

# How Can the EU Move Towards Clean Air? The Need for a Bold Step Forward

Health and Environment

**ISGlobal** Barcelona  
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Global Health

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[ This document is one of a series of discussion notes addressing fundamental questions about global health. Its purpose is to transfer scientific knowledge into the public conversation and the decision-making process. These documents are based on the best information available and may be updated as new information comes to light. ]

30 October 2023

*Photo: Brescia (Italy). Lars Kjølhede Christensen / Flickr*

The Ambient Air Quality Directives (AAQD), along with other supporting legislation setting emissions standards for key sources of air pollution, are one of the most important public health opportunities for the European Union in decades. The scale of the problem and the extensively documented health impacts of air pollution demand bold and comprehensive action from EU leaders and policy makers.

- Air pollution has substantial **negative effects on people's health at all ages**, as pollutants reach the blood and impact nearly every system and organ in our bodies.
- **Children are a particularly susceptible group** and can develop air pollution-related chronic conditions such as obesity, diabetes or cardiovascular disease, that last throughout their lives as adults.
- **Over 95% of urban residents** in the EU are exposed to concentrations above the

recommended levels of pollutants such as fine particulate matter (PM<sub>2.5</sub>) and ozone.

- Data from the European Environment Agency shows that exposure to PM<sub>2.5</sub> in concentrations above those stated on the 2021 guidelines published by the WHO resulted in **238 000 premature deaths** in the EU during 2020.
- Air pollution results in **enormous economic costs** not only related to health-care, but also due to how exposure to air pollution substantially reduces economic output per worker.
- According to the OECD, air quality improvements could have been responsible for up to 15% of the EU GDP growth between 2000 and 2015, suggesting that **stricter air quality regulations could be justified based solely on economic grounds**.
- **Full alignment of the AAQD with the latest WHO guidelines** is a necessary

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step to protect the health and wellbeing of EU citizens and incentivize action.

- **Addressing the different sources of pollution in a combined approach** is essential. Measures aimed at limiting emissions from the top-polluter transport sector should be complemented with legislation directed at other fields like industry and agriculture.

- **Support from local authorities in tackling air pollution is imperative**, as local and regional governments are often the implementers and enforcers of many air quality management measures ●

# 1. The Air We Breathe and How it Impacts our Health

**“Data from the European Environment Agency shows that exposure to PM<sub>2.5</sub> in concentrations above those stated on the 2021 guidelines published by the WHO resulted in 238 000 premature deaths in the EU during 2020.”**

## a. The various impacts of air pollution: death, disease and costs

Humans breathe. If we do not, we die. There is no way we can prevent the harmful particles we breathe getting into contact with and damaging our respiratory system. Nevertheless, the impact of air pollution is **not** restricted to that. Besides breathing air, humans are surrounded by air. Acne, ageing skin and dry eyes are examples of the effects of air pollution. When polluting particles enter our body through the respiratory system, some of them are small enough to pass through the lung cells and **reach the blood**, and are carried throughout the rest of the body. Small particles can reach unborn babies through their mothers’ blood, which means that babies suffer from the harmful effects of air pollution even before they start breathing. Low birth weight and prematurity are the most obvious consequences of this prenatal exposure.

**Children** are an especially vulnerable group.<sup>1,2</sup> Their developing respiratory and immune systems are especially susceptible. They spend more time in outdoor activities, moving around and breathing faster. And they are closer to the ground, which means closer to pollution sources such as exhaust pipes of cars. Therefore, it is not surprising that

