

BRIEFING:

HOW CLEAN AIR ACTION CAN HELP ADDRESS SOCIO-ECONOMIC HEALTH INEQUALITIES

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HEAL
HEALTH AND
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ALLIANCE

Summary

There is mounting evidence that socio-economic inequalities and the health impacts of air pollution are interlinked. People living in socio-economically disadvantaged areas in EU cities and regions are likely to be exposed to higher levels of air pollution and to experience disproportionately severe health impacts. In these areas or regions, children, pregnant women, the elderly and those living with disease are particularly at risk, given that their overall health status may already be poorer than that of their counterparts living in more affluent areas.

Air pollution is the top environmental threat to health in Europe, with **96%**¹ of the urban population breathing unhealthy air. Air pollution leads to hundreds of thousands of premature deaths every year and billions of Euros in health costs. It is also a major risk factor for the exacerbation of existing diseases and all chronic conditions. As the World Health Organization underlines, both short and long-term exposure increase the risk of heart disease, stroke, asthma, chronic obstructive pulmonary disease, and lung cancer. Additionally, exposure to air pollution is linked to reduced lung function, impacts on the developing brain and central nervous system, an increased risk of preterm birth, and reduced birth weight— which in turn create additional health risks later in **life**². Furthermore, it raises the risk of **diabetes**³, obesity, and **dementia**⁴.





As EU member states, regional and local authorities prepare to implement the revised Ambient Air Quality Directive (AAQD), this briefing by the Health and Environment Alliance (HEAL) argues that decision-makers and authorities should pay particular attention to addressing socio-economic inequalities in their clean air efforts. The swift transposition and implementation of the new rules, with strengthened administrative collaboration and the full utilisation of financial support schemes, promise significant progress towards cleaner air across Europe. Improved air quality will be beneficial to everyone and contribute to preventing health inequalities for those living in socio-economically disadvantaged areas.

Health impacts of air pollution

PM

Particulate matter

- Impacts the developing brain and central nervous system
- Causes cardiovascular disease, stroke, obesity, possibly dementia
- Causes lung cancer, chronic obstructive pulmonary disease
- Causes throat irritation and breathing problems
- Increases the risk of pre-term birth, reduced birth weight, as well as pre-eclampsia during pregnancy

SO₂

Sulphur Dioxide

- Causes lung cancer, chronic obstructive pulmonary disease
- Causes headaches and anxiety

NO₂

Nitrogen Dioxide

- Causes asthma and reduced lung function
- Causes throat irritation and breathing problems

BaP

Benzo(a)pyrene

- Causes throat irritation and breathing problems
- Linked to increased behavioral problems (ADHD) and weakening of the immune system

O₃

Ozone

- Causes lung cancer, chronic obstructive pulmonary disease
- Causes throat irritation and breathing problems

Background and policy context

The **revised Ambient Air Quality Directive (AAQD)** entered into force on 10 December 2024. It features updated limits for key air pollutants in the EU to reflect the serious health impacts of air pollution and to align more closely with the latest World Health Organization (WHO) recommendations. EU member states must now act decisively to meet these new standards. This means swiftly transposing the AAQD into national law and taking action to achieve the new clean air standards by 2030 at the latest. Implementing the AAQD will lead to immediate improvements in air quality and health outcomes, including a much-needed reduction in the **staggering**⁵ costs associated with air pollution.

In particular, the revised AAQD recognises that the health of **people of lower socio-economic status tends to be more affected** by air pollution than the health of the general population. This is because of their greater exposure and higher vulnerability. It includes a number of specific measures aimed at the protection of sensitive population and vulnerable groups. Various EU policies address environmental inequalities. A major priority objective set in the **EU's 8th Environment Action Programme**⁶ to 2030 is to significantly reduce inequalities, by ensuring that social inequalities resulting from climate and environment-related policies are minimised and that measures taken to protect the environment and climate are carried out in a socially fair and inclusive way.

