

The need for clean air zones  
in polluted towns and cities  
across the UK

February 2023



# ZONING IN ON CLEAN AIR

# Foreword



Our new report finds that 24 million people across the UK are breathing in toxic air that is damaging their lungs and their ability to breathe. The debilitating impact air pollution is having on people's lives and lungs cannot be overstated, with up to 36,000 premature deaths attributable to air pollution every single year in the UK.

At Asthma + Lung UK, we're fighting for a world where everyone can breathe clean air with healthy lungs. The evidence on air pollution is loud and clear: it is stunting the growth of children's lungs, causing lung cancers and triggering life-threatening symptoms of lung conditions, such as asthma attacks. In the face of this public health emergency, the government has been disappointingly slow to make meaningful progress towards tackling toxic air and reducing pollution within legal limits.

Local authorities have a vital role to play in helping their residents breathe cleaner air. Five years ago, over 60 local authorities were directed by the government to take all the necessary steps to improve air quality and bring pollution levels within legal limits. However, only 20% of local authorities have implemented all the measures that government has mandated them to do. We desperately need more support for local authorities to take the action needed to fight air pollution in our towns and cities.

Clean air zones are a tried and tested policy intervention, with evidence showing they are the most effective way of reducing air pollution in a short time frame. We need more local authorities to introduce clean air zones and to see local leadership steering air quality policies that are underpinned by adequate support from central government.

No one should be forced to breathe air that is dirty, toxic and harmful to their health. To make real change, and help the millions of people still breathing in unsafe air in 2023, we need to see national and local governments come together across the country in a concerted effort to tackle air pollution and its devastating health impacts.

A handwritten signature in black ink, appearing to read 'Sarah Woolnough'.

**Sarah Woolnough, Chief Executive, Asthma + Lung UK**

# Executive summary

At Asthma + Lung UK, we are fighting for everyone's right to breathe. As the nation's lung charity we are here for the one in five people who will be affected by a lung condition in their lifetime. For too long, the nation's lung health has been side-lined, under-treated and under-resourced. This is inexcusable when lung conditions are the third leading cause of death in the UK and millions are affected by breathlessness, which can be terrifying and limit people's ability to get on with their lives.

We estimate that 24 million people in urban areas in England are breathing toxic air, this figure includes 5.5 million children under 18 and at least 1.4 million people living with asthma or chronic obstructive pulmonary disease (COPD). Air pollution is a public health emergency responsible for up to 36,000 premature deaths in the UK each year, and we have been campaigning to reduce the devastating toll it takes on everyone, including people with lung conditions.

The UK has been in breach of legal limits for nitrogen dioxide (NO<sub>2</sub>) since targets were introduced in 2010. This is why, in 2017, following several legal cases brought in front of the High Court, over 60 local authorities were mandated by the government to take urgent action on toxic air and reduce NO<sub>2</sub> to levels under legal limits. This report examines the progress that has been made towards clearing up air pollution since 2017 and compares the impact different policy options have had across the UK, in particular clean air zones.

# Our recommendations

1

**Roll out clean air zones and low emission zones across polluted cities and city regions** to lower pollution from all vehicles and support people to move to cleaner modes of travel. These should include financial incentives for people with long-term lung conditions who may need to use their car in order for them to move to cleaner options.

2

**Set out additional government funding for local authorities** to deliver policy measures based on a holistic approach including commitments to inclusive walking and cycling policies that enable everyone to be part of the solution. This should include the funding and extension of safe cycling paths, the banning of pavement parking, and financial support for e-bike purchases.

3

**Ensure communication campaigns with health messaging are carried out to support the roll-out of clean air zones.** Communications that outline the aims of clean air zones from a public health perspective should be jointly delivered by central and local government.

4

**Ensure air quality policies are co-designed with communities, specifically those who are most at risk** and under-represented in policymaking. This is particularly important for health information provision and air pollution alerts.

5

**Ensure all clean air policies deliver maximum public health impacts** and are integrated with wider respiratory health plans, such as Integrated Care Systems and Integrated Care Boards.

6

**Ensure air quality policies have enforcement mechanisms** in place that ensure the best possible health outcomes are delivered. In particular, governing bodies such as the Office for Environmental Protection should hold national and local policymakers to account and monitor the delivery of ambitious health targets.

# What are clean air zones?

A clean air zone (CAZ) is a defined zone which reduces access to the most polluting vehicles through charging or other restrictions. The aim of a CAZ is to improve air quality, public health and promote a reduction in greenhouse gas emissions. CAZs can be charging, where users will be charged a fee to enter a zone or non-charging, which does not impose charges and relies on other measures to improve air quality e.g. speed limits.

There are four different classes of charging CAZs, Class A to D, these define the types of vehicles that will be charged within the zone. Other charging measures such as Low Emission Zones (LEZs), Ultra Low Emission Zones (ULEZ) and Zero Emission Zones (ZEVs) are classed as CAZs but may adopt different emissions standards.

Class	Vehicle type
A	Buses, coaches, taxis, private hire vehicles
B	Buses, coaches, taxis, private hire vehicles, heavy goods vehicles
C	Buses, coaches, taxis, private hire vehicles, heavy goods vehicles, vans, minibuses
D	Buses, coaches, taxis, private hire vehicles, heavy goods vehicles, vans, minibuses, cars, the local authority has the option to include motorcycles

# Air pollution is a public health emergency

Air pollution is the biggest environmental risk to human health<sup>1</sup>. In the UK, up to 36,000 early deaths per year can be attributed to air pollution<sup>2</sup>. According to the latest Chief Medical Officer's report published in December 2022, the mortality burden linked to air pollution is likely to be higher than existing estimates, as they do not consider all outdoor air pollutants and other morbidity impacts<sup>3</sup>.

## Air pollution from road transport

Nitrogen dioxide (NO <sub>2</sub> )	Fine particulate matter (PM <sub>2.5</sub> )
<p><b>What is it?</b> A gas.</p> <p><b>Where does it come from?</b> Predominantly formed during fuel combustion from cars, heavy goods vehicles and industrial plants. Road transport represents the primary source of NO<sub>2</sub> (49.7%)<sup>4</sup>.</p>	<p><b>What is it?</b> Tiny particles of solids or liquids in the air, such as dust, ash and dirt.</p> <p><b>Where does it come from?</b> Road transport forms 13% of PM<sub>2.5</sub> emissions. Domestic wood and coal burning and industrial processes also contribute<sup>5</sup>.</p>

Short-term exposure to NO<sub>2</sub> can inflame peoples' airways, reduce lung capacity over time, exacerbate existing conditions such as asthma, while long-term exposure can increase the risk of developing a lung condition<sup>6</sup>. Air pollution puts people at risk of heart disease and lung cancer: one in ten cases of lung cancer have been linked to poor air quality<sup>7</sup>. Several studies have associated air pollution with an increased risk of dementia and cognitive decline<sup>8</sup>. Evidence in The Lancet has shown that people living close to very busy roads in particular are at higher risk of developing dementia<sup>9</sup>. According to the latest World Health Organization guidelines (updated in 2021), over 99% of people in the UK live in areas where NO<sub>2</sub> levels are unsafe for their health.

Air pollution is a particular concern in urban areas as higher population density means greater exposure. Differences in socio-economic backgrounds has revealed patterns of unequal exposure to air pollution in urban areas: 85% of people living in areas with illegal levels of NO<sub>2</sub> make up the poorest 20% of the UK population<sup>10</sup>.