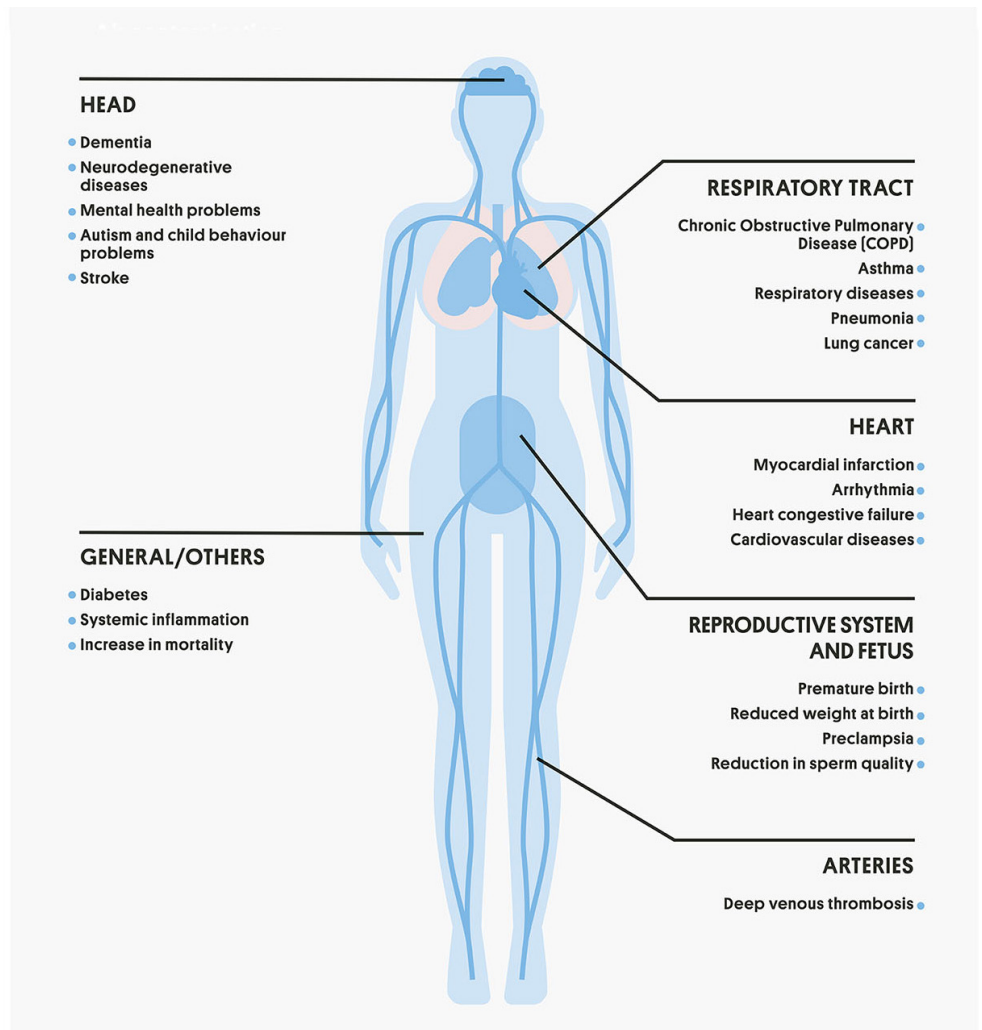
they suffer more and more from allergies and respiratory diseases, like asthma. During childhood, air pollution is also associated with low rates of vitamin D and mental disorders at early ages. Moreover, children exposed to air pollution have higher rates of chronic diseases once they become adults, like obesity, diabetes, cardiovascular disease and hypertension. In fact, **nearly every organ** in the body may be harmed throughout life, so conditions like stroke, different types of dementia and Parkinson’s disease, cancer, infertility, osteoporosis, fractures and rheumatic diseases, have all been related to air pollution.<sup>3</sup>

<sup>1</sup> Khreis H., Cirach M., Mueller N. et al (2019). Outdoor air pollution and the burden of childhood asthma across Europe. *Eur Respir J.* Oct 31;54(4):1802194. doi: 10.1183/13993003.02194-20 18. PMID: 31391220.

<sup>2</sup> European Environment Agency (2023). Air pollution and children’s health. <https://www.eea.europa.eu/publications/air-pollution-and-childrens-health>

<sup>3</sup> Schraufnagel D.E., Balmes J.R., Cowl C.T. et al (2019). Air pollution and noncommunicable diseases: A review by the forum of international respiratory societies’ environmental committee, part 2: Air pollution and organ systems. *Chest.* 2019;155(2):417–26.

**Figure 1. Health effects of air pollution.**



Source: [citieswewant.isglobal.org](https://citieswewant.isglobal.org)

Despite legislation and technological advances in recent decades, air pollution is considered by the European Environment Agency (EEA) as “**the single largest environmental health risk**”. If we look at the numbers, data from the EEA<sup>4</sup> shows that **exposure to fine particulate matter (PM<sub>2.5</sub>)**, one of the most common pollutants, in concentrations above those stated on the 2021 guidelines published by the World Health Organization (WHO) resulted in **238 000 premature deaths** in the EU during 2020. At the same time, exposure to nitrogen dioxide (NO<sub>2</sub>) above the guideline levels led to an estimated 49 000 premature deaths that year and acute exposure to ozone caused 24 000.

