Consultation Response
Outdoor and indoor air quality targets

Objectives and Scope

The Environmental Audit Committee is undertaking a short inquiry to establish the adequacy of current measures to promote indoor and outdoor air quality. It is seeking written evidence to inform its inquiry and will hold a limited number of oral evidence sessions to form an initial view of the issues.

About the Association of Directors of Environment, Economy, Planning and Transport (ADEPT)

The Association of Directors of Environment, Economy, Planning & Transport (ADEPT) brings together directors from county, unitary, metropolitan and combined authorities, along with local enterprise partnerships, sub-national transport bodies and corporate partners drawn from key service sectors. ADEPT members look after your roads and transport, your environment, your local economy and wellbeing, alongside future plans for your area. ADEPT is a membership based, voluntary organisation with members across the country. Our primary role is to take the lead in transforming local authorities. We represent members' interests by proactively engaging central Government on emerging policy and issues, and promoting initiatives aimed at influencing government policy. We achieve this by developing best practices and by responding to government initiatives and consultations.

About the Association of Directors of Public Health (ADPH)

ADPH is the representative body for Directors of Public Health (DsPH), and is a collaborative organisation, working in partnership with others to strengthen the voice for public health, with a heritage which dates back over 160 years. ADPH work closely with a range of Government departments, including UKHSA and OHID as well as the four CMOs, NHS, devolved administrations, local authorities (LAs) and national organisations across all sectors to minimise the use of resources as well as maximise our voice.

ADPH aim to improve and protect the health of the population by:

- Representing the views of DsPH on public health policy.
- Advising on public health policy and legislation at a local, regional, national and international level.
- Providing a support network for DsPH to share ideas and good practice.
- Identifying and providing professional development opportunities for DsPH.

About the Chartered Institute of Environmental Health (CIEH)

CIEH is the professional voice for environmental health representing over 7,000 members working in the public, private and third sectors, in 52 countries around the world. It ensures the highest standards of

professional competence in its members, in the belief that through environmental health action people's health can be improved.

Environmental health has an important and unique contribution to make to improving public health and reducing health inequalities. CIEH campaigns to ensure that government policy addresses the needs of communities and business in achieving and maintaining improvements to health and health protection.

Our Position

Q1: What evidence exists of the extent of air pollution directly or indirectly impacting health of individuals or communities in England?

Air pollution causes a considerable burden of death and disability and costs the UK economy £22.6 billion every year. In the UK, 40,000 deaths a year are attributed to exposure to outdoor air pollution through increased risk of diseases such as heart disease, stroke, respiratory diseases and cancer.[1] Air pollution (both indoor and outdoor) has been identified as a major environmental hazard to public health by both the World Health Organisation (WHO) and Public Health England (PHE) which bears responsibility for about one in every nine deaths annually.[2]

Air pollution contributes to over 20,200 respiratory and cardiovascular hospital admissions per year and could have long-term impacts on health.[3] The more immediate impacts of air pollution exposure include asthma and increased cardiovascular hospitalisations. There is a substantial evidence base linking short-term variations in PM concentrations with variations in mortality risk. Short-term exposure to $PM_{2.5}$ is associated with cardiovascular, respiratory, and cerebrovascular mortality.[4] Long-term exposure to $PM_{2.5}$ is associated with effects on lung development and asthma in children. In adults, it is associated with an acceleration of lung function decline and respiratory mortality.[5] It is estimated that over 50,000 instances of coronary heart disease (CHD), 16,000 strokes, 9,000 cases of asthma and 4,200 lung cancers could be prevented if there was a reduction of just 1 $\mu g/m^3$ of fine particulate air pollutant in England in 18 years. In England alone based on a model by PHE there were over 63,000 instances of disease linked to $PM_{2.5}$ in 2017 which would amount to 1.3 million new instances of disease by 2035. The vast majority of these cases are CHD, diabetes and chronic obstructive pulmonary disease (COPD). It is estimated in 2035, there will be 1.1 million instances of disease linked to NO_2 and most of these cases are made up of diabetes and asthma. This should come as no surprise seeing how air pollutants, especially particulate matter has been categorised as a group one carcinogenic to humans by International Agency for Research on Cancer.[6]

According to the Committee on the Medical Effects of Air Pollutants (COMEAP): 'COMEAP reviewed nearly 70 studies in human populations (epidemiological studies) which looked at possible links between air pollution and a decline in mental ability and dementia in older people. They also considered studies which investigated how air pollution might affect the brain. From this review, it can be concluded that it is likely that air pollution does contribute to these effects. The most likely way this occurs is through effects on the circulation. It is known that air pollutants, particularly small particles, can affect the heart and blood vessels, including to the brain.'[7]

Q2: What evidence exists to demonstrate the impact of the Ultra Low Emission Zone in London, and other Clean Air Zones nationwide, on reducing public health risks or improving health outcomes within areas where they have been introduced?

