REPUBLIC OF SERBIA
MINISTRY OF CONSTRUCTION, TRANSPORT AND INFRASTRUCTURE

REPORT ON THE STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE SPATIAL PLAN OF THE REPUBLIC OF SERBIA FOR THE PERIOD BETWEEN 2021 AND 2035
– Draft –

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CONTENTS

1. BASIS OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT

According to Article 13 of the Law on Strategic Environmental Assessment, the bases of the strategic assessment include the following:

- overview of the content and objectives of the plan and programme and their connection to other plans and programmes;
- overview of the current environmental status and quality in the area that the report refers to;
- environmental characteristics in areas likely to be exposed to significant impact;
- environmental protection issues and problems considered in the plan or programme and the outline of reasons for omission of certain issues and problems from the assessment procedure;
- outline and evaluation of the prepared alternative solutions related to environmental protection in the plan and programme, including the alternative solution of non-realization of the plan and programme and the most favourable alternative solutions from the aspect of environmental protection;
- results of previous consultations with interested authorities and organizations relevant from the aspect of objectives and evaluation of potential impact of the strategic assessment.

The Spatial Plan of the Republic of Serbia (hereinafter: the Spatial Plan), for which the Strategic Environmental Assessment is being developed (hereinafter: the Strategic Assessment), is the basic planning document of spatial planning and development in the Republic of Serbia. The development of this Spatial Plan is based on two previous spatial plans (the first was adopted in 1996, and the second was adopted in 2010), implementation programmes and reports on the implementation of the 2010 Spatial Plan, "Serbia 2025" investment programme, strategies and development documents of the Republic of Serbia, results of previous research, requirements of competent public institutions and bodies, as well as international frameworks and documents in the area of spatial planning and development.

The task of the development of the Spatial Plan is to provide national platform for spatial organization and structure that determines the manner in which the territory of the Republic of Serbia is used for the purpose of ensuring optimum and sustainable utilization of land. The Spatial Plan promotes the achievement of national/state objectives of spatial development despite various challenges, including depopulation, urbanization, regional inequalities, rural development, environmental degradation, technical infrastructure and insufficient or unproductive utilization of available territorial capital.

Legal basis for the preparation of the Plan and Strategic Assessment

The Spatial Plan was prepared in accordance with the Decision on the preparation of the Spatial Plan of the Republic of Serbia for the period from 2021 to 2035 (*Official Gazette of RS*, number 48/19). It was developed in accordance with the provisions of the Law on Planning and Construction (*Official Gazette of RS*, no. 72/09, 81/09 - corr., 64/10 – decision of the CC, 24/11, 121/12, 42/13 – decision of the CC, 50/13 – decision of the CC, 98/13 – decision of the CC, 132/14, 145/14, 83/18, 31/19 and 37/19 – other law) and the Rulebook on the content, manner and the procedure of preparation of documents of spatial and urban planning (*Official Gazette of RS*, number 32/19), as well as with other relevant laws, bylaws and regulations.

Strategic Assessment is part of documentary basis of the Spatial Plan. It is prepared in accordance with the provisions of the Law on Environmental Protection (*Official Gazette of RS*, no.135/04, 36/09, 72/09, 43/11- decision of the CC, 14/16, 76/18, 95/18) and the Law on Strategic

Environmental Assessment (*Official Gazette of RS*, no.135/04 and 88/10) as well as other relevant legislation:

- Law on Environmental Impact Assessment (*Official Gazette of RS*, no. 135/04 and 36/09);
- Law on Nature Protection (*Official Gazette of RS*, no. 36/09, 88/10, 91/10 - corr, 14/16 and 95/18);
- Water Law (*Official Gazette of RS*, no. 30/10, 93/12 and 101/16, 95/18);
- Law on Forests (*Official Gazette of RS*, no. 30/10, 93/12, 89/15 and 95/18);
- Law on Soil Protection (*Official Gazette of RS*, no.112/15);
- Law on Waste Management (*Official Gazette of RS*, no. 36/09, 88/10, 14/16 and 95/18);
- Law on Packaging and Packaging Waste (*Official Gazette of RS*, no. 36/09, 95/18);
- Law on Air Protection (*Official Gazette of RS*, no. 36/09 and 10/13);
- Law on Protection from Noise Pollution in the Environment (*Official Gazette of RS*, no. 36/09 and 88/10);
- Law on Fire Protection (*Official Gazette of RS*, no.111/09, 20/15 and 87/18);
- Law on Protection from Non-Ionizing Radiation (*Official Gazette of RS*, no. 36/09);
- Law on Integrated Prevention and Control of Environmental Pollution (*Official Gazette of RS*, no. 135/04 and 25/15);
- Law on Emergency Situations (*Official Gazette of RS*, no.111/09, 92/11 and 93/12);
- Law on Utility Services (*Official Gazette of RS*, no.88/11, 104/16 and 95/18); etc.

In addition to the above-mentioned legal regulations, a great number of bylaws in the area of environmental protection was used in the course of preparation of the Strategic Assessment.

Reasons for the development of the Strategic Assessment

Reasons for the development of the Strategic Environmental Assessment were defined on the basis of the territorial scope and potential environmental impact of the Spatial Plan, in the following manner (Decision on the preparation of the Strategic Environmental Assessment of the Spatial Plan of the Republic of Serbia for the period from 2021 to 2035, *Official Gazette of RS*, no.41/19):

- the importance of the Spatial Plan for environmental protection and sustainable development results from the need to protect the environment, improve the quality of life and ensure sustainable development in the Republic of Serbia;
- a need to take into account strategic issues of environmental protection during the course of the planning of the spatial development of the Republic of Serbia and to ensure their adequate resolution;
- a fact that the Spatial Plan represents a framework for the preparation and implementation of spatial plans, development projects, programmes and investment decisions.

1.1. Overview of the content and objectives of the Plan and its connection to other plans

In this part, an outline of the Spatial Plan is given, i.e. the conception of spatial development and planning solutions for certain sectors, as well as the objectives of spatial development. The outline of the Spatial Plan is given by area for which the planning solutions were included in the impact assessment (Table 3.7).

The textual part of the Draft Spatial Plan consists of three parts:

1. *Bases* (legal basis, scope, planning horizon; method of development; overview of the planning system and planning basis; overview of the effects of the Global financial crisis and globalization processes; territory of the Republic of Serbia in a broader European

environment; regional development; general assessment of the situation by thematic areas with the synthesis assessment of potentials and limitations as well as of key problems of spatial development);

2. *Planning solutions* (spatial development scenarios; spatial development principles; vision, general and specific objectives of spatial development; long-term strategy of spatial development; planning solutions by thematic area – protection and utilization of natural resources, heritage and environment, population and social development, economy, infrastructure; protection and utilization of space);
3. *Implementation* (priority planning solutions; implementation measures and instruments; connection with public policies and application guidelines within the planning system; development and adoption of planning documents; spatial development indicators; guidelines for the development of the SPRS implementation programme).

1.2.1. Overview of the content of the Spatial Plan

Protection and utilization of agricultural land and the development of agriculture and fisheries

1. To stop the occupation of agricultural land for residential construction, forming of new business-industrial zones and for all other economic and social-cultural purposes, except the energy and other capital infrastructure investments. This implies the introduction of a prohibition against the expansion of construction zones of settlements, simultaneously with the undertaking of measures to revitalize and activate brownfield sites, with adequate spatial-planning support at a local level.
2. To make up for the multi-annual delay in recultivation and revitalization of space degraded by open-pit mining exploitation of lignite deposits and other economic and consumer activities, giving preference to the recultivation by afforestation over the return to the previous, predominantly agricultural purposes.
3. Improvement of soil information systems through the establishing of LPIS (*Land Parcel Identification System*).
4. Operationalization of the concept of LDN (*Land Degradation Neutrality*) in the period from 2021 to 2035, both in relation to the so-called historically contaminated and degraded soil and in cases when further occupation of agricultural land is necessary in order to satisfy other, non-agricultural priorities of social-economic development.
5. Increase of investments in the broadening of ecologically safe irrigation systems, regulation of drainage systems and safety of flood protection, with strict compliance with the requirements determined by the Hydro-technical infrastructure development plan. The irrigation systems may be formed only based on specific designs and adequate technical documentation, in addition to necessary definition of measures to control the quantities of water use and the manner of its use. In doing so, the construction of good primary infrastructure which would enable more efficient irrigation technology (e.g. transfer to sprinkler system and the ‘drop by drop’ irrigation system) should be especially taken into account, as well as the increase in resistance to disturbances related to adverse weather conditions.
6. Planned direction of the manner of utilization and preservation of eco-system and production functions of abandoned/non-cultivated agricultural land, its conversion into forestry land thereby including them in the measures of sustainable forest management, i.e. through the introduction of restrictive penalties and progressive tax policy measures in terms of obligations of regular cultivation, at least through the mowing 1-2 times a year.
7. Strengthening of IT and advisory assistance in transfer and application of the best available knowledge to improve the existing and develop new agro-technical, hydro-technical, IT and other procedures that serve to increase the production-economic potential of soil without adverse effects on the environment.

8. Identification of contaminated sites and defining/delimitation of areas requiring the implementation of the programme of protection from all forms of erosion, decrease in organic matter content, salinization, compacted soil, loss of biological diversity, conversion of land to non-agricultural purposes, floods and landslides, in addition to determining priority preventive measures, time limits for the implementation, competences, indicators to monitor the effects and funding sources.
9. Arrangement of local traffic and dirt roads that serve primarily for the carrying out of field works under optimum agro-technical time limits, including the improvement of infrastructure conditions for Integrated Soil Fertility Management (ISFM), being that the scope of agricultural production cannot be increased without the combined application of mineral/inorganic and organic fertilizers, with mandatory control of soil fertility.
10. Assistance in application of conservation methods of soil cultivation, which include crop rotation, introduction of protective/covering crops into existing crop rotation, reduced ploughing, mulching, burning, grassing of marginal arable surfaces, maintenance of meadows and pastures, as well as recycling of inputs in mixed crop-livestock production;
11. Development of warm water fish ponds in the Region of Serbia – North, predominantly in depressions and salt flats near larger rivers and canals of the rivers Danube, Sava, Tisza, Hydro system Danube-Tisa-Danube, Drina, Great Morava, South Morava and West Morava, in accordance with the spatial possibilities and satisfying quality of the terrain, appropriate quantity of water and its satisfying quality, and other natural characteristics; and
12. Development of cold water fish ponds in the Region of Serbia – South, mostly on the rivers of class-I quality in highland areas (Raska, Studenica, rivers of Stari Vlah mountains, karst springs of East Serbia, etc.).

Ecological aspects of agriculture development

1. Establishment of ecologically better-optimized relation between agricultural and forest areas, through afforestation of low productivity arable land (above the cadastral category 5) and other agricultural land endangered by erosion. Forests are of special importance for the environment and, within this framework, also for the improvement of soil fertility, in the first place through the protection of agricultural crops from the effects of wind.
2. Prevention of mutually conditioned processes of physical, chemical and biological soil degradation, with mandatory undertaking of appropriate measures of protection against erosion.
3. Control of the level of harmful gas emissions and unpleasant odors coming from cattle farms through equipping of barns and auxiliary facilities, selection of fodder and methods of cattle breeding, especially in residential zones and in zones of tourist facilities.
4. Elimination of the sources of air pollution through dust where a special attention should be paid to the maintenance of plant cover in arable soil during the longest possible annual period, through the increase of areas under winter crops, the introduction of protective/covering crops, etc.
5. Protection of natural or semi-natural enclaves (ponds, marshesgroves, enclosures, rattles, etc.), networking of agricultural land into various forms of protective greener (protective forest belts, anti-erosion and water flow protection hedges, bordering lines and other natural habitats), according to the terrain configuration, hydrological conditions, use of land etc. Developed biodiversity ensures the protection of agriculture from vermin and weed and safeguards agriculturally significant genetic resources, while protective belts protect agricultural cultures from cold winds and erosion, in addition to being a valuable element of the landscape.
6. Prevention of negative impact of intensive irrigation and inadequate agrotechnique on the level of underground water and water-air soil regime. Inadequate cultivation of soil may

contribute not only to the drying out of the soil, but also to the floods, reducing the level of water absorption (compression of soil, drainage, removal of hedges, etc.).