Groups most affected by the harmful impacts of air pollution are older people, young children, and pregnant women<sup>11</sup>. Evidence shows that children in particular are more vulnerable to breathing in polluted air because their airways are smaller and still developing. The Lancet published findings that air pollution is stunting children's lungs and increasing their chances of longer-term health conditions<sup>12</sup>.

Research by Asthma + Lung UK has revealed that 40% of babies born each year are delivered in hospitals that are surrounded by toxic levels of NO<sub>2</sub> pollution, meaning their first breath outdoors is already putting their health at risk<sup>13</sup>. A growing body of scientific evidence is revealing the impacts toxic air is having on our internal organs and nervous system.

“

It is heartbreaking and distressing to see your child in hospital, terrified and gasping for air, as the doctors fight against time to find a tiny vein to inject medication into. The fact that air pollution could be triggering Lucy's asthma makes me sad and angry and frustratingly, doctors can't easily diagnose it as a cause or treat it with a prescription.

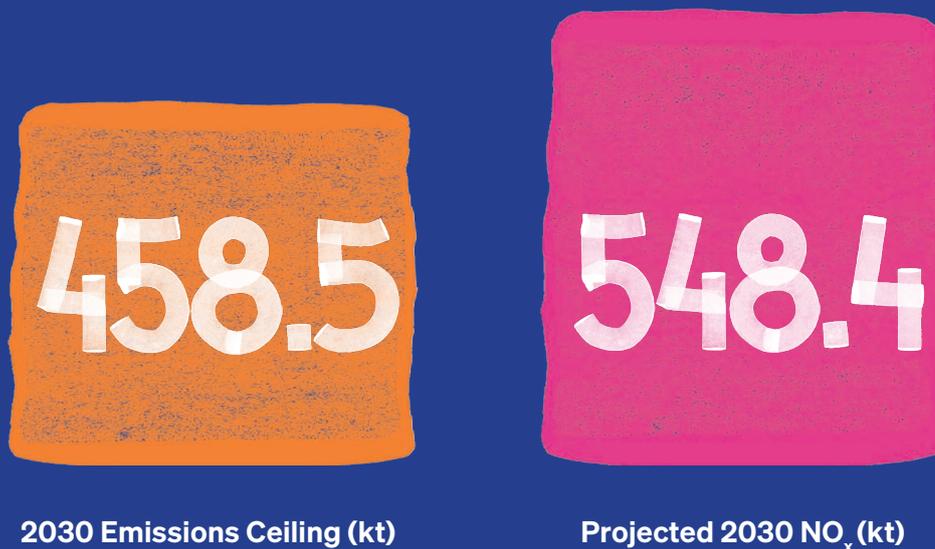
Everyone has a right to know exactly what this invisible threat is doing to our children. Pollution near our homes and schools should be reduced so children can breathe easier. We should all be working towards that now, and not just talking about it or changing laws in the future.

**Leah, West Midlands**

# Current policy measures are insufficient to fight air pollution

The government is putting in place insufficient policy measures to reduce air pollution and meet its targets. According to projections from the National Audit Office (NAO), existing policy measures agreed by the government are inadequate to achieve the UK's 2030 national emission ceilings<sup>14</sup>. The latest government projections show that nitrous oxides (NO<sub>x</sub>) are expected to be 16.5% higher in 2030 than the legal ceiling set by the government.

**Figure 1: UK projected emissions compared to 2030 emission ceilings<sup>15</sup>**

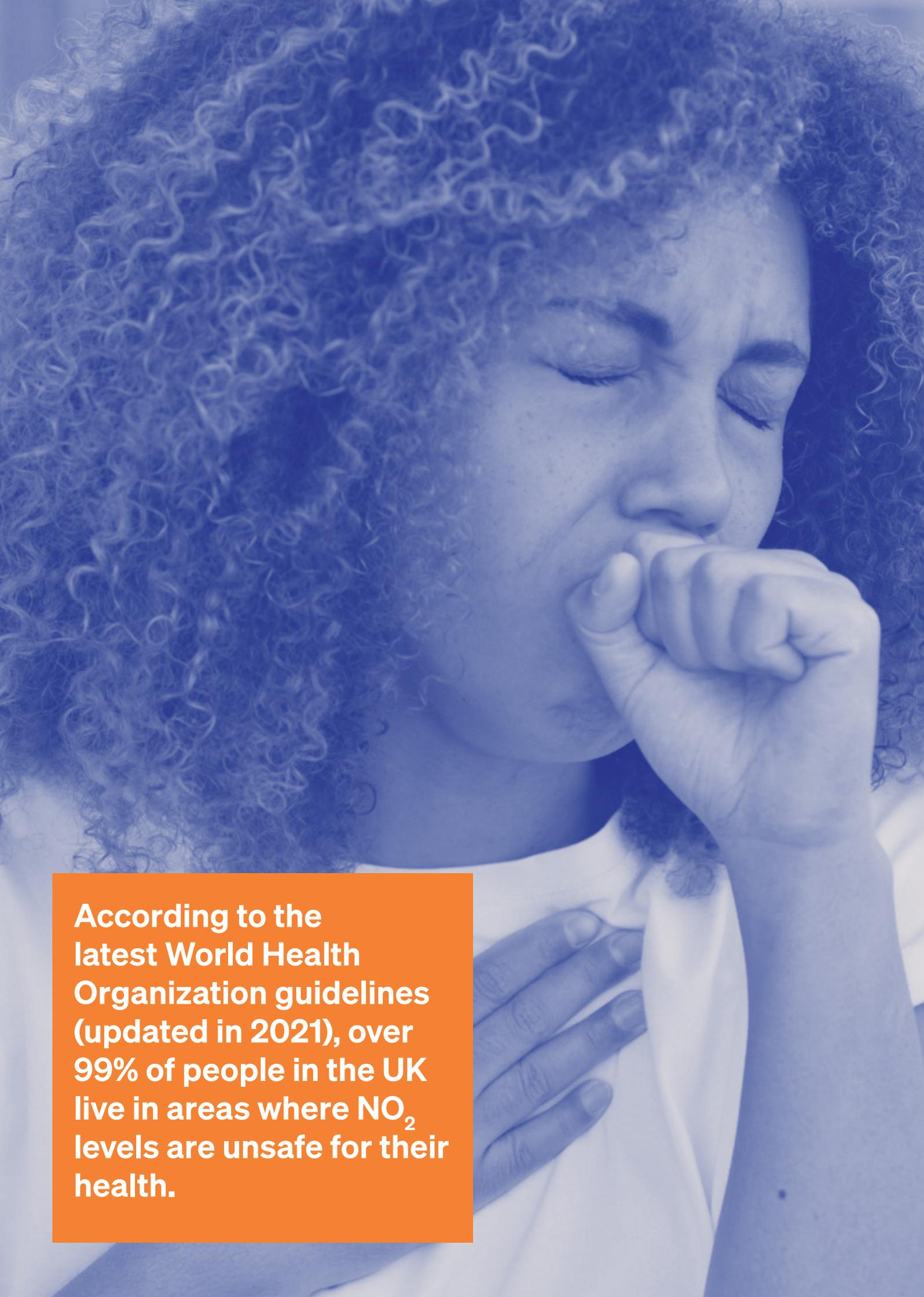


As of 2019, over three quarters of air quality reporting zones in the UK had illegal levels of pollution<sup>16</sup>. The latest data from 2021 shows nearly a quarter of these reporting zones are still breaching legal limits, however this figure is not representative of national air quality as the data is impacted by the COVID-19 pandemic.