Moreover, the EU's first **Zero Pollution Action Plan**⁷, adopted in 2021, commits to improving health and well-being in the EU, the first flagship initiative being the reduction of health inequalities through zero pollution. The plan also announces an Inequalities Register identifying trends, disparities and inequalities across EU regions for pollution-related diseases, to help target interventions at EU, national and local level. Such a register would enable people to compare the degree to which pollution affects their health across the different regions where they live, work and study.

Despite repeated commitments to reduce inequalities across the EU, the WHO **warns**⁸ that **health inequalities in Europe are an increasing concern**. One reason for this is the uneven distribution of environmental risks within countries and their populations. For instance, **the European Environment Agency (EEA) points**⁹ out that the benefits of policies which reduce air pollution concentrations are often unevenly distributed across geographical areas and social groups. This leads to health inequity that urgently needs political attention to ensure a proper public health return on public money investment.

Air pollution, health and socio-economic inequality: what's at stake?

Air pollution **affects everyone**, with some groups being more at risk, including children, pregnant women, the elderly or those living with disease. Short and long-term exposure increases the risk of cardiovascular and heart disease, stroke, asthma, chronic obstructive pulmonary disease and lung cancer. Poor air quality is also linked to reduced lung function, impacts on the developing brain and central nervous system, increased risk of preterm birth and reduced birth weight. New studies underline a higher risk of diabetes, obesity and dementia.

But there is another, often overlooked risk factor: the socio-economic conditions people live in.

A growing body of evidence suggests that the health of people of lower socio-economic status tends to be more affected by air pollution than the health of the general population. **Two factors are at play**¹⁰:

Firstly, there is an **unequal exposure to air pollution** across and within European countries, regions, and cities - people with lower status tend to live in areas with higher levels of traffic and industrial activity, they tend to live closer to or work in city centres or industrial areas and are more likely to work outdoors or in places more affected by air pollution.

Secondly, there is an **unequal distribution of the health impacts** of air pollution due to socio-economic vulnerability as additional risk-factor.



Air pollution and socio-economic inequalities are interlinked

In 2022, **96% of the EU population in cities breathed air that was considered harmful to health**¹¹ (above the latest WHO air quality **guidelines**¹²). The European Environment Agency **found**¹³ that in the European Union fine particulate pollution (PM 2.5) is consistently over 30 percent higher in the poorest regions. This echoes evidence **highlighted**¹⁴ by the World Health Organization (WHO) for Europe, which shows that regions with a lower GDP per capita, lower levels of education and more long-term unemployment have higher PM2.5 concentrations. Furthermore, differences in PM2.5 exposure can be found within regions and even cities.

Science



In Ghent, Belgium, people in neighbourhoods with lower income, high unemployment rates and more rental housing are more exposed to air pollution.¹⁵



In Italy, lower levels of education, high unemployment rates and more rental housing are often linked to exposure to a higher level of air pollutants in cities.¹⁶



In Czechia, groups with lower education levels and higher unemployment rates were found to often reside in cities with higher concentration levels of combustion related air pollutants.¹⁷



In Paris, France, the most deprived census block areas are some of the most impacted by air pollution, with a link to more premature deaths.¹⁸



In Barcelona, Spain, exposure to higher concentrations of varied air pollutants and risk of early death is higher in deprived neighbourhoods.¹⁹



In Athens, Greece, reduction of outdoor PM concentration can benefit disadvantaged groups over ten times more.²⁰

The science behind each of these examples is available in the clickable links.

Socio-economic disadvantage can increase the health impacts of air pollution

Everyone is vulnerable to the impacts of air pollution – and the level of vulnerability changes according to age, health condition, and socio-economic status, as well as the area where people live, work or study. Some groups are more at risk than others, including children, pregnant women, the elderly or those living with disease.

If these at-risk groups live in socio-economically disadvantaged neighbourhoods, the health impact from air pollution may be higher. This is not only due to higher pollution levels, but also because their overall health status may be worse, they may have limited access to healthcare, a poor diet or other lifestyle habits which play a role.