Utilization of natural resources, forests, forest soil, forestry and hunting

Protection and utilization of forests and the development of forestry and hunting will be carried out in accordance with the principle of sustainable utilization of natural resources up to a degree and in the manner that does not endanger diversity and the functioning of natural systems and processes.

1. Sustainability and adaptive planning and management of forests and adequate increase in forest resources to 41% of the surface area of the Republic of Serbia, i.e. for around 900 km^2, in the light of its positive impact on climate change, the decrease of greenhouse effect for around 15%, as well as more extensive multi-functional utilization of forests;
2. Maintenance of health and vitality of forest ecosystem that is continuously endangered by biotic and abiotic risk factors, the intensity of which is sometimes on the edge of natural disaster, with the effects of endangering bioecological stability, production potential and self-sustainability, as well as of continuous multi-functional forest management;
3. To maintain and stimulate production functions of forests, for which there is a potential of around 6.3 million m^3 of wood in intensive forest management;
4. Maintenance, conservation and adequate increase of biodiversity in forest ecosystems;
5. Maintenance and adequate increase of protective functions of forests (especially soil and water) as well as the increase of areas under forests through re-cultivation of open-cut mines and tailings;
6. Maintenance and increase of surface areas under trees and forests in urban zones as important factors for the resistance of urban centers to climate change;
7. Maintenance of other social-economic functions and conditions that have aesthetical, recreational, cultural and educational character.
8. Maintenance and increase in the number of big and small game (for 15% by 2035) and natural distribution of the population of hunting species in accordance with the provisions of favorable conservation status. This should be followed by the maintenance of genetic diversity of the population of hunting species in accordance with the provisions of favorable conservation status.
9. Increase in and the improvement of species diversity of a biological community to which a hunting species belong (bear, chamois, blackcock, bustard, etc.) and other fauna (falcons, eagles, storks, etc.).

Protection and utilization of waters and water management infrastructure

1. Planned development of 18 regional water supply systems for settlements and industries that require the highest quality water. Some of the parts of these sub-systems have not yet been connected to the systems of higher order, but the conception of their gradual aggregation/enlargement will be kept, as it is in accordance with the requirements of reliability in terms of the quantity and quality of the water that is supplied to settlements.
2. Through the planning documentation, reservation of the spaces which are the sites of regional and national water sources. Water treatment and disinfection in drinking water production plants are planned for all regional water sources, with robust and reliable technologies that guarantee high quality of processed water.
3. Within river systems, facilities are constructed and measures implemented to ensure their multi-purpose operations. Where conditions allow it, the most important facilities are reservoirs, and in the plains, the systems of canals are developed that will enable the management of water regimes (HS DTD, HS North Backa, HS Nadela, etc.).

4. In Vojvodina, HS DTD, as well as HS North Backa are an integral part of river systems. HS DTD should be revitalized as soon as possible. HS North Backa, with several smaller reservoirs and a network of main canals and pump stations to supply the water to the most water-deficit region of North Backa has been partly constructed, and its completion is of high priority.
5. The following have special strategic importance for the Republic of Serbia:
    - in the South Morava system, frontal reservation of Vlasina lake – by increasing the reservoir volume (within river basin land, through the installation of weir on the spillway), Zavoj lake – completion of the already initiated project of the increase of water balance by connecting only one part of the high flow from Toplodolska river;
    - in the system of West Morava, reservoir Velika Orlovaca and reservoir of Roga,
    - in Kolubara system, reservoir Stuborovni, with multi-annual flow regulation;
    - in Timok system, reservoir Bogovina on the Crni Timok river (support of the regional system of water supply and an important facility in active defense against floods in the Timok river valley);
    - in the system of rivers Drina and Lim, facilities on the rivers Lim, Middle and Lower Drina;
    - the planned HS Upper Ibar – Raska is of special strategic importance. Through the construction of reservoir Ribarice on Upper Ibar, immediately upstream from the slippage of back water from the reservoir Gazivode, conditions are created to transfer a part of the water through a gravitational system into the reservoir Barakovo on the Josanica river, right tributary of Raska, in the period of high flow, thereby conveying it to the water-deficit area of Raska in the zone of Novi Pazar.
6. The following are the most important planned hydro-energy systems:
    - Two systems on the river Drina, that should be implemented together with the Republic of Srpska: (a) The Lower Drina System, planned with 4 steps in the basic river bed, within the project of development of currently very unstable river bed of the lower course of the river Drina, all the way to the confluence with the Sava river; and (b) Middle Drina System, that should be planned together with the facilities within the basic river bed, without any unfavorable impact on social, urban and living environment.
    - The system of integral arrangement of the flow and Valley of Great Morava River, with the cascade of hydropower plants that are implemented in the riverbed for high flow. The most favorable layout should be selected among the alternatives with five, 6 or 7 steps. In the course of the development of all facilities, a place is foreseen for the construction of locks, but these should not be constructed before the interested user has been found. The system is followed by: (a) necessary regulations, especially in the settlement zones for the purpose of their balanced urban connecting to new stable aquatoria; (b) systems for the protection from external and inland waters; (c) development and protection of all water sources; and (d) development of sites for exploitation of river materials. This system is an integral development project of utilization, development and protection of the entire Great Morava river valley.
    - The cascade system on the Ibar river, with facilities in the riverbed for high flow that do not endanger the surrounding, but on the contrary contribute to the integral development of that river valley.
    - Implementation of cascades of small hydropower plants (SHPP) on the watercourse of the Nisava River with facilities that are only in the riverbed for high flow. Supportive facilities realized by typified pneumatic dams enable very favorable utilization of that part of the Nisava river flow in terms of ecology, as part of the integral arrangement of that river valley.
    - West Morava is suitable for the realization of the cascade of SHPP with facilities exclusively in the flood flow bed. The works on its regulation (with the relocation of

the flow) due to the construction of highway should be used to create conditions to use the section of that river along the route of the future highway through the cascade of typified SHPP, in a cost-effective and ecologically desirable way.

- The realization of SHPP, with all current and future multi-purpose reservoirs, whereby in terms of reservoirs intended for water supply of SHPP, only surplus water from the reservoir will be used for energy purpose and will not disturb the regime of water capture and discharge from the reservoir.

7. The construction of sewage systems and wastewater treatment plants (WWTP) of settlements includes all agglomerations having more than 2,000 population equivalent (PE). On the territory of the Republic of Serbia, without Kosovo and Metohija, a total of 398 agglomerations has been identified, which will treat their wastewater through over 350 WWTPs with a total capacity of around 7.1 million PE. Several WWTPs are planned for some agglomerations (e.g. 4 plants are planned in Belgrade), and some WWTPs can treat wastewater from several agglomerations (Vrbas - Kula, Uzice - Sevojno - possible and Pozega – Arilje – Kosjeric - Ivanjica, Paracin - Cuprija, Nova Pazova - Stara Pazova - Indjija, etc.). Most of the existing WWTPs will be reconstructed and upgraded to meet the prescribed requirements. It is necessary to expand and reconstruct the sewerage system in the settlements, as a separation sewerage system as a rule, in order to connect 85% of all inhabitants.

Mineral sources and mining

1. Production of lignite coal realized by *Elektroprivreda Srbije* within two basins on 5 open-pit mines (Polje C, Polje D – South wint, Tamnava - Zapadno Polje and Polje G in Kolubara basin and Drmno in Kostolac basin). In the next planning period, the required production for the supply of existing and new modern thermal power capacities is about 48 Mt of coal, out of which up to 36 Mt from the Kolubara basin and about 12 Mt from the Kostolac basin. The planned capacity in the Kolubara basin by 2025 will be realized at the mentioned surface mines, and the production is also planned at the new surface mine Radljevo Sever from 2021/2022, and a gradual completion of production at the surface mine Polje G. After 2025, and until the end of the planning period, coal production in the Kolubara basin will be realized in the eastern part of the basin at the surface mine Polje E and the western part of the basin at the surface mines Tamnava - Zapadno Polje and Radljevo Sever. The designed capacity of the surface mine Drmno is optimized and serves as a coal reserve in the deposit and the required production for the supply of existing thermal power units and the entry of the new block B3 of 350 MW of the TPP Kostolac. Having in mind the resource potential of coal, it is necessary to include in the overall development of *Elektroprivreda Srbije* the development of surface coal exploitation in new surface mines in the western part of Kostolac basin with a capacity of 9 million tonnes of coal per year and the construction of a new state-of-the-art HELE (High Efficiency Low Emission) thermal power plant the power of which would range from 600 MW up to 1,000 MW. In the next planning period, it is also necessary to use the potential of the Kovin lignite coal deposit by building a surface mine with a capacity of about 6 Mt of coal to supply the new modern HELE thermal power plant.

2. The development of the mining sector in the field of metallic mineral sources (MRM) in the next planning period is based on further development of the existing exploitation and the production of copper and related metals in the Bor basin and the production of lead and zinc metals, then the worldwide important potentials of lithium in terms of raw materials, resources and economy as well as the potentials for future production of antimony, molybdenum and nickel. Apart from copper, lead and zinc, the other mentioned metallic MRMs are not exploited today, but they have great developmental potential, both geologically and in terms of production.

3. The strategic plan for the development of copper production is based on certified geological reserves of copper ore of over 2.5 billion tonnes, on the possibility of increasing the capacity of ore exploitation by purchasing new high-capacity mining machinery, reconstruction and procurement of new flotation equipment and reconstruction of smelter and construction of new sulphuric acid factory, that would achieve more effective and efficient technological results and environmental protection according to the highest environmental standards.
4. The development of lead and zinc exploitation in the next planning period is focused primarily on deposits where underground exploitation is performed in central Serbia - Rudnik, Grot, Lece, Veliki Majdan, as well as on deposits that have resource potential for exploitation. Future development should be focused on the modernization of mining plants, especially processing plants, for the purpose of raising the capacity, better utilization of deposits and finalization of the production to metals.
5. In the period until 2025, the economically most important exploitation for the Republic of Serbia, that of lithium, will be launched in Jadar basin which is one of the most important potentials worldwide in terms of the amount and content of lithium and boron in the ore.
6. The key for the future development of the non-metallic industrial MRs, but also of great importance for the mining sector as a whole, will be the beginning of jadarite exploitation and borate extraction as a non-metallic industrial mineral resource in the Jadar basin and the beginning of borate exploitation in the Jarandol basin.

Tourism

Based on the potential during tourist season, primary tourist destinations are ranked in the following three groups according to their importance: 1. Destinations with predominantly summer offer (Gornje Podunavlje, Novi Sad - Fruska gora, Gornje Potisje, Donje Potisje, Deliblato sands, Djerdap, and Sumadija mountains); 2. Destinations with summer offer with the participation of winter offer (Kucaj mountains - Beljanica, Valjevo-Podrinje mountains - Drina, Drina - Tara - Mokra gora - Zlatibor, and Zlatar - Pester); 3. Destinations with year-round offer (high mountain areas with immediate surroundings) - Stara planina, Vlasina - Krajiste, Kopaonik, Golija, Prokletije, and Sar Mountains.

Separation of secondary tourist spaces as wholes within the existing and potential integrated offer of national and regional significance includes tourist potentials of the surroundings of larger urban settlements, natural and cultural values outside tourist destinations etc., with summer offer and the participation of winter offer, which are 1. Belgrade surrounding areas, 2. Pristina surrounding areas, 3. Nis surrounding areas, 4. Sokobanja surrounding areas, 5. Novi Pazar surrounding areas, 6. Cacal surrounding areas, 7. Loznica surrounding areas, 8. Spatial unit Zajecar - Negotin, 9. Spatial unit Krusevac – Aleksandrovacka zupa – Jastrebac, and 10. Spatial unit Leskovac - Radan.