The impact of Ultra Low Emission Zone (ULEZ) on reducing public health risks or improving health outcomes

Clean Air Zones (CAZs) with financial charges have the greatest impact in reducing air pollution in the most affected areas over the short to medium term. There is no evidence that they displace emissions to neighbouring areas. Where financial incentives are provided, CAZs have a positive longer-term effect in

accelerating the replacement or retrofitting of older, more polluting vehicles with low emissions ones.

The impact of the Ultra Low Emission Zone (ULEZ) / other CAZs will depend on different factors including the measures which are implemented to reduce air pollution as well as uptake by the local population. For example, reduction in air pollution will have a lower impact on health outcomes if that reduction is achieved simply by a reduction in journeys than if there is a transport modal shift towards active travel (mainly walking and cycling) with their subsequent implications for physical activity.

Certainly, the ULEZ is associated with a 60% reduction in $PM_{2.5}$ (exhaust only) 2019-2022[8] as well as reductions in NO_2 and PM_{10}.[9] Evidence from other CAZs supports this: in Bath, for example, the 2021 CAZ report showed that NO_2 concentrations fell by over 20% in the first year of the scheme, both inside the Zone and in the wider urban area. There was a high level of demand for financial assistance to replace or retrofit older, more polluting buses, HGVs and vans/LGVs. Similarly, Low Emission Zones have been associated with falls in NO_2, $PM_{2.5}$ and PM_{10} in Spain.[10] Nonetheless, it is difficult to estimate how that reduction has been achieved – whether it is through switching vehicles, public transport or active travel. One survey estimated that 17% of those changing their mode of travel moved to cycling whilst 43% simply walked. Analysis of the Active People Survey indicates that those who cycle for active travel are four times more likely to meet physical activity guidelines than those that do not.[11]

The impact of Ultra Low Emission Zone (ULEZ) on improving air quality and health

A report published by the Mayor of London has illustrated three main impacts of the ULEZ expansion in 2019. Firstly, ULEZ expansion leads to improved vehicle compliance and reduced traffic levels.[12] The overall ULEZ compliance rating has increased to 94.4% from 39% in 2017, and in October 2022 there were 47,000 fewer vehicles (5% reduction) and reduced traffic flows. Post pandemic traffic levels in outer London have largely returned to pre-pandemic levels, but in central and inner London travel levels remain below what they were in 2019. The second impact is the reduction of carbon, $PM_{2.5}$ and NOx emissions by 4%, 19% and 26%. Finally, the air pollutant concentrations measurements demonstrate that air in the zone is cleaner, with central London NO_2 levels being 26% lower than they would have been without ULEZ. However, London is bearing the highest health cost from air pollution in Europe.[13] Research from the University of York indicates that the ULEZ zone has reduced the health cost and improved health outcomes in ULEZ zones.[14] Further research is being done to assess the effect on child lung development and other health related outcomes.[15]

The Mayor of London should provide support in the transition phase

Despite the significant health risk, London residents have no control over the air that they breathe. The Transport Research journal has found that there is a strong inverse relationship between poverty and emission generation.[16] Similarly, research found that air pollution, deprivation and poor-health status combinations can create increased and disproportionate disease burdens.[17] However, the expansion of the ULEZ will not be without cost. The Mayor of London should be prepared to help with the transitional costs, particularly for those with low income.

Maximising the effectiveness of Clean Air Zones

For CAZs to be the most effective, LAs need to ensure that they discourage use of all vehicles, no matter their emissions standards. It is only by reducing the total number of cars on the road, including electric vehicles, that we will reduce all types of pollution, including $PM_{2.5}$ which from road transport is produced

predominantly by vehicle braking and tyres. Moreover, in order to ensure the greatest benefits are derived from introducing either CAZs or ULEZs, it essential that they are designed to succeed and have sufficient public support, as well as viable alternative public transport.

How LAs can support Clean Air Zones

Greater support must be also provided by LAs for people and businesses to upgrade their vehicles when implementing a CAZ, or other charging zones. This will help all people to change to less polluting modes of transport, such as electric buses, e-bikes or cargo bikes, regardless of their income level. This support could take the form of a scrappage scheme or mobility credits – whereby a vehicle is swapped for credits to use on public transport. Mobility credits have multifaceted benefits in that they promote the need to have fewer cars on the road, support congestion challenges faced by most major urban centres, as well as promoting better public health while supporting our carbon and net zero objectives.