Science



Children

- **In Sweden**, children from low-income households are more affected by the harmful effects of air pollution.²¹
- **In Italy**, higher exposure to air pollution is linked to lower birth weight and a higher number of premature births, with the risks being even greater for those who are unemployed or less educated.²²



Elderly

- In Italy, **another study** found exposure to air pollution and worse socio-economic standing increased the risk of COVID-19 infection.²³
- **In Paris**, France, exposure to air pollution among the elderly living in the poorest neighbourhoods increases the risk of mortality.²⁴
- **In Dublin**, Ireland, a higher 30-day mortality in elderly hospital patients was linked to higher nitrogen oxide (NOx) pollution on their admission day.²⁵
- **In Rome**, Italy, long-term NO₂ exposure is likely to worsen the short-term effects of exposure to PM, showing the cumulative effects of various air pollutants on the elderly are also evident.²⁶



People with pre-existing health conditions

- **In Dublin**, Ireland, analysis of air pollution and hospital admissions for cardiovascular and respiratory diseases identified higher mortality risk among those from lower socio-economic groups.²⁷

The science behind each of these examples is available in the clickable links.

Policy recommendations

To reduce inequalities in air pollution exposure and its effects, and to maximise the significant health benefits of the revised Ambient Air Quality Directive:

1

Prioritise improving air quality everywhere; at national, regional and local level:

Initiate or increase policy action towards swiftly reducing emissions of pollutants in every sector to reach the air quality levels recommended by the WHO. Member states should swiftly transpose the new EU clean air requirements and begin preparations to reach the new limit and target values by 2030. Air pollution knows no borders. Taking swift action across one member state will help to decrease cross-border pollution and help other countries, regions and cities in keeping to the new legally binding requirements.

2

At the city level, develop a plan to support most at-risk groups in socio-economically disadvantaged areas, and involve them in decision-making.

This may include mapping socio-economic areas and connected health status trends and primary health determinants in urban areas. Involve individuals and organisations from these most at-risk groups in the design and implementation of local health-promoting policies.

3

Strengthen administrative collaboration among health, social and welfare services, urban planning, mobility, housing and energy departments in local to regional administration for the development and implementation of clean air policies.

4

Make full use of financial support schemes and allocate financial resources and fiscal incentives for the development and implementation of tailored clean air policies.

In particular:

- a. Increase accessibility and safety of active mobility and public transport for all:** Make active mobility initiatives and robust public transport (sufficient space, safe infrastructure, equitable pricing) a priority in **socio-economically disadvantaged areas**.
- b. Increase energy efficiency of housing in the most deprived areas:** Improve the quality of housing to improve energy efficiency and address energy poverty.
- c. Switch to support for domestic heating through renewables** for low-income households instead of subsidising fossil fuels or wood burning and accelerate the coal phase out.

Examples of opportunities of EU funding and support:

- **Funding for clean air** ²⁸
- **Social Climate Fund** ²⁹
- Recommendations from EU's **Net Zero Cities** network³⁰

Endnotes

1. <https://www.eea.europa.eu/publications/europes-air-quality-status-2024#:~:text=96%25%20of%20the%20EU's%20urban,ambitious%20than%20the%20current%20ones>
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The Health and Environment Alliance (HEAL) is the leading not-for-profit organisation addressing how the environment affects human health in the European Union (EU) and beyond. HEAL works to shape laws and policies that promote planetary and human health and protect those most affected by pollution, and raise awareness on the benefits of environmental action for health.

HEAL's over 80 member organisations include international, European, national and local groups of health professionals, not-for-profit health insurers, patients, citizens, women, youth, and environmental experts representing over 200 million people across the 53 countries of the WHO European Region.

As an alliance, HEAL brings independent and expert evidence from the health community to EU and global decision-making processes to inspire disease prevention and to promote a toxic-free, low-carbon, fair and healthy future.

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