Navigable transit/touring tourist routes are identified according to the criteria of importance for nautical tourism and position in relation to the valley-water tourist destinations. They are divided into primary-international directions: Danube, Tisza and Sava. National directions are: 1) the Danube - Tisa - Danube canals, 2) other navigable canals in Vojvodina, and 3) limited parts of the flows of rivers Drina, Velika Morava, Zapadna Morava and Ibar. For the purpose of nautical tourism, it is necessary to build river marinas on international waterways on the rivers Danube, Tisza and Sava, as well as appropriate ports and harbors.

The identification and ranking of spa tourist centers and places was done according to the criteria of their development and how promising they are in terms of the coverage of tourist destinations and positions to transit/touring routes and city centers. The spas of Serbia are differentiated into primary spas and tourist centers of promisingly international significance, secondary spas of national

importance and other spas of regional importance. *Primary spa centers* of promisingly international significance with a year-round offer are: 1) Vrnjacka Banja, 2) Sokobanja, 3) Niska Banja, 4) Vranjska Banja, 5) Bukovicka Banja, and 6) Banja Koviljaca.

Identification and ranking of mountain tourist centers and places as core mountain destinations, were performed according to the criteria of their development and how promising they are in terms of the position and importance of their destinations. They are differentiated into the following: *mountain centers of promisingly international significance* with a year-round offer - 1) Kopaonik, 2) Stara planina (Jabucko Ravniste and Golema reka as a promising destinations), 3) Sar Mountains (Brezovica), 4) Prokletije (a promising center above Pec), 5) Vlasina (Vlasina Lake) and Krajiste (Besna Kobila as a promising place), 6) Golija (Ivanjica), 7) Zlatibor, and 8) Tara. *The most significant mountain places of national importance* with a predominantly year-round offer are the following: Valjevo Mountains/Divcibare and potentially Povlen, Zlatar and Mokra Gora/Drvengrad. *Other mountain places of national importance* with mostly year-round offer are the following: Rudnik, Kucaj mountains/Crni Vrh and possibly Beljanica, Goc, Zeljin, potentially places below Satorica and Pilatovica on Kopaonik, and a place below Mokra gora tutinska etc.

Transport and communications

Planning solutions for the development of *road transport* and transport network are as follows:

- better management by improving the planning, design and construction, exploitation and maintenance of road network, better organization and greater safety of road transport;
- activities to establish facilities necessary for the interactive connection of the road traffic system and users, primarily along the international Corridor 10, with raising the level of service (systems of supervision, control and management of traffic, completion and improvement of accompanying facilities);
- reconstruction and rehabilitation of certain sections of Corridor 10;
- completion of the part of the Belgrade bypass;
- completion of the construction of highway routes and the construction of new ones;
- reconstruction and construction of a great number of roads;
- reconstruction of bridges and tunnels on the primary network;
- construction of bypasses around city and municipal centers;
- activities on the project of metro system in Belgrade, that include preparation of required documentation, commencement of the construction and the construction of the first metro line;
- activities on bicycle routes on the territory of the Republic of Serbia (basic north-south route and with side connections) and the system of cycling development centers for the purpose of achieving interstate cooperation.

Planning solutions for the development of *rail transport* are as follows:

- reconstruction, construction and modernization of the existing railways of the Corridor 10 (E-70 and E-85) through Serbia in double-track electrified high-performance railways for speeds ranging from 160 to 200 km/h, and for combined traffic (passenger and freight) and combined transport.
- reconstruction and modernization of the railway Belgrade – Vrbnica – state border - (Bar), section Valjevo - Vrbinca;
- reconstruction, modernization and electrification of a single-track railway Belgrade – Pancevo – Vrsac – border with Romania, with the construction of the second track, for the speed of 160 km/h;

- reconstruction and modernization of one-track railway Lapovo – Kraljevo – Lesak – Kosovo Polje – Djeneral Jankovic – state border, with the construction of the second track on the section Lapovo – Kragujevac - Kraljevo;
- reconstruction and modernization of the railway Subotica – Bogojevo – state border with the construction of a triangle in front of the station Bogojevo;
- development of large railway junctions on the Corridor 10 (railway junctions Belgrade, Novi Sad, Subotica and Nis) as well as solving of the rail transport in larger centers (Pancevo, Vrbas, Ruma, Valjevo, Kraljevo, Lapovo, Pozega) through the reconstruction and modernization of railways and stations in accordance with the needs and plans for the development of towns;
- reconstruction of regional railways – revitalization, modernization and electrification of the existing one-track railways with the construction of capacities for the connection of significant users of railways;
- reconstruction of local and auxiliary railways in accordance with developmental needs.

Planning solutions for the development of *water transport* and waterways are as follows:

- rehabilitation of inland waterways and ensuring their cleaning, deepening, signaling and maintenance;
- introduction of modern technologies of transport (intermodal transport, containerization, RO/RO transport, Hucke pack terminals, river-sea navigation);
- hydro-technical and excavation works on the critical sectors on the rivers Danube and Sava;
- adaptation of locks within the Hydropower and Navigation System Djerdap 1 and Hydropower Djerdap 2;
- improvement of conditions for navigation within the dam on the Tisza river;
- extraction of the sunken German navy fleet from the Second World War (Danube river);
- introduction of electronic system of marking of waterways;
- extension of capacities of the port of Smederevo and the construction of access railway and road infrastructure;
- construction of new ports in Belgrade and Apatin;
- construction of new port capacities of ports in Bogojevo, Sremska Mitrovica, Prahovo and Senta;
- organized coastal landscaping and of the entire infrastructure that accompanies tourist manifestations.

Basic conception of spatial development of *airport infrastructure* is based on further realization of the network of regional airports, planning and linking to other modes of transport by creation of multi-modal hubs.

Planning solutions include the construction of new *border crossings (BP)*: BP Sremska Raca on the highway Kuzmin – Sremska Raca (as a joint border crossing), BP Kotroman on the new section of the highway Pozega – Boljare (border with Montenegro). In further stages of road transport project implementation activities on BP Vatin, BP Vrska cuka, BP Djerdap II and other are foreseen.

Energy, energy infrastructure and energy efficiency

Revitalization of the existing thermal power plants and the development of new capacities are conditioned by the application of international directives on industrial emissions of harmful gases. This requires modernization and ecological improvement of the existing thermal power blocks (blocks of the Thermal power plant Nikola Tesla A1-A2, A3-A6, B1-B2, Kostolac A1-A2 and B1-B2), as well as the shutting down of the existing blocks whose power is lower than 300 MW by 2024 (Morava, Kolubara A) due to their average age of 45 years and the average energy efficiency of under 30%, and due to high levels of emissions into air.

The conception of spatial and general development of the electric power industry sector and the production of electrical energy in the period until the year 2035, in addition to the increase of the installed power on several existing hydropower plants, is based on ensuring the conditions and the construction of new production capacities.

Realization of energy production from 'pure coal' in highly-efficient thermal power plants, with technologies to collect and store CO_2. Use of 'pure coal' should be realized in three stages. The first stage involves revitalization of the existing and the construction of new blocks, with increased efficacy, decreased CO_2, SO_2, and NO_x emissions as well as the emission of particulate matter. In the second stage, thermal power plants are designed and constructed, with the level of efficiency up to 50% and with the increased environmental protection. The third stage involves the introduction and use of technologies of separation and depositing of CO_2. Such a concept of development coupled with constant modernization of thermal power plants, the increase of their efficacy, separation and depositing of CO_2 and the increase in the level of environmental protection and public health represents a basis to ensure the safety of energy supply in the Republic of Serbia after the year 2035 as well.

As a concept of the development of the transmission system, the introduction of the 400 kV network in the region of Western and Central Serbia remains as a goal in the forthcoming period, which will ensure – in addition to the strengthening of inter-connecting relations with our neighbors, before all Romania, Montenegro, Bosnia and Herzegovina, Croatia and Bulgaria – a high level of safety of power supply of the consumer on the entire territory of the Republic of Serbia.

The development of distribution network includes the reconstruction and modernization of the existing transformer stations (replacement of outdated energy equipment, capacity increase, automatization of plant elements, etc.) and the construction of the lacking transformer stations and lines, before all of the voltage level of 110 and 35 kV and the existing network of lower voltage levels (35, 20, 10 and 0, 4 kV).

In the forthcoming period, the greater importance will be given to the combined production of electric and thermal energy in centralized systems. For the heating of Lazarevac, Obrenovac, Kostola and Pozarevac, thermal power plants of the EPS (*Electric Power Industry of Serbia*) Kolubara A, Kostolac A and Nikola Tesla A are already used. For Belgrade, the biggest heating system, the realization of the project of the heat transmission line Belgrade – Obrenovac is of great importance (use of heat from TENT A - 600 MWth on the account of the reduction in available power for the production of electricity of around 150 MWe), as well as thermal energy supply from co-generative plant of garbage incinerator in Vinca, with thermal capacity of 56.6 MWth. The combined production of thermal and electric energy should be considered through the construction of gas power plants with combined cycle in larger industrial centers (Novi Sad, Nis, Kragujevac, Pancevo, Loznica, Bor, etc.), as well as due to the requirements of technological processes and the supply of utility consumers.
The increase in energy production from renewable sources of energy is a strategic commitment for the purpose of environmental protection, decrease of import dependence and the increase of the level of energy safety. It is planned that Serbia will achieve the paritipcation of 27% of renewable energy sources in total gross final consumption of energy in the Republic of Serbia.

Environmental management

Conception of environmental protection and improvement in the time horizon until 2035 the year is based on the implementation of the following activities:

- preservation of all elements of the environment: water, air, soil, natural and immovable cultural property, biodiversity.
- integral planning based on the principles of conflict prevention in space and on the principles of sustainable development, planning of rational use of natural resources (agricultural and forest land, water, raw materials and other natural resources) respecting the capacity of space and the environment, increasing the use of renewable energy sources, etc.
- prevention and remediation, application of precautionary principles for activities that may cause greater pressure on the environment or uncertainty, application of remediation measures in degraded and polluted areas.
- integration of environmental objectives, measures to reduce negative impact on the environment and monitoring systems into the planning, design and construction sectors.
- defining protection zones, zones of influence and protective distances around facilities and activities that emit significant pollution or have a risk to the environment and human health.

In order to make progress in establishing an efficient environmental management system, the following priority planning solutions need to be implemented.

1. *Rehabilitation of polluted industrial and mining-energy sites*, which includes: implementation of remediation and restoration procedures for hot spots - contaminated industrial sites, recultivation and remediation of sites most damaged by mineral sources exploitation (RTB Bor, flotation tailings and smelter, Kolubara and Kostolac lignite basins) and remediation and restoration of polluted watercourses (section of the Veliki backi canal).
2. *Reduction of air pollution originating from energy and industry sector*, which includes: creation of a register of pollutants with emission balance; modernization and revitalization of existing TPPs and development of new capacities which must be conditioned by the implementation of Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control); shutdown of existing power units below 300 MW (TPP Morava, TPP Kolubara A - due to its age, energy efficiency below 30% and high emissions into the air). Use the best available technologies in the industry. Identify zones of impact on the population using software models that will take into account cumulative and synergistic impacts (and not just individual ones) and take all legal measures to protect the health of the population in these zones. With the Paris Agreement, the Republic of Serbia has committed itself to reducing greenhouse gas emissions.
3. *Improving the quality of surface and ground water*, which includes the following: adoption of water management plans for catchment areas, construction of systems for collection, disposal and treatment of wastewater in settlements and industries located in the settlements that are most endangered and with the greatest risk to human health and environment, and providing cost-efficient use of water in industry and energy, by introducing new technologies and recirculation. To strive to achieve that all settlements with more than 2,000 population equivalent necessarily have a wastewater treatment plant, which is also required by the EU Directive 91/271/EEC on urban wastewater treatment. The development of water quality monitoring should be directed towards the establishment and equipping of Regional Monitoring Centers, which would increase efficiency in profile processing, control and monitoring of recipients.
4. *Prevention of further loss of soil, preservation and improvement of its quality*, which includes the following: rehabilitation of degraded and contaminated land in industrial areas; identification of sites where it is necessary to implement programs for protection against pollution by nitrates, agrochemicals and other harmful agents of agricultural origin; re-cultivation and revitalization of the area degraded by surface exploitation of lignite deposits; implementation of erosion protection measures; protection and prevention of changes in the purpose of high land capability class of agricultural land.

