflicting measures. For example, mechanical ventilation drawing clean air from roof tops to buildings could be recommended as a potential measure to mitigate air pollution impact, but mechanical ventilation will increase energy use and produce more carbon emissions. However, Combined Heat and Power, which is often proposed in built-up areas to improve energy efficiency, is beneficial to carbon reduction but could increase air pollutant emissions. Achieving both air quality and climate goals will require system changes and much needed holistic considerations.

“As air quality professionals, we continue to place health and wellbeing at the heart of our professional approach.”

As air quality professionals, we continue to place health and wellbeing at the heart of our professional approach for colleagues, clients, and the communities in which we work. As we find ourselves thinking about a world beyond the COVID-19 crisis, it is important that we rebuild our society in a way that protects planetary health and clean air and creates a resilient, sustainable, and equitable zero-carbon future.

We would like to call all IAQM members to share your case studies where a suggested mitigation measure benefits both air quality and climate change, as well as what challenges you face when addressing air quality and climate issues. Please send your comments and thoughts to Ethny Childs so that these can be considered by the IAQM Climate Change Working Group.

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These Insights Articles are designed to provide a view on topical issues affecting those working in air quality. This thought piece has been authored by Xiangyu (Sian) Sheng, Vice Chair of the IAQM Committee and member of the [IAQM Climate Change Working Group](#).

About the Institute of Air Quality Management (IAQM)

The IAQM aims to be the authoritative voice for air quality by maintaining, enhancing and promoting the highest standards of working practices in the field and for the professional development of those who undertake this work. Membership of the IAQM is mainly drawn from practising air quality professionals working within the fields of air quality science, air quality assessment and air quality management.

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