

PART I

ANALYSIS OF PUBLIC POLICY DOCUMENTS ON AIR AND WATER QUALITY OF THE CITIES OF BOR AND ZAJEČAR

As part of the project "Ecological response to mining expansion in Timočka Krajina", which is financed by the European Union and implemented by the Association "Za Drinking Fountains", the Association of Young Researchers Bor, the Civic Library "Evropa" Bor and the "Children's Center" Zaječar, analysis of existing public policy documents on solving air and water quality problems is planned. The analysis was done on the basis of the collected documentation, which includes over a hundred documents on the international, national and local news of the cities of Bor and Zaječar. Documents include international plans, European directives and strategies, as well as legal regulations, strategies, programs and plans at the national and local level.

I. A. Documents of public policies on air protection

1. At the international level, the most important document of the United Nations Organization is "Agenda 2030", which contains a total of 17 sustainable development goals, of which, in the 11th goal, one of the sub-goals includes solving the problem of polluted air. The goals of Agenda 2030 should be directly implemented through national and local development plans and environmental protection programs and plans.

In the EU legal framework, it is given great importance to the monitoring of ambient air through amendments to Directive 2008/50/EC on ambient air and cleaner air for Europe, which sets goals for preventing and reducing harmful effects on human health and the environment as a whole. In addition to this directive, a special directive of Directive 2004/107/EC (known as the 4th daughter directive) also regulates the concentrations of heavy metals, namely arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in the ambient air, with the aim of avoiding, preventing or reduce adverse impacts on human health and the environment in general. These directives, as pointed out in the "Shadow report for Chapter 27 - One step forward, two steps back", have been largely transferred into Serbian legislation, but the Air Protection Act and the Regulation on monitoring conditions and air quality requirements have not yet been fully harmonized.

The European strategic documents Clean Air Policy Package and the EU Action Plan towards Zero Pollution for Air, Water and Soil are also important.

For Serbia, the document Green Agenda for the Western Balkans, adopted at the end of 2022 in Sofia, which contains, among other things, goals to reduce pollution, especially of air, water and soil in the Western Balkans, is of particular importance.

2. At the national level, in Article 24 of the Law on Environmental Protection it is determined that air protection is achieved by taking measures to systematically monitor air quality, by reducing air pollution with polluting substances below prescribed limit values and by taking technical-technological and other necessary measures to reduce emissions by monitoring the impact of polluted air on human health and the environment.

Nevertheless, the key strategic national document on air protection is the Law on Air Protection (Official Gazette of the RS, no. 36/9, 10/13 and 26/21), which regulates air quality management and determines the measures, way of organizing and controlling the implementation of protection and improvement of air quality as a natural value of general interest that enjoys special protection.

According to the law on air protection, air protection is achieved by establishing a unique air quality management system, preserving and improving air quality, reducing pollution, monitoring air quality based on measurements and standardized methods, ensuring public availability of air quality data, etc.

Air quality control is carried out through the identification of zones and agglomerations and prescribed activities for the assessment of air quality in zones and agglomerations for selected pollutants in the air. In a separate chapter of the Law, instruments of national public policy and planning are defined, namely: air protection program, air protection plans, short-term action plans, national program for the gradual reduction of annual national limit values of emissions from existing combustion plants, and operator plans for reducing emissions from stationary facilities, for which the Law prescribes the relevant content.

On the basis of the Law on Air Protection, corresponding by-laws were adopted, such as: Regulation on conditions for monitoring and air quality requirements (Official Gazette of the RS, no. 11/10, 75/10 and 63/13), Regulation on establishing the Quality Control Program of air in the state network, Regulation on limit values of emissions of pollutants in the air from combustion plants (Official Gazette of the SR, No. 6/16), Regulation on the determination of zones and agglomerations (Official Gazette of the RS, No. 58 of 08/05/2011 , 98 of 12/10/2012) and Regulation on determining the list of air quality categories by zones and agglomerations on the territory of the Republic of Serbia for the year 2020 (Official Gazette of the RS No. 130 of 25/11/2022), Regulation on public participation in the development of certain plans and programs in the field of environmental protection (Official Gazette of RS, No. 117/2021) and others. In addition to the regulations, several regulations were adopted on the content of air quality plans (Official Gazette of the RS, No. 21/10), on the content of short-term action plans (Official Gazette of the RS, No. 65 of 14 September 2010), on the methodology for types and methods data collection, etc.

