

Scottish Parliament's Net Zero, Energy and Transport Committee – Air Quality Roundtable

Submission of evidence

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It should be noted that Dr Price is the UK Research and Innovation (UKRI) Regional Clean Air Champion for Scotland and is a member of the CAFS2 Public Engagement working group.

The operation to date of the Scottish Government's 'Cleaner Air for Scotland 2 Strategy'

[1] Poor air quality is a public health emergency¹, meaning bold and ambitious approaches for tackling air pollution are required now.

[2] As outlined in Cleaner Air For Scotland 2 (CAFS2), Scotland aims for “the best air quality in Europe”, highlighting ambitions far beyond the minimum acceptable improvements.

[3] Since publishing CAFS2, the World Health Organisation have released new global air quality guidelines (2021)² which have been significantly updated in response to fifteen years of further scientific evidence on the health effects of air pollution (since the 2005 guidelines). This reinforces the need for ambition.

[4] It is within this context that Environmental Standards Scotland (ESS) have released their Air Quality Investigation Improvement Report for local authorities and Scottish Government, which outlines a series of concerns with current action to address air quality in Scotland. Overall, I agree with the actions laid out by ESS in their report. They are sensible and should support quicker action to improve air quality, particularly for NO₂, in Scotland.

[5] While the focus in the ESS improvement report is NO₂, it is important to note that this is not the only pollutant of concern in terms of health impacts, nor the only pollutant covered by CAFS2 (others include PM_{2.5}, PM₁₀ and SO₂). Scotland's air pollution comes from a range of sources, creating a 'cocktail' of pollutants, which a) vary between locations and b) change over various timescales (e.g. second-by-second, diurnally, annually and beyond). This makes tackling air pollution extremely challenging and creates the need for a multiple-strategy approach.

[6] While the legislative focus for air quality is on outdoor environments, people in Scotland spend most of their time indoors (in homes, workplaces, schools etc.). These indoor microenvironments can be impacted by air pollution levels outdoors (through infiltration), but also have pollution sources of their own, for example cooking, domestic burning of solid fuels and cleaning sprays. In turn, indoor sources may also contribute to outdoor air pollution. If

¹ Holgate (2022) Air pollution is a public health emergency. *BMJ* 2022;378:o1664.

² World Health Organization. (2021). WHO global air quality guidelines: particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. World Health Organization. <https://apps.who.int/iris/handle/10665/345329>. License: CC BY-NC-SA 3.0 IGO.

Scotland truly wants to achieve the “the best air quality in Europe”³, then ambitions on improving indoor environments need to match those of outdoors. While indoor environments are included in CAFS2, there appears to be limited evidence of any significant changes in this area so far.

[7] CAFS2 highlighted the need to work across systems, for example addressing air quality and climate change through joined-up action and linking air quality and health actions more effectively. I haven’t seen any evidence of this happening particularly effectively to date.

Progress towards and implementation of Low Emissions Zones (LEZs) in Edinburgh, Glasgow, Aberdeen and Dundee

[8] I agree with ESS that the introduction of the four low emission zones in Glasgow, Edinburgh, Aberdeen and Dundee are a ‘step in the right direction’⁴ in terms of reducing NO₂ concentrations.

[9] SEPA modelling suggests that the impact of the Scottish LEZs on NO₂ will be significant^{e.g.5}. However, evidence from other cities around the world of the impact of LEZs on NO₂ and PM_{2.5/10} following implementation and monitoring is much more mixed⁶.

[10] The Friends of the Earth air quality preliminary data analysis shows that Scotland did not breach air quality limits in 2022 for the first time (excluding periods impacted by Covid lockdowns)⁷. However, it is again worth noting the air quality ambitions in CAFS2, alongside the updated 2021 WHO Air Quality guidelines, and the fact that there is no safe level of air pollution - compliance is not enough.

[11] Any measures to improve air quality, such as LEZs, need to be accompanied by other measures designed to reduce NO₂ and other air pollutants as part of a multi-strategy approach. These include the promotion of active travel, e.g., on foot or by bike, as well as more sustainable travel, e.g., by train or bus.