As the **population grows older**, it becomes more sensitive to air pollution. At the

same time, more and more people keep moving to **urban environments**, ultimately increasing the number of people exposed to major pollutants, which tend to be a bigger concern in cities. Specifically, according to EEA data,<sup>5</sup> the share of urban residents exposed to concentrations above the recommended levels is 96% for PM<sub>2.5</sub>, 95% for ozone, and 89% for NO<sub>2</sub>. Furthermore, evidence shows that important **inequalities** exist when it comes to exposure to air pollution, with individuals of **lower socio-economic status** (unemployed, lower income or with a low education level, often disproportionately women and migrants) being severely more affected.

While the described health impacts are undeniably the most relevant and press-

<sup>4</sup> Soares J., González Ortiz A., Gsella A. et al (2022), Health risk assessment of air pollution and the impact of the new WHO guidelines (Eionet Report – ETC HE 2022/10). European Topic Centre on Human Health and the Environment.

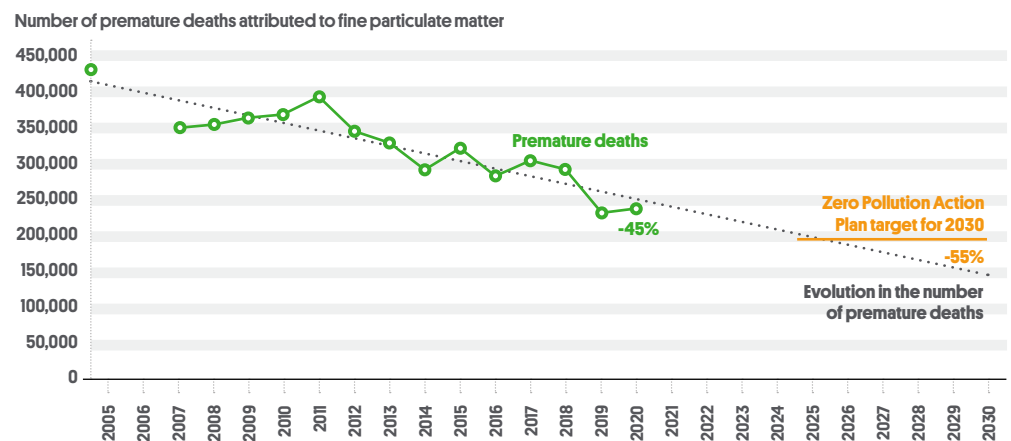
<sup>5</sup> European Environment Agency (2023), Europe’s Air Quality Status 2023. <https://www.eea.europa.eu/publications/europes-air-quality-status-2023>.

ing ones, the **economic costs** associated with air pollution are also remarkable. A study published by the Organisation for Economic Co-operation and Development (OECD) Economics Department in 2019<sup>6</sup> showed that exposure to air pollution substantially **reduces economic output per worker**. This happens because it causes work absenteeism and diminishes both the cognitive and physical capabilities of affected individuals. Evidence found in this study suggests that **improving air quality can yield large economic benefits**. Between the years 2000 and 2015, PM<sub>2.5</sub> concentration declined by 20% in the EU and estimations indicate that this sole event boosted the EU GDP by 2.4%. The study also considers that air quality improvements could have been responsible for up to 15% of the EU GDP growth over that period, suggesting that stricter air quality regulations could be easily justified based solely on economic grounds and can positively contribute to economic growth.

## b. How health impacts of air pollution have changed in the last decades

Progress has been made to improve Air Quality in Europe. But it is not enough. Between 2005 and 2020, the number of premature deaths attributable to exposure to fine particulate matter (PM<sub>2.5</sub>) above the WHO guidelines level fell by 45% in the 27 EU Member States (EU-27). The EU's zero pollution ambition aims to further reduce these deaths by 55% between 2005 and 2030, and could be achieved if the current rate of decline is maintained (See Figure 2). To do so requires new and bolder policies and action ●

**Figure 2. Premature deaths in the EU-27 due to PM<sub>2.5</sub> levels above the 2021 WHO guidelines and distance to the zero pollution target, 2005-2020.**



Source: Reprinted from: <https://www.eea.europa.eu/data-and-maps/figures/premature-deaths-in-the-eu-1>

<sup>6</sup> Dechezleprêtre A., Rivers N. and Stadler, B. (2019), "The economic cost of air pollution: Evidence from Europe", OECD Economics Department Working Papers, No. 1584, OECD Publishing, Paris. <https://doi.org/10.1787/56119490-en>.