The most important strategic document on air protection is the Air Protection Program in the Republic of Serbia for the period from 2022 to 2030 with the Action Plan, which was finally adopted at the end of 2022, and which defined the measures and activities that will be implemented in the following period in order to improve air quality. The program recognizes the negative impact of air pollution on public health, with the vision of achieving clean air in Serbia by 2030, and offers general and specific goals, as well as several scenarios for achieving the goals. The goals of this Program will be realized through the reduction of emissions of polluting substances from various sectors, such as energy, stationary combustion plants, traffic, large industrial plants and agriculture, with the connection, cooperation and participation of institutions, businesses and citizens.

The general objective of the Program is "reduction of adverse health impacts due to exposure to poor quality air by 2030 compared to 2015 through reduction of exposure to air pollution, while limiting adverse impacts on ecosystems" and the most important specific objectives are to reduce SO₂ emissions by 92% and suspended particles PM_{2.5} by 58.3% and reduction of air pollutant emissions from industrial plants in relation to the best available techniques.

The program defines measures and activities that will help local self-government units in the further development of air quality plans, short-term action plans and local monitoring programs. Important documents are the annual reports on air quality of the Environmental Protection Agency, such as the last published report for 2020.

In addition to these documents, appropriate spatial plans are also important. The Spatial Plan of the Republic of Serbia is still being developed, and for the area of Timočka Krajina, some spatial

plans of special purpose areas are also significant, such as the Spatial Plan of the Special Purpose Area of the Bor-Majdanpek mining basin, which is being developed, as well as the development of spatial plans of the area that has just begun exploitation of mineral raw materials at the location of the "Čukaru Peki" mine in the city of Bor.

3. The Law on Air Protection establishes that, in addition to other protections, the improvement of air quality is ensured within the scope of its powers and local self-government units. However, the development of public air protection policies at the local level in the Republic of Serbia is slow, as the content of local air quality plans and short-term plans was defined ten years ago by special regulations. The regulation on the determination of zones and agglomerations establishes special entities for the purpose of control, maintenance and/or improvement of air quality. The territory of the then municipality and now the city of Bor is located in the first zone of "Serbia", as well as in the special agglomeration "Bor". The Air Protection Act established that, depending on the category of air in each zone and agglomeration, certain measures should be implemented to prevent or reduce air pollution. An air quality plan with the aim of achieving appropriate air quality limit values or target values.

The last Decree from 2022 (Official Gazette of the RS, number 130 of 25 November 2022) determined the list of air quality categories by zones and agglomerations on the territory of the Republic of Serbia for 2020. On the other hand, the latest annual report on the state of air quality, prepared by the Environmental Protection Agency, shows that in 2021 the air was excessively polluted and falls into category III in the agglomeration of Bor, due to exceeding the limit value of SO₂, as well as in the city Zaječar, due to exceeding the limit values of suspended particles PM₁₀.

The city of Bor adopted its first Local Environmental Action Plan - LEAP, which determined activities to solve the problem of polluted air back in 2003, and then the second LEAP in 2013. At the end of 2022, a decision was made to create the third LEAP under the name of the Environmental Protection Program of the City of Bor. Solving the problem of air protection was regulated by a special Air Quality Plan back in 2013, which was valid until 2022. A new Air Quality Plan for the Bor agglomeration for the period 2022 - 2030 was prepared, the public debate on the draft of this document was completed and it is expected to be adopted in early 2023. after obtaining the consent of the Ministry of the Environment. In the meantime, the city of Bor has developed, with the participation of the public, a short-term air quality action plan, which is implemented from the beginning of 2022. For the implementation of this plan, funds have been provided in the city budget, especially for the functioning of local monitoring stations and for the expansion of the network of monitoring stations, for equipping the ecotoxicology laboratory, etc. To monitor and direct the implementation of this Short-term Action Plan, a permanent working body was formed, composed of representatives of the city administration, relevant ministries and other state bodies, professional institutions and civil society organizations. Air quality monitoring in the city of Bor, in addition to the network of state monitoring stations, is also carried out through a local network managed by the Institute of Mining and Metallurgy as an authorized institution, based on annual air monitoring programs adopted by the City Assembly.

