REGIONAL EDUCATION AND INFORMATION CENTRE
FOR SUSTAINABLE DEVELOPMENT IN SOUTH-EAST EUROPE
REGIONALNI CENTAR ZA OBRAZOVANJE I INFORMISANJE
IZ ODRŽIVOG RAZVOJA ZA JUGOISTOČNU EVROPU

Pollutant Emission Registry for the Ugljevik municipality

Policy Brief

INTRODUCTION

The Ugljevik municipality represents a mining region with a mine and a thermal power plant (TPP) Ugljevik as the main driver of development. In order to improve transparency and reduce environmental pollution, the Ugljevik municipality has developed a Pollutant Emission Registry. This document enables a better understanding of the impact of emissions on the environment and public health, as well as the identification of measures to reduce emissions in the future.

A methodology and model have been developed for preparing the Pollutant Emission Registry (PER) for small and diffuse sources of air emissions, taking into account the Nomenclature for Reporting (NFR) sector for spatial distribution in a high-resolution grid, in accordance with the Cooperation Programme for Monitoring and Evaluation of Transboundary Air Pollution in Europe (EMEP/EEA), the Guidebook for Air Emission Inventory 2019, and the Air Protection Law of the Republic of Serbia (Official Gazette of the Republic of Serbia No. 28/7, 41/8, 29/10).

The PER plays an important role in strengthening shared responsibility, reducing pollution, and promoting sustainable development in accordance with the Aarhus Convention. The registry allows for the analysis of emissions and provides information for assessing their impact on human health and the environment. It also serves as a basis for the future development of an atmospheric dispersion model to assess pollutant concentrations in the air.

The aim of developing the PER in the Ugljevik municipality is to improve public access to information by establishing a comprehensive registry of emissions and pollutant transfers. This facilitates public participation in environmental decision-making and contributes to reducing environmental pollution.

The PER has been developed in a Geographic Information System (GIS) and includes various sources of air emissions. As part of the registry development, a GIS database has been created, which includes point, line, and area sources of emissions. Project activities include methodology development, listing of legal entities and emission calculations, household emission research through surveys, preparation of a high-resolution geocoded grid, data analysis, database development, and creation of the web application for the Registry.

SOURCES OF AIR EMISSIONS IN THE UGLJEVIK MUNICIPALITY

The Pollutant Emissions Registry of the Ugljevik municipality encompasses various types of pollutants emitted as a result of human activities.

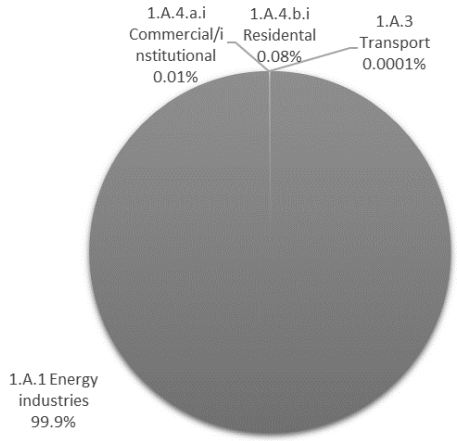


Figure 1. Emissions of SOx by sectors

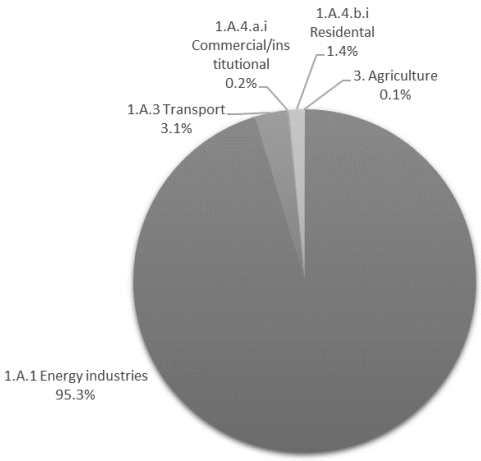


Figure 2. Emissions of NOx by sectors

- Industrial emission sources

Industrial emission sources represent a significant source of air pollution in the Ugljevik municipality. The most significant polluter in this sector is the Ugljevik Thermal Power Plant. Emissions from coal combustion for electricity and heat production include sulfur dioxide (SO2), nitrogen oxides (NOx), particulate matter (PM), heavy metals, and other pollutants. SO2 and NOx emissions are the most dominant in this sector, accounting for 99.9% and 95.3% of the total emissions of these pollutants in the Ugljevik municipality, respectively.

