

The Secretary of State has announced that the Environment Bill should include a “legally binding commitment on particulate matter so that no part of the country exceeds the levels recommended by the WHO”. Describe the key elements you think should be in the Bill and what measures it should include to enforce it.

Particulate matter (PM) includes all solid and liquid, organic and inorganic particles suspended in the air. According to the WHO, there is a quantitative correlation between exposure to PM_{2.5} (fine PM) and PM₁₀ (coarse PM) with mortality, as exposure can lead to respiratory disorders, cardiovascular diseases or lung cancer. In addition, national costs associated to air pollution could reach £5.3 billion by 2035¹. To limit the negative impacts, especially affecting the most vulnerable groups, the WHO has set objectives on annual mean and 24-hour mean levels of PM.

PM₁₀ and PM_{2.5} emissions have decreased by more than 50% between 1990 and 2017², yet the achieved progress remains insufficient to comply with WHO guidelines. PM₁₀ and PM_{2.5} daily and annual concentrations in England exceeded the WHO annual mean objectives in almost all parts of the country^{3,4}.

In 2018, the main sources of PM emissions were combustion in the Industry/Commercial/Residential/ sectors, production processes, agriculture, and road transport. To achieve compliance with WHO objectives all around the UK, efforts need to be reinforced in both urban and rural areas.

To ensure that PM concentrations remain below the WHO objectives, the Environment Bill should deliver the following actions:

1. Set new stricter emission limits for industrial sites. Emissions from industrial processes represent a substantial share of PM emissions (30% in 2017). While industrial facilities have permits authorised to enforce compliance with the limits within the EC Industrial Emissions Directive, the new Environment Bill creates an opportunity to enhance this environmental protection. This legislation should set up a framework to target emerging issues and new scientific evidence and have sufficient flexibility to incorporate further standards for health protection over the long term.

2. Target wood burning from residential heating. Residential heating is an increased source of concern. While use of coal as an energy source in the domestic sector is decreasing, PM emissions are not decreasing due to the extended use of wood burning. To reduce these emissions, a new awareness campaign is needed to inform about the dangerous health impacts related to PM, emissions from wood burning and ways to mitigate these as well as alternative heating technologies. In addition, the Environment Bill could ensure that key authorities include more stringent standards regarding the use of energy efficient materials and technologies for new buildings and houses.

3. Limit the most polluting traffic in cities, by encouraging the uptake of low emissions vehicles and developing innovative technologies to decrease emissions from brakes and tyre wear. In the recent years, measures based on national objectives have been applied in major cities of the UK to limit emissions from road traffic, primarily focused on NO₂. However, emissions from non-exhaust

sources are projected to increase in future years as these emissions have not been targeted by current measures. Alternative measures should also be enforced, like supporting an increased use of electric vehicles for private and business use, and promotion of public transport or biking/walking.

4. Target agricultural activities associated with high PM emissions. In rural regions, the agricultural sector was a major source of PM before the ban on burning crop residues in 1993. However, current emissions still remain high because of PM production through ammonia emissions. To go beyond the current national directives, the Environment Bill could make sure that appropriate stakeholders will incorporate more restrictive actions related to farming activities, such as organic and inorganic fertiliser use, slurry storage, spreading of liquid and solid manure to land, and livestock housing improvement.

5. Increase monitoring across the UK. To enforce and monitor compliance with WHO objectives around the UK, the best available technology to monitor and quantify PM levels must be used. Emerging technologies will allow to spread a large number of monitors across the UK which will provide real-time data. The Environment Bill provides the opportunity to set more audacious requirements than the current national or international legislations.

¹ <https://www.gov.uk/government/news/new-tool-calculates-nhs-and-social-care-costs-of-air-pollution>

² http://naei.beis.gov.uk/overview/pollutants?pollutant_id=24

³ <https://www.eea.europa.eu/publications/air-quality-in-europe-2018>

⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf