# Department of Environment, Food and Rural Affairs Consultation on Environmental Targets

Submission from the British Heart Foundation

June 2022

## Key points

- The British Heart Foundation (BHF) has funded over £5.8 million of research exploring the impact of air pollution on heart and circulatory health since the early 2000s. Our research has helped to show how air pollution, particularly fine particulate matter ($PM_{2.5}$), can cause damage to the heart and circulatory system, increasing the risk of a potentially fatal heart attack or stroke.
- The target-setting process set out under the Environment Act presents a once-in-a-generation opportunity to drive action to ensure that England's air quality is the best it possibly can be for the nation's health.
- We support the setting of both an Annual Mean Concentration Target (AMCT) and a Population Exposure Reduction Target (PERT) for $PM_{2.5}$, to drive action to address inequitable air pollution hotspots and encourage further improvement and health benefits across the population.
- We recognise that the Government's proposed AMCT has been set at a level (10 $\mu gm^{-3}$) which reflects the World Health Organization's 2005 health-based air quality guidelines, and we are encouraged by the involvement of health experts in the target-setting process.
- However, given the proven and enormous impact air pollution has on health and the economy, the 2040 deadline is far too far away. **We urge Government to accelerate this timeline and aim to reach this target of 10 $\mu gm^{-3}$ by 2030**.
- We are already close to meeting this target in many areas. Specifically, the Government's preferred scenario is posited to achieve a concentration of 11 $\mu gm^{-3}$ by 2030, only 1 $\mu gm^{-3}$ from the target, and it is not sufficiently clear that a further decade will be required to make that final reduction.
- Furthermore, the WHO have updated their guidelines to reflect new health evidence, recommending a new $PM_{2.5}$ target of 5 $\mu gm^{-3}$. **Government should therefore aim for a compliance date of 2030 for 10 $\mu gm^{-3}$ as an interim target, while ultimately aiming for the new WHO guideline target of 5 $\mu gm^{-3}$** in order to adequately protect the health of future generations.
- We are concerned that the Government's Detailed Evidence Report and Impact Assessment contain some gaps:
    - Notably, the report does not outline the concentrations that would be achieved in each of the scenarios in the years between 2030 and 2040, limiting assessment of when 10 $\mu gm^{-3}$ would be achievable.
    - More detail on the likely policy interventions that would be required under each scenario would better facilitate public engagement and enable scrutiny of the Government's assessment of the relative difficulty and acceptability of implementation

1. The British Heart Foundation (BHF) welcomes the opportunity to respond to the Government's consultation on their environmental targets, specifically on the topic of air quality. This submission outlines our response to the following questions:

a. **Do you agree or disagree with the level of ambition proposed for a $PM_{2.5}$ concentration target? What reasons can you provide for why the government should consider a different level of ambition?**
b. **Do you agree or disagree with the level of ambition proposed for a population exposure reduction target?**

2. Air pollution is the largest environmental health risk in the UK, with up to 36,000 attributable deaths per year[i]. Additional estimates have found that there are as many as 11,000 deaths from cardiovascular disease each year in the UK that are attributable to air pollution[ii].

3. As the largest independent funder of medical research into heart and circulatory diseases in the UK, the BHF has funded over £5.8 million of research exploring the impact of air pollution on heart and circulatory health since the early 2000s. Our research has helped to show the many ways air pollution, particularly fine particulate matter ($PM_{2.5}$) can cause damage to the heart and circulatory system, including:

    - damaging the inside walls of your blood vessels, causing them to become narrower and harder,
    - restricting the movement of your blood vessels, which can increase blood pressure and add to the strain on your heart,
    - making your blood more likely to clot,

    all of which can contribute to an increased risk of a heart attack or stroke.

4. This research is part of a vast body of international evidence on the damage to health caused by ambient air pollution. Exposure to $PM_{2.5}$ is strongly associated with cardiovascular and respiratory diseases, and there is increasing evidence of links with dementia, diabetes, and adverse birth outcomes including low birth weight[iii].

5. Given this abundant evidence of health harm, we have long been calling for the adoption of the World Health Organization's (WHO) more stringent and health-based air quality guidelines into UK law, in order to adequately protect people's health. In 2005, the WHO guideline limit value for $PM_{2.5}$ was set at 10 $\mu gm^{-3}$, reflecting best evidence at the time, but a 2021 update to these guidelines integrated more recent health evidence and reduced the recommended limit value to 5 $\mu gm^{-3}$, while suggesting that the former guideline value of 10 $\mu gm^{-3}$ now be used as an interim target[iv]. Furthermore, the WHO recognises that there is no safe level of exposure to $PM_{2.5}$.