- Emissions from small combustion sources

Emissions from small combustion sources, especially individual heating systems such as solid fuel stoves using wood or coal, represent a significant source of air pollution. These emissions contain various harmful substances that negatively affect air quality and human health. Emissions from these combustion sources include particulate matter (PM10 and PM2.5), carbon monoxide (CO), and other pollutants.

- Transportation

Emissions from the transportation sector account for less than 5% of the total emissions for each pollutant. The transportation sector has the highest share within NOx emissions, accounting for 3.1% of the total emissions.

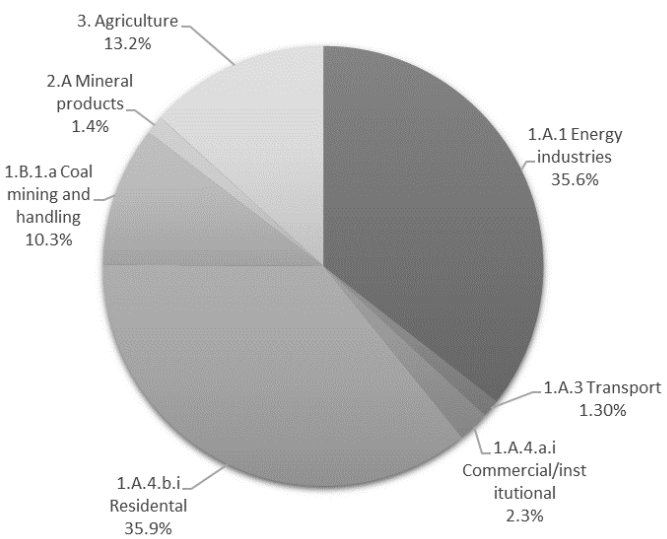


Figure 3. Emissions of PM10 by sectors

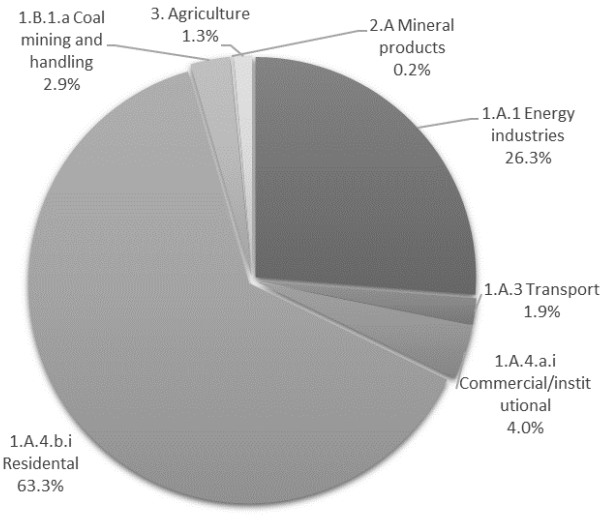
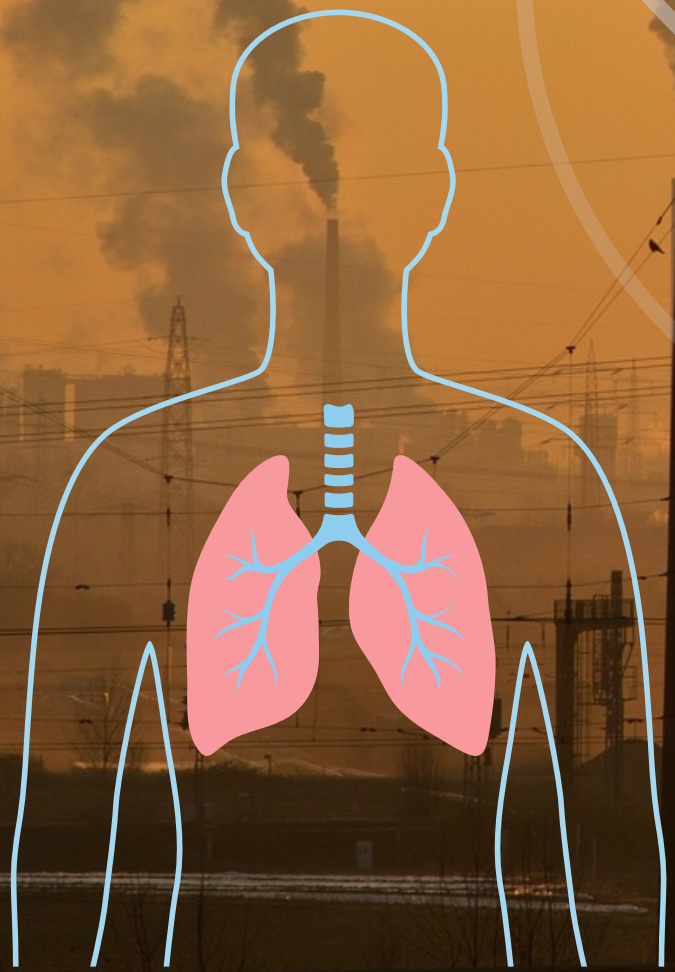


