

The health harm of air pollution in PRISTINA

How coal power generation contributes to poor air quality and health risks



Air pollutants, gases and particles in the atmosphere strongly affect human health, the climate and the environment. The air in Western Balkan cities is usually dense with exhaust fumes, industry smoke or soot from coal power plants, especially during the fall and winter season. Air pollution is the single greatest environmental health risk and one of the main causes of death and disease globally and in the region. Poor air quality is also a leading risk factor for major chronic diseases in adults, including heart and lung disease as well as cancer. While each one of us is threatened by poor air quality, some groups in cities, including children, the elderly and those already suffering from disease, are particularly vulnerable.

Lowering air pollution levels, by following the World Health Organization recommendations, could prevent a significant number of chronic diseases and early deaths in cities each year. Decision-makers should be more ambitious in implementing long-standing commitments to improve the quality

of ambient air. This series of HEAL briefings aims to showcase the sources of air pollution in four cities in the Western Balkan region, and highlight why a phase out of coal power generation and end to using fossil fuels would be beneficial especially for city residents.

The Pristina region has an area of 572 square kilometres, divided into 43 settlements. According to the 2019 data, 216,870 permanent residents live on the territory of Pristina. The average age of residents in 2011 was estimated to be 30,2 years¹.

Poor air quality is a consistent problem throughout the year and for pollution peaks. Air pollution affects Pristina mostly during the autumn and winter seasons due to increased fossil fuel combustion. In 2020², peak pollution saw PM₁₀ concentrations of 367,2µg/m³, PM_{2.5} concentrations of 234,5µg/m³, NO₂ concentrations of 206,5µg/m³ and SO₂ levels of 294,8µg/m³.

¹“Statistical Yearbook of the Republic of Kosovo”, 2020, Kosovo Agency of statistics <https://ask.rks-gov.net/media/5641/vjetari-2020-final-per-web-ang.pdf>

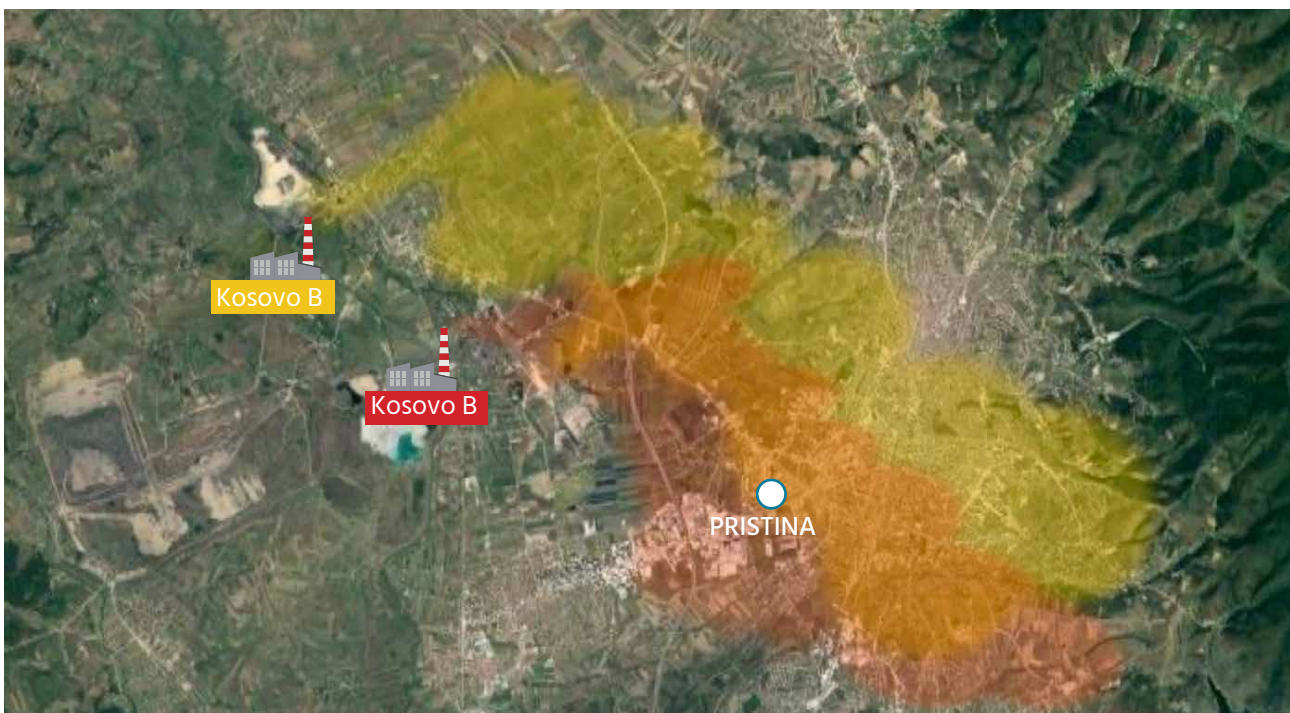
²Data from monitoring stations, Hydrometeorological Institute of Kosovo 2021 <https://airqualitykosova.rks-gov.net/en/reports-for-the-monitoring-stations/>

How do coal plants contribute to poor air quality in Pristina?