# 2. Current Political Landscape in the EU Regarding Air Quality


“Full alignment of the AAQD with the latest WHO guidelines is a necessary step to protect the health and wellbeing of EU citizens and incentivize action.”

As part of the **European Green Deal’s** zero pollution ambition for 2050, the current **Ambient Air Quality Directives** are being revised by the European Commission. These directives are aligned with the 2030 agenda and United Nations Sustainable Development Goals,<sup>7</sup> specifically with SDG3 (Good Health and Wellbeing) and SDG11 (Sustainable Cities and Communities). The proposed changes in the directives would set lower air quality standards for 2030, more aligned with those recommended by WHO, and new requirements for monitoring pollutants of emerging concern, such as ultra-fine particles. In order to achieve this goal on time, countries need to be ready and establish the necessary air quality plans and measures ahead of 2030.

As the discussion on the matter of this revision is being held, **stakeholders** have presented their reactions to the current proposal, with the public consultation showing that 88% of respondents would like to see a moderate or significant increase in action and ambition to tackle air pollution. In order to properly understand the current landscape regarding this legislation revision, we will be discussing how far air quality regulations have come in the EU, how far they need to go and who are the main actors involved in this debate.

### a. Where do we come from in terms of EU air quality regulations?

The EU’s air quality policy framework rests on three pillars:

 <p><b>Two Ambient Air Quality Directives (2008/50/EC and 2004/107/EC)</b></p>	Set quality standards for concentration levels of key air pollutants.
<p><b>National Emissions Ceilings Directive</b></p>	Establishes national emissions reduction commitments for 5 transboundary air pollutants [SO <sub>2</sub> , NO <sub>x</sub> , non-methane volatile organic compounds, NH <sub>3</sub> and PM <sub>2.5</sub> ].
<p><b>Legislation setting emissions standards for key sources of air pollution in various sectors such as transport, energy and industry</b></p>	Several directives on industrial emissions, medium combustion plants, fuel quality and sulphur content in liquid fuels, eco-design, regulations on vehicle emissions standards, real driving emissions, and non-road mobile machinery.

What are the implications of the Ambient Air Quality Directives? These two pieces of legislation were conceived in order to protect human health and the environment by setting **standards** for ambient air quality for a total of **13 air pollutants**, with the most relevant being: SO<sub>2</sub>, NO<sub>2</sub> and NO<sub>x</sub>, particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and ozone. These standards must be attained by all Member States across their territories within specified timelines and limit values are **legally binding** from the date

they come into force. Countries have the obligation to take all necessary measures to reach compliance with the standards as long as they do not involve disproportionate costs. However, there are challenges at implementing these measures, since Member States are the ones subject to this obligation but cities and regions have a key responsibility in achieving compliance.

The AAQ directives also set **common methodology and criteria** to assess air quality in all Member States in a compa-

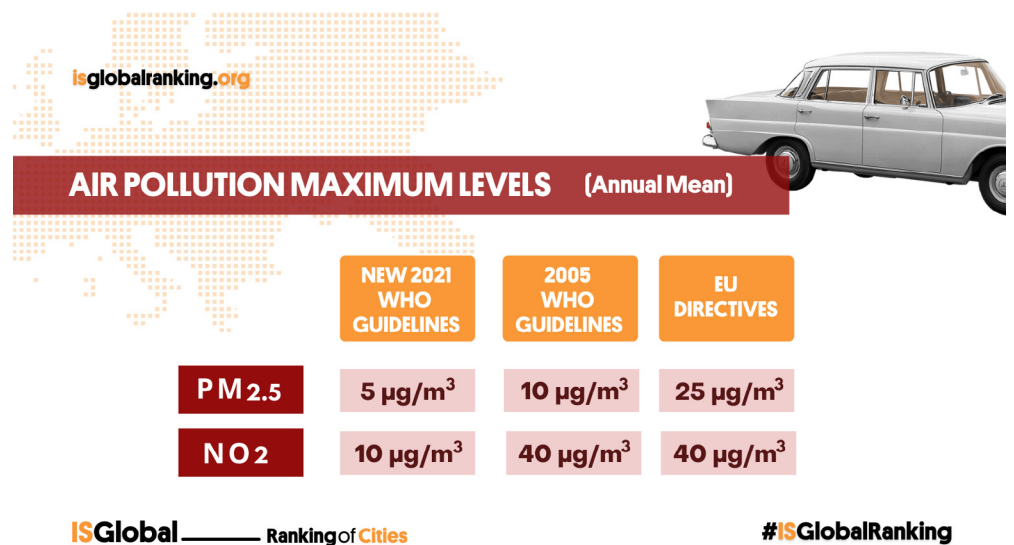
<sup>7</sup> United Nations (2023), The 17 goals [Internet]. Sdgs.un.org. [citado 21 de septiembre de 2023]. <https://sdgs.un.org/goals>

