

SOMETHING IS IN THE AIR



Drivers and Health
Impacts of Ambient
Air Pollution
in Slovakia

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Policy Note



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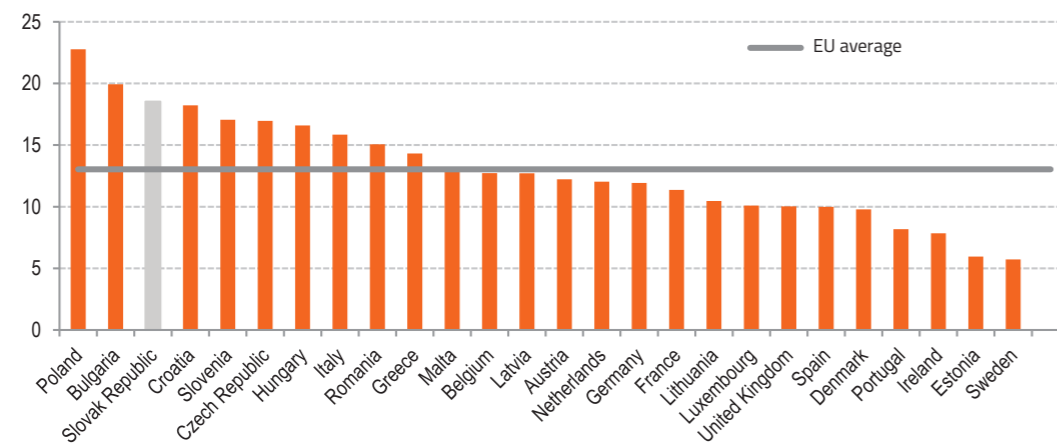
Something is in the air

Thousands of people die prematurely every year due to air pollution

Slovakia continues to suffer from one of the highest levels of Ambient Air Pollution among European Union (EU) countries with significant effects on public health. High levels of exposure to PM_{2.5} (particulate matter less than 2.5 microns in diameter) contribute to the incidence of asthma, cardiovascular problems, lung disease and consequently to premature death. Slovakia has been criticized in the past due to the insufficient transposition of the EU regulatory framework regarding air quality. Despite some improvements over the past years, the situation in the country remains unsatisfactory.

With the support from the European Commission the Institute for Environmental Policy in conjunction with the World Bank has conducted a study to estimate the regional health impacts of air pollution in the country. The health benefits of the National Air Pollution Control Programme (NAPCP) have been compared against the costs related to the implementation of the NAPCP. The study focused on 72 districts (the two biggest cities counted as one each) and has been conducted with the support of the Structural Reform Support Programme of the European Commission (EC).

The population exposure to PM_{2.5} was among the highest in the EU in 2019 (in µg/m³)

