

The Economic Fallacy of Improving Air Quality in Europe: the Social and Economic Costs of Inaction Are Far Greater than Taking Ambitious Action

Health and Environment

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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.]

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The economic implications are large, with monetary costs resulting from reduced life expectancy, illness, lost productivity and damage to ecosystems amounting to more than 5% of the GDP in many countries.

Air pollution is the top environmental threat to health in the European Union. It has substantial negative effects on people's health at all ages, resulting in more than 300,000 premature deaths in the region per year.¹

Failing to address and improve air quality means knowingly imposing avoidable socio-economic (welfare) losses on society and especially in cities, where over 95% of the population breathe air that damages their health ●¹

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¹ European Environment Agency (2022). Air quality in Europe 2022. <https://www.eea.europa.eu/publications/air-quality-in-europe-2022>

1. An Insight into Inaction

“Numerous cost-benefit analyses have shown that air quality improvement policies generate bigger benefits than costs.”



a. Defining cost of inaction and the importance of cost-benefit

Cost of inaction for air pollution refers to damage to health, ecosystems and the economy. Health expenditures, labour productivity losses and diminished agricultural yields can be classified as **market costs**, as they are directly measurable and depend on the current market prices. **Non-market costs**, on the other hand, cannot be quantified in the same way and derive from premature mortality and the loss of quality of life caused by illness, pain, suffering and discomfort. Air pollution generates significant market and non-market costs.

Being able to accurately measure the health-related economic impacts of air pollution is crucial in order to guide and persuade policy makers, as well as to offer transparent information to citizens. However, there are challenges in **standardising measurements** across the EU. For example, barriers to healthcare access can lead to underestimating the health consequences of air pollution and widen inequalities among different regions and socioeconomic groups. At the same time, air pollution as a risk factor needs to be integrated into the health system in order to better quantify the risks and consequences. Ensuring standardised, coordinated and public access to data on air pollution can also help assess the real effectiveness of implemented policies and achieve more accurate modelling.

The cost of taking action to improve air quality derives from the implementation costs of prevention and reduction measures. Numerous cost-benefit analyses have shown that air quality improvement policies generate **bigger benefits than costs**. In fact, the average cost of an optimal air pollution control strategy is estimated at around 0.01-0.02% of GDP,² which is significantly lower than the 5% of GDP from air pollution welfare dam-

ages. However, the sectors tasked with the expenditures for reducing air pollution are not always the same sectors that accrue the benefits. This discrepancy can be a challenge to understanding and utilising economic data, especially in contexts where governance is highly sectorial.



b. The economic consequences of not acting now

The European Council's negotiating position on the new Ambient Air Quality Directive (AAQD) allows Member States to **delay compliance** with the new air quality values until 2040. This delay would come at a great cost to society in premature deaths, ill health and other costs. This flexibility has been justified as a means to appease those Member States, mostly from Central and Eastern Europe, concerned about the implementation costs of the new maximum values contained in the Directive. The Council wants this flexibility to be available under specific circumstances, such as a high share of low-income households or lower national GDP per capita than the EU (currently 17 out of 27 fulfil that condition). However, several impact analyses indicate that delays will accrue more costs and generate more negative health impacts, especially for vulnerable groups who already have a larger burden.

The **impact assessment report**³ made by the European Commission to accompany the proposal of the new AAQD estimates a net benefit (gross benefit minus implementation costs) in all three air quality improvement policy scenarios (*see Table 1*) presenting different ambition levels, with economic benefits increasing with closer alignment to the World Health Organization (WHO) 2021 standards. The report also states that adopting a full alignment position would have the largest net benefit (more than 38 billion Euro) of all possible options, with an estimated benefit-to-cost ratio between 6:1 and 18:1.

² Maas R., Grennfelt P. (eds), 2016. Towards Cleaner Air. Scientific Assessment Report 2016. EMEP Steering Body and Working Group on Effects of the Convention on Long-Range Transboundary Air Pollution, Oslo.

³ European Commission (2022). Impact Assessment Report Accompanying the document Proposal for a Directive of the European Parliament and of the Council on ambient air quality and cleaner air for Europe. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022SC0545>

Table 1. Policy scenarios for EU air quality standards



| | Current EU standards | 2021 WHO guidelines | Policy option 1 (2030) - Full alignment | Policy option 2 (2030) - Closer alignment | Policy option 3 (2030) - Partial alignment |
|---|----------------------|---------------------|---|---|--|
| PM _{2.5} (annual) [$\mu\text{g}/\text{m}^3$] | 25 / 20 | 5 | 5 | 10 | 15 |
| PM _{2.5} (daily) [$\mu\text{g}/\text{m}^3$] | - | 15 | 15 | 25 | 37.5 |
| PM ₁₀ (annual) [$\mu\text{g}/\text{m}^3$] | 40 | 15 | 15 | 20 | 30 |
| PM ₁₀ (daily) [$\mu\text{g}/\text{m}^3$] | 50 | 45 | 45 | 45 | 50 |
| NO ₂ (annual) [$\mu\text{g}/\text{m}^3$] | 40 | 10 | 10 | 20 | 30 |
| NO ₂ (daily) [$\mu\text{g}/\text{m}^3$] | - | 25 | 25 | 50 | 50 |
| O ₃ (annual) [$\mu\text{g}/\text{m}^3$] | - | 60 | 60 | 70 | 100 |
| O ₃ (daily) [$\mu\text{g}/\text{m}^3$] | 120 | 100 | 100 | 120 | 120 |
| Net benefits [billion €] | NA | NA | 38 | 36 | 29 |

*PM: particulate matter; NO₂: nitrogen dioxide; O₃: ozone.