**Table 1: current legal limits for air pollutants in the UK compared to WHO recommendations**

Pollutant	Current UK law	WHO 2005 recommended guidelines	WHO 2021 recommended guideline
Annual average for NO <sub>2</sub>	40 µg/m <sup>3</sup>	40 µg/m <sup>3</sup>	10 µg/m <sup>3</sup>
Annual average for PM <sub>2.5</sub>	25 µg/m <sup>3</sup>	10 µg/m <sup>3</sup>	5 µg/m <sup>3</sup>

The government was due to publish an updated National Air Pollution Control Programme in September 2022 to outline additional measures required to achieve the 2030 emission ceilings, but as of January 2023 no timeline for the publication of the updated plan has been set out.

A close-up photograph of a person with curly hair, wearing a white shirt, coughing into their right elbow. The image is overlaid with a semi-transparent blue filter. In the bottom left corner, there is an orange rectangular box containing white text.

**According to the latest World Health Organization guidelines (updated in 2021), over 99% of people in the UK live in areas where NO<sub>2</sub> levels are unsafe for their health.**

# Car travel remains king

In 2021, 88% of all passenger kilometres travelled in Great Britain were made by cars, vans and taxis compared to only 10% by bus, coach or rail<sup>17</sup> with the majority of journeys made being short; nearly three quarters (72%) of all trips were under five miles. In parallel, in 2020, 97% of the 32.7 million licensed cars were still powered by petrol (58%, 19.1 million) or diesel (38%, 12.5 million)<sup>18</sup>.

Road traffic has steadily increased since 2016 and hit an all-time high in 2019 before dipping dramatically in 2020. As of October 2022, road transport had bounced back to levels only 5% under 2019 levels<sup>19</sup>.

The pandemic afforded a glimpse of how achievable good air quality is with lower car use: only five areas remained at illegal levels of pollution in 2020: Greater London, West Midlands, Greater Manchester, Bristol and South Wales<sup>20</sup>. Lockdown measures highlighted the effectiveness of traffic reduction measures to improve local air pollution and carbon emissions.



# Local interventions are needed to tackle toxic air

Air quality policies are in the remit of local authorities as pollution hotspots are often on specific roads managed by local councils. Therefore, it is the responsibility of local authorities to decide on a package of measures to reduce air pollution to below legal limits, it will then be jointly agreed with the Department for Environment, Food and Rural Affairs (DEFRA).

Policy measures to reduce air pollution include charging measures (i.e. CAZs) and non-charging measures. Non-charging measures include non-charging CAZs, improvements in emission standards to public transport fleets (e.g. retrofitting buses) and investment in walking and cycling infrastructure.

CAZs have shown to be the most effective policy measure to deliver rapid and effective improvements to air quality in urban areas<sup>21</sup>. Indeed, charging CAZs and low emission zones have a key role in getting the most polluting vehicles off the streets of towns and cities.

Modelling by DEFRA\* suggests that CAZs are most effective when rolled out as a network in major cities across the UK. The evidence shows that a network of CAZs would be 2.4 times more effective than retrofitting buses, black cabs and heavy good vehicles<sup>22</sup>. However, given the potential financial impact of CAZs on local residents, some local authorities have elected to implement non-charging measures to reduce air pollution.

\*This modelling does not take into account emission reductions generated by the COVID-19 pandemic.



# CAZs are integral to the government's air quality strategy

The government's *2017 UK Air Quality Plan for tackling roadside nitrogen dioxide concentrations* identified CAZs as the "fastest and most cost-effective way of meeting NO<sub>2</sub> limit values on the majority of urban roads"<sup>23</sup>. Over 60 local authorities exceeding NO<sub>2</sub> limits in 2017 were mandated by the government to take immediate action to reduce air pollution.

In five cities where air pollution was notably higher, local authorities were directed to roll out CAZs, these included: Derby, Nottingham, Birmingham, Leeds and Southampton. As of 2023, only Birmingham has rolled out a Class D CAZ that charges private vehicles. Leeds, Southampton, Derby, and Nottingham rejected the government plans and elected to introduce non-charging measures to reduce pollution.

## Air quality plans in Leeds

Leeds initially proposed the introduction of a Class B CAZ in 2018 in the central and northern parts of the city before formally abandoning the plan in 2020. The council secured £6.2m in funding to help taxis, buses, coaches and HGVs upgrade and retrofit vehicles ahead of the CAZ which led to improvements in vehicle emission standards. In 2020 all plans for a CAZ in Leeds were abandoned as the council deemed it no longer necessary due to the rapid uptake of vehicles with better emission standards. A survey by the government's Joint Air Quality Unit (JAQU) found that a third of people who upgraded their vehicle did so to be compliant with the CAZ<sup>24</sup>. However, lower air pollution levels in 2020 in Leeds were only temporary as the city saw illegal levels of pollution in 2021 highlighting the need for further action from both the council and DEFRA<sup>25</sup>.

## Air quality plans in Southampton and Derby

Similarly in Southampton and Derby, air pollution fell below legal limits in 2020 so it was deemed a CAZ was not required<sup>26</sup>. Southampton rolled out a voluntary, non-charging CAZ alongside a low emission taxi incentive scheme. However, levels in both cities remained high, at 38 µg/m<sup>3</sup> in Southampton and 36 µg/m<sup>3</sup> in Derby, compared with the national average of 27 µg/m<sup>3</sup><sup>27</sup>.

## Air quality plans in Nottingham

Nottingham was still in breach of legal limits for NO<sub>2</sub> in 2022, the city formally abandoned plans to introduce a CAZ in 2018 as it deemed it not to be required. This decision was approved by the government following modelling showing that Nottingham could reduce pollution to legal levels within two years by retrofitting its bus fleet. Five years later Nottingham has not been legally required to submit another plan showing how it will achieve compliance with the legal limits.

# Clean air zones are the most effective way of reducing air pollution

According to modelling by DEFRA, CAZs have the largest impact on NO<sub>2</sub> than any other policy and produce on average an 18.3% reduction in NO<sub>2</sub> concentrations<sup>28</sup>. In practice, CAZs rolled out in Birmingham, Bath and London have led to rapid improvements to air quality.

Nearly 95% of vehicles in London now meet lower emissions standards. In comparison, older non-compliant vehicles pollute twice as much as ULEZ compliant vehicles<sup>29,30</sup>. NO<sub>2</sub> concentrations are estimated to be 44% lower than they would have been without the ULEZ<sup>31</sup>.

Similarly, a report from the Bath CAZ has shown that compared with 2019 (pre-COVID 19 baseline), there has been a decrease in annual NO<sub>2</sub> concentrations of 21% within the zone and 22% in the urban area outside the zone<sup>32</sup>.

## CASE STUDY:

### Birmingham

The example of Birmingham has shown that with the right design, CAZs can have an immediate and durable impact on air pollution without penalising local populations.

