



Recommendation 11 for Policy-makers on Air pollution

- Fully align European Union (EU) air quality limit values with World Health Organization (WHO) global air quality guidelines for outdoor air pollution without delay. At the local and national levels, develop and implement plans to ensure that all air pollutants comply with the WHO guidelines.
- Ensure further reductions in industrial emissions.
- Align policies limiting air pollution with climate change, energy, and other environmental policies at the EU, national and local levels to capitalise on co-benefits. Policies should be targeted at different levels of governance.
- Improve spatial planning to reduce motorized traffic and provide accessible and safe infrastructure for active and greener travel.
- Develop and implement policies to discourage and phase out outdoor and indoor fossil and solid fuels for heating, cooking, and recreational purposes, accompanied by awareness-raising campaigns.
- Incentivize cleaner forms of energy for heating and cooking, which do not adversely affect indoor and outdoor air quality, such as heat pumps, solar power, or geothermal energy.
- Support citizens to actively engage and participate in developing local plans to reduce emissions of air pollutants. Make sure information on outdoor air pollution at the local and national levels is easily available for the public.
- Protect sensitive populations and vulnerable groups from air pollution; for example, do not locate new schools or nursing homes next to busy roads. Where existing schools and other buildings with sensitive populations and vulnerable groups are situated next to busy roads, incentivize the use and correct maintenance of air filters and purifiers to avoid or decrease infiltration of outdoor air pollution.

Executive summary

Air pollution is the largest environmental risk factor in the EU. Most people live in locations where outdoor air pollution levels exceed the 2021 WHO air quality guidelines. For both outdoor and indoor air, combustion sources are proven human carcinogens, including diesel soot, polycyclic aromatic hydrocarbons (PAHs), and benzene.

Outdoor air pollution causes lung cancer and possibly contributes to other types of cancer. Exposure to air pollution is also likely to result in poorer survival from cancer. In 2021, 23 000 cancer deaths in the EU were caused by ambient particulate matter. Outdoor air pollution is associated with several health effects in addition to cancer, especially chronic and acute respiratory diseases (asthma) and cardiovascular diseases, which can result in premature death. Air pollution has also been linked with adverse birth outcomes, diabetes, and neurological diseases. Exposure to household air pollution can cause noncommunicable diseases, including stroke, ischaemic heart disease, chronic obstructive pulmonary disease (COPD), and lung cancer.

Reducing outdoor air pollution is the collective responsibility of local, national, and EU authorities and major industrial facilities that emit large amounts of air pollutants. Aligning the EU limit values with the WHO 2021 air quality guidelines is an important step, alongside integrated policy actions such as regulating combustion, promoting active and greener travel, and aligning with climate change policies in the EU. This policy brief describes international policies and guidelines that support policy-makers and other stakeholders to implement the European Code Against Cancer, 5th edition (ECAC5) policy recommendation to address the cancer burden caused by outdoor and indoor air pollution.

Key policy actions to reduce exposure to air pollution

For outdoor air pollution:

- **Fully align EU air quality limit values with the WHO global air quality guidelines for outdoor air pollution, without delay. At the local and national levels, develop and implement plans to ensure that all air pollutants comply with the WHO guidelines.**
 - In 2021, WHO developed new health-based air quality guidelines for major air pollutants. It is important to align the legally binding EU limit values with these guidelines. A health impact assessment found that the benefits of reducing air pollution levels to these guidelines would far exceed the costs. At the local level, cities can also use the WHO guidelines to guide their policies.
- **Align policies limiting air pollution with climate change, energy, and other environmental policies at the EU, national, and local levels to capitalize on co-benefits. Policies should be targeted at different levels of governance.**
 - Because burning fossil fuels is an important source of outdoor and indoor air pollution, policies aimed at reducing air pollution emissions would also be beneficial to reduce carbon dioxide emissions and contribute to addressing climate change. This requires actions on multiple levels, for example at the EU level to set emission standards for motor vehicles, aviation and shipping, at the national level to promote major public transportation infrastructure, and at the city level to address local sources, including wood burning, and promote safe cycling and improve the pedestrian infrastructure.
- **No combustion for energy production at the EU level.**
 - In line with climate change mitigation, no burning should be used for electricity production at the EU level, including a ban on coal power plants. Heating systems should not rely on burning oil, gas, or wood.
- **Cities should provide accessible and safe infrastructure for active and greener travel.**
 - Active travel may be a relatively easy and time-efficient way to reduce emissions of air pollutants and also to provide advantages to individuals from increased physical activity, which is beneficial for both cancer prevention and survival from cancer. To facilitate cycling and walking, a safe infrastructure needs to be developed in cities to avoid traffic accidents. Many cities in the EU have made progress in the past decade. Reducing traffic congestion is a co-benefit of active travel policies. Check out the **Physical inactivity and sedentary behaviour** policy brief to learn more.
- **Cities or municipalities should discourage burning of materials.**
 - Because residential wood burning is becoming a larger source of outdoor air pollution, reducing the burning of wood is an important policy. Policies may stimulate voluntary avoidance of burning through information campaigns, by subsidizing alternatives to wood burning, or by prohibiting wood burning.

• Ensure greening of heavy industry.

- Policies to reduce greenhouse gas emissions from large industries should be accompanied by policies to directly reduce emissions of pollutants that are damaging to health. This is especially important if governments provide subsidies to industries to reduce carbon dioxide emissions.

• Support citizens to actively engage and participate in developing local plans to reduce emissions of air pollutants. Make sure information on outdoor air pollution at the local and national levels is easily available for the public.