5. *Reduction of noise levels next to roads and industries that endanger housing*, which includes the following: identification of the of state roads with heavy traffic that require noise monitoring; reduction of noise levels in endangered locations along roads and industries that affect housing by applying technical and biological protection measures. Development of strategic noise maps for settlements and traffic infrastructure systems.
6. *Harmonization of national regulations in the field of environment with EU legislation*, with the strengthening of institutional capacities, which includes the following: adoption of laws and bylaws, ratification and implementation of international conventions, directives and agreements; strengthening of institutional capacities at the national, provincial, regional and local levels.
7. *Establishment and expansion of the monitoring and the development of the National Register of Pollution Sources* in space, which includes the following: modernization of the ambient air quality monitoring network, establishment of automatic monitoring of significant emitters, expansion of surface water and groundwater quality monitoring systems; establishment of a wastewater emission monitoring network; development of the monitoring of soil pollution.

Waste management

Establishment of centers for separate collection of recyclable waste (paper, cans, glass, plastic, etc.) where citizens will bring their own waste, in all local governments. This will enable regional systems to separate special waste streams, such as recyclable materials, electrical and electronic equipment waste, batteries, hazardous household waste, tires.

It is planned to organize regional waste management centers with all the necessary infrastructure and the construction of the remaining regional landfills, in accordance with the Draft National Waste Management Strategy for the period 2020-2025. in the following waste management regions: Vranje, Belgrade, Novi Sad, Indjija, Krusevac, Nis, Kraljevo, Valjevo, Zrenjanin, Nova Varos, Sombor, Vrsac, Zajecar, Smederevo, Kragujevac, Petrovac, Loznica.

Capacity building for hazardous waste management in Serbia. It is necessary to determine centers for the collection of hazardous waste from households. Construction of a hazardous waste management system includes the establishment of collection and transport of hazardous waste, construction of regional warehouses in five regions in Serbia, construction of plants for physical and chemical treatment of hazardous waste, construction of incinerators for hazardous and medical waste incineration, and cassettes for hazardous waste in regional sanitary landfills. Recycling islands with containers for separate collection of packaging waste (for glass, metal, paper, PET), biodegradable waste and other mixed waste, secondary separation plants, mobile plants for treatment of construction and demolition waste, in the following regions: Subotica, Krusevac, Uzice, Pancevo, Pirot, Sremska Mitrovica, Nova Varos, Kragujevac, Zrenjanin and Valjevo.

By establishing a system for managing special waste streams, facilities for collection and treatment of waste batteries, tires, oils, waste from electrical and electronic products etc. will be built, mainly through the investments from the private sector based on waste management permits. It is necessary to reduce the generation of packaging waste and further encouragement to recycle, especially in households, with the establishment of primary waste selection. Greater involvement of public utility companies (PUC) at the local level in terms of primary selection is needed, as well as networking of PUCs and existing packaging waste management operators.

Protection, arrangement and sustainable use of natural values, cultural property and landscapes

The priority in the field of protection, arrangement and use of **natural resources** in the forthcoming period must be the achievement of the optimal value of the surface area of protected areas of 12% of the total area of the Republic of Serbia, as recommended by previous planning documents. The planning goal for the coverage of the territory of the Republic of Serbia with protected areas is at least 15%. The declared protected areas and the areas proposed for protection, with the prepared documentation, will include the total protected area of 909,530 ha (10.28% of the territory of the Republic of Serbia) in the planning period.

Revision of protection acts for previously protected areas and their harmonization with the Law on Nature Protection will be performed, and among them are larger or more significant areas - Oplenac, Orasac, Borovo brdo, Takovski grm, Ljubic, Mackov kamen, Tekeris, Bubanja, Gradiste, Gamzigrad - Romulijana, Milicinica, Manasija, Ljubostinja, Gradac gorge, Tresnjica gorge, Prugovo and others, but no significant change in the total surface area of reviewed areas is expected.

It can be expected that in the planning period, within the planned areas, a protection will be declared in some of the legally established models, except for the national park, on a maximum of 220,000 ha (2.48% of the territory of Serbia).

In addition to the protected areas that have already acquired the status of a protected area on the basis of international conventions and programs, the strategic commitment has been confirmed in order to nominate the following areas for:

- UNESCO Ramsar list – Karadjordjevo, Okanj bara, Rusanda, Jegricka, Tamis river valley from Baranda to Uzdin, river Danube in Negotinska Krajina, water reservoir Gruza, river Drina from Lesnica to its confluence, Uvac, Golija, Stara Mountain and Kopaonik, as well as to complete the procedure of declaration of the nominated National Park Djerdap and IBA area of Mala Vrbica for Ramsar site;
- UNESCO Biosphere Reserves list – Obedska bara, Deliblato sands, Tara, Sargan – Mokra Gora, Zlatibor, Djerdap, Kucaj mountains and Stara Mountain;
- UNESCO World Natural and Cultural Heritage list – Djerdap, Sar Mountain, Djavolja varos;
- UNESCO Geoparks list – Stara mountain.

An audit will be performed and the boundaries of the elements of the *ecological network* will be determined in accordance with the law, the updated act on the ecological network and regulations on protected species and habitats, for certain nationally and internationally ecologically important areas (Emerald, IBA important areas for birds, IPA important areas for plants, PBA selected areas for butterflies, PHA areas important for the protection of hoverflies); ecological corridors, especially for watercourses and riparian zones of large rivers, but also for other important watercourses and vegetation belts in natural and semi-natural condition.

The area covered by approximate boundaries of the ecological network is 2,123,170 ha (23.99% of the territory of the Republic of Serbia) and will be increased to about 2,650,000 ha (about 30% of the territory of the Republic of Serbia) in the planning period, by increasing the number of and expanding the ecologically significant areas (primarily Emerald and PHA areas) and by the identification and inclusion of significant habitats in the ecological network.

Spatial connection of **cultural property** will be achieved by defining cultural areas and cultural routes at the international, national, regional and local levels and will be determined by the management plans for their sustainable use and development. Priority should be given to the following regions: Southern Serbia, Eastern Serbia, Southwestern Serbia, and the Danube Corridor.

They have significant cultural potentials, the activation and sustainable use of which can significantly contribute to the territorial cohesion and economic development of these, otherwise less developed, regions of Serbia.

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The following areas stand out as cultural areas: Fruska Gora; Stari Vlah; Rudnik; Ovcar-Kablar gorge; Cer; Zlatibor; Podrinje; Sumadija; Novi Pazar; Podunavlje/Danube region; Aleksandrovac, Kopaonik; Nis; Toplica; South Morava; Pirot; Timok valley; Banat; Backa; Srem; and Kosmaj. As landscape units, whose central determinants is immovable cultural property, the following stand out: monuments included in the UNESCO World Cultural Heritage list (Stari Ras with Sopocani, Studenica monastery, medieval monuments in Kosovo, Gamzigrad); monasteries Banjska, Zica, Gradac, Stara and Nova Pavlica, Banja, Manasija; Arilje; Ljubostinja; Kalenic; Ravanica; fortresses in Belgrade, Petrovaradin and Bac; medieval towns and fortifications Maglic, Koznik, Novo Brdo and Zvecan; historical towns, settlements and parts of settlements Sremski Karlovci, Cajkino brdo (Vrnjacka Banja), Topcider (Belgrade).

Reconnaissance of valuable spatial elements and units that require planned protection involves additional field research, research of the historical development of the area, as well as natural and social conditions that led to the existing forms of physical structure.

The concept of protection, arrangement and sustainable use of the **landscape** of Serbia includes the following guidelines: *natural landscapes* and those similar to natural are protected, i.e. protection of the landscape structure and undisturbed functioning of natural processes, protection of biodiversity, as well as the preservation and establishment of ecological networks are provided. When their natural and aesthetic values are violated, rehabilitation (revitalization and restoration) should be enabled in accordance with the protection regime. Adequate spatial development (rural and tourist development) in line with the capacity of the landscape and the established regimes of II and III degree of protection should be enabled.

In *rural areas,* sustainable development is based on the recognition, protection and improvement of their specific character, existing values and landscape capacity.

The development of *urban landscapes* is based on the fact that they will continue to be the landscapes with the greatest dynamics of change which are the result of modern social and economic trends, and that their structure and functioning should be adapted to climate change which in turn creates preconditions for a quality life of the inhabitants.

1.2.2. Description of the Plan's objectives

In the Spatial Plan, the **vision** of long-term spatial development is defined as 'balanced, spatially developed territory of the Republic of Serbia on the principles of economic, social and territorial cohesion, with higher and more uniform quality of life and environment, preserved identity and diversity of space, adapted and resistant to climate change.'

General objective of the plan is sustainable and more balanced spatial development, mitigation of regional differences and greater degree of territorial cohesion in order to improve the quality of life, slow down unfavorable demographic processes and create conditions for young people to remain in the country, while improving competitiveness, accessibility and preservation of territorial capital and spatial identity, adjustment of activities performed in the space and of the settlements to climate change.

The general objective rests upon the sustainable development of the Republic of Serbia by 2035, as well as the following: strengthening of the territorial capital of the Republic of Serbia; balanced

regional development for the purpose of national integration and cohesion; polycentric development of spatial, urban and rural structures; optimization of the use of and the reduction in consumption of soil, energy, water and other natural and man-made resources in relation to the planned/foreseen results; accessibility to infrastructure, social and utility services and infrastructure integration; higher quality of life; efficient preservation and improvement of the environment; economic development and functioning of all activities based on sustainability, circular development and mitigation of climate challenges, with a certain degree of territorialization of the objectives.

Specific objectives of spatial development are the following:

1. Better utilization of the Republic of Serbia's territorial capital in order to take advantage of its geo-strategic position as a central country in the Balkans;
2. Reduced pace/dynamics of depopulation and more optimized territorial distribution of the population;
3. A more balanced spatial organization with a polycentric structure of urban systems and a higher degree of achieved economic and social cohesion of urban and rural areas, as well as partnerships between urban and rural settlements;
4. More harmonized spatial distribution of the economy (at the national and regional level) in order to strengthen its role as a driver of dynamic, sustainable, more balanced and inclusive socio-economic growth, employment and higher quality of life;
5. A territory more connected with the Balkan/neighborhood, European and wider environment, more accessible and equipped with infrastructure (transport, energy, water and utility) and digital networks;
6. Preserved identity and strengthened resistance of space to changes and pressures, through sustainable utilization and protection of natural resources, environment, biological diversity, natural and immovable cultural property values, development and arrangement of landscapes and green infrastructure.

Specific objectives include the following: reduction of territorial differences in terms of the level of development, and especially in terms of lagging behind of critically underdeveloped, recessive and demographically depleted areas; mitigation of negative demographic trends in the long run, especially a decrease of the emigration of young, qualified persons; prevention of fragmentation and disintegration of space, especially its underdeveloped areas, integration of less developed environment, in parallel with further development of the most developed areas; infrastructural, economic and cultural connection of the Republic of Serbia with the neighboring/Balkan, European and wider environment; encouragement of the development of more promising rural areas; stopping and legalization of illegal construction wherever possible; limiting urban expansion and construction areas/land; development and gradual application of circular production/economy; protection of cultural and natural heritage and natural resources (agricultural land, forests, water resources, biodiversity).