Source: Adapted from the European Commission impact assessment report.

The United Nations Economic Commission for Europe (UNECE) estimated⁴ in 2021 that in half of its countries, the **costs from air pollution** exceeded 5% of their GDP, reaching more than 10% in six EU Member States (Bulgaria, Romania, Poland, Greece, Hungary and Croatia). It estimated those costs will be 14% lower by 2030 based on policies currently in place, and could reduce to 21% for EU Member States who implement additional policy measures. Based on an analysis of the current National Air Pollution Control Programmes (NAPCP), abatement costs for available additional actions would be more than 20 times lower than the **avoided damage**. Of this avoided damage in the baseline scenario, about 91% corresponds to health effects, while 9% benefits are from improved ecosystem services and prevented deterioration of buildings and materials.⁵ The maximum benefit with the existing technology, irrespective of implementation costs, is more than three times higher than the benefits estimated in the baseline scenarios for 2030 and 2050, both for health and non-health costs.

These economic analyses indicate that, while action for air pollution is being characterised in politics and media as a cost, in reality action is a **necessary investment** that will yield economic benefits in multiple sectors. It is crucial to change the discourse to more transparently describe these different scenarios and generate great coherency amongst different EU sectors and policies ●

⁴ UNECE (2022). Cost of inaction. Forty-first session of the Executive Body. Informal document. <https://unece.org/sites/default/files/2021-11/Cost%20of%20inaction.pdf>

⁵ CE Delft, 2018. Health impacts and costs of diesel emissions in the EU.

Box 1. Numbers of inaction



Damage costs of air pollution are high and unsustainable:

- Costs from air pollution exceed **5% of the GDP** for 26 of the 56 UNECE countries and for six countries [Bulgaria, Romania, Poland, Greece, Hungary and Croatia] they exceed **10% of their GDP**.

Benefits will be almost immediate:

- Complying with WHO guidelines target levels would prevent more than **51 000 deaths** for PM_{2.5} exposure every year.⁶
- With **current policies** costs will go down **14%** by 2030 for UNECE countries.
- With **additional measures** costs will go down **21%** by 2030 for UNECE countries.
- **Reducing PM_{2.5} concentration by 1 µg/m³ boosts GDP by 0.8% in the same year.**⁷

The necessary investment for abatement measures is significantly lower than the costs of air pollution damage:

- Average cost of an optimal air pollution control strategy is estimated at **0.01-0.02% of GDP**.
- Estimated **benefit-to-cost ratio** for partial to full alignment with the 2021 WHO guidelines by 2030 would range from **6:1 to 28:1**.

2. Overcoming Inaction and Next Steps

“Evidence from cost-benefit analyses clearly indicates that taking action to improve air quality should be a priority from not only the health perspective, but also makes economic sense.”

Evidence from cost-benefit analyses clearly indicates that taking action to improve air quality should be a priority from not only the health perspective, but also makes economic sense. **Strong political commitment** is needed in order to adequately and timely implement ambitious air pollution control strategies, aligned with the WHO recommendations, which will eventually result in net economic benefits for countries and improved health and well-being for EU residents. Key action points for ensuring that policies are ambitious and timely are summarised below.

Commitment to setting more ambitious thresholds

The current European Commission proposal for the AAQD is still not close to

the **limits recommended by the WHO** 2021 guidelines, and are actually twice as high for PM_{2.5} and NO₂ annual averages. This lack of more ambitious objectives will generate an increase in the costs of health, ecosystem and economic damages in the short and long-term.

Avoid delays and exemptions in complying EU clean air standards, invest in air quality action instead

According to Article 18 of the proposal for the new AAQD, a Member State could ask to postpone the compliance of established values for up to five years, when some site-specific conditions are given. This is likely to be requested in places where air quality needs the most urgent action because of health consequences.

⁶ 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

⁷ 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.

Postponements generate an incoherency and are counterproductive: instead of tackling inequalities caused by air pollution, they would only reinforce health and socioeconomic disparities among the population, given the possibility of providing exemptions for countries with a lower-than-average EU GDP.

The current economic arguments against action will contribute to **injustice and greater impacts among more vulnerable groups**, especially in urban en-

vironments, where inequities are greater and the populations and exposures are concentrated. Instead of extending the timeline, exceedances should be a call for increased funding to invest in air pollution reduction measures more ambitiously. Existing EU funds from social, environmental and economic programs, such as the European Green Deal, can be directed and prioritised to address those countries most in need ●

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