- Engaging citizens in planning will lead to better acceptance of plans, which have the potential to provoke opposition. Citizens are knowledgeable about their own neighbourhoods. Providing up-to-date information about air quality levels for neighbourhoods, or preferably homes, is important to empower citizens and raise their awareness. In recent years, this information has been supplemented by citizens measuring their own pollution levels. This is most useful when carried out in collaboration with the institutes responsible for monitoring pollution levels.

For indoor air pollution:

• Develop and implement policies to discourage and phase out indoor burning of fossil and solid fuels for heating, cooking, and recreational purposes, accompanied by awareness-raising campaigns.

- Authorities are generally reluctant to prohibit activities in the private home environment. Awareness-raising campaigns can encourage citizens to reduce indoor burning. In new housing in cities, alternative heating and cooking facilities can be incorporated more easily, for example by connecting homes to communal warm water systems that use industrial waste heat. To avoid opposition to such policies, the energy costs should not exceed those of traditional energy systems.

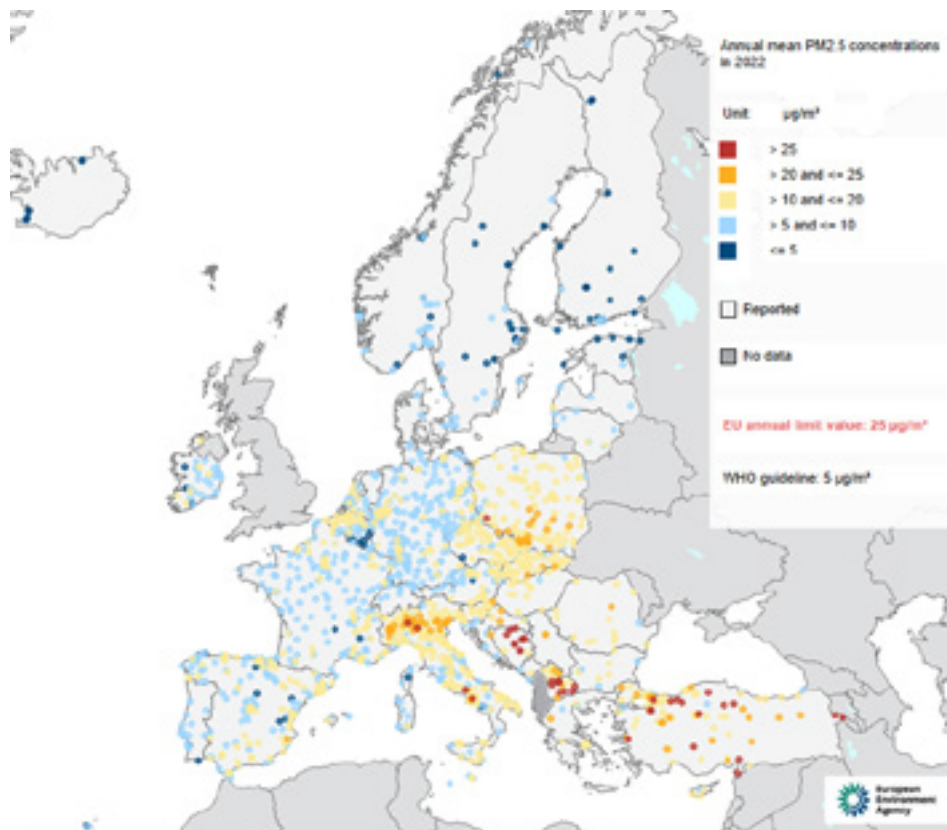
• Incentivize cleaner forms of energy for heating and cooking, which do not adversely affect indoor and outdoor air quality, such as heat pumps, solar power, or geothermal energy.

- Subsidizing the installation of non-fossil fuel heating systems may encourage their adoption. In several EU Member States, solar panels have been successfully installed on large numbers of homes.

• Protect sensitive populations from air pollution. Buildings that are used by sensitive population groups, including children and older people (schools, homes for older people), should not be built near major roads. For schools, and other public buildings, for which it is not possible to avoid penetration of outdoor air pollution, incentivize the use of air filters and purifiers.

- For existing schools that are near major roads, exposure to air pollution could be reduced by using air cleaners, such as proper filtration systems or mobile air cleaners. City subsidies for the schools would encourage this.

• Because a substantial part of indoor air pollution originates from the penetration of outdoor air pollutants, any policy measure targeted at outdoor air pollution (listed above) will also positively affect indoor air pollution.



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Figure 1: Concentrations of PM2.5 in 2022 in relation to the EU annual limit value and the WHO annual guideline level

Risk of cancer

- A large variety of sources influence outdoor air pollution, including motorized traffic, industry, and residential burning of fossil fuels. There is no safe level below which air pollution has no effect.
- The classification of outdoor air pollution, and more specifically particulate matter,¹ as carcinogenic to humans is based on its causal link with lung cancer. Benzene, another common and persistent outdoor air pollutant, is a human carcinogen that causes acute myeloid leukaemia in adults. Exposure to outdoor air pollution may also be associated with bladder, breast, and brain cancers.
- Indoor air quality is influenced by outdoor air and indoor sources of pollution, including smoking and burning of fossil fuels, such as coal, wood, and natural gas. Household burning of coal is carcinogenic to humans, and household burning of biomass fuel (e.g. wood) is also strongly associated with lung and oesophageal cancers. Burning releases chemicals, such as polycyclic aromatic hydrocarbons (PAHs), fine particulate matter, formaldehyde, and benzene, which have also been classified as carcinogenic. Exposure to second-hand smoke is also a cause of cancer.

¹ Particulate matter is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

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