In addition to these documents, the Development Plan of the city of Bor is currently being developed based on the sustainable development goals from Agenda 2030. On the basis of this highest strategic act of the city of Bor, the goals and measures for solving the problem of polluted air in the new Environmental Protection Program and Air Quality Plan of the Bor agglomeration are being elaborated. The preparation of the new Spatial Plan of the city of Bor,

which will provide spatial conditions for solving the problem of polluted air, has also begun. Solving the problem of air pollution is partly defined in the Energy Efficiency Plan of the city of Bor.

It should be noted that the key air quality problem in Bor is pollution from mining and industrial plants, and to solve this problem, in addition to the local community, the participation of the state and companies that manage mines and metallurgical plants is necessary.

In the city of Zaječar, the main sources of air pollution are individual fireplaces, a monitoring network for monitoring air quality has not been developed, and not all the necessary documents have been brought. The Assembly of the city of Zaječar made a decision on making the Development Plan for the City of Zaječar for the period 2021-2027 and the decision on making the Air Quality Plan on the territory of the City of Zaječar (Official Gazette of the City of Zaječar, no. 70 of 9 December 2021). The existing working body for water quality has been expanded for the area of air quality. A working version of the Air Quality Plan has been prepared and it is expected to organize consultations for the preparation of the draft document, organize a public hearing on the draft document and finally adopt this document in 2023.

In Zaječar, there is ongoing activity on the development of the Spatial Plan of the city's territory, as well as several spatial plans for special purposes that include solving the problem of air quality improvement - the gas pipeline network of eastern Serbia, several locations for solar power plants, etc. Initiatives were also launched for the development of the monitoring network, both through the acquisition of state stations and the expansion of the number of monitored parameters, and through the further development of the local network.

I. B. Documents of public policies on water protection

1. Similar to the issue of air protection, the most important document in the field of water protection at the international level is the UN "Agenda 2030" document, which contains the goals of sustainable development, of which goal 6 relates directly to water, and goal 14, which refers to life under water. These goals are realized through national regulations and strategies, as well as local development plans and environmental protection programs and plans.

In the legal framework of the EU, water and its protection are also of great importance. The most important act in the field of water is the Water Framework Directive, which defines the key goals of the European water policy, and above all, the comprehensive protection of all waters and the integral management of water resources. The Water Framework Directive is a directive that includes and links other significant directives that directly or indirectly relate to the field of water, some of which are:

- Directive 75/440 relating to the required quality of surface water intended for abstraction for drinking water;
- Directive on the protection of underground water from pollution and quality deterioration, which refers to the prevention of the deterioration of the condition of underground water and the application of special measures for the prevention and control of their pollution;
- Industrial Emissions Directive, which regulates pollution from industry;
- Directive on environmental quality standards in the area of water, which refers to environmental quality standards in relation to the presence of certain polluting substances or groups of substances identified as priority based on environmental risks;

- Directive 2013/39/EC relating to priority substances in the field of water policy;
- Directive on the management of the quality of bathing water, which determines the standards of quality and monitoring of the condition of water used for bathing and recreation;
- Directive establishing technical specifications for chemical analyzes and water status monitoring, establishing minimum criteria for their execution during monitoring, as well as rules proving the quality of analytical results.

As for the application of these directives in the process of harmonization of the legal system of Serbia and the EU, as pointed out in the "Shadow Report for Chapter 27 - One step forward, two steps back", there were no significant changes in the past period because the Law on Waters was not amended, and was adopted with bylaws related to it. Also, better coordination is needed between the water management sector and the environmental protection sector in connection with the implementation of EU directives. Preparations for amendments to the Law on Water are in progress, so the starting points for the drafting of the Law on Waters have been prepared.