rable and reliable manner. Countries must set up a network of monitoring stations and sampling points based on criteria defined by the directives and ensure both data quality and accuracy of measurements. When failure to comply with the standards occurs, countries must prepare and implement **air quality plans** and measures for those pollutants exceeding the limits and communicate them to the European Commission within a two-year period.

### b. What can be improved and why we need to move forward

When discussing **air quality standards**, recent evidence<sup>8</sup> has shown that complying with the 2021 WHO guidelines target levels would prevent more than 51 000 deaths for PM<sub>2.5</sub> and 900 for NO<sub>2</sub> each year across almost 1000 European cities. These figures justify the need for stricter standards and action.

**Figure 3. The World Health Organization (WHO) updated its 2005 Global Air Quality Guidelines (AQG) in September 2021.**



In 2019, the AAQ directives were subject to an evaluation by the European Commission that concluded that they had only been **partially effective** when it came to improving air quality. It was stated that they had not ensured that sufficient action was taken throughout the EU to meet air quality standards while keeping exceedances to a minimum. Some of the shortcomings identified in this policy framework include the impossibility to **readjust the standards** in order to converge with the advancing scientific knowledge and the need for an improvement in **data comparability and reliability**.

Although setting the new standards is a very important part of the proposal, it is also crucial to address one of the biggest weaknesses of the current legislation, which concerns the air quality plans constructed by national governments to prevent limit exceedances or minimise their duration. These plans were regarded as

**insufficient**, as they often failed to advance the adoption of decisive measures for reducing air pollution, mainly due to **delays** in their implementation or even a complete **lack of enforcement** of the proposed measures.

The proposed changes in the AAQ directives would not only adjust the air quality standards to the current scientific evidence, but they are also aimed at improving the way air quality plans work. These **plans would be required to be made in advance** in cases of non-compliance prior to 2030, with the aim to ensure that the pollutant levels are reduced accordingly and the standards met when the new limits become binding. The timeframe for corrective action would also be clarified. Air quality plans should be **updated** if in their third year of existence they have still failed to resolve the situation.

The proposal also specifies the **minimum information** to be included in air quality

<sup>8</sup> Khomenko S., Cirach M., Pereira-Barboza E et al (2021), Premature mortality due to air pollution in European cities: a health impact assessment. *Lancet Planet Health*. 2021 Mar;5(3):e121-e134. doi: 10.1016/S2542-5196(20)30272-2. Epub 2021 Jan 19. PMID: 33482109.

plans, with requirements to estimate the effect of the planned measures in terms of pollutant concentration reduction as well as a compliance time perspective. When preparing air quality plans, Member States would be required to assess the risk of **exceeding alert thresholds** and this analysis would be used for establishing, where applicable, **short-term action plans**. At the same time, requirements on **stakeholder involvement** would also be revised, and an obligation would be added for countries to **consult the public** and any competent authorities in the design and/or update of air quality plans.

Another relevant addition in this proposal would be the requirement to establish

a **publicly available air quality index** with hourly air quality updates for relevant pollutants such as PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub> and ozone. Explicit provisions on **granting legal standing for citizens** to challenge the legality of decisions, acts or omissions concerning the countries' air quality plans are also included in the proposal. This measure would ensure that individuals whose health is affected due to violations of rules regarding air quality are able to **claim and obtain compensation** for any damage to their health from the relevant competent authority. At the same time, **penalties** for violations of any measures taken to improve air quality would have to be established ●

## 3. Taking Action

**“Cities play a key role in successful air quality management. It is in these smaller environments where public engagement also plays an important part.”**

### a. Main actors involved and different perspectives

With air quality being one of the most important public health topics facing the EU, many stakeholders are involved in the process of decision-making. Some of them are supporting change while others are more reluctant. Regarding the current revision process, **NGOs** have been pushing for increased ambition. On this line, the **Health and Environment Alliance (HEAL)** advocates for showcasing the importance of social inequalities in this matter, allocating sampling points so they take into account the specific exposure of vulnerable groups in places like social housing, schools, hospitals and elderly homes. The **Eurocities network** also provided their view on the matter, stating the importance of matching ambitions in source-specific regulation in sectors responsible for air pollution like transport, agriculture and construction.