If the **basic objectives** are observed **by area of the Plan**, as well a brief outline, then they can be presented as follows:

1. *Protection and utilization of agricultural land and development of agriculture and fishery*

   - permanent preservation of areas and quality of agricultural soil in good agricultural and ecological conditions in order to ensure safe supply of sufficient quantities of food rich in healthy ingredients for domestic needs;
   - provision of support for the dynamic development of fishery, in accordance with spatially heterogeneous advantages and limitations; and

- the increase in efficiency of the utilization of soil and other resources in the production of food, biofuels and other agricultural raw materials, for the purpose of continuous and stable growth of income of farmers and fishermen, with special appreciation of the importance of associating of primary producers and the improvement of their position in the market value chain;

2. *Utilization of natural resources, forests, forest soil, forestry and hunting*

- fulfilment of ecological, economic and social effects of forests, through the provision of wood (raw material) for processing and furniture industry and as a renewable energy resource, achievement of recreational and cultural effects, provision of benefits for forest owners, along with permanent forest monitoring activities in order to protect and preserve resources in a healthy condition;
- multi-purpose use of forests and hunting potentials, while ensuring sustainable management of game populations and their habitats in a manner and to the extent that the vitality of game populations, habitat production capacity and biological diversity are permanently maintained and improved, thus fulfilling the hunting functions;
- development of integral information systems for forestry and hunting sectors.

3. *Protection and utilization of waters and water management infrastructure*

- the Republic of Serbia is treated as a unique water management space in order to enable high system reliability;
- establishment of an adequate system of integrated water management;
- provision of necessary quantities, of adequate quality, for different forms of water utilization;
- achievement of good ecological and chemical status/potential of surface water bodies and good chemical and quantity status of groundwater;
- providing protection from external and internal waters and protection against erosion and torrents.

4. *Mineral sources and mining*

- sustainable utilization of mineral sources and maintaining of the position of the Republic of Serbia as a regional leader in mining industry, as one of the foundations of national economy and energy safety. Basic objective will be achieved by sustainable development of mining sector and participation of the mining industry with 5% in the total GDP of the Republic of Serbia by 2030.

5. *Tourism*

- Sustainable spatial development of tourism, integrated into economic, social, cultural and ecological development of territorial units, urban and rural settlements and infrastructure, that contributes to the strengthening of international, national and regional competitiveness, activation and protection of tourist spaces.

6. *Transport and communications*

- Increase of transport accessibility and quality of transport infrastructure and services on the territory of the Republic of Serbia. This implies a more balanced spatial development of transport infrastructure and the improvement of the position in international transport with a focus on the development of rail, intermodal and water transport on international

corridors, and with the harmonization of various modes of transport for the purpose of a more successful intermodality.

7. *Energy, energy infrastructure and energy efficiency*

- safe supply of energy to consumers, which means the protection of energy potentials, including renewable energy sources, more efficient energy system (production, distribution and consumption of energy) and optimal spatial distribution of energy facilities and energy infrastructure, while ensuring environmental protection and public health.

8. *Environmental management*

- preventive protection and improvement of environment as a precondition for balanced development, utilization and arrangement of the space of the Republic of Serbia, in the context of stopping the negative trends in space and environment, protection of all planned activities that might endanger the existing environmental quality, along with the rehabilitation and revitalization of affected and degraded areas.

9. *Waste management*

- development of sustainable system of waste management for the purpose of the reduction of environmental pollution and spatial degradation;
- construction of infrastructure for utility waste management based on the rational spatial concept of waste management and the establishment of primary separation of waste in local self-government units;
- construction of plants for treatment and disposal of hazardous waste and special waste streams;
- closing and remediation of existing utility waste landfills and contaminated hazardous waste sites and revitalization of the area.

10. *Protection, arrangement and sustainable utilization of natural values, cultural property and landscapes*

- Basic objective of spatial development in the area of *natural heritage* is protection, preservation and improvement of natural resources and biological diversity and geo-heritage in accordance with the contemporary knowledge and experience, general national interest in sustainable development and accepted international obligations.
- Basic objective of spatial development in the area of *cultural heritage* is affirmation of cultural heritage as a resource of sustainable development and a factor of national and regional identity.
- Basic objective of spatial development in the area of *landscape* is the achievement of target quality of a landscape, reached through the management of affirmation processes (recognition) of the value of the character of a landscape as a public good of importance for the direction of sustainable spatial development.

1.2.3. Connection with other documents

One of the eight *Millennium Development Goals at the national level in the Republic of Serbia* defines that the sustainability of the environment must be ensured. This goal has become an obligation in the course of drafting of national strategies and documents, as well as action plans in the Republic of Serbia, and includes the following: incorporating the principles of sustainable

development into national policies, stopping the loss of natural resources and encouraging their revitalization.

In the field of environment, the Republic of Serbia has adopted the most important strategic documents regulating the policy of environmental protection and improvement. The basic concept of environmental development and policy measures are defined in the strategic documents listed below. The basic conclusion that can be drawn from the strategic documents is the necessity to integrate the aspect of environmental impact into sectoral development policies, primarily - energy, water management, industry, and agriculture, and transport, regional and spatial development. Environmental protection aspects, as part of the concept of sustainable development relate to the formulation of strategies to preserve ecological integrity, based on three basic principles: connection to the use of final stocks of non-renewable resources; the manner of using renewable resources and maintaining the level of pollution emissions within the limits of the absorption capacity of the environment.

National Programme for Environmental Protection (*Official Gazette of RS*, no. 12/10) defines strategic objectives of environmental protection policy, as well as specific objectives aimed at the protection of medium (air, water, soil) and the impact that certain sectors have on environment (industry, energy, agriculture, mining, transport, etc.). Also, priority objectives within the medium and sector have been determined and necessary reforms have been proposed in order to achieve all changes required to implement the objectives. Proposed reforms include the reforms of regulatory instruments, economic instruments, monitoring and information systems, financing systems in the area of environmental protection, institutional issues and requests related to infrastructure in the area of environmental protection. This document is comprehensive and served as a foundation for other strategic documents.

National Environmental Approximation Strategy of the Republic of Serbia (*Official Gazette of RS*, number 80/11) was adopted in order to ensure the readiness of the Republic of Serbia for negotiations with the EU in the most efficient way, as well as in order to fulfil the obligations derived from the membership. In addition, the Strategy contains an outline of economic instruments and financial mechanisms in the area of environment necessary to realize domestic and foreign investments and needs for institutional reform, development of legislation, and implementation of regulations on all levels, education and development of public awareness in the field of environment.

National Strategy of Sustainable Use of Natural Resources and Assets (*Official Gazette of RS*, number 33/12), as an important matter, defines the increase in resource use efficiency (thereby the decrease in the intensity of their use) and the decrease in environmental impact by the economic use of resources. The focus is set on the finding of the options of practical policy to separate the trend of economic development and the development in general from the trend of resource use and environmental impact.

Water Management Strategy for the Territory of the Republic of Serbia by 2034 (*Official Gazette of RS*, number 3/2017) represents a comprehensive planning document determining long-term water management policy, directions of sustainable activities in the area of use of waters, protection of waters, arrangement of watercourses and the protection of harmful effects of water. In the planning period, a significant improvement of the condition in the water sector is expected, compared to the existing one. On the basis of the Strategy, reforms of the water sector will be implemented in order to achieve required standards in water management, including organizational adjustment and systemic strengthening of professional and institutional capacities at a national, regional and local level.

Biodiversity Strategy of the Republic of Serbia for the period 2011-2018 (*Official Gazette of RS*, no. 13/2011) is the first strategic document directly and completely dedicated to the protection of nature defining national objectives for the protection and preservation of biodiversity, outlining basic characteristics and values of the biodiversity of the Republic of Serbia, legal, institutional and financial framework for the protection of biodiversity, conceptual model of pressures, threat factors and their causes, strategic areas, biodiversity protection activities and an action plan with details of responsible institutions, execution dynamics and potential sources of funding.

The Draft **National Waste Management Strategy for the period 2020-2025** further develops the regional approach to municipal waste management and sets goals in line with the EU acquis. In the foreground is the selection of waste at source, the increase in the level of waste recycling and the construction of the lacking infrastructure in order to create the basis to meet the goals set out in the key EU Directives in the waste sector. An integral part of the Strategy that sets goals and deadlines to achieve them, is the National Waste Management Plan with measures and activities, as well as a set of economic instruments. The purpose is to develop and improve the waste management system, through complementing the strategic and legislative framework and planning documents in this sector. Implementation plans of key EU directives in this area have been developed and a Negotiating Position has been prepared as a basis to open negotiations with the EU under Chapter 27 related to environment and climate change. The application of the EU Landfill Directive is considered together with the application of other waste management requirements, in particular with regard to the objectives set out by the EU Framework Directive related to waste and the EU Directive on Packaging and Packaging Waste. The application of these requirements affects the set of infrastructure that needs to be developed for each region.

Republic of Serbia Sustainable Urban Development Strategy until 2030 (*Official Gazette of RS*, number 47/19) represents a key instrument for the achievement of sustainable urban development by the application of integral approach. Five strategic directions of urban development have been defined (sustainable economic development, arrangement of urban settlements, social wellbeing, environmental quality and urban development management). The feature of this strategy is its clear connection to the spatial aspect and differentiation into levels and domains of national and local action.

Status and plans for transposition and implementation of the EU acquis for Chapter 27 - Environment and Climate Change is a document adopted in 2015, created as a result of an agreement reached between the Republic of Serbia and the European Commission in line with the conclusions of the Bilateral Screening. The document presents the status and plans for the transposition and implementation of the EU acquis in Chapter 27.

The Energy Development Strategy of the Republic of Serbia until 2025 with projections until 2030 (*Official Gazette of RS*, No. 101/15) determines strategic priorities for energy development, the most important of which in terms of spatial development are the following: ensuring energy safety through reliable, efficient and high quality supply of energy and energy sources and establishing conditions for reliable and safe operation of all systems within the energy sector and their sustainable development; development of the energy market, which requires more intensive connecting of the energy system of the Republic of Serbia with the energy systems of other countries, especially from the immediate surrounding; transition towards sustainable energy by providing conditions for the improvement of energy efficiency in performing of energy activities and energy consumption; creation of economic, commercial and financial conditions to increase the share of energy from RES, as well as for combined production of electricity and heat; creating institutional, financial and technical preconditions for the use of RES; improvement of the state and system of environmental protection in all areas of energy activities. It is defined that the use of new, more energy efficient and environmentally friendly, technologies and devices is of short-term

importance, while the technological modernization of energy facilities and systems, the increase in energy efficiency in energy production, distribution and use as well as the use of new renewable energy sources are of long-term importance.

Industrial Policy Strategy of the Republic of Serbia from 2021 to 2030 (*Official Gazette of RS*, no. 35/2020). The Industrial Policy Strategy of the Republic of Serbia contains reform steps in the area of industrial development whose aim is to increase the competitiveness of national industry that will significantly contribute to a high sustainable economic growth. The aim of the Strategy is to raise the technological level of industry and its transformation towards digitalization and automatization, the increase in contributions of scientific-research and innovative solutions, as well as in total scope of investments into industry along with securing the balance in the structure and quality of investments. The Strategy states that the representatives from the economy who participated at forums said that a stimulating environment has not yet been established that would promote investments in 'green' technologies, waste management or production systems that generate energy from renewable energy sources.

The National Action Plan for Renewable Energy Sources of the Republic of Serbia - NAPRES (*Official Gazette of RS*, No. 53/2013). NAPRES foresees that the share of RES will be in accordance with ratified international agreements and determines the ways to achieve an obligatory share of energy produced from RES of 27% in total consumption by 2020. This share of energy from RES is an obligation of the Republic of Serbia determined by the Energy Community Treaty. NAPRES has set a goal of having around 1,100 MW (new) from RES by 2020. This document also aims to encourage investments in the area of RES. In NAPRES, the goals for the use of renewable sources are determined on the basis of energy needs, economic possibilities and obligations of the Republic of Serbia undertaken by ratified international agreements. NAPRES contains the following: (1) an obligatory share of energy from renewable sources in gross final energy consumption in accordance with undertaken international obligations; (2) the planned share of energy from renewable sources in gross final energy consumption; (3) planned share of energy from renewable sources in gross final electricity consumption; (4) planned share of energy from renewable sources in gross final energy consumption for heating and cooling; (5) the planned share of energy from renewable sources in the gross energy consumed in all forms of transport; (7) measures to achieve the planned shares of energy from renewable sources, which include in particular: incentive measures, cooperation mechanisms, cooperation of local, provincial and national authorities, policy of development of biomass resources for energy purposes, as well as their effects; (8) measures necessary for the development of distance heating and cooling infrastructure in line with the growth of heating and cooling energy production from renewable energy sources; (9) measures to ensure the development of adequate programs to inform citizens and the economy about incentives, benefits and practical aspects of the development and use of energy from renewable sources, including the cooperation of public authorities; (10) deadlines for the implementation of planned activities.