Furthermore, LAs can work with transport partners to:

- Reduce congestion and providing credible alternatives to the private vehicle, such as reliable and effective public transport.
- Reduce antisocial behaviour on the transport network, to encourage better patronage.
- Implement effective intelligent sequencing of traffic lights by using Air Quality sensors at junctions to determine traffic flow and elevated pollution levels.
- Encourage large companies to subsidise public transport for their staff's commute.

Q3: Are the current national targets for outdoor air pollution ambitious and wide-ranging enough to provide adequate protection for public health and the environment in a) rural and b) urban areas?

No, we are of the view that the current national targets for outdoor air pollution are neither sufficiently ambitious nor wide-ranging enough to provide adequate protection for public health and the environment in either rural or urban areas. There is no 'safe' level of air pollution, and it would be iniquitous for some in the UK to be asked to breath air that is more polluted than other parts of the country. The Government should set more ambitious targets to match with Wales and international standards and take on the lead in reducing air pollution in the UK.

We would like to begin by expressing our concern that the WHO Air quality guidelines 2021 have not been mentioned in the revised Air Quality Strategy for England. The targets set in the strategy (an annual mean concentration of 10 µg/m^3 or below and a reduction in average population exposure by 35% by 2040, compared to a 2018 baseline) do not align with WHO target for $PM_{2.5}$ (an annual mean concentration of 5 µg/m^3 or below). We would have expected targets for England to align with WHO targets or, at least, for the Strategy to reference those targets and explain why less ambitious targets have been set. It is also less ambitious than the Clean Air Plan in Wales which aims for 'concentrations across Wales to be below the WHO guideline for $PM_{2.5}$ where it is possible, and lower still where there is sufficient potential and there is high public exposure or risk to sensitive receptor groups'.

The UK Government has set out the following statutory emission reduction targets (through the Environmental Act 2021 and the Environmental Improvement Plan) for five damaging pollutants to be achieved by 2030 relative to 2005 levels:

- Reduce emissions of nitrogen oxides by 73%.

- Reduce emissions of sulphur dioxide by 88%.
- Reduce emission of $PM_{2.5}$ by 46%.
- Reduce emissions of ammonia by 16%.
- Reduce emissions of non-methane volatile organic compounds by 39%.

Despite ammonia being recognised as one of the three most impactful pollutants, alongside $PM_{2.5}$ and nitrogen oxides both of which have considerably more ambitious reduction targets, the UK Government have set insufficiently ambitious targets for ammonia reductions. Ammonia is a reactive gas which impacts biodiversity, and when it reacts with other chemicals in the air, it can form particulate matter which travel over large distances further adding to the well-publicised public impacts this can have on public health. The main source of ammonia emissions is agricultural activity (87% in 2021).[18] Given the clear relation between agricultural activity and ammonia emissions, it is unclear why the Government have taken such a light-touch approach to the agricultural sector, both in terms of regulation of the industry but so too with respect to targets designed to reduce emissions from agriculture.

Furthermore, we must be cautious not to treat different air pollution targets in isolation in view of their respective impacts on the environment and public health in urban or rural areas. Air pollution is an all-encompassing public health issue which has huge public health and environmental impacts irrespective of where the emissions emanate from. Emissions from transport and domestic burning may be more felt in urban settings, whereas emissions from agriculture will be more felt in rural settings. Despite this, it is important to acknowledge that air quality is transboundary, with pollutants capable of travelling long distances, impacting biodiversity and public health within regions and beyond.

It is also important to recognise in the setting of targets who and how many people are exposed to different kinds of air pollutants. This could allow an understanding of the differential impact air pollution has on residential and non-residential areas as well as on different population groups. This could also enable an understanding of how air pollution affects vulnerable populations.

Q4: Are measures currently in place, and those proposed in the revised Air Quality Strategy for England, sufficient to achieve national targets?

We are disappointed that for the consultation on revised Air Quality Strategy, we were given such a short time to respond such an important issue. Having this consultation released with many still on the Easter break, many local authorities in pre-election period, and the Air Quality Strategy due for publication on 1st May, conveys the impression this consultation was merely a rubber-stamping exercise as opposed to genuine consultation that can influence the final strategy.

We noticed that much of the revised Air Quality Strategy focuses on what LAs must do to tackle air pollution. However, it is evident that without enforceable, updated regulations (not just guidance) and greater local government resourcing as well as central Government action on significantly polluting industries such as agriculture, any actions taken by LAs may be piecemeal and disjointed. While the focus on LAs is welcome, success in reducing harmful emissions and meeting national targets also requires action by Government, business, and individuals. It is unhelpful to single out councils for taking insufficient action. The draft strategy also fails to say what additional funding will be made available to councils.

We agree that there is a need to align local air quality monitoring within national boundaries as comprehensive, accessible air quality data within LA boundaries is important to facilitate an evidence-

based approach to reducing air pollution.