On the **industry** side, the European Automobile Manufacturers' Association (ACEA) and the European Non-ferrous Metal Association (Eurometaux) point

out the need to ensure that existing air quality standards are met before setting new ones. They also defend that providing access to justice and compensation for citizens would result in legal uncertainties for operators, competent authorities and countries. However, it's important to keep in mind that these proclamations completely take the focus away from people's health and foment an attitude of inaction that would furthermore damage the population's health and the environment.

### b. Prime sources of pollution and their impact on health

According to an assessment made by the European Environment Agency (EEA), most air pollution in Europe comes from heating buildings, road transport, industrial activities and agriculture.

If we look at the data provided by the EEA on limit exceedances by country between 2014 and 2020,<sup>9</sup> **Germany and Spain** were the ones reporting the highest numbers, with 154 and 108 exceedances respectively. For both Germany and Spain, the main source driving emissions over

<sup>9</sup> ETC/ATNI (2021), Report 9/2020: Air Quality Plans and Measures. Analysis of data submitted from 2014 to 2020.

the limits were **heavily trafficked urban centres** or **proximity to a major road**, accounting for 95% and 57% of exceedances respectively. In fact, up to 64% of all reported exceedances from all countries were linked to dense traffic in urban centres and proximity to major roads, with **NO<sub>2</sub>** being the dominant pollutant.

The second most important source driving exceedances was **domestic heating**, accounting for 14% of the total and up to 57% in countries like Slovenia. In this case, emissions come primarily from wood and coal burning and the main pollutant involved is PM<sub>10</sub>. **Local industry**, including electrical power production, was the cause of 10% of exceedances, with Spain and France presenting the largest absolute numbers while the largest relative percentage was in Belgium (50%).

While looking at the sources causing limit exceedances is important, evaluating their impact in terms of **mortality** is also crucial. A recent study<sup>10</sup> that analysed data from 857 European cities showed that **transport** was responsible for 49% of mortality caused by NO<sub>2</sub>, while **residential and agricultural** sources accounted for 23% and 18% of mortality caused by PM<sub>2.5</sub> respectively.

### c. Governance: addressing air quality at a national and local level

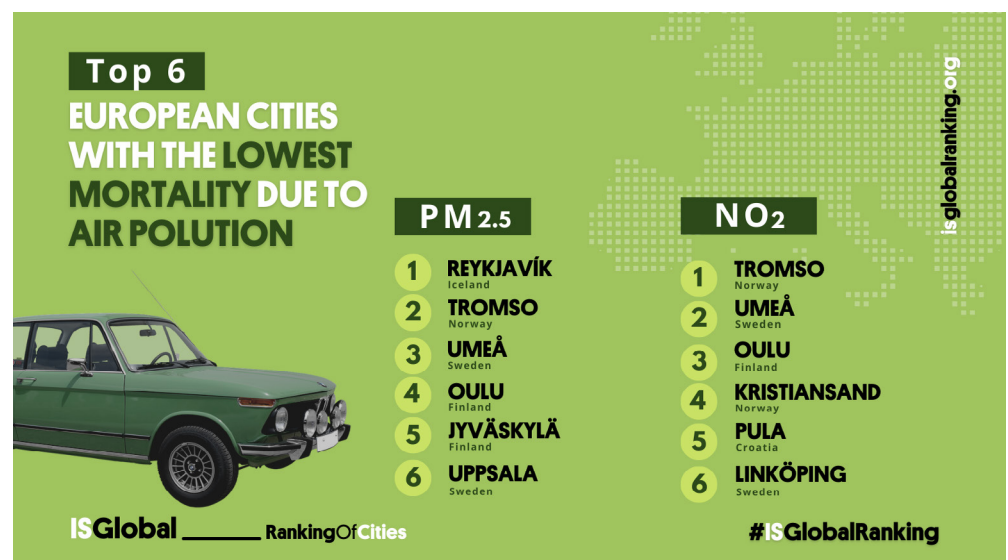
**Air quality plans** are currently the main tool used by countries to tackle air qua-

lity, reduce emissions of pollutants and, overall, improve public health. From 2014 to 2020, up to 21 Member States submitted at least one air quality plan to the EEA. These plans included information regarding:

- Short term action plans and programmes to improve air quality.
- Specific measures designed in the context of these air quality plans.
- Exceedances of EU air quality standards that triggered the development of short-term action plans and air quality plans, and the main emission sources that contributed to those exceedances.
- Scenarios of how those specific measures might improve air quality.