- A scrappage scheme was set up by the council for people on lower incomes: £2,000 grants are handed out for the purchase of a new vehicle or for the equivalent of three years of free travel within the West Midlands.
- A six-month interim report found a 13% reduction in NO<sub>2</sub> levels (compared with 2019 levels) and that 88.8% of vehicles were compliant within the area covered by the CAZ.
- An evaluation by JAQU showed two in five residents changed their travel behaviours as the result of the CAZ: 18% made fewer trips to avoid entering the zone, 13% changed their travel mode, and 13% rerouted their trips<sup>33</sup>.
- Surveys show that a council-initiated communications campaign to explain the aims of the CAZ successfully shifted public support for the policy from 37% to 45%<sup>34</sup>.



**Birmingham has shown that with the right design, clean air zones can effectively reduce air pollution without penalising the local community.**

# Five years on where are we?

As of January 2023, there were six charging CAZs in England: Bath, Birmingham, Bradford, Bristol, Portsmouth, and York. However, only Birmingham, Bradford and Bristol charge private vehicles. Oxford has also introduced a Zero Emission Zone (ZEV) and a Ultra Low Emission Zone (ULEZ) in London.

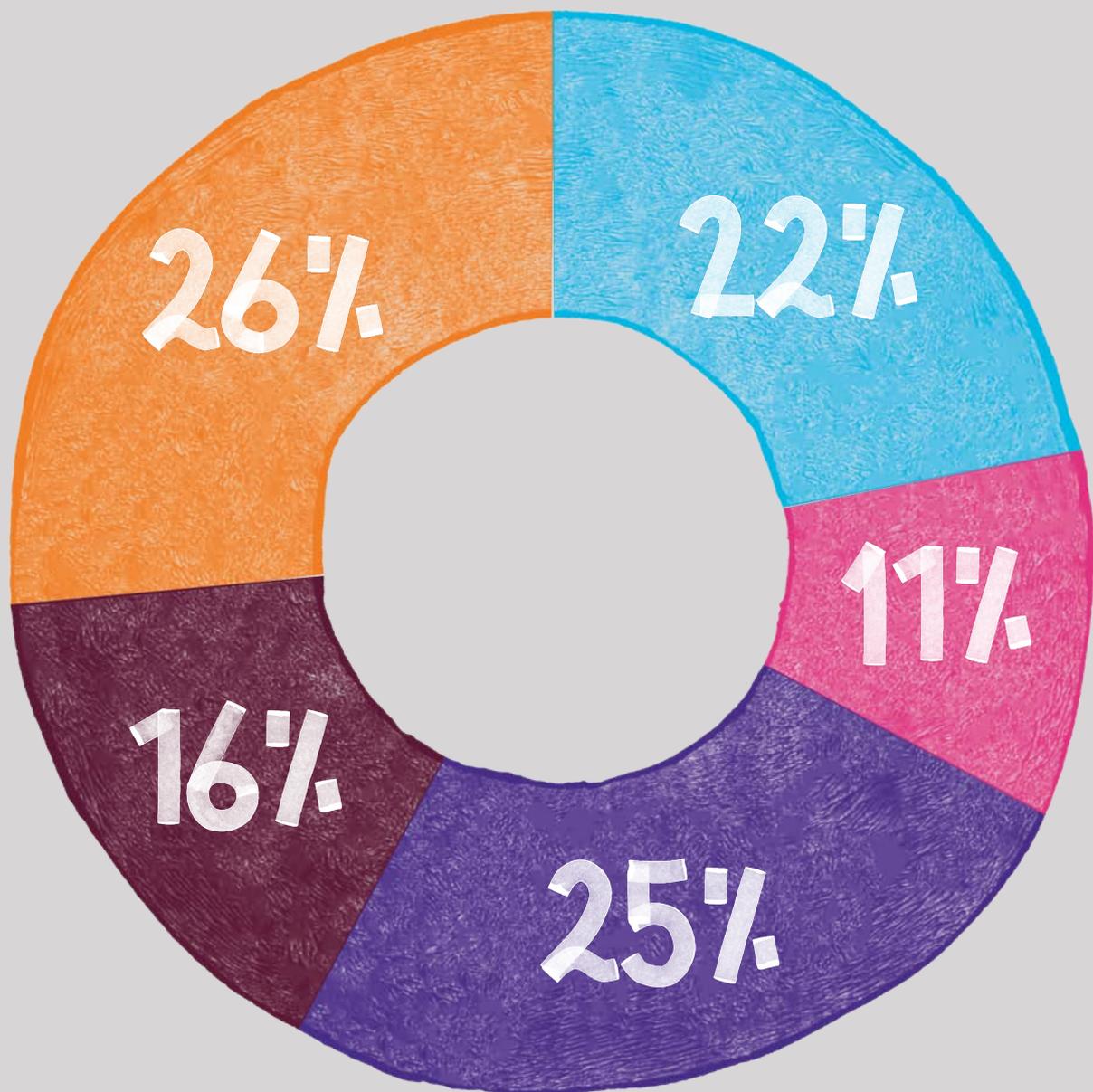
Clean air zones have been rolled out where local leadership has prioritised action on air pollution. For instance, London has led by example on air quality policies. The capital introduced a congestion charge 20 years ago in 2003 and an Ultra-low Emission Zone (ULEZ) in 2019 to charge vehicles that do not meet specific emission standards. As of 2021, only 27% of people living in London used a car for their commute, compared with 68% across the UK<sup>35</sup>. While it's important to acknowledge the significant public transport gap between London and other major UK cities, the political will exhibited in London to tackle toxic air has been instrumental to policy change and improving air quality. Between 2016 and 2020 reductions in NO<sub>2</sub> were five times greater in London than in the rest of the country<sup>36</sup>. YouGov polling showed that 63% of Londoners were in favour of CAZs in their local area<sup>37</sup>.

According to DEFRA's latest compliance data in 2021, 25 local authorities in the UK still had illegal levels of air pollution. These included local authorities in Greater Manchester, Greater London, the West Midlands, West Yorkshire, Sheffield, Glasgow, Liverpool, and Bristol, representing 24 million people who live in areas exceeding legal limits for NO<sub>2</sub><sup>38</sup>. Air pollution is likely to increase as road traffic rises after the pandemic, but this is difficult to assess in the absence of the 2022 compliance data that will be published by DEFRA in 2023.

As of June 2022, according to the NAO and JAQU:

- Only 20% of local authorities (14 out of 64) had implemented all the measures that were expected by the government to bring levels of pollution under legal limits.
- Two local authorities had introduced CAZs (Birmingham and Bradford) and 12 had adopted non-charging measures such as improved road layouts or traffic signalling to reduce traffic queues<sup>39</sup>.
- 17 local authorities were in the process of implementing measures with the majority opting for non-charging measures and according to modelling 16 local authorities were already compliant with legal air pollution limits<sup>40</sup>.
- Seven local authorities had yet to produce and agree a plan with the government to tackle NO<sub>2</sub><sup>41</sup>.

## Status of NO<sub>2</sub> plans in local authorities across the UK



Already compliant



No plan



Measures implemented



Not known



In the process of implementation

# Delays to local plans to tackle air pollution

Amongst the 17 local authorities that have been subject to delays, ten are in Greater Manchester — where plans are still under review by the government. In Birmingham, Bristol and Bradford the implementation of CAZs were delayed because of the pandemic, but as of December 2022 the cities had delivered CAZs or equivalent charging measures.