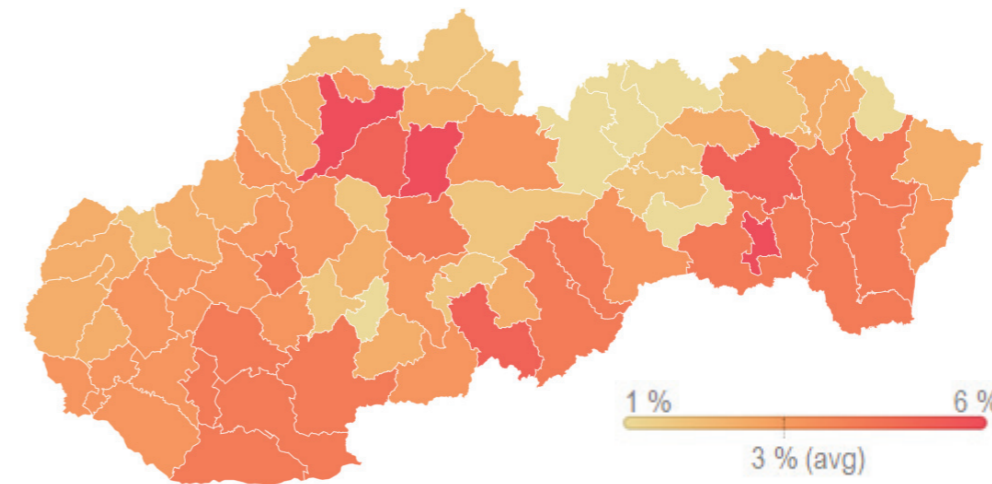


Source: OECD, Exposure to PM_{2.5} in countries and regions

Polluted air causes a few thousand premature deaths each year

Current concentrations of PM_{2.5}, PM₁₀ and NO₂ (nitrogen dioxide) are estimated to result in around 1,592 premature deaths every year. This means that if concentrations were reduced to the World Health Organization (WHO) guideline value of 10 micrograms per cubic meter air (µg/m³) for PM_{2.5} and 20 µg/m³ for PM₁₀, annual mortality would fall by this amount. The main source of premature deaths is PM_{2.5}. When using the zero-pollution guideline (as used in air pollution reports by the **European Environmental Agency**, EEA), the total estimate rises to 4,375 premature deaths. However, such a reference value is unrealistic since concentrations of pollutants in the ambient air are unlikely to decline to zero. The estimates are based on European studies that link concentrations of these pollutants to different health impacts. With regard to morbidity, main impacts take the form of restricted activity days and workdays lost, with some additional cases of chronic bronchitis and asthma.

More than 5% of total mortality can be attributed to air pollution in the most afflicted areas of Žilina, Košice and Ružomberok. Therefore, achieving an improvement of air quality in these areas will have the highest positive impact on public health. For example, Košice has some of the highest incidence of asthma and chronic bronchitis cases.



Source: own elaboration

Share of total mortality attributable to PM_{2.5} pollution

The estimated economic costs of premature mortality are estimated at around €5.3 billion. The range of the costs is between €1.1 billion and €8.0 billion, depending on the selected methodology. The costs of restricted activity and higher morbidity rate across all endpoints sum up to €549 million. The total mortality and morbidity costs are equivalent to about 6.9% of the annual GDP of Slovakia.

These health impacts add up to around 6.9% of the Slovak GDP.

The NAPCP is estimated to save about 116 lives and to reduce morbidity by 2030. The Programme has been formulated to meet Slovakia's air quality and emission reduction targets by 2030. The NAPCP consists of several measures to reduce emissions of PM_{2.5}, nitrogen oxides (NO_x), sulfur dioxide (SO₂) and ammonia (NH₃) across transport, residential heating and agriculture sectors with health benefits until 2030. The value of these health benefits in 2030 is estimated between €204 million and €1.4 billion per year, while the net present value of benefits is at around 2.4 billion. The net present value of costs depends on the valuation method from €398 mil. (fiscal costs) to €1.12 billion (economic costs). The implementation of the NAPCP is cost effective in most of the scenarios, with €1 bringing more than €8 benefits in better health in the most profitable scenario. Since the benefits of intervention are likely to last longer, considering the benefits up to 2040 increases the benefit-to-cost ratio by a further 18%.

The proposed intervention would improve the population health.

The database and analytical tool created in this study can be applied to a more targeted analysis of the costs and benefits of future policy interventions. The analysis of the NAPCP can be broken down into 13 individual components, each subject to a benefit and cost comparison. In addition, granular data can be used to determine the benefits and costs of focused regional interventions, such as city traffic restrictions or local bans on high emission heating devices, and would require more detailed air quality modelling. The datasets used for calculating health impacts and related economic valuations should be regularly updated to include the latest data and to reflect changes in scientific knowledge allowing policy makers to use the tool efficiently in the future.

Even though the impacts of the pandemic have not been modelled within this study, there is increasing evidence that particulate matter can aid transmission of COVID-19 as the virus "hitch-hikes" on aerosols. Furthermore, the health impacts of atmospheric air pollution and associated chronic diseases place people in these groups into higher COVID-19 risk categories. Both these linkages give greater impetus to immediate action to reduce PM concentrations where possible. Strategies for 'Building Back Better' aim to sustain improvements in air quality through measures that combine a reduction in greenhouse gases as well as local air pollutants.

This policy note includes the results of an analytical collaboration between the Institute for Environmental Policy (IEP) and the World Bank through the project Drivers and health impacts of ambient air pollution.

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The material presents the opinions of the authors and the IEP, which do not necessarily reflect the official opinions of the Ministry of the Environment of the Slovak Republic or the World Bank. The aim of publishing IEP comments is to stimulate and improve professional and public discussion on current environmental topics. The citations of the text should therefore refer to the IEP (and not the MoE SR) as the author of these opinions.

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