1.2. An overview of the current environmental status and quality of the area covered by the Report

In the course of the preparation of the Strategic Assessment, it is necessary to give an overview of the current status and the quality of the environment in the area for which the Spatial Plan is adopted, since the characteristics of the current status form the basis for any research on environmental issues in a particular area. The basic characteristics of the current status for the purpose of this research are defined on the basis of the following: insight into the measurements results of environmental elements performed by authorized organizations, existing planning documents, conducted studies, available professional and scientific literature, as well as direct insights gained from the field.

1.2.1. Air Quality

Air quality in Serbia is impaired, first of all, in larger urban centers and their peri-urban zones, then in the areas of mining and larger thermal power and industrial plants, traffic corridors. The most common and causes of air pollution are outdated technology, low energy efficiency, lack of treatment plants for gases arising in the course of operations in industrial and energy sectors, use of poor quality fuels for heating, as well as poor quality of motor vehicles etc.

This is shown by the latest available data from the Environmental Protection Agency, indicating that the production of electricity and heat is the dominant source of total emissions of sulphur oxides (90% of total emissions) and nitrogen oxides (53% of total emissions) in the Republic of Serbia.

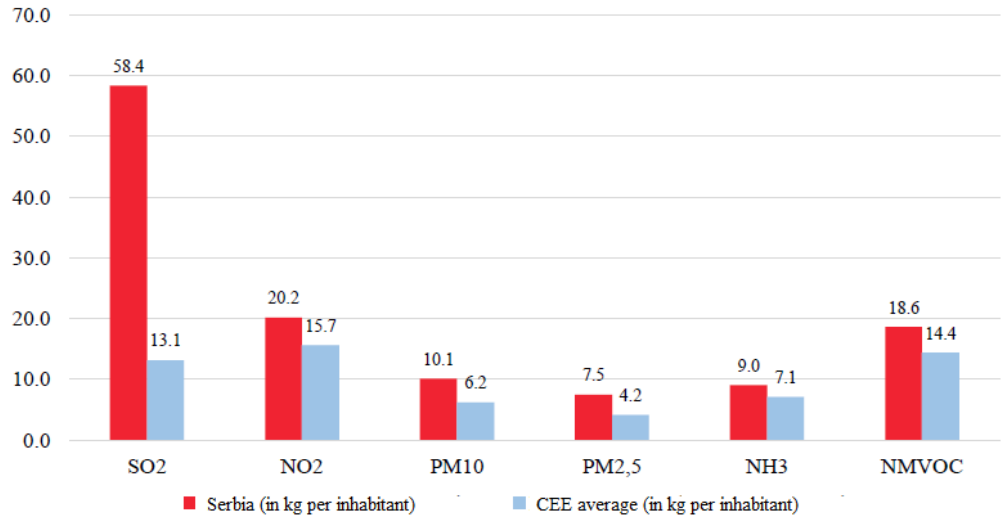
Road traffic was in the second place with a contribution of 19% of the total emission of nitrogen oxides, which did not represent a significant change compared to the previous year, 2018.

Heating plants of power less than 50 MW and individual furnaces are the most important sources of suspended particles PM10 (57%) and PM2.5 (77%), followed by industry and road transport.

Serbia has a negative record in terms of air pollutant emissions in relation to the countries of Central and Eastern Europe (CEE). We are clearly lagging behind also in relation to the relatively low standards of air quality in CEE and at the moment large emissions of pollutants released into the air are recorded.

Emissions of sulphur dioxide per capita were higher by 350% compared to the CEE average, suspended particles - by about 70%, and nitrogen dioxide, ammonia and non-methane volatile organic compounds - by an average of about 30%.

Graph 1.1. Emissions of air pollutants in Serbia and Central and East European countries (for 2015)



Source: CEIP (Centre on Emission Inventories and Projections).

Air emissions by sector in the period 1990-2018

In order to obtain reliable data and information on air pollution sources in Serbia, the National Register of Pollution Sources (PRTR Register) has been established, which, in addition to other sources, also includes air pollution sources. The register of air emissions is divided into two parts:

- *Register of large sources of pollution* (In 2018, 258 plants were registered for which an analysis of economic sector was performed), and
- *Register of sources* (In 2019, it included 1,493 plants).

In accordance with the requirements of the Convention on Long-Range Transboundary Air Pollution, anthropogenic sources of air emissions in Serbia are divided into nine categories: 1. production and distribution of energy; 2. use of energy in industry and industrial products; 3. heating plants with a capacity of less than 50MW and individual heating; 4. fugitive emissions; 5. use of solvents and industrial products; 6. road traffic; 7. air, water and railway traffic; 8. agriculture; and 9. waste.

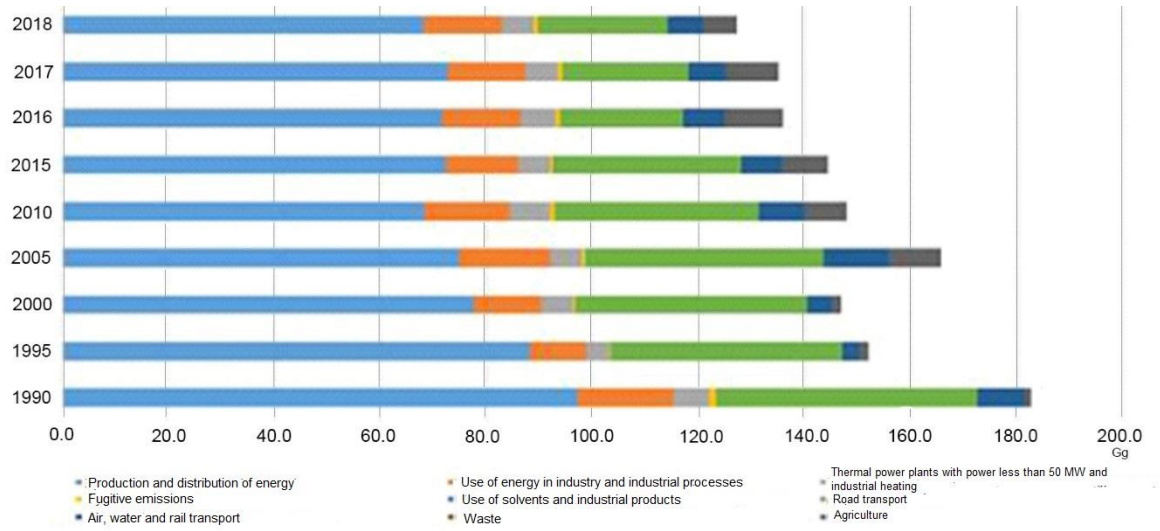
The type and the magnitude of environmental impacts associated with energy consumption, such as resource depletion, greenhouse gas emissions, air pollutant emissions, water pollution, radioactive waste accumulation, etc., directly depend on the type and amount of energy (fuel) consumed as well as from the applied technologies in the processes of production and consumption. The degree of environmental impact depends on the relative share of different fossil fuels and the degree of application of pollution reduction measures.

The energy sector is the largest emitter of greenhouse gases in Serbia, accounting for 80.6% of total emissions, of which the most important subsector is the energy industry, which includes public production of electricity and heat, refineries and fuel production (representing 70% of emissions from the energy sector and 56% of total national emissions). Consumption is dominated by fossil fuels with 87.9% (coal as much as 47.2%, oil 26.1%), while the share of renewable energy sources is 12.1%.

Seven different **nitrogen oxides** are formed in the combustion processes of fossil fuels, of which nitrogen monoxide (NO) and nitrogen dioxide (NO_2) are the most significant in terms of frequency of recurrence, effects on human health, and pollution. The most important point sources of nitrogen oxide in the Republic of Serbia are thermal power plants, chemical and mineral industry, as well as the production of animal and plant products from the food sector. Road traffic also has a large share in total emissions (Graph 1.2). The total amount of nitrogen oxides emitted from the plants in 2019 is 44.85 Gg.

Nitrogen dioxide is present in concentrations above permitted in the ambient air in cities, primarily in Belgrade and Uzice, while occasional exceedances occur in Novi Sad and Nis, and somewhat less frequently in Valjevo.

Graph 1.2. Nitrogen oxides emissions by sector in the period 1990-2018
expressed in thousands of *tonnes*

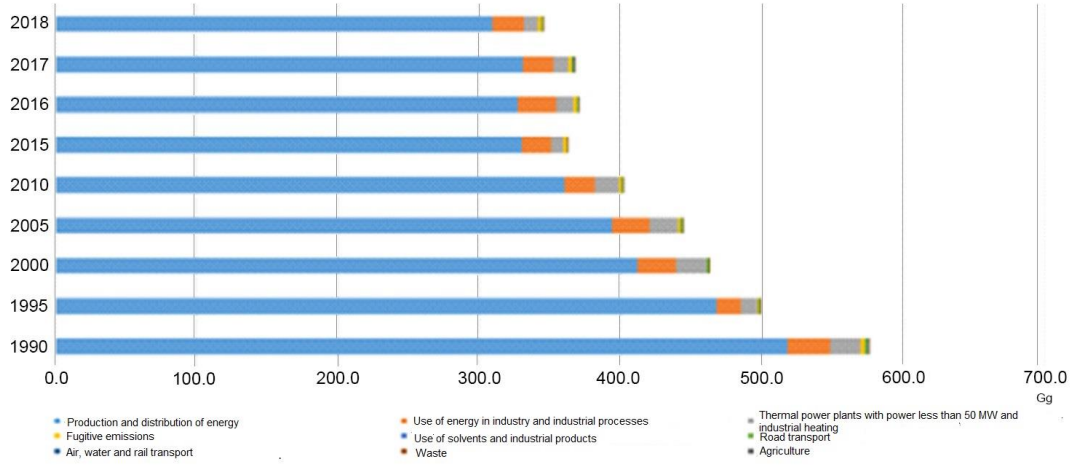


Source: Report on the Environmental Status in the Republic of Serbia for 2019

The most significant sources of pollution from which **sulphur oxides** are emitted are in the category - Production and distribution of energy (Graph 1.3), i.e. from thermal power plants, then the mineral industry, animal and plant products from the food sector and from metal production and processing.

By analyzing the data, it was established that the total emission of this pollutant in 2019 is 360 Gg.