6. While we recognise that the proposed Annual Mean Concentration Target (AMCT) of 10 $\mu gm^{-3}$ is a vast improvement on current air quality limits and in line with the previous WHO guideline value, we are disappointed that the date set for meeting this target of 2040 does not adequately reflect the urgency of the situation, particularly in light of the WHO's updated guidelines. Allowing further 18 years to meet this target effectively means another generation of young people growing up exposed to levels of air pollution that we know are damaging their health. We urge Government to reconsider this and aim for a compliance date of 2030 for 10 $\mu gm^{-3}$ as an interim target, while ultimately aiming for the new WHO guideline target of 5 $\mu gm^{-3}$.

7. The Government's own expert health advisory committee, the Committee on the Medical Effects of Air Pollutants, COMEAP, published an update to their previous *Advice on health evidence relevant to setting $PM_{2.5}$ targets*[v], "strongly support[ing] a reduction of $PM_{2.5}$ concentrations, ideally to (or below) the WHO guideline value of 5 $\mu gm^{-3}$." COMEAP does note the challenge of achieving this immediately and the need for a cost-benefit analysis, as well as the suggestion by the WHO of adopting 10 $\mu gm^{-3}$ as an interim target. We were pleased to see the level of engagement with COMEAP in this process, having previously called for robust and transparent involvement of health experts. Adopting their advice and aiming for the most ambitious targets would appropriately reflect the scale and urgency of air pollution as a health issue and set the UK as a true global leader in this space.

8. It is our view that targets should be stretching, and are there to propel bold action towards an aspiration, rather than merely setting out what is already achievable. There are a number of points outlined in the Government's Detailed Evidence Report[vi] which suggest that the ambition for the AMCT could be accelerated:

a. **We are already close to the proposed target in many areas.** The report states that, "in recent years the average of concentrations measured across the [measuring] network has been relatively steady at around 10 to 11 $\mu gm^{-3}$.

b. Figure 33, the matrix of feasibility, shows that **achieving an average $PM_{2.5}$ concentration of 11 $\mu gm^{-3}$ is likely by 2030 under most scenarios, including the preferred 'high' intervention scenario**. Even in London, the area which is specified as the most challenging and the reason for not adopting a more ambitious deadline, Figure 21 shows that, under the 'high' intervention only a handful of areas would have $PM_{2.5}$ levels of 10-11 or >11 $\mu gm^{-3}$.

c. The matrix does not detail the concentrations that would be achieved in each of the scenarios in the years between 2030 and 2040, making an assessment of when the 10 $\mu gm^{-3}$ would be achieved impossible. However, it is not, in our view, sufficiently demonstrated that a full decade would be required for a 1 $\mu gm^{-3}$ reduction. Government should perform and publish their analysis of when their preferred scenario would achieve this concentration.

d. The Detailed Evidence Report and Impact Assessment [vii] confirm that policies whose implementation is necessary to meet existing legal commitments, such as the National Emission Ceilings Regulations and reaching Net Zero, would take us most of the way to achieving the target of 10 $\mu gm^{-3}$ by 2030. This indicates limited ambition to go further, which is misaligned with the Government's stated aims of leaving the environment in a better state than that in which it was inherited and minimising the impact of poor air quality on public health[viii].

e. While limited detail on the models and scenarios is available, the evidence report does specify that the Scenario Modelling Tool "conservatively" maintains emissions at the 2030 level where future data for particular sectors is not available. While this may be appropriate to the model, this conservative approach does not seem to have been recognised in the final decision over the target, and an abundance of caution appears to have been exercised in allowing 10 years post-2030 to reach the 10 $\mu gm^{-3}$ ACMT.

f. While we understand the need to integrate some effects of meteorology such as bad weather and dust storms or volcanic activity, we are concerned that undue flexibility is being afforded in the intention to consider the target met if the annual mean concentration of 10 $\mu gm^{-3}$ is not exceeded in three out of the 4 years preceding 2040. This could limit further policy action and a "continuous improvement" mindset, despite acknowledgement that there is no safe level of air pollution, and that any reduction beyond the target value would still have substantial health and other benefits.

9. We broadly support the introduction of a Population Exposure Reduction Target to ensure further improvement across the UK, rather than focusing only on compliance with a target in particular hotspots. However, we are unable to comment on the level of ambition of the proposed target.