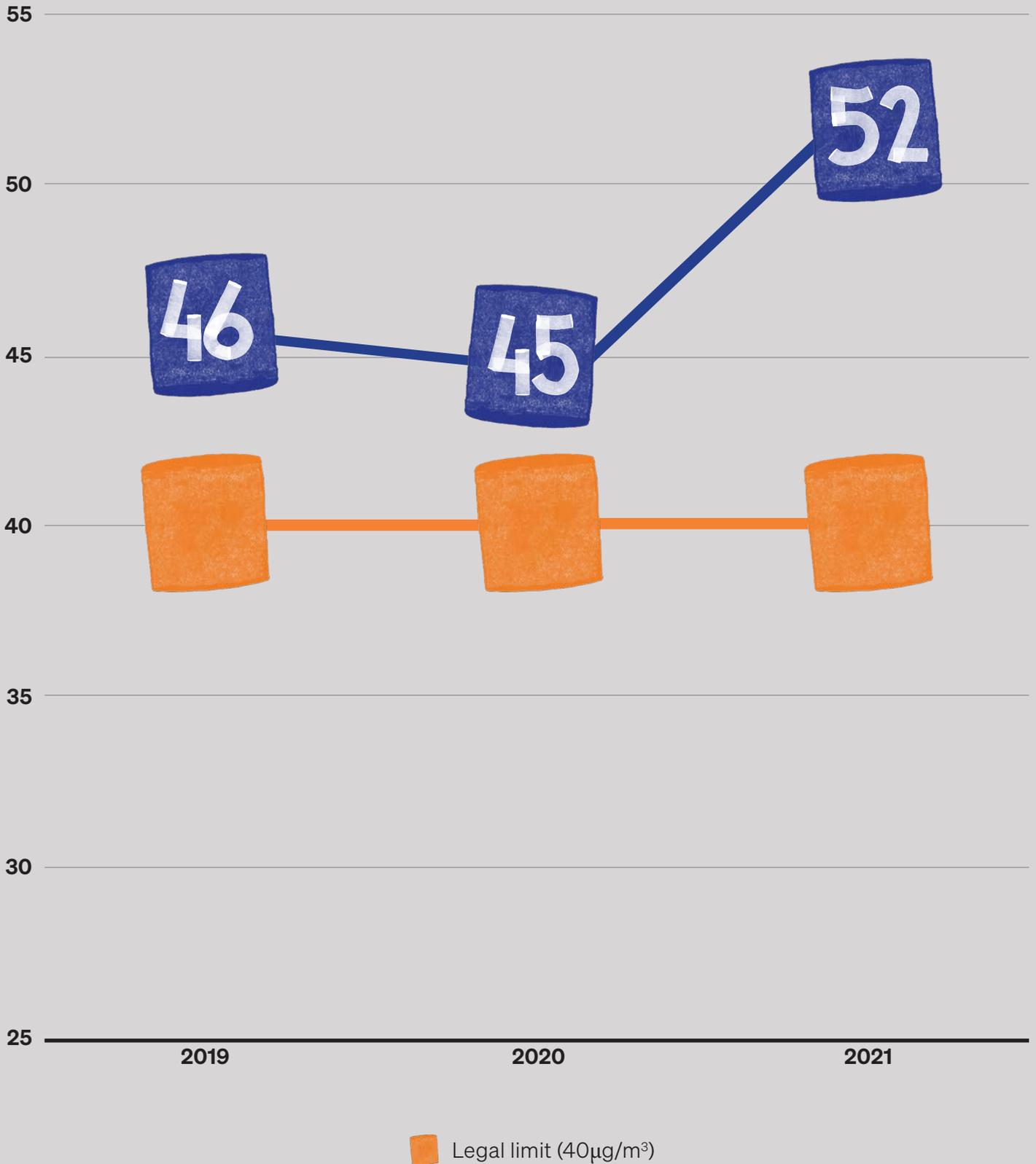
Greater Manchester Combined Authority (GMCA) had planned to launch a Class C charging CAZ in May 2022 to achieve legal compliance with NO<sub>2</sub> levels by 2026 at the latest. All local authorities in the Greater Manchester region are in breach of legal limits for air pollution and as of 2021 Manchester City Centre surpassed London in NO<sub>2</sub> emissions<sup>42</sup>.

In June 2022, Mayor Andy Burnham announced that the GMCA had opted for less ambitious measures, namely a proposal for a non-charging 'investment-led' CAZ to encourage taxis, buses, coaches, and heavy goods vehicles to upgrade their vehicles. The proposal is currently under review by the government and went ahead for public consultation despite warnings from the Secretary of State for DEFRA that: a smaller and targeted Class C charging CAZ in Manchester City Centre would be needed to achieve legal compliance<sup>43</sup>.

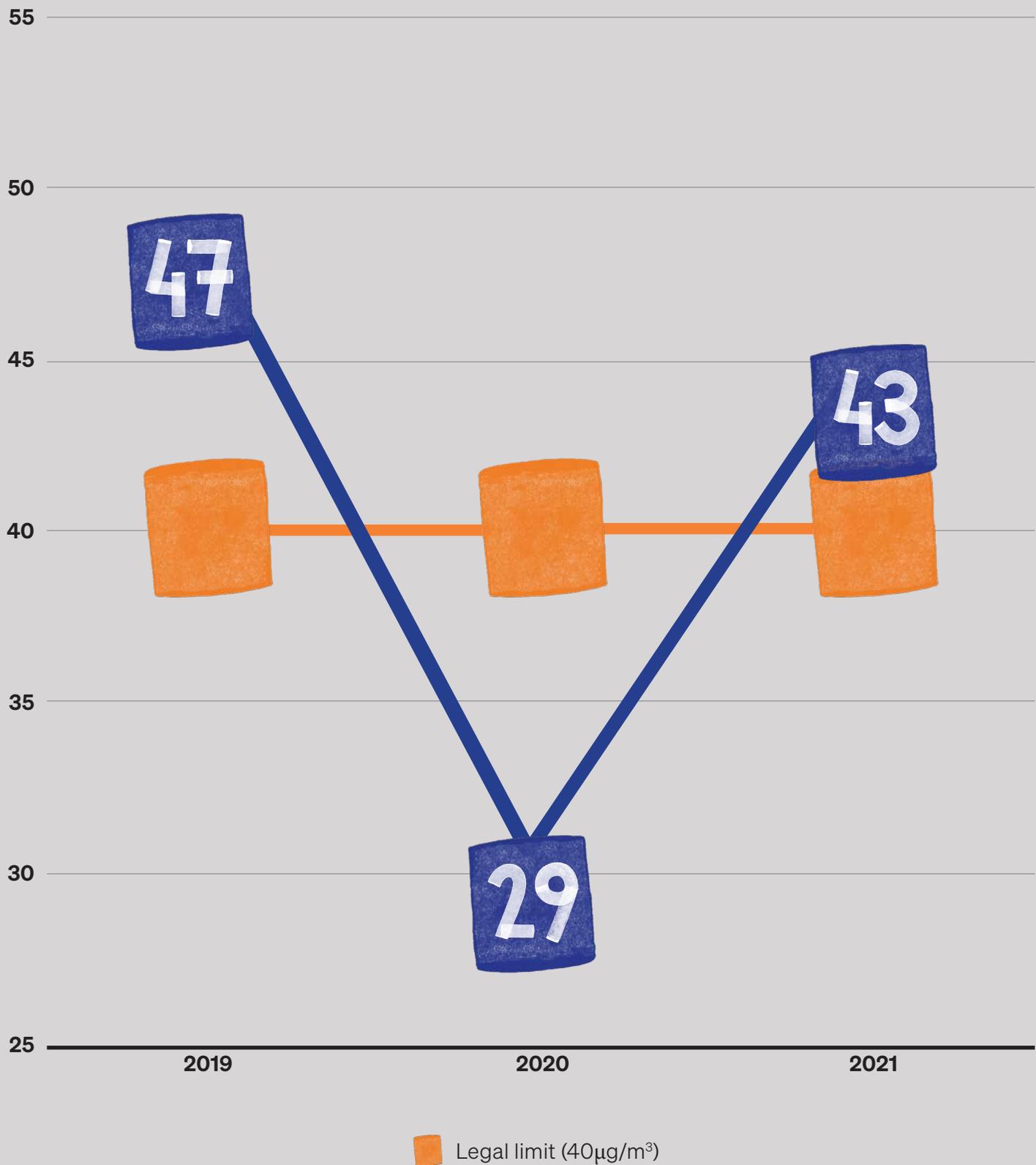
Alongside Greater Manchester other local authorities such as Liverpool, and Nottingham have dropped plans for CAZs. In all three of these cities where the policies were planned but not implemented NO<sub>2</sub> concentrations have increased. The latest data shows that in 2021, air pollution in Greater Manchester was 5.2 times higher than the WHO recommended levels, with levels nearly 1.5 times higher than the legal limit across the combined authority<sup>44</sup>.