The sources of air pollution that impact air quality in this city include industrial activities, transport, energy production, energy and heat generation for households, agricultural activities and landfills. Pristina is the capital of Kosovo, and coal power generation in the country has burdened public health, the economy and the environment for decades.

A particular concern for health protection in Pristina are the emissions from two large coal power plants Kosovo A and Kosovo B, located about 9 and 14 kilometers from the city centre. According to the

report “Comply or Close”³, Kosovo A and Kosovo B breached the emission ceilings for sulphur dioxide (SO₂), nitrogen oxides (NO_x) and particulate matter (PM) in 2020. SO₂ emissions were 1.8 times above the national ceiling in 2020, at an absolute value of 19,987 tonnes. Kosovo’s NO_x emissions also significantly increased between 2018 and 2020 – they reached 22,846 tonnes, nearly 3,700 tonnes more than in 2018. In 2020, PM emissions were 4.25 times above the national ceiling at 5,867 tonnes, an increase from the 5,042 tonnes emitted in 2018.



³“Comply or Close”, Bankwatch, 2021 <https://www.complyorclose.org/wp-content/uploads/2021/09/En-COMPLY-OR-CLOSE-web.pdf>

The health impacts of air pollution

The World Health Organization (WHO) says that no level of air pollution can be considered 'safe' and the link between air pollution and respiratory and cardiovascular diseases is well established. Particulate matter with a size of 10 micrometers (PM₁₀) or 2.5 micrometers or less (PM_{2.5}) leads to the greatest

health burden. Annual mean PM concentrations in Pristina are significantly higher than what the World Health Organization (WHO) recommends⁴. In 2020⁵, the average annual concentration for PM₁₀ was doubled, and almost five times higher for PM_{2.5} compared to the WHO guidelines.

Figure 1

Annual mean of particulate matter concentrations in Pristina in 2020, compared to WHO recommendations



⁴ WHO Global air quality guidelines, World Health Organization <https://www.who.int/news/item/22-09-2021-new-who-global-air-quality-guidelines-aim-to-save-millions-of-lives-from-air-pollution>

⁵ Annual statistics, Hydrometeorological Institute of Kosovo, 2021 <https://airqualitykosova.rks-gov.net/en/annual-statistics/>

Table 1 Pristina - Annual average concentrations ($\mu\text{g}/\text{m}^3$)

YEAR 2020	PM _{2.5}	PM ₁₀	NO ₂
STATION: PRISHTINA, KHM	24	32.5	20.3
STATION: PRISHTINA, RILINDJA	22.9	37.4	26
Average	23.45	34.95	23.15
WHO recommendation	5	15	10
Concentrations	4.7 times higher than WHO recommendation	2.3 times higher than WHO recommendation	2.3 times higher than WHO recommendation

Source: <https://airqualitykosova.rks-gov.net/en/annual-statistics/>

Breathing in particulate matter, even at low levels, can lead to physiological changes in the body that damage health. When inhaled, particles travel into the bloodstream and cause harm to our lungs and heart. They can cause strokes and lead to premature death. Studies also link particulate matter with harm to the healthy development of children, and diseases such as obesity and Alzheimer's. Poor air quality is also linked to chronic and acute respiratory diseases, which significantly degrades quality of life, such as bronchitis and the aggravation of asthma. Scientists continue to identify new ways that air pollution can harm our health, for example, there is increasing evidence linking air pollution to dementia and new evidence has shown that particles of air pollution travel through the lungs of pregnant women and lodge in their placentas, harming babies before they are born.

Newest studies show that even the lowest levels of air pollution have significant damage to health. Based on that new scientific knowledge, WHO has very recently revised their air quality guidelines. New Air Quality guidelines⁶ recommend lower values for several pollutants, most notably for particulate matter PM_{2.5}, which causes the greatest health burden, for which a new annual concentration of $5\mu\text{g}/\text{m}^3$ is now recommended, for nitrogen dioxide (NO₂), which has come under intense scrutiny in discussions on road transport and inner-city driving bans, a new annual concentration of $10\mu\text{g}/\text{m}^3$ is now recommended (from previously $40\mu\text{g}/\text{m}^3$).

The health toll of this persistent poor air quality is significant: According to the European Environment Agency report on Air quality in Europe 2020, in 2018 Kosovo suffered 4,000 premature deaths due to PM pollution alone⁷.