10. The BHF notes that the Government proposes to assess compliance with these targets using monitoring alone, moving away from the existing approach of using a combination of monitoring and modelling. There are only 63 $PM_{2.5}$ monitoring sites across the country and, while we acknowledge the plan to "*expand the $PM_{2.5}$ monitoring network over the next three years to support the assessment and delivery of the new targets,*[ix]" we are concerned that a monitoring-only approach lacks the granularity to appropriately assess air quality concentrations across the country. This risks missing areas where targets are not being met, and so we support the introduction of a binding minimum requirement for the number of $PM_{2.5}$ monitors, as outlined in the Detailed Evidence Report[x].

11. We would also point out that air quality modelling has a number of vital roles outside of monitoring compliance, including better understanding individual and population-level exposure to air pollution and understanding the resultant health outcomes, monitoring progress towards targets and assessing the potential and actual impact of policy interventions. We are reassured that the evidence packs acknowledge this and indicate the continued use of modelling in assessing progress towards targets and

broader policy development[xi], and encourage the Government to ensure that the results of this modelling are made publicly available and accessible.

12. We have noted some limitations of the consultation documents which have made assessment of the proposals and their relative ambition challenging.

    a. The 'medium,' 'high' and 'speculative' scenarios that were modelled are not described in sufficient detail, or with relevant examples, to allow the reader to understand the types of specific policy, technological advances and requirements of individuals would be necessary under each regime. Government has passed judgement on these in some cases, for example stating that for London, "significant traffic reductions modelled in the more speculative scenarios would likely be extremely difficult, costly, and disruptive to deliver," but, without further detail, the reader cannot engage with and scrutinise this claim in order to assess the acceptability and feasibility of achieving the targets. Similarly, there is no indication of the uncertainty associated with the feasibility assessment in the matrix, again restricting the capacity for comparison and assessment of whether more significant intervention would be deemed acceptable by the public.

    b. The Impact Assessment only provides a cost-benefit assessment of a 'do nothing' scenario and the Government's preferred 'high' scenario, again meaning that a thorough comparison of additional options, in particular a more ambitious scenario, cannot be made. This is despite the recognition that reductions in exposure to $PM_{2.5}$ beyond the targets have health benefits, and so a more ambitious target could reasonably be expected to have greater overall benefits to health and the economy.

13. We urge Government to look again at a more ambitious date of 2030 for meeting the 10 $\mu gm^{-3}$ $PM_{2.5}$ target and to publish the details of the policies that they believe would be necessary to achieve this so that the public can engage with this issue fully. Transparency, leadership and a clear pathway to this goal will be vital in bringing the public along, and are needed to drive action to address this pressing health issue.

14. In line with this, we would also encourage Government to explicitly state their intention to go further in the long run and outline action to ultimately reach the World Health Organization's updated guideline limit value for $PM_{2.5}$ of 5 $\mu gm^{-3}$, in order to adequately protect the health of the nation and future generations.

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For more information on any of the points in this submission, contact Rebecca Elliott, Prevention Policy Manager, at elliottr@bhf.org.uk

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[i] Committee on the Medical Effects of Air Pollutants (2018), *Associations of long-term average concentrations of nitrogen dioxide with mortality*.
[ii] WHO (2018) Global Health Observatory – air pollution deaths by country (2016 estimates) – https://apps.who.int/gho/data/node.main.BODAMBIENTAIRDTHS?lang=en
[iii] Public Health England (2018), *Estimation of costs to the NHS and social care due to the health impacts of air pollution*.
[iv] World Health Organization (2021), *WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*. https://apps.who.int/iris/handle/10665/345329.
[v] Committee on the Medical Effects of Air Pollutants (2022), *Advice on health evidence relevant to setting PM2.5 targets – update* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1060744/COMEAP_WHO_AQG_-_Defra_PM2.5_targets_advice__2_.pdf
[vi] Department for Environment, Food and Rural Affairs (2022), *Air quality $PM_{2.5}$ targets: Detailed evidence report*
[vii] Department for Environment, Food and Rural Affairs (2022), *Environment Act Targets Impact Analysis: Air Quality*
[viii] HM Government (2018), *A Green Future: Our 25 Year Plan to Improve the Environment* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf
[ix] Department for Environment, Food and Rural Affairs (2022), *Air quality $PM_{2.5}$ targets: Detailed evidence report*
[x] Department for Environment, Food and Rural Affairs (2022), *Air quality $PM_{2.5}$ targets: Detailed evidence report*
[xi] Department for Environment, Food and Rural Affairs (2022), *Air quality $PM_{2.5}$ targets: Detailed evidence report*