# Air pollution trends 2019-2021 in Greater Manchester and Liverpool

## Greater Manchester Urban Area Levels of NO<sub>2</sub> between 2019-2021



## Liverpool Urban Area Levels of NO<sub>2</sub> between 2019-2021



# Non-charging options to improve air quality

Local authorities are expected to produce air quality plans outlining the policy measures that will be adopted to improve air pollution. It is crucial that charging measures are implemented alongside measures like improving public transport and active travel infrastructure to ensure the impact on local residents and small businesses is minimised. Evidence from Public Health England suggests the best way of reducing emissions from road transport is through a package of transport and non-transport related policy measures designed according to the local area's requirements.

Many cities with illegal levels of air pollution have elected to only roll-out non-charging measures. However, many of the measures have yet to be implemented or their impact reported. The available policy measures to reduce emissions from road transport can be divided between policies designed to:

## **Reduce emissions from existing vehicles**

- The roll-out of retrofitting measures to ensure vehicle fleets meet Euro 6 standard or higher i.e. buses, black cabs and heavy goods vehicles
- Improve anti-idling enforcement
- Promote eco-driving with public awareness campaigns
- Intelligent speed adaption measures and low speed limits in city centres
- Traffic calming measures to slow traffic such as speedbumps

## **Reduce the demand for more polluting forms of transport**

- Promote walking and cycling: i.e. increase the number of wide and segregated cycle lanes, increase bike hire infrastructure, increase the size of pavements and the number of zebra crossings, increase bike parking infrastructure
- Make public transport more accessible by subsidising it at a local level
- Implement school streets
- Improve public transport frequency and density by designating new and priority bus services
- Improve the provision of school buses

## **Promote the uptake of vehicles with low emissions**

- Public information campaigns on air pollution and the corresponding health impacts
- Scrappage schemes to financially facilitate the transition to low emission and electric vehicles for businesses, charities, disabled people and people on lower incomes
- Development of an electric vehicle charging infrastructure
- Promotion of low emission zones
- Fiscal incentives for low emission vehicles e.g. road tax rebates or VAT rebates

# CASE STUDY:

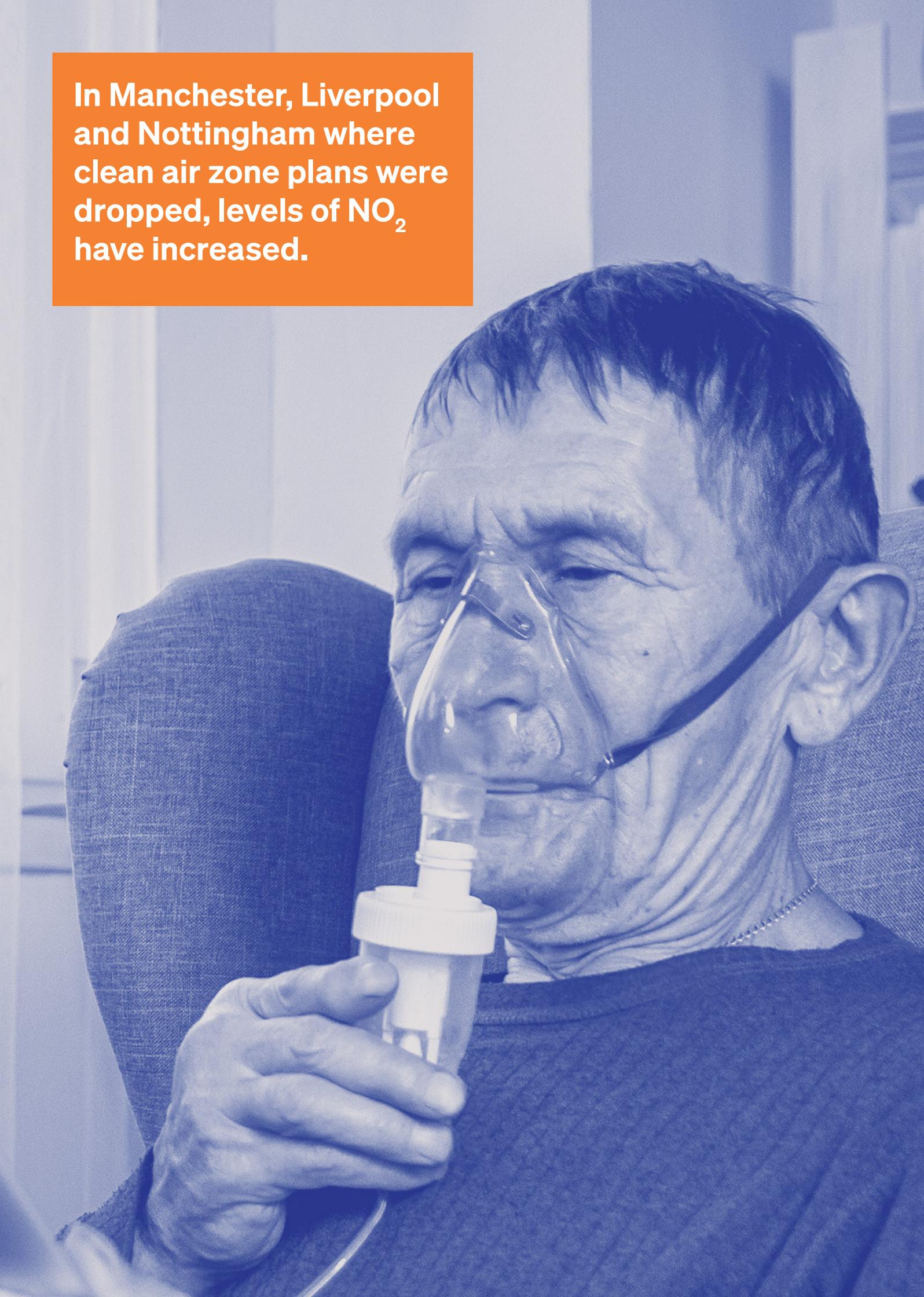
## Greater Manchester

Greater Manchester has some of the worst polluted air in the UK<sup>45</sup>. To tackle its toxic air, Greater Manchester Combined Authority (GMCA) has chosen to reduce vehicle emissions and implement an investment-led non-charging CAZ to decarbonise the vehicle fleet. An investment-led CAZ operates on a grant model to incentivise people to upgrade their vehicles. The GMCA has also set out funding for the electrification of the bus fleet, securing £16m in government funding to retrofit and replace buses operating in Manchester that are not compliant with Euro 6 standards.