We agree that significant action should be taken to better regulate the most polluting domestic wood burners, particularly in urban areas. There are flaws within the existing regulatory framework which hamper effective LA enforcement, such as Smoke Control Areas, which need updating from central Government.

We are of the view that the Environment Agency (EA) needs to be mandated to ensure they permit all agricultural sites which meet the capacity aspect of the legislation, eg pigs and poultry permits. Furthermore, enforcement action against agricultural sources of emissions falls outside the remit of LAs and requires long overdue regulation from central Government.

Additionally, the 'Best Available Techniques' (BAT) standards and guidance notes on relevant industrial emissions should be updated to promote newest available technologies. Specifically, more could be done to improve intensive agricultural installations which require environmental permits and are currently regulated by the EA. Agricultural installations, such as poultry units, extract air which is then emitted to the environment adding significant sources of ammonia. As ammonia is a precursor of $PM_{2.5,}$ this contributes to both regional and local $PM_{2.5}$ emission which could travel long distances leading to poorer air quality elsewhere (eg in city centres where there is already high PM2.5 concentrations). Currently there are techniques available to remove ammonia from the extract air of poultry installations (through going through an acid water curtain/ bath which could typically remove over 90% of ammonia emissions together with other particulate loading). However, they are not noted as BAT. BAT should be updated covering ammonia and smaller agricultural installations supported with clear planning guidance. The new standard should come into force for all new sites and should be retrofitted into existing sites. We suggest that this could be done over a phased timescale and in any case, should be stated as a requirement should an existing site wish to expand.

LAs can help to reduce emissions from road transport by regulating vehicles – both private and commercial – and working directly with public transport authorities to ensure that they are operating low emission public transport fleets. This requires further guidance, support, and funding from central Government to guarantee budgets, encourage behaviour change, and to support enhanced monitoring. The new Local Transport Plan guidance will be a key framework to guide local planning and investment, it is important that Department for Environment, Food and Rural Affairs (Defra) is engaged in its production to ensure that the Air Quality Strategy is adequately reflected there. This should complement work and support to encourage active travel as the ultimate carbon neutral transport.

We agree with the recommendations of the Chief Medical Officer, Professor Sir Chris Whitty, that the Government should work with LAs to set out a clear roadmap for improving indoor air pollution, while working to improve ventilation wherever possible, so that toxic air can be removed from the indoor environment.

Given the health impact of $PM_{2.5}$, it is important to promote the consideration of $PM_{2.5}$ in the planning system. Most importantly, public health should be placed at the centre of future national planning policy to improve population health and wellbeing, reduce the social cost of poor health, and deliver on the levelling up mission.

The draft strategy states that there has been insufficient action by LAs to reduce $PM_{2.5}$ and that if further action is still insufficient Government will consult on introducing a new statutory duty on councils. If this happens then such consultation should be held at an appropriate time and over a long enough period to

allow councils to consider the proposal properly and develop a detailed response. Any statutory duty on councils would need to be accompanied by corresponding powers to act against polluters and must be fully funded.

We would also like to highlight that EA regulated waste sites are a significant source of particulate emissions. LAs are precluded from taking action against EA regulated waste sites unless they receive the express consent of the Secretary of State. EA should have the responsibility to ensure robust regulation of waste sites. Should the EA fail their duty to regulate waste sites, LAs should be given sufficient enforcement powers supported with adequate funding to do so.

Lastly, the revised Air Quality Strategy should have more consideration of indoor air quality, as poor indoor ventilation as well as indoor air pollution from the products we use and combust are a growing concern. The revised Air Quality Strategy should consider how regulations on the use of chemicals can be kept at a high standard after Brexit.

For a more detailed understanding of our views on the revised Air Quality Strategy, we recommend you to read our joint response here and ADPH's full response here.

Q5: What are major barriers and challenges to achieving national targets on air quality?

Since the Clean Air Act of 1956 there have been many Acts that are either directly or indirectly related to air pollution. However, air pollution related mortality remains unacceptably high. The major barriers and challenges to achieving the national targets on air quality are:

Non-alignment of targets with limited ambition

Under the Environment Act 2021, the UK air quality targets are:

- Annual Mean Concentration Target ('concentration target') – a maximum concentration of 10µg/m3 to be met across England by 2040.
- Population Exposure Reduction Target ('exposure target') – a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

Bringing these forward to 2030 would not only improve health; research by Imperial College indicates that if current and proposed policies related to net zero and air pollution are implemented in full the UK would meet the WHO interim $PM_{2.5}$ target by 2030. However, this would still mean that the UK will miss its greenhouse gas target of a 78% reduction from 1990 to 2035. Aligning targets to 2030 would achieve both climate and health goals.