A total of 944 air quality plans were reported between 2014 and 2020. Of these, 59% were reported to have been fully implemented while 15% were only in their first year of implementation by the end of the period and 17% were under revision. As the majority of these plans aim to reduce health risks, most of them focused on reducing levels of NO<sub>2</sub> and PM<sub>10</sub> and some plans explicitly aimed to preserve and protect vegetation. Notably, up to **65% of exceedances** were reported in **urban areas**, 21% in suburban areas and 14% in rural areas.

**Figure 4. European cities with the lowest and the highest mortality due to air pollution.**



<sup>10</sup> Khomenko S., Pisoni E., Thunis P. et al (2023), Spatial and sector-specific contributions of emissions to ambient air pollution and mortality in European cities: a health impact assessment. *Lancet Public Health*. 2023 Jul;8(7): e546-e558. doi: 10.1016/S2468-2667(23)00106-8. PMID: 37393093.

## Top 6

### EUROPEAN CITIES WITH THE HIGHEST MORTALITY DUE TO AIR POLLUTION



#### PM<sub>2.5</sub>

- 1 BRESCIA  
Italy
- 2 BERGAMO  
Italy
- 3 KARVINÁ  
Czech Republic
- 4 VICENZA  
Italy
- 5 SILESIAN METROPOLIS  
Poland
- 6 OSTRAVA  
Czech Republic

#### NO<sub>2</sub>

- 1 MADRID (Metropolitan area)  
Spain
- 2 ANTWERP  
Belgium
- 3 TURIN  
Italy
- 4 PARIS (Metropolitan area)  
France
- 5 MILAN (Metropolitan area)  
Italy
- 6 BARCELONA (Metropolitan area)  
Spain



ISGlobal ——— RankingOfCities

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Source: [isglobalranking.org](https://isglobalranking.org). Data from the study “Premature mortality due to air pollution in European cities; an Urban Burden of Disease Assessment” (Khomenko et al., 2021), published in *The Lancet Planetary Health* in January 2021. The levels refer to the 2005 WHO limit values.

As much as **70% of measures** put in place as part of national air quality plans or air pollution control programmes across all countries were focused on the **transport sector**. Up to 12% were focused on commercial and residential energy sectors linked to domestic heating, 8% focused on industry, 6% on shipping and 4% on the agricultural sector. Regarding pollutants, 62% of measures focused on **reducing emissions of NO<sub>2</sub>**, while 36% of them focused on particulate matter (26% on PM<sub>10</sub> and 10% on PM<sub>2.5</sub>). The most common approach in this matter was traffic planning and management, primarily focusing on **improving public transport**. Other frequently reported measures include the management of parking spaces, speed limits and low-emission zones. Another heavily implemented approach focused on **public information and education** through different media channels raising awareness around air pollution.

With this data in mind, the issue of which level of administrative authority is responsible for ultimately implementing these measures becomes crucial. According to the EEA, **86%** of these were managed at a **local level**, while only 11% were managed at the regional level and 3% at the national level. In summary, with most exceedances occurring in urban and suburban areas and most air quality measures being managed at a local level, it becomes

clear that **cities play a key role** in successful air quality management. It is in these smaller environments where **public engagement** also plays an important part.<sup>11,12</sup> Nevertheless, it can serve both as a force pushing forward, when citizens are actively involved in addressing air pollution, and as a source of resistance, when public opposition to specific measures such as road traffic restrictions arise. Public awareness and education become essential, as the level of public acceptance of air quality management measures is higher in cities where people are better informed about air quality issues and the health benefits of clean air.

#### d. Good practices

Several initiatives have been launched in order to promote changes in air quality at a global, regional and local level. At a global level, the **UN environment programme** has recently highlighted the efforts carried out by five cities in their fight against environmental pollution: Bogotá, for the electrification of the public transportation network; Warsaw, for its programme *Breathe Warsaw*; Seoul, who will ban diesel cars from all public sector and mass transit fleets by 2025 to fight its air quality crisis; Accra, the first African city to join the *BreatheLife Campaign*; and Bangkok, who launched in 2019 The Green Bangkok 2030 project. With these

<sup>11</sup> EC (2019), Special Eurobarometer 497: Attitudes of Europeans towards Air Quality, version v1.00, European Commission, Directorate-General for Communication.