As of October 2022, 72% of the buses met a Euro 6 emission standard compared with 53% in September 2021<sup>46</sup>. In January 2023, Greater Manchester received an additional £3.4m from the government's Capability & Ambition Fund aimed at increasing the uptake of active travel.

Investment in public transport is a positive step, but better coverage through the city is needed to encourage more people to leave their cars at home. There are major blind spots in the public transport system in Greater Manchester, meaning many residents still rely on cars to travel. In 2017, the majority of journeys (58%) in Greater Manchester were made by car or van compared to only 26% by foot. Nearly three quarters (73%) of all car journeys were made within the local authority of residence, indicating that these journeys could be via public transport, walking or cycling<sup>47</sup>. In addition to this, according to analysis by the Clean Cities Campaign, the number of private cars in Greater Manchester has increased by around 31% in the last decade<sup>48</sup>.

**In Manchester, Liverpool and Nottingham where clean air zone plans were dropped, levels of NO<sub>2</sub> have increased.**



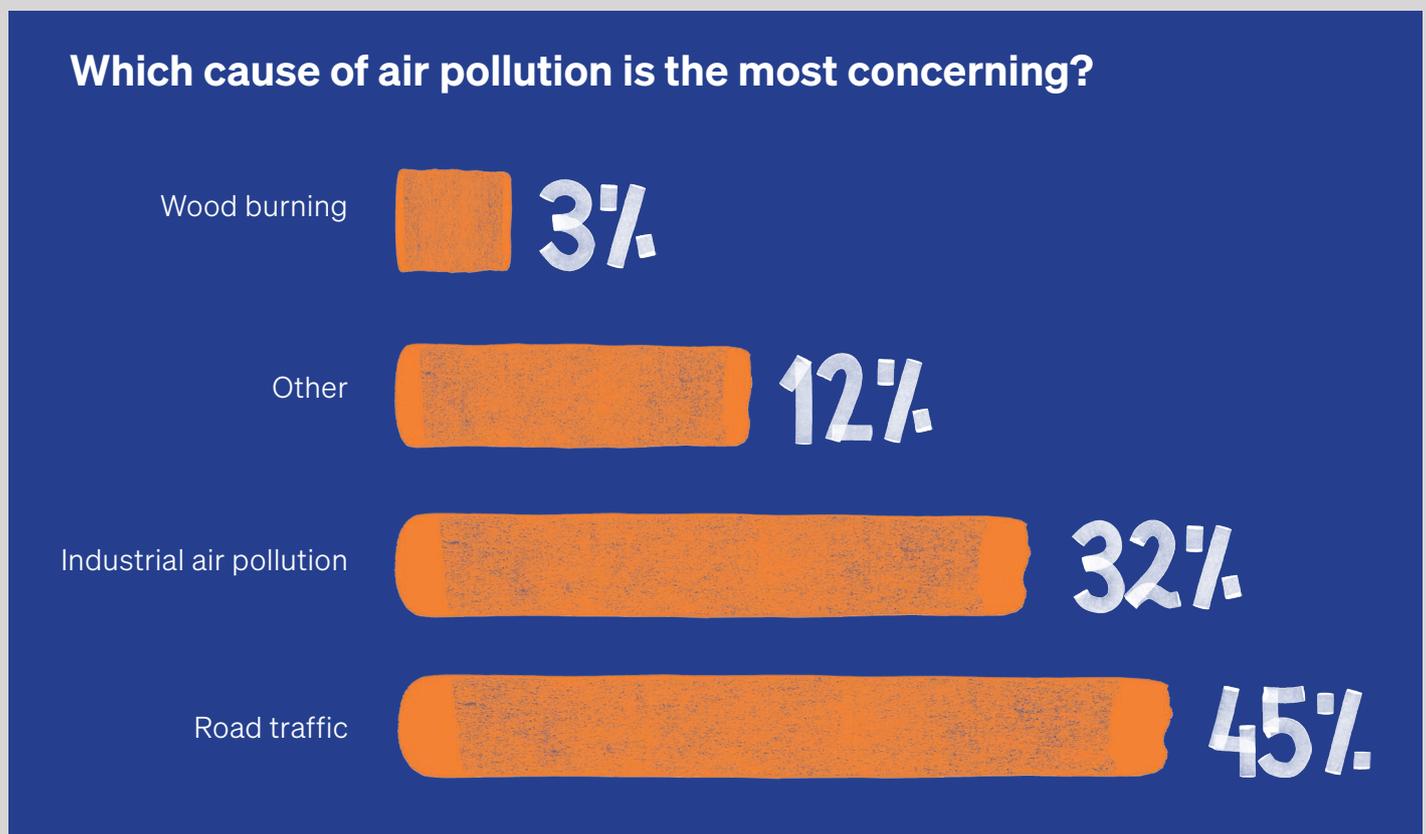
# A public demand for cleaner air

CAZs are the most effective way of reducing air pollution, but local authorities are worried about the costs a CAZ may cause for local businesses and residents. This is why mitigation measures need to be implemented alongside the roll out of CAZs including scrappage schemes and adequate investment in public transport.

The support for CAZs is seen to increase where public transport infrastructure is adequate and comprehensive scrappage schemes have been rolled out: nearly two thirds of people in London supported a CAZ. According to the polling carried out by YouGov in January 2023, only one in five people in the UK strongly oppose the roll out of a CAZ where they live. This figure is higher in the North where public transport is less reliable and car ownership is higher than the rest of the country. Over 90% of people surveyed in the North supported more reliable and cheaper transport, the highest proportion of any region polled. In parallel, 63% of people in the North of England used cars as their main mode of transport.

Overall, there are still more people across the UK that are in favour of a CAZ in their local area than there are opposing one<sup>49</sup>. In addition, nearly three quarters of people supported a scrappage scheme (to allow people to upgrade their vehicle to a cleaner form of transport) showing peoples' willingness to support policies that improve air quality.

For the majority of people surveyed, road traffic was the leading and most concerning source of pollution, echoing previous polling on people with lung conditions carried out by Asthma + Lung UK in 2022<sup>50</sup>. People want to see policy solutions being implemented for both environmental and health reasons.



# Clean air zones are vital for public health

Out of the 24 million people estimated to live in areas which are illegally polluted, at least 1.4 million have asthma or chronic obstructive pulmonary disease (COPD)<sup>51</sup>. Over a third of annual premature deaths linked to air pollution occur in areas in breach of legal limits for NO<sub>2</sub> (10,000 of the ~30,000 deaths). Notably, DEFRA's modelling has shown that health benefits reaped from the implementation of a CAZ in the first year are estimated around £3,600 million with a reduction in emergency hospital admissions from air pollution. Public Health England reported that in 2017 the total cost of air pollution to the NHS and social care was reported at over £40 million, and this could rise to £3.8 billion by 2035 when all diseases are included<sup>52</sup>.