⁶ WHO global air quality guidelines, World Health Organization
<https://www.who.int/news/item/22-09-2021-new-who-global-air-quality-guidelines-aim-to-save-millions-of-lives-from-air-pollution>

⁷ Air Quality in Europe 2020, European Environment Agency 2020
<https://www.eea.europa.eu/publications/air-quality-in-europe-2020-report>

The health impacts of climate change

Climate change is expected to make matters worse: According to the Kosovo Environmental Protection Agency report⁸, since 1900 until today there has been movements of average annual temperatures with an increasing trend. Thus the average annual temperature for the period 1930-1990 was 8.6°C, for the period 1990-2002 it was 9°C, while for the period 2003-2019, over 10°C.

An increase in the level of greenhouse gas emissions affects the atmosphere and the surface which later, in turn, leads to climate change. It is well established that during heat waves air pollution goes up as well (e.g. the levels of ozone, which is another health harming pollutant). Emissions of ozone depleting substances are in a continuous upward trend for NO_x and non-methane volatile organic compounds as well as for CO.

In Kosovo, total greenhouse gas emissions vary between 9,489 Gg CO₂ eq. (2008) and 10,164 Gg CO₂ eq. (2016). Emissions depend largely on energy demand and the activities of the energy sector which is the main source of CO₂ at the national level, which is mainly from the two coal power plants. Kosovo has higher emissions of CO₂ than some of the countries in the region.

The multiple risks of climate change threaten to reverse the progress of the environment and public health⁹. Tackling climate change requires decision-makers to provide a coordinated response to ensure a transition to a healthier future¹⁰. The burning of fossil fuels is responsible for more than a half of carbon pollution locked in cities worldwide. Coal is the biggest contributor to anthropogenic climate change.

Mayors active for healthy cities, clean air and a fossil fuel phase out

Being concerned about the effects of fossil fuels industry, mayors across the Globe in the C40 network have agreed to start “greening” the cities in order to expand uptake and access to clean, affordable electricity for millions of urban residents¹¹. Increasing renewables leads to multiple benefits that result in mitigating the effects of climate change and will provide a healthier environment for all.

To join the global effort, mayors of the nine participating municipalities in the Western Balkans (Bosnia and Herzegovina: Banovići, Kakanj, Lukavac, Maglaj, Tuzla; Serbia: Novi Sad,

Niš; Montenegro: Pljevlja; North Macedonia: Bitola) have committed to undertake voluntary measures aimed to reduce air pollution in their municipalities under the Clean Air Regions Initiative (CARI)¹². Cities under the CARI initiative will strive to adopt and implement local air quality action plans with ambitious policies and measures, share their experiences and learn about progress and achievements in other regions and the city of Pristina unfortunately did not join the initiative but still has the opportunity to implement measures that clean up the air and protect health.

⁸ “Kosovo Environment 2020 - Report on environmental indicators”, Kosovo Environmental Protection Agency, 2022 https://www.ammk-rks.net/repository/docs/Mjedisi_i_Kosov%C3%ABs_2020_Raport_i_treguesve_mjedisor%C3%AB_-_ANGLISHT.pdf

⁹ The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future, The Lancet [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)01787-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01787-6/fulltext)

¹⁰ Climate change infographic, Health and Environment Alliance <https://www.env-health.org/wp-content/uploads/2019/11/Climate-Change-Health-Infographic-V3.pdf>

¹¹ C40 Renewable Energy Declaration, C40 Cities https://www.c40.org/press_releases/renewable-energy-declaration

¹² Declaration “Clean Air Regions Initiative (CARI)”, Energy Community <https://www.energy-community.org/news/Energy-Community-News/2021/07/1.html>

Recommendations

CITY AUTHORITIES



Set up a clean air for health action plan, including the path to reach WHO's air quality recommendations, and tackling the main pollution sources.



Make informed energy choices based on health and environment impact assessments and economic analyses to benefit the Pristina city. Fossil fuel intensive cities are not environment friendly solutions for a healthier future.



Highlight the contribution of coal power plants to poor air quality in Pristina and advocate for a coal phase out. This will lead to public health benefits as well as cost savings.



Establish a multi-agency task force so that all relevant parties can contribute to improving air quality by doing research on health and financial implications making sure that actions will lead to the best outcomes.



Increase air quality monitoring coverage and make data available 24/7 so that citizens can follow the recommendations to avoid health risks. City authorities need to implement air pollution risk management measures to keep citizens safe.



Initiate public campaigns to increase awareness among citizens about the health impacts of air pollution. City authorities should provide information on reducing exposure to air pollution.

HEALTH COMMUNITY



Increase the participation of health experts in decision-making processes to ensure that the implementation of preventive measures is up-to-date. Decisions have to be made in a real-time manner. Timely actions will prevent chronic diseases and premature death.



Highlight the true costs of coal power generation in public health and clean air deliberations and decisions at city level, and advocate towards increasing the public understanding of how public health will benefit in reducing coal's unpaid health bill.



As a health community, provide input in the development of clean air actions, as well as energy and climate policies, and support the implementation of measures to reduce coal pollution.



Communicate to the patients and to the public the links between air pollution and health, and how improvements of air quality will result in better health.



Promote strong climate action in order to minimize the impacts of heat and extreme weather events.

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