<sup>12</sup> ETC/ATNI (2020), Report 2/2020: Public awareness and efforts to improve air quality in Europe

recognitions, the UN draws attention to the deep inequalities that underlie environmental pollution, which causes the most deaths in low and middle-income countries.<sup>13</sup> At the EU level, the **mission on climate-neutral and smart cities** of the European Commission will support 100 selected European cities in their transformation towards climate neutrality in 2030. These cities will sign a Climate City Contract adjusted to their situation and will engage in a journey in which cities' inhabitants will play a major role.<sup>14</sup>

At a local and regional level, we have some examples like the **superblocks of Barcelona**, an initiative that aims to restructure the city to return the space occupied by vehicles to people, and that continues to scale up with the creation of new green and pedestrian spaces throughout the city ●<sup>15</sup>

## 4. Policy Recommendations

**“Addressing the different sources of pollution in a combined approach is essential. Measures aimed at limiting emissions from the top-polluter transport sector should be complemented with legislation directed at other fields like industry and agriculture.”**

While air pollution remains a consistent problem throughout Europe, a lot has been done in the last decade and even more can be achieved if we act now. There are many alternatives and solutions to managing air quality and addressing the different sources of pollution to meet the proposed air quality standards, and they need to be adapted and implemented in every country's national air quality plans. We provide a series of policy recommendations based on current scientific knowledge:

**Aligning the Ambient Air Quality Directive with the current WHO standards for air quality is an ambitious exercise that will undoubtedly provide immense benefits.**

Air pollution is one of the most important health issues in the European Union. Scientific evidence overwhelmingly supports taking more stringent action that would not only save hundreds of thousands of lives each year, but also drive economic growth and minimise costs. The new directive should be fully implemented in a responsible and timely manner. Further delay on the application of the new standards would come at a great cost for EU citizens.

**Addressing the different sources of pollution in a combined approach is essential to**

**reducing emissions and improving air quality.** With transport being the top pollution source, measures aimed at limiting emissions from this sector are fundamental. The AAQD and the implementation of the new Euro 7 emission standards for road vehicles are critical policy and legislative actions needed. These should be complemented with legislation directed at other sectors, such as industry and agriculture. The Industrial Emissions Directive, which is the main EU instrument regulating industrial pollutant emissions, is also currently under revision.

**The right to compensation for people who have suffered health consequences derived from air pollution should be a pillar in the pursuit of accountability from polluters.**

As the health impacts of air pollution are largely conditioned by socioeconomic determinants, monetary compensation should serve as an equalising tool for citizens as well as a deterrent for polluters.

**Showcasing the importance of social inequalities regarding the health impacts of air pollution to fully comprehend and address air quality.** Special consideration in studies, policies and strategies should be given to exposure for vulnerable groups

<sup>13</sup> UNEP. United Nations Environment Programme (2022) [citado 21 de septiembre de 2023], Five cities tackling air pollution [Internet]. <https://www.unep.org/news-and-stories/story/five-cities-tackling-air-pollution>

<sup>14</sup> European Union (2022), EU Missions: 100 climate neutral and smart cities [Internet]. Europa.eu. [citado 21 de septiembre de 2023]. [https://research-and-innovation.ec.europa.eu/system/files/2020-09/ec\\_rtd\\_mission-cities-citizens-summary\\_en.pdf](https://research-and-innovation.ec.europa.eu/system/files/2020-09/ec_rtd_mission-cities-citizens-summary_en.pdf)

<sup>15</sup> Ajuntament de Barcelona (2023), Superilles [Internet]. Barcelona.cat. [citado 21 de septiembre de 2023]. <https://ajuntament.barcelona.cat/superilles/en/>

in places like social housing, schools, hospitals and elderly homes.

**Support from local authorities in tackling air pollution is imperative.** Many of the most powerful measures regarding air quality management involve local or regional governments as their implementers and enforcers. Cities have the tools to implement low emission zones or to promote modal shifts in transport, pushing people towards more sustainable solutions, which is why their involvement is fundamental.

**Citizens can enrich policy decision-making and are essential stakeholders in public health issues.** Improving public information, education, awareness and involvement from society in this matter can lead to people pushing forward in terms of legislation as well as an improvement in public acceptance of air quality management measures ●

## TO LEARN MORE

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