[12] It is also important to note that non-exhaust emissions from vehicular traffic are an important source of air pollution⁸. These include emissions from tyre and brake wear that contribute particles and heavy metals into the atmosphere. These emissions will persist when shifting to lower emission vehicles, including, importantly for the coming years, electric vehicles.

³ Cleaner Air For Scotland (CAFS) 2 Available at: <https://www.gov.scot/publications/cleaner-air-scotland-2-towards-better-place-everyone/>.

⁴ Environmental Standards Scotland (ESS) Air Quality Investigation Improvement Report. 2022. Available at: <https://www.environmentalstandards.scot/wp-content/uploads/2022/09/20220929-ESS-AIR-QUALITY-INVESTIGATION-REPORT-IESS.21.013.pdf>.

⁵ SEPA (2021) Low Emission Zone – Glasgow Evidence Report. Available at: <https://www.glasgow.gov.uk/CHttpHandler.ashx?id=55000&p=0>.

⁶ Williams, H., Bartington, S. E., Pope, F. D. and Landeg-Cox, C. (2022). ‘Low Emission (Clean Air) Zones’, TRANSITION Clean Air Network, Birmingham, UK. Available at: <https://doi.org/10.25500/epapers.bham.00004107>.

⁷ <https://foe.scot/press-release/scotland-meets-air-pollution-limits-thanks-to-clean-air-zones/>

⁸ Air Quality Expert Group (2019) Non-Exhaust Emissions from Road Traffic. Available at: https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1907101151_20190709_Non_Exhaust_Emissions_type_set_Final.pdf.

Scotland's global standing on air quality and best practice it can learn internationally

[13] There are some excellent examples of research, policy and practice from elsewhere that can help support evidence and action to tackle air quality in Scotland. Some examples are given below.

[14] As outlined above [7], there is a need to take action on air pollution and health in a more joined-up way. As an example of best practice, Great Ormond Street Hospital worked with Imperial College London to add air quality information (PM_{2.5} and NO₂) to people's medical records⁹. This supports discussions between healthcare professionals and their patients on air pollution levels at their home address, the potential health impacts of that pollution and how to mediate its effects. Thorough training of healthcare professionals around air pollution communication, for example using Global Action Plan's online training materials¹⁰, is required to support this.

[15] To help protect those most vulnerable to air pollution, Global Action Plan has released the Clean Air Hospital Framework¹¹ to support the improvement of air quality around hospital sites.

[16] The Breathe London Community Programme¹² supports community groups in London to monitor and improve air pollution in their local area. Community groups can bid for sensors to deploy in their local area to support public engagement about air pollution, monitor changes in pollutant levels and test for impacts following local changes/ interventions. The initiative also supports the development of a wider community of people and groups interested in air pollution. Research suggests this type of approach can be effective in supporting public action to address air pollution¹³.

[17] The UK Research and Innovation (UKRI) Clean Air Programme¹⁴ is a £42.5M investment in air quality research across the UK. The Programme is ongoing, with results being published as they become available. Key areas of research include traffic-related pollution, the impact of air pollutants on vulnerable groups of people, and policy and practice interventions to improve air quality. It is expected that the research will lead to a significant change in understanding of air pollution and ways of tackling it in Scotland and the wider UK.

⁹ <https://www.gosh.nhs.uk/news/air-pollution-levels-added-to-patients-postcodes/>

¹⁰ <https://www.actionforcleanair.org.uk/health/knowledge-hub-health>

¹¹ <https://www.actionforcleanair.org.uk/health/clean-air-hospital-framework>

¹² <https://www.breathelondon.org/about>

¹³ McCarron, A., Semple, S., Braban, C.F. et al. Public engagement with air quality data: using health behaviour change theory to support exposure-minimising behaviours. *J Expo Sci Environ Epidemiol* (2022). <https://doi.org/10.1038/s41370-022-00449-2>

¹⁴ <https://www.ukcleanair.org/>