Three out of ten local authorities with the highest hospital admission rates for asthma in children (under 19 years) are in Greater Manchester: Tameside, Oldham and Manchester have childhood hospital admission rates for asthma nearly four times higher than the national average<sup>53</sup>. In 2021, Michael Marmot highlighted the link between unequal exposure to air pollution and health inequalities in Manchester: air pollution is much more prevalent in deprived communities which puts residents at higher risk of serious health impacts<sup>54</sup>. Effective clean air policies and strategies are needed to reduce health inequalities.

The negative impact on health is one of the main reasons people are concerned about air pollution and would like to see policy solutions being implemented. Over 58% of people surveyed cited the impacts on health as the main reason why they thought pollution was a problem in their local area. This concern was markedly higher amongst people aged over 50, where nearly two thirds of respondents thought pollution was a problem for their health. In particular people were worried about the impact of air pollution on the health of children (51%) and on people with lung conditions (56%), showing people were most concerned about the impact of pollution on groups at higher risk of the health impacts of air pollution.



# Charging measures remain the best option to reduce air pollution

The introduction of CAZs across the country has evolved towards more holistic approaches that favour a combination of charging measures, walking and cycling policies (including cycle routes) and cheaper public transport fares. The Greater Cambridge Partnership are consulting on a Sustainable Travel Zone which would impose a daily congestion charge, introduce £1 flat fares for buses, and introduce better cycle routes<sup>55</sup>. Oxford has introduced a Zero Emission Zone (ZEV) rather than a CAZ that applies a daily charge to all non-zero-emission vehicles.

Despite political tension and pushback, some local authorities such as Sefton are still strongly considering charging measures to tackle air pollution, and both Oxford and Cambridge have pushed forward with charging measures but not clean air zones. Charging the most polluting vehicles on the road will not only ensure emissions are lower but also drive the uptake of electric vehicles (EVs).

Local authorities need to be supported by the government to implement clean air policies that will accelerate the uptake of battery electric vehicles and drive investments in technological improvements. The government has already taken steps to improve air quality and reduce carbon emissions with the ban on the sale of all new petrol and diesel vehicles by 2035 that will encourage the uptake of EVs.

We already know that EVs have much lower carbon emissions: in 2020 a typical battery electric car was already estimated to save ~65% in greenhouse gas emissions compared to an equivalent conventional petrol car. With expected improvements to battery technology, battery manufacturing, and disposal of electric cars, it is estimated that by 2050, a battery electric vehicle could generate 81% less emissions than a petrol car<sup>56</sup>. However, these emission reductions will not be achieved before another 27 years, this is why clean air zones and low emission zones must be supported by the government.

**Table 2: trends in average CO2 emissions for petrol, diesel and battery electric vehicles in gCO2e/vkm<sup>57</sup>**

	Petrol cars emissions	Diesel car emissions	Battery electric vehicles emissions
2020	275	223	97
2030	245	197	59
2050	205	157	38

# Better communication and more local powers are needed

Many local authorities have faced pushback from local residents and businesses with the burden of implementation placed on local government, who have not been provided with adequate support to communicate and engage with residents on why action is needed on air pollution to protect health. This undermines local authorities' ability to implement charging CAZs in the worst polluted areas because of the strength of local opposition and the lack of communication to counter this.

Better communication campaigns should be delivered jointly by central and local governments to outline the benefits of CAZs from a public health and environmental perspective. The NAO has warned that the government does not "clearly and consistently communicate air quality issues and its proposed solutions to the public", as the data is published under many different sets and is inaccessible to members of the public that are not familiar with air quality legislation<sup>58</sup>. It is difficult for people to access information about air quality problems in their local area; people are often unaware of the levels of pollution where they live and what progress is being made to tackle these issues.

The lack of air quality information feeds into misconceptions about CAZs that are often perceived as revenue-raising schemes. The revenue from the charges CAZs introduce goes back into measures to improve air quality e.g. improving and extending the public transport system. The benefit of communication plans on CAZs were evidenced in Birmingham and Bath where JAQU carried out polling before and after the roll-out of CAZ. In Birmingham, they found that 45% of residents supported the CAZ, and in Bath 59% of residents supported the policy. The higher levels of support in Bath were attributed to a greater awareness of the health benefits of cleaner air, thanks to messaging from the local authority<sup>59</sup>. In Birmingham, nearly a quarter of the local residents perceived the CAZ as a scheme aimed at raising funds for the council<sup>60</sup>. Whereas in Bath, raising funds was in fifth place, which can be linked to a communication campaign focused on the health and environmental aspects of the CAZ.

Local authorities also need to have access to better funding to implement measures that ensure charging policies are more palatable to the public, who on the whole support better air quality. Many charging measures have been poorly designed and therefore delivered unfairly. An example of this is a CAZ delivered without a well-designed scrappage scheme that would target people on lower incomes who are the least able to afford a less-polluting vehicle which allows them to mitigate the cost of the policy. We have estimated that only 20% of all funding towards scrappage schemes has been awarded to individuals with the remaining funding going towards businesses and taxis. Local authorities need increased air quality funding in order to implement their policies more fairly to mitigate public and political opposition.

# Conclusion

Air pollution is a public health emergency, and action must be taken by the government without any further delay to address the health issues and inequalities it is generating. Overall, charging measures and clean air zones remain the most effective way of reducing NO<sub>2</sub> fast.

The government has been slow to make progress and 24 million people are still breathing in toxic air that is harming their lungs, respiratory systems and vital organs.

The public recognises the importance of air quality and have supported charging measures where policies have been delivered alongside a holistic package including financial support. The future of air quality policies and clean air zones are dependent on the way these policies are delivered and the political leadership they benefit from.

Clean air zones are often perceived as revenue-generating schemes that have a disproportionate effect on poorer communities. Misinformation and the absence of effective communication campaigns are tarnishing the overall goals of clean air zones which is to improve air quality, reduce morbidity and early mortality linked to air pollution exposure.

This needs to change, the government and local authorities need to work jointly to bring the public on board and provide better air quality information to people. The current state of air quality information is making it more difficult for policymakers to gain public support for the measures needed to reduce levels of toxic air such as clean air zones.

It is imperative that the government prioritise action on air pollution and support local authorities to protect the lives of their residents, and especially those who are living with a lung condition for whom air pollution is having a debilitating impact on their daily lives.

## Annex 1. Air quality reporting zones in breach of legal limits for NO<sub>2</sub>

	Zones in breach of annual NO <sub>2</sub> limit value	Clean air zone plans	Implemented	Type
1	Liverpool urban area	No	No	N/A
2	Bristol urban area	Yes	Yes	Class D CAZ in Bristol city centre
3	West Yorkshire urban area	Yes	Yes	Class C+ CAZ in Bradford
4	Greater London urban area	Yes	Yes	ULEZ in Inner London
5	Glasgow urban area	Yes	Yes	Class A CAZ (buses only)
6	Greater Manchester urban area	Yes	Yes	N/A
7	West Midlands urban area	Yes	Yes	Class D in Birmingham
8	South Wales	No	No	N/A
9	Sheffield urban area	Yes	Yes	Class C live in February 2023
10	Nottingham urban area	No	No	No

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Funded by

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