Lack of targets

Whilst the Government has set targets for reducing fine particulate matter by 2040, it has not set targets or long-term objectives for other serious pollutants such as ammonia.

Public engagement and awareness

Many policies to tackle air pollution (eg CAZs, domestic wood burning and agricultural regulation), may face strong opposition from the public if the public is not suitably informed of the need for such decisions to be taken in the first place. The Government should provide clear guidance and strong national messaging on the importance of clean air and should implement strong national policies to support local

actions. It should also provide sufficient funding and resources to LAs for awareness raising in both urban and rural areas, tailored to local needs.

Inadequate LA resources and funding

Inadequate LA resources and funding is a major barrier to achieving national targets on air quality. LAs should be supported with resources, adequate staffing and additional inspection capacity to enforce restrictions and reduce pollution. Large industries have made it expensive for LAs to prosecute, and so the national Government plays an important role in supporting LAs in enforcing regulations. Dedicated funding should be provided to LAs to raise awareness and increase enforcement capacity. Enforceable restrictions should also be imposed within the existing regulatory framework. The Government should also provide consistent messaging regarding air pollution.

Extended timescales needed to develop, gain approval for and implement policies

Another major barrier is the extended timescales needed to develop, gain approval for and implement measures especially those on a large scale such as charging Clean Air Zones. LAs should not be expected to take on additional burdens within this space without being provided with adequate funding to carry out the roles and responsibilities the Government is proposing in the revised Air Quality strategy.

Factors with limited LA control

LAs' limited control of private vehicle movement, industry and meteorology makes it difficult for LAs to reach the air quality targets. These factors often have greater impact on the concentration than the emission of pollutants. More resources, support and guidance should be provided to LAs. Accessible data is also important in aiding LAs' action.

Inadequate data monitoring

Currently, LAs do not have adequate monitoring capabilities to understand the full picture of local air quality for local action. The present air quality monitoring system lacks capabilities and effectiveness.

The Government is aiming to deliver up to 100 new $PM_{2.5}$ monitoring stations over the next three years and by 2028 at the latest. However, Defra has stated that this is only the minimum number required based on the Department's sampling. It is unlikely that this number of monitoring stations could provide a true understanding of levels of pollution in the most populated agglomerations. To put this in perspective, if London meets the minimum legal requirement, it will only have 15 $PM_{2.5}$ monitors to measure compliance with the Annual Mean Concentration Target for $PM_{2.5.}$ Of these 15 monitors, 10 will be background monitors to measure compliance with the Population Exposure Reduction Target.

In order for LAs to have adequate information to analyse $PM_{2.5}$ levels, identify hotspots and implement targeted interventions, a more ambitious expansion of the monitoring network is required. The Government should aim to have at least 100 monitors in each LA area before 2027. These need to be both diffusion tubes and advanced monitors which could provide a reading of average levels of $PM_{2.5}$ as well as live readings to help highlighting hotspots and peak hours. All the data from this monitoring network should provide open access for everyone to view when needed.

The Breathe London network was able to install, maintain and insure air quality sensors at 139 sites between December 2020 and September 2021. This network also has a simple online tool for accessing the data. There is no reason why all LAs could not have the same sort of network by 2027 if supported by

appropriate funding from central Government.

Finally, there is no explicit duty placed on the Government by the Environmental Targets (Fine Particulate Matter) (England) Regulations 2022 to review and revise the monitoring network to ensure it is up to date with the latest technological and scientific standards and that the placement and number of stations remain appropriate. This represents a loosening of regulations compared to the regime under the Air Quality Standards Regulations 2010, which requires a review of the network every five years. We believe the Government should revisit this.

Underestimation of the importance of health inequalities

Another major barrier is the current underestimation of the importance of health inequalities. Further details can be found in Q9.

Q6: Does the Government provide sufficient funding and devolved powers to local authorities in England to improve local air quality? If not, what additional funding or devolved powers are required?

The Government does not currently provide sufficient funding to LAs in England to improve air quality. LAs should be supported with resources, adequate staffing and additional inspection capacity to enforce restrictions and reduce pollution. Large industries have made it expensive for LAs to prosecute, and so the national Government plays an important role in supporting LAs to enforce regulations. Dedicated funding should be provided to LAs to raise awareness and increase enforcement capacity. Enforceable restrictions should also be imposed within the existing regulatory framework. Funding for LAs which aren't captured in the EU Directive regime in particular is limited to the annual Defra air quality grant which is competitive and provides little funding to deliver large improvements in air quality. Due to the fact that it is a competitive grant it also relies on officers having sufficient capacity to submit a bid and implement a project which is a key limiting factor for many LAs. Therefore, non-competitive funding for cost-effective measures would greatly assist these LAs.