2. The basic regulation at the national level for the implementation of water protection against pollution is represented by the Law on Water (Official Gazette of RS, No. 30 of 7.5.2010, 93 of 28.9.2012, 101 of 16.11.2016, 95 of 8.12.2018) and Law on environmental protection (Official Gazette of the RS, no. 135/04, 36/09, 36/09 - Dr. Law, 72/09 - Dr. Law, 43/11 -US and 14/16), which prescribe the preparation appropriate plans for the protection of water from pollution. The Law on Water regulates the legal status of water, integral water management, management of water facilities and water land, sources and method of financing water activities for the protection of water from pollution and protection from the harmful effects of water. Emphasis is placed on the aspect of environmental protection, that is, the achievement of environmental protection goals in the area of water, because a combined approach has been adopted, which includes pollution control at the point of origin, through the establishment of emission limit values and environmental quality standards. The assessment of the state of water quality is given on the basis of ecological and chemical status, taking the worst of them for rivers and lakes, as well as ecological potential and chemical status, for artificial and significantly altered water bodies.

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of them for rivers and lakes, as well as ecological potential and chemical status, for artificial and significantly altered water bodies.

Ecological standards define the values of biological (aquatic invertebrates, algae, macrophytes, microorganisms) and selected physico-chemical quality parameters (oxygen parameters, acidity, nutrients) in relation to the natural state, while the chemical status is defined by environmental quality standards in terms of priority hazardous and other specific substances.

In addition to the mentioned laws, the Law on Integrated Prevention and Control of Environmental Pollution (Official Gazette of the RS, no. 135/04 and 25/15) is also important for water management; The Law on Mining and Geological Research (Official Gazette of RS, No. 101/15), which, among other things, regulates the method of classification of resources and reserves of mineral raw materials and underground water and geothermal resources; The Law on Nature Protection (Official Gazette of RS, No. 36 of 2009, 88 of 2010, 91 of 2010 - correction, 14 2016, 95 2018 - other law, 71 2021) which establishes the protection and preservation of nature, biological, geological and regional diversity as a part of the environment, bearing in mind the unity of processes in nature, the significant component of which is water; Law on Public Health (Official Gazette of the RS, number 72/09), which regulates the realization of public interest - preservation and improvement of the health of the population, within which the preservation of the environment is a significant activity; etc.

The Law on Water establishes strategic and planning acts that are the basis for water management on the territory of the Republic of Serbia. The key strategic act (which replaces the former Water Management Framework of the Republic of Serbia) which determines the goals of water management is the Water Management Strategy until 2034, and it defines the basic ways of using water, protecting water from pollution and protecting it from water in the entire territory of the Republic of Serbia. The Action Plan for the implementation of the Water Management Strategy for the period 2021-2023 was also adopted, so the conditions for its effective implementation were created.

The adoption of strategic and planning documents in accordance with the obligations arising from the Water Framework Directive (Water Management Plan, Water Pollution Protection Plan, Flood Risk Management Plan, development of a concrete plan and measures to improve water quality monitoring, integration of directives on nature - Birds Directive and Habitats Directive - in the field of water management, etc.). In the past period, a public debate was held on the Water Management Plan Proposal, and it is expected that this key document will be adopted soon. In addition to the above, other strategic documents are also important for the field of water management:

- The National Sustainable Development Strategy for the period 2009 - 2017 (Official Gazette of the RS, No. 57/08), which promotes the principles of integrating environmental issues into other sectoral policies and including environmental costs in the product price ("the user pays" and "polluter pays"). In the water sector, sustainable development implies optimal water management, along with preservation and improvement of water quality and their rational use. This strategy will be replaced by the Development Plan of the Republic of Serbia;
- The National environmental protection program covers the period until 2019, which represents a means for rationally solving priority problems in the field of environmental

protection in the country. This plan will be replaced by a new Environmental Protection Strategy, the preparation of which was initiated by the Ministry of the Environment;

- The Spatial plan of the Republic of Serbia from 2010 to 2020 (Official Gazette of the RS, number 88 of 23 November 2010), which, in the part related to water resources, gives special importance to their sustainable and strictly controlled use. The preparation of the new Spatial Plan of Serbia until 2035 is underway.