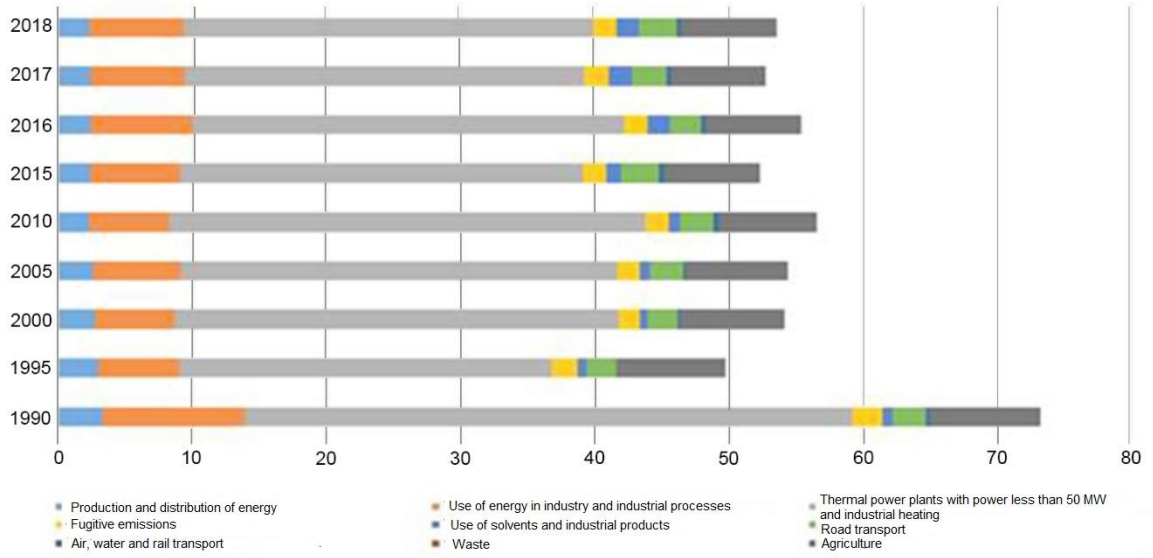
Graph 1.3. Sulphur oxide emissions by sector in the period 1990-2018 expressed in thousands of tonnes



Source: Report on the Environmental Status in the Republic of Serbia for 2019

Suspended particles can reach the air from natural sources (atmospheric chemical reactions) and anthropogenic sources, the most important of which are thermal power plants and the combustion of fossil fuels in traffic. In the process of combustion, soot (from diesel fuel) and fly ash (from thermal power plants) are formed. Smog is formed in the process of photochemical reactions (complex chain reactions of gaseous pollutants that occur due to sunlight). The most significant emitted quantities of particulate substances in 2019 come from thermal power plants from the energy sector, mineral industry, intensive livestock production and food industry, which is shown in Graph 1.4. The total emission of suspended particles was 13.35 Gg.

Graph 1.4. Emissions of suspended particles by sector in the period 1990-2018 expressed in thousands of tonnes



Source: Report on the Environmental Status in the Republic of Serbia for 2019

As a product of incomplete combustion, **carbon monoxide** does not significantly affect the state of air quality at any measuring point, and the cities where the maximum daily eight-hour concentration is exceeded are Vranje and Zajecar, and somewhat less often Uzice, Sabac and Krusevac.

According to the national emission balance submitted by the National Register of Pollution Sources (NRPS) annually, the dominant source of emissions of suspended particles PM10 and PM2.5 are heating plants of less than 50 MW power and individual heating, which in 2017 participated with 57% in PM10 emissions, and with 75% in PM2.5 emissions. Also, industry and agriculture without livestock occur as sources that contribute to the total PM10 emissions with 13% and 10% respectively. The industry sector is also present as a source of PM2.5 with 9%, and road transport participates with only 6% at the national level.

By analyzing data on air emissions, it can be concluded that the largest sources of pollution by sulphur oxides and nitrogen oxides are energy production and distribution, and the most significant source of suspended particles is the combustion of solid fuels in electricity production and household combustion for heating.

Road transport should also be mentioned as a very significant source of nitrogen oxides.

The most significant emitter of ammonia are farms, i.e. the breeding of domestic animals, and especially the management of manure on the farms.

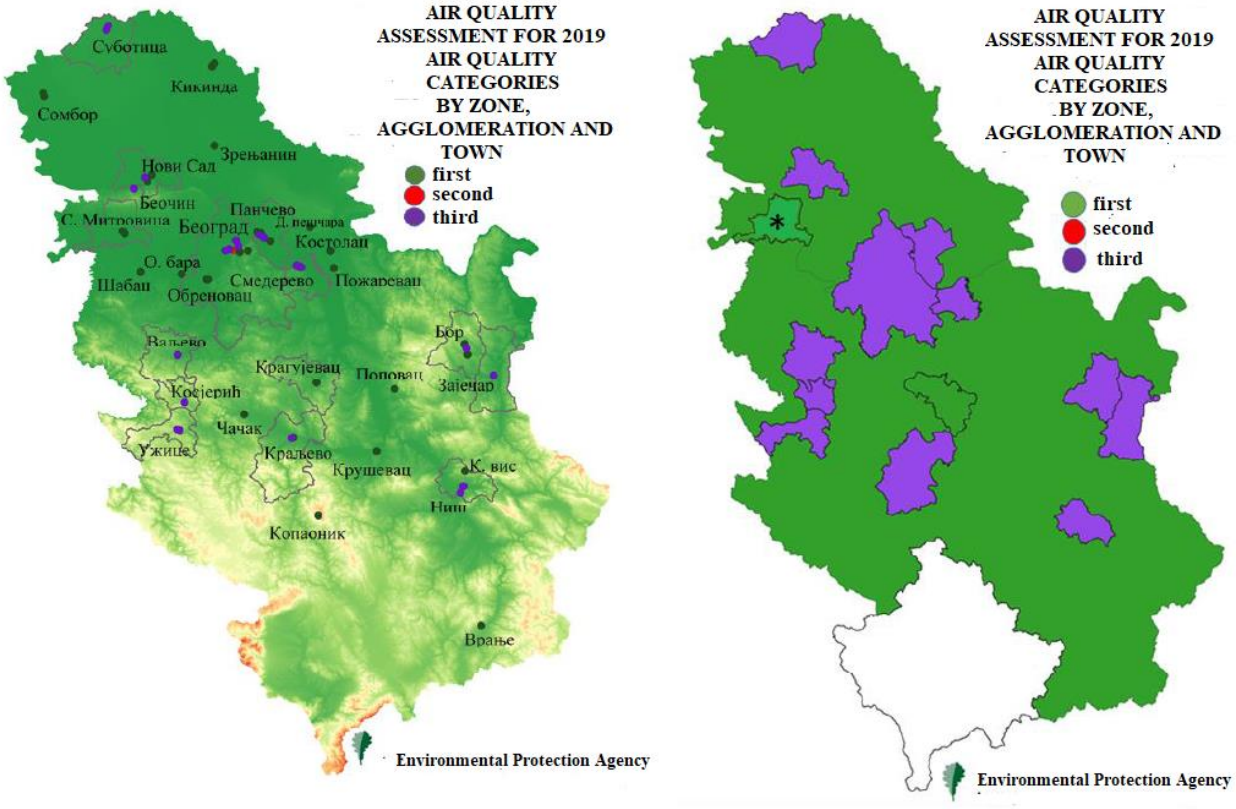
Air Quality Assessment in the Republic of Serbia

The official assessment of air quality in the Republic of Serbia is presented as follows: *Category I - clean air or slightly polluted air* (where limit values for any pollutant are not exceeded); *Category II - moderately polluted air*, and *Category III - excessively polluted air* (where limit values for one or more pollutants are exceeded).

During 2019, excessively polluted air (Category III) was in the agglomeration of Belgrade, Nis, Smederevo and Kosjeric (due to exceeding the limit value of suspended particles PM10 and PM2.5), then in the agglomeration Pancevo (due to exceeding the limit value of suspended particles PM2.5), and in the agglomerations of Novi Sad and Uzice (due to exceeding the limit value of suspended particles PM10). In the Bor agglomeration, the air was excessively polluted due to the exceeding of the limit values of SO_2 (Figure 1).

In the territories of the towns of Valjevo, Kraljevo and Subotica, the air was also excessively polluted (Category III) due to the exceeding of the limit value of suspended particles PM10 and PM2.5, also in Beocin due to increased concentration of PM2.5 particles, while in Sremska Mitrovica, the lack of measuring of suspended particles during January and February gave an inadequate picture that the air quality was of the first category.

Figure 1.1. Air Quality categories in 2019 in Serbia



Source: Annual Air Quality Report for the Republic of Serbia in 2019

In the zones of Serbia and Vojvodina, the air quality has not changed in the past eight years, and it is of the first category, i.e. clean or slightly contaminated. In eight agglomerations, which were established in 2010, the state of air quality has gone through changes (Table 1.1).

Table 1.1. Air Quality categories in the period 2010-2018

		AIR QUALITY CATEGORISATION								Source: Environmental Protection Agency
		2010	2011	2012	2013	2014	2015	2016	2017	2018
ZONES	SERBIA	II	I	I	I	I	I	I	I	I
	VOJVODINA	II	I	I	I	I	I	I	I	I
AGGLOMERATIONS	BELGRADE	III-PM10	III-PM10, NO2	III-PM10, NO2	III-PM10, NO2	II	III-PM10	III-PM10, NO2	III-PM10, NO2	III-PM10, NO2.5
	NOVI SAD	III-NO2	III-NO2	I	I	I	II	I	I	I
	NIS	III-PM10	III-PM10	II	I	I		I	III-PM2.5	I- no data for PM10
	BOR	III-SO2	III-SO2	III-SO2	III-SO2	III-SO2	III-SO2	I	I	I
	UZICE		II	II	III-PM10	III-PM10	III-PM10	III-PM10	III-PM10	III-PM10
	KOSJERIC		III-PM10	III-PM10	II	I				III-PM10, NO2.5
	SMEDEREVO		III-PM10	III-PM10	III-PM10	III-PM10				III-PM10, NO2.5
	PANCEVO		III-PM10	III-PM10	I	I	III-PM10	I	III-PM10, NO2.5	III-PM10
Valjevo - zone Serbia				III-PM10	III-PM10	III-PM10	III-PM10	III-PM10	III-PM10	III-PM10
Kraljevo - zone Serbia									III-PM2.5	III-PM10, NO2.5
Kragujevac - zone Serbia						II	III-PM10	III-PM10	III-PM10	III-PM10
Sremska Mitrovica - zone Vojvodina						II	III-PM10	III-PM10	I	III-PM10
Subotica - zone Vojvodina								III-PM10, NO2.5	III-PM10, NO2.5	III-PM10, NO2.5

Category I - clean or slightly polluted air (air quality parameters are below established limit values)
Category II - moderately polluted air (some of the air quality parameters exceed limit values, but are below tolerant levels)
Category III - overly polluted air due to the concentrations that have exceeded limit values or tolerant levels (tolerant levels exceeded)

According to the data of the Environmental Protection Agency shown in Table 1.1, Belgrade is the agglomeration that has had the worst air quality in the period 2010-2018, as it was in the category III during the entire observed period, i.e. the air was excessively polluted (except in 2014 when it was in category II).

The cause of such an air quality assessment is frequent exceeding of the concentration of PM10 particles and occasional exceeding of NO_2. In the last six years, the air quality in Uzice has remained endangered by the presence of suspended PM10 particles. In Pancevo, the suspended particles were the cause of polluted air in 2011, 2012, 2015, 2017 and 2018, when the air was assessed as excessively polluted.

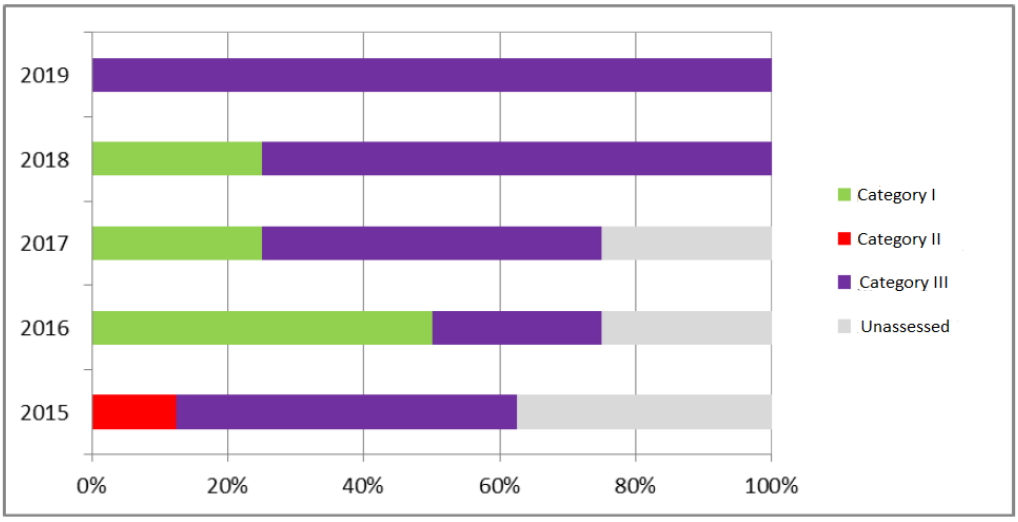
Nis had polluted air until 2012, and since then the air has been clean except in 2015 (due to insufficient measurement scope, the air quality category has not been determined), and in 2018, due to insufficient measurement scope of PM10 particles, it was rated as the first category. Novi Sad has a changeable status of air quality, but it can be said that for the last seven years, except in 2015, it has had a clean air.