£33.9 million has been made available in grant funding for the agricultural sector to voluntarily self-regulate emissions arising from their polluting activities. This is almost three times the amount of funding of £11.6 million that was made available to LAs in the Air Quality Scheme. We suggest that the UK Government must do more to fund more work in Air Quality Management Areas (AQMAs) and areas exceeding 10ug/m3 $PM_{2.5}$ in future years.

Additionally, more public health funding is needed to reduce harm and mortality caused by air pollution. In England, LAs' public health funding has suffered a 26% cut (in real terms on a per person basis) since 2015/16. It is estimated that £0.9 billion will be needed annually to restore funding to 2015/16 levels.[19] Although DsPH as well as Environmental Health and Protection Services have been acting to manage these cuts, they have reached the limit of available efficiencies. In the UK, 40,000 deaths a year are attributed to exposure to outdoor air pollution through increased risk of diseases such as heart disease, stroke, respiratory diseases, and cancer. Public health needs to be funded sustainably and adequately in line with local population health need.

With regards to the devolved powers required, it is worth noting that LAs can help to reduce emissions from road transport by regulating vehicles – both private and commercial – and working directly with public transport authorities to ensure that they are operating low emissions public transport fleets. However, this requires further guidance, support, and funding from central Government to guarantee

budgets, encourage behaviour change, and to support enhanced monitoring. The new Local Transport Plan guidance for instance will be a key framework to guide local planning and investment, it is important that Defra is engaged in its production to ensure that the revised Air Quality Strategy is adequately reflected there. Additionally, though the Environment Act 2021 has brought in additional powers to tackle wood burning, even with these monitoring and enforcing non-compliant burning in smoke control areas is extremely difficult. More resources and support should be provided to LAs.

Measures to enable LAs to introduce local congestion charging for hot-spot areas would also be useful. This could tackle pollution at source and address issues that legislative powers to fine largely do not address.

Moreover, we support the work of HAC partner Asthma + Lung UK, which recommends giving LAs the power and legal duty to implement smoke free zones in all places where $PM_{2.5}$ is above the WHO Air Quality Guidelines. LAs should also have discretion for implementing smoke free zones, as they have the best understanding of what is happening in their area although a consistent national emphasis is considered suitable. All smoke free zones should be delivered in collaboration with Defra, alongside a significant increase in resources to ensure proper consultation with residents and the correct enforcement of the zones, particularly in the most densely populated areas.

Lord Berkeley, Lord Young of Cookham, Lord Hunt of Kings Heath and Baroness Randerson have tabled an amendment to the Levelling Up and Regeneration Bill which recognises the importance of protecting and enhancing cycling and walking routes through development. We support this amendment, which would give LAs greater powers to encourage modal shift away from cars and towards active travel, a key component of improving air quality. It should be noted that funding for active travel and public transport has greatly decreased over recent years despite the fact that investing in these areas has the potential to yield some of the largest improvements to air quality as well as a host of other wellbeing benefits.

Q7: What are the long-term health impacts of indoor air pollution?

Indoor air pollution can be very damaging to health, as indoor smoke can possess fine particles that are 100 times more than what is considered to be tolerable. It is said that burning wood and coal on a stove or open fire causes more air pollution than road traffic in the UK.[20]

Indoor air pollution can come from many different sources. Utilising wood and coal on stoves or for heating homes for instance can lead to the release of particulate matters. Long-term exposure to smoke released from the burning of these fuel sources can increase people's risk of lung cancer and asthma. There is much evidence in lower-income countries of the effects of exposure to solid fuel burning on respiratory health. There are fewer studies in higher-income countries, such as the UK. There is some limited evidence for indoor exposure to wood burning being associated with asthma and respiratory infections in children.[21]

Globally indoor air pollution was attributed to more than three million deaths in 2020, 237,000 of which were children under five. Moreover, exposure to air pollution can lead to a plethora of morbidities including stroke, heart diseases, COPD, respiratory infections and lung cancer. Evidence has also suggested that there are links between household air pollution and health concerns such as low birth weight, tuberculosis (TB), cataract, nasopharyngeal and laryngeal cancers.

A 2021 Literature Review by the WHO found that evidence consistently supports the association between air pollution and respiratory system effects (most often allergic rhinitis, asthma development or

exacerbation, chronic airway inflammation, and acute respiratory infections) and nervous system effects (impairments in different neuropsychological development outcomes or effects on the nervous system observed by neuroimaging) in children. This finding is consistent across different scientific studies on children's health outcomes including those in relation to chemical pollutants in indoor and public settings; as well as chemicals that are commonly detected in indoor air in schools, kindergartens and day-care centres.[22]

Q8: What steps can the Government take to improve indoor air quality?