3. By law, numerous responsibilities in the sphere of water management have been transferred to local governments, which are especially competent for the adoption of plans regulating protection against the harmful effects of water (flood risk management plan, general and operational plan for flood defense), as well as plans for regulates water pollution protection (water pollution protection plan and monitoring program). The local self-government is also responsible for water management of the II order, issuing water documents for objects of local importance, as well as documents for the discharge of waste water into public sewers. Among its most significant activities is the performance and development of communal activities (purification and distribution of drinking water, collection and purification of waste water, etc.), which is regulated by a separate law. The assessment that the implementation of public water protection policies at the local level in the Republic of Serbia is slow, is also valid for the area of water.

The City of Bor has defined the basic determinations on water management and protection, as well as on other aspects of the environment, in its previous local ecological action plans and plans in the previous sustainable development strategy and in the Spatial Plan. The preparation of the new, third Environmental Protection Program (LEAP), the new Development Plan of the city of Bor, which replaces the previous sustainable development strategy, and the new Spatial Plan of the city of Bor, is underway. Every year, special operational plans for defense against second-order flood waters are drawn up in the territory of Bor.

In the previous LEAPs, the goals and tasks in the area of providing drinking water and in particular dealing with waste water were specially addressed. Drinking water is provided from remote sources (four separate systems, the most important of which is the Bogovina system - source in the River Crni Timok), so local public fountains are not of particular importance. The main problem is mine and industrial waste water, the solution of which is the responsibility of the state and companies that manage mines and industrial plants. The company ZiJin Cooper, which is a strategic partner and manager of the former RTB Bor, has started the unified solution of mine and industrial wastewater in the Kriveljska and Bor river basins, but plans and environmental impact assessments for these facilities are not yet available. The company ZiJin Mining, which manages the new Čukaru Peku mine, has defined plans and environmental impact assessments for the facilities that are aimed at the Brestovačka and Borska rivers. The city of Bor is responsible for municipal wastewater, the solution of which was started with the drafting of a Detailed Regulation Plan for the construction of collectors and wastewater treatment plants (WWTP) in the Bor river basin. Solving this problem is now changing through the development of the new Spatial Plan of the city of Bor and the General Urban Plan, and in addition to solving the plant for the Bor river basin, waste water is also being solved for the Brestovačka river basin by building special bioreactors.

The public health institute "Timok" monitors the water quality of public fountains on the territory of the city of Bor, as well as the water on Lake Bor, which is used for bathing and recreation. However, the waters of the Borska reka River, the Kriveljska reka River and the Brestovačka reka River are not monitored by the measuring stations of the Republic Hydrometeorological Institute. The Republic Hydrometeorological Institute monitors the waters (and the water quality of the river Veliki Pek) through its two measuring stations. In the city of Bor, the development of an elaborate and the establishment of a unified system of measuring stations for monitoring the quality of air, water and soil are underway.

Similar to Bor, the city of Zaječar solved water management issues in its Spatial Plan, and will continue to solve it through the development of the Zaječar City Development Plan. What is specific about Zaječar is that, despite the fact that the supply of drinking water is solved entirely by water from the reservoir of Grliško Lake and processing in the water factory, there are numerous artesian fountains in the city that represent a real wealth. The city resolved the protection of these fountains with a special Decision on the protection of artesian and subartesian fountains in the territory of the city of Zaječar (Official Gazette of the city of Zaječar, no. 47 of 24 December 2015), but there are still problems with the construction of illegal wells that disturb the abundance and quality of water with these fountains. There is also a special permanent Working body for water quality that monitors the arrangement of these public fountains.

The problem of arranging the Black and the White Timok river is solved through the implementation of the Plan for detailed regulation of the arrangement of sections of the White and the Black Timok in Zaječar. As in the city of Bor, a plan for the detailed regulation of municipal waste water treatment facilities on the territory of the city of Zaječar was also drawn up. Special plans were prepared for individual industrial sites - Plan for the detailed regulation of the wastewater treatment plant from the "Heineken Srbija" brewery production plant in Zaječar and the Urban Project for the separation of limestone Rgotski krš.

The quality of water from artesian public taps is regularly monitored by the Institute for Public Health "Timok", while the Republic Hydrometeorological Institute monitors the watercourses of the White, Black and the Great Timok through a number of stations, but only one station, which is located in Zaječar itself, analyzes the quality of the river water.