Figure 4. Emissions of PM2.5 by sectors

IMPACT ON HEALTH AND ENVIRONMENT

The PER enables the assessment of air pollutants on the environment and public health. Pollutants such as SO2, NOx, and PM particles have a negative influence on air quality and can cause respiratory problems in humans. Additionally, heavy metals and other toxic substances present in emissions can have long-term harmful effects on the environment and ecosystems.

Providing information on emissions of pollutants from various sources allows for decision-making regarding emission reduction, improvement of technologies, and implementation of sustainable practices in industries and households. This contributes to environmental protection, preservation of natural resources, and enhancement of the quality of life for residents.



NEXT STEPS

Based on the information collected through the Pollutant Emissions Registry, the main sources of pollution have been identified. Using the research and analysis results, local authorities and relevant institutions can make decisions and implement regulatory measures to limit the emissions of pollutants in the future.

In addition to the regulatory aspect, it is important to promote and support the adoption of sustainable practices and technologies in industries and households. This can include incentives for transitioning to cleaner energy sources, improving energy efficiency, implementing filtration systems, and reducing the use of pollutants in manufacturing processes.

Raising public awareness about pollution and its impact on the environment is crucial for behavioral change and the adoption of sustainable practices. Local authorities, along with educational institutions, can organize campaigns and educational programs about the importance of environmental conservation, the harmful effects of pollutants, and methods to reduce emissions.

Continuous monitoring of pollutant emissions and regular reporting of the results enable tracking progress in pollution reduction and identifying areas that require additional efforts. Transparency in data collection and publication of emissions information provides citizens and relevant institutions with valuable insights, contributing to responsible management and informed decision-making.

As part of the project, a web platform called zrAQ.ba (www.zraq.ba) has been developed, allowing citizens to stay informed about air quality in their area. Citizens have access to an interactive map on the website, displaying georeferenced data on air emissions in the municipality of Ugljevik. By developing this web platform, citizens are empowered with access to relevant air emissions information, enhancing transparency, accountability, awareness of air pollution, and encouraging actions aimed at improving environmental quality.

CONCLUSION

The air quality in the Ugljevik municipality can be described as problematic, with a high level of pollution caused by various emission sources. Reducing air pollution poses a significant challenge and requires a comprehensive strategy that involves reducing emissions from all sources, improving technology, and developing alternative energy sources.

Based on the study results, to address the air pollution problem, the following steps are recommended: reducing emissions from households and transportation, promoting clean energy sources, improving industrial processes, reducing emissions from surface mining, reducing emissions from agriculture, and raising public awareness.

Considering that emissions from the Thermal Power Plant can spread over a larger geographic area, further assessment of each sector's contribution to local air quality is recommended, along with assessing cross-border transportation (beyond the borders of Bosnia and Herzegovina) of pollutants from the Ugljevik municipality, with a focus on the impact of the Thermal Power Plant.

It is also recommended to implement a public awareness campaign about the importance of preserving clean air and its positive effects on human health and the environment. Education on energy efficiency, reducing the use of fossil fuels, and promoting renewable energy sources can be valuable steps towards reducing air pollution.

By implementing these recommendations and collaborating with all relevant stakeholders, the Ugljevik municipality can achieve significant improvements in air quality, creating a healthier and more sustainable environment for its population.