Indoor air quality is affected by outdoor air quality, the use of domestic appliances containing carbon-containing fuels (eg heater and oven), environmental tobacco smoke (ETS), second-hand smoke (SHS), as well as the household use of cleaning and personal care products, building materials and household consumer products. To improve indoor air quality, it is vital that the Government adopts a whole system and a health in all policies approach, linking key partners across transport, planning, health and education at local, regional and national levels. The Government should also consider health inequalities in its strategy to improve air quality. Further details on air quality and health inequalities could be found in Q9.

Most importantly, the Government should improve indoor air quality by ensuring that LAs are supported with resources, adequate staffing and additional inspection capacity to enforce restrictions and reduce pollution. Dedicated funding should be provided to LAs to raise awareness and increase enforcement capacity. Specifically, the Government should provide continued support for addressing fuel poverty and allocate more resources (eg grant) to support LAs to improve sub-standard housing. It is vital to ensure housing has adequate ventilation and better insulation to prevent pollutants concentrating indoors and air quality worsening. Ventilation in all settings should follow appropriate standards with appropriate guidance to ensure professionals are familiar with the best practice on indoor air quality. Enforceable restrictions should be imposed within the existing regulatory framework. The Government should also provide consistent messaging regarding air pollution. More information on funding and resources can be found in Q6.

By ensuring that indoor air quality is factored in at the design stage of all developments, the planning framework can be a vital tool to promote indoor air quality. Currently, insufficient attention is paid to indoor air quality and good acoustic design. With poor design, people will either suffer from air pollution in poorly ventilated homes or they have to open their windows for ventilation which leaves them vulnerable to noise pollution.

Damp and mould remain a public health concern with the death of Awaab Ishak. The Government should update the Housing Health and Safety Rating System (HHSRS) risk assessment which has been identified by the Government as a priority. This risk assessment framework enables property inspections to identify where damp and mould is likely to adversely affect residents. In addition, the Government should support households to improve insulation to prevent mould from forming in the first place.

Smoking tobacco products is also a major challenge to indoor air quality and is a significant driver of health inequalities. It has been estimated that smoking causes half of the difference in life expectancy between the least deprived and the most deprived areas being caused by smoking.[23] Therefore, the Government should ensure all social housing in communal buildings is smoke-free, make stop smoking a norm and work harder to protect non-smoker populations from the harms of second-hand smoke.

In order to improve indoor air quality, measures should also be in place to improve outdoor air quality by promoting active travel, public transport and the use of low-emission vehicles. In order to move toward lower emission vehicles and promote active travel, local planning is important to develop more efficient public transportation, wider pavements and better infrastructure for walking, cycling and hybrid/electric vehicles.

The redesign and revitalisation of urban spaces is needed, placing amenities within an appropriate and safe distance for active travel and thus reducing car dependency, and increasing green spaces to encourage active transport. Public transport should be expanded to cover the whole of the UK and should be fit for purpose in extreme weathers and in relation to capacity. Where possible, light vehicles and public transport should also be electrified to reduce emissions.

Rises in vehicle excise duty could be another way of achieving this. 71.3% of DsPH support incentivising the use of low-emission vehicles and adjusting Vehicle Exercise Duty to reflect the impact of diesel vehicles on levels of nitrogen dioxide in the atmosphere.[24] 81.2% of DsPH prioritise active travel in terms of transport policy and investment decisions.

Furthermore, we agree with the recommendations of the Chief Medical Officer, Professor Sir Chris Whitty, that the Government should work with LAs to set out a clear roadmap for improving indoor air pollution, while working to improve ventilation wherever possible, so that toxic air can be removed from the indoor environment. Also, in areas where local action may be considered inefficient, potentially creating a disjointed and incoherent picture for both business and the public to decipher, we would ask the Government to take the lead in promoting a consistent nationwide approach.

Q9: What are the differential impacts, geographically, and across socioeconomic groups, of poor outdoor and indoor air quality? Are measures to address poor air quality appropriately targeted?

There are striking health inequalities associated with air pollution, as people with low incomes are more likely to have existing medical conditions, live in areas with poorer outdoor and indoor environments (eg in higher density flats, near to industry or busy roads), and have worse access to decent housing (eg they may live in smaller flats) and green spaces.[25] [26] Higher density properties tend to have poorer ventilation which prevent indoor pollutants from escaping. This makes these residents more susceptible to local pollution from their neighbours especially if they have neighbours who smoke. Smoking tobacco products is also a significant driver of health inequalities, with half of the difference in life expectancy between the least deprived and the most deprived areas being caused by smoking.[27] Smoking is more prevalent in lower socioeconomic groups, with almost 26% of people in manual forms of employment using tobacco compared to an estimated 10.2% of those in managerial roles. The aforementioned impacts have not even taken into consideration the fact that people of lower socioeconomic status tend to have poorer health outcomes to begin with and spend less time outdoors. This makes poor indoor air quality more of a concern as people with lower socioeconomic status tend to be exposed to indoor air pollutants for longer durations.[28]

Measures to address poor air quality have not taken adequate consideration of the impact of health inequalities. They have failed to address areas with the worst air quality. More actions should be taken to improve England's air quality as a whole and strategically target cities that have the greatest levels of pollution. The most polluted cities in England were Chatham, Stockton, Christchurch and Sheffield. All of them were found to have yearly exposure levels above the WHO's recommended limit of 10 $\mu g/m^3$ by

more than 25%. London also has the highest levels of NO_2 (above legal limits) with the West Midlands also ranked highly on the list.[29] These cities require more action and resources to reduce mortality related to air pollution. The list of recommended measures that Government should take to reduce air pollution in areas with poorer air quality could be found in Q8.

Q10: How well is the Government spreading awareness of the impacts of poor air quality and promoting action being taken to tackle the issue?

At present, LAs are responsible for raising awareness and distributing air quality information to the wider public. While it is important for LAs to continue providing tailored messaging suited to local needs and population, this should be in tandem with centralised messaging that supports these efforts. More could be done by the Government to spread awareness of the impacts of poor air quality and promote actions being taken to tackle the issue. It is vital that there is strong and consistent national messaging on the detrimental impact of air pollution that could be tweaked for local contexts, ensuring there is a blend of a consistent national message that can be tailored for local audiences. LAs should be supported in ongoing information provision around air quality monitoring and issues to allow the public to be suitably informed. This could raise awareness and educate the public of the need to introduce CAZs, domestic wood burning regulations and agricultural regulations.

Given the disproportional impact on vulnerable individuals including those with an existing health condition and the fact that exposure to air pollution creates disease that would not otherwise have occurred, medical and health professions should be key trusted messengers in delivering messages to these groups. Trials have been carried out with GPs in London preceding a national pilot to create air quality champions in the GP community. More work is required on this theme and more research should be done to determine what innovative approaches would be effective in engaging groups most susceptible to poor air quality. The most vulnerable members of society and health care professionals should know where to obtain information on local air quality. They should be regularly notified, particularly when incidents or occasions of poor air quality take place. More work could be carried out with schools so that people are aware of the sources of poor air quality. Work could also be carried out with local businesses around travel planning for delivery and commuting time to avoid high concentration of air pollutants during rush hours helping to reduce peak pollution concentrations and reduce personal exposure to those travelling.

Q11: How well is the Government coordinating measures between national and local actors to improve air quality, both outdoors and indoors?

Coordination between national and local actors could be improved. We are disappointed that for the consultation on revised Air Quality Strategy, we have been given such a short time to respond such an important issue. Having this consultation released with many still on Easter break, many local authorities in pre-election period, and the Air Quality Strategy due for publication on 1st May, conveys the impression this consultation was merely a rubber-stamping exercise as opposed to genuine consultation that can influence the final strategy. Much of the work on air quality seems to have been devolved to Local Authorities who are under increasing financial challenge without dedicated funding for addressing air quality.

We noticed that much of the revised Air Quality Strategy focuses on what LAs must do to tackle air pollution. However, it is evident that without enforceable, updated regulations (not just guidance) and greater local government resourcing as well as central Government action on significantly polluting industries such as agriculture, any actions taken by LAs may be piecemeal and disjointed. While the focus on LAs is welcome, success in reducing harmful emissions and meeting national targets also requires action by Government, business, and individuals. It is unhelpful to single out councils for taking insufficient action. The draft Strategy fails to say what additional funding will be made available to councils.

The Government should adopt a whole system approach, linking key partners across transport, planning, health and education. It is vital to recognise that air pollution does not adhere to LA boundaries, and therefore there is a need to develop partnerships across LA boundaries in order to implement effective sustainable strategies to bring down mortality associated with air pollution.

Additional funding is also required for enforcement and education. The Government should provide more resources to place/environmental teams in LAs. More funding could also be allocated via an Air Quality Grant. More public health funding is also needed to reduce harm and mortality caused by air pollution. In England, LAs' public health funding has suffered a 26% cut (in real terms on a per person basis) since 2015/16. It is estimated that £0.9 billion will be needed annually to restore funding to 2015/16 levels. Although DsPH have been acting to manage these cuts they have reached the limit of available efficiencies. In the UK, 40,000 deaths a year are attributed to exposure to outdoor air pollution through increased risk of diseases such as heart disease, stroke, respiratory diseases and cancer. Public health needs to be funded sustainably and adequately in line with local population health need.

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