In the period from 2015 to 2019, the percentage of agglomerations with highly polluted air was changing (Graph 1.5).

The agglomerations had clean air in 2016, 2017 and 2018, namely 25% to 50% of agglomerations. It can also be seen that the second category of moderately polluted air was present only in 2015 in one agglomeration.

The number of agglomerations with excessively polluted air has increased, so from 25% in 2016, it rose to 100% in 2019, i.e. all agglomerations had excessively polluted air.

Graph 1.5. Air quality in agglomerations by category
for the period 2015–2019



Source: Annual Air Quality Report for the Republic of Serbia in 2019

In order to improve air quality in agglomerations where limit or tolerance values have been exceeded, air quality plans have been developed and approval was received from the Ministry for the following agglomerations: agglomeration Bor (2013), Belgrade agglomeration (2016), Pancevo agglomeration (2017) and for the agglomerations Smederevo and Novi Sad (2018). The short-term action plan for the Uzice agglomeration (2016) envisages measures that will lead to the reduction and control of particulate matter (PM10) emissions.

Finally, it should be noted that the Inventory of Basic Air Pollutants is kept in Serbia and on the basis of these data the indicator of the Emissions of **acidifying gases** is developed, in accordance with the EMEP/EEA 2016 methodology. The trends of anthropogenic emissions of acidifying gasses – nitrogen oxides, ammonia and sulphur oxides, in the period from 1990 to 2018 - are monitored. Based on the data, it can be concluded that the emitted amounts of sulphur oxides show a slight decrease, while the emitted amounts of ammonia and nitrogen oxides do not show significant changes in the observed period. Based on the inventory, the most significant contributors to the total amount of emitted acidifying gases in 2018 are the following:

- nitrogen oxides: energy production and distribution 53,52% and road transport 19,09%,
- sulphur dioxide: energy production and distribution 89,56%, and
- ammonia: agriculture with around 85, 30%.

According to the same EMEP/EEA 2016 methodology, trends in **ground-level ozone precursors** (secondary pollutant in the troposphere, but a strong oxidizing agent with proven harmful effects on the living world) are monitored, which include emissions of nitrogen oxides, methane, carbon monoxide and volatile organic substances without methane. The emitted quantities of CO show a drop for the period 1990-2018, while the emitted quantities of NMVOC show a very slight decrease in the mentioned period. Adequate data for methane emissions are not yet available. The most significant contributors to the total amount of ozone precursor emissions are 'Thermal power plants with power less than 50 MW and individual heating' (CO - 73.09%, NMVOC with 21.50%), 'Agriculture' (CH4 - 42.6%). A significant share in NMVOC emissions also have 'Agriculture', with 17.37%, 'Use of solvents and industrial products' - 14.54%, 'Use of energy in industry and industrial processes' with 9.07%, and fugitive emissions with 30.75%.

The following Table 1.2 presents a list of companies that had the highest emissions of sulphur dioxide, nitrogen oxides and suspended particles in 2016, and thus significantly contributed to excessive air pollution in Serbia.

Table 1.2 List of companies that had the highest emissions of sulphur dioxide, nitrogen oxides and suspended particles in 2016

Rank	Sulphur dioxide	Nitrogen oxides	Suspended particles
1	TPP Kostolac B	TPP Nikola Tesla A	TPP Nikola Tesla A
2	TPP Nikola Tesla A	TPP Nikola Tesla B	TPP Kolubara
3	TPP Kostolac A	TPP Kostolac B	TPP Kostolac B
4	TPP Nikola Tesla B	TPP Kostolac A	TPP Kostolac A
5	TPP Kolubara	TPP Kolubara	TPP Nikola Tesla B
6	Pancevo Refinery	Lafarge	TPP Morava
7	TPP Morava	Pancevo Refinery	Hesteel – Smederevo
8	Energy	TPP Morava	Zelezara Smederevo*
9	MB Kolubara – Processing	CRH	Energy
10	Sunoko – Pecinci	Petrohemija	MB Kolubara – Processing

Finally, the analysis of the data on air emissions as the largest sources of sulphur and nitrogen oxides and solid particles are the combustion of solid fuels in the production of electricity and heat, as well as combustion in households for the purpose of heating and cooking. It is necessary to single out road transport as a very significant source of nitrogen oxides. The most important emitters of ammonia are farms, i.e. breeding of domestic animals, and especially the management of manure on them.

1.2.2. Water Quality

Serbia's water resources are for the most part transit waters of the rivers Danube, Sava, Tisza and other, while only 9% are domicile waters. Water regimes on rivers are characterized by spatial and seasonal unevenness. This means that the western, southwestern and southern parts of Serbia are richer in water than the northern, central and eastern parts, and that high waters are present in spring, and low waters in late summer, autumn and early winter.

The main sources of water pollution in the Republic of Serbia are untreated industrial and municipal wastewater, drainage water from agriculture, leachate and landfill leachate, as well as pollution related to river navigation and the operation of thermal power plants.

According to the Environmental Protection Agency data, the dominant water pollution in the Republic of Serbia with nitrogen and phosphorus comes from communal and industrial sources, mostly from plants within the energy sector, chemical and mineral industry, as well as public utility companies.

A large number of PUCs do not have a flow meter installed on their outlets, which is why the exact quantities of discharged wastewater are unknown, although their installation was prescribed by the law more than twenty years ago, which points to the fact that legal obligations have not been adequately met.

According to the SWQI[1] indicator for the period 2009-2018, watercourses on the territory of the Republic of Serbia are characterized by the improvement of water quality. SWQI analysis included

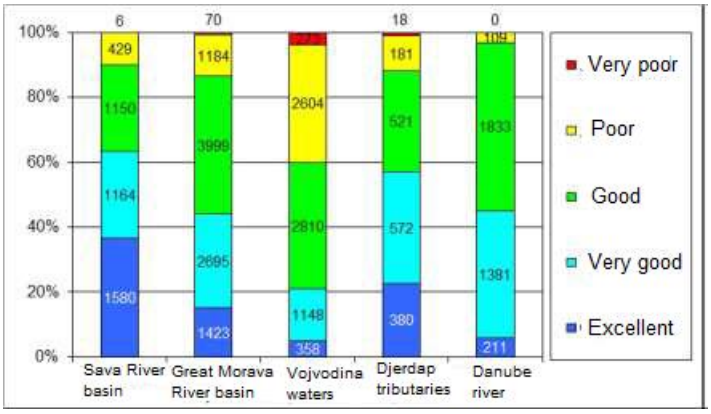
[1] Serbian Water Quality Index (SWQI) monitors nine parameters of physico-chemical water quality parameters and one parameter of microbiological water quality and ensures the measuring of the surface water status in terms of their general quality.

the catchment areas of watercourses of the Republic of Serbia and the waters of Vojvodina were sampled, from Bezdan station to Radujevac, then the Danube river with Drina and Kolubara basins, tributaries of Djerdap Lake, right tributaries of the Danube river downstream from the mouth of Great Morava and Great Morava basin, with South and West Morava basins.

By analyzing 25,204 samples from 248 measuring points sampled on average once a month in the period from 1998 to 2018, the worst situation is in the territory of the Autonomous Province of Vojvodina, where the quality indicator is *very poor* in as much as 74% of samples (Graph 1.6).

A favorable (increasing) trend has been determined on the entire territory of the Republic of Serbia, there are no significant changes in the Danube and Morava basins, while an unfavorable (declining) trend has been determined in the Sava River Basin. The median values of SWQI range from 80 to 90, which corresponds to the quality 'good' and 'very good'.

Graph 1.6. SQQUI method of water sample analysis
by catchment areas of the Republic of Serbia (1998-2018)

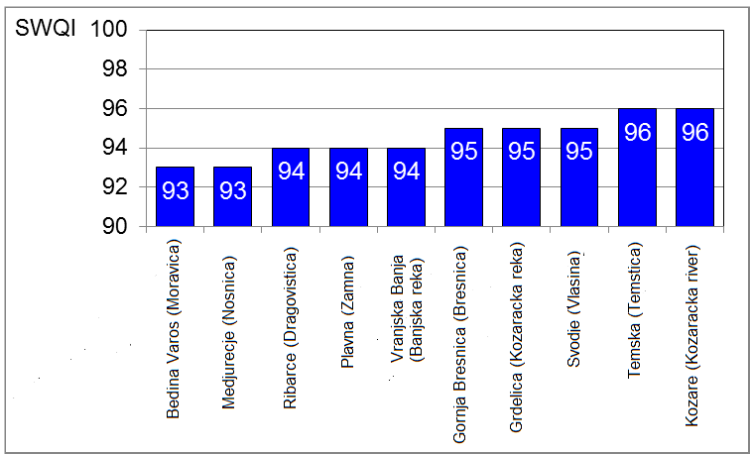


Source: Report on the Environmental Status in the Republic of Serbia for 2019

The analysis of the ten 'best' and 'worst' measuring points (watercourses) by the SWQI method shows a general picture of the quality of our watercourses (Graphs 1.7 and 1.8). It can be stated that the cleanest are small watercourses in hill and mountainous areas and that these water resources can be said to be outside the impact of wastewater from larger urban and industrial centers.

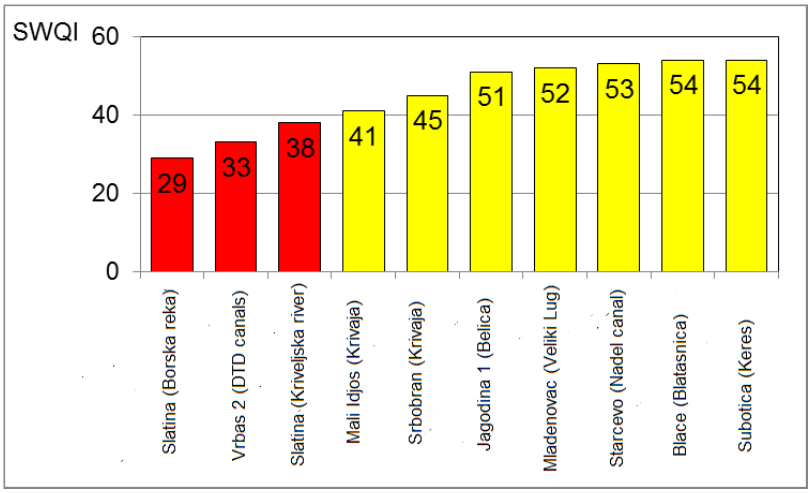
The Great Backa Canal is an ecological 'hot spot' in Serbia and represents a great and urgent ecological problem, and at the same time an example of difficulties in solving the problem of surface water pollution.

Graph 1.7. Ten 'best' measuring points (watercourses) – SWQI average (1998-2017)



Source: Environment in Serbia 2004-2019

Graph 1.8. Ten 'worst' measuring points (watercourses) – SWQI average (1998-2017)



Source: Environment in Serbia 2004-2019

The quality of river water in the Republic of Serbia, in terms of **nitrates**, belongs to the excellent ecological status at 91% of measuring points. Unfavorable (increasing) trend of nitrate was determined at 13% of measuring points (six): Srpski Itebej (navigable Begej), Tekija (Danube), Kusice (Pek), Badovinci (Drina), Mojsinje (South Morava) and Nis (Nisava). It is good that the average values of nitrates at these measuring points are low and within the limits of an excellent ecological status.

In terms of **orthophosphates**, the quality of river water does not belong to good ecological status at 11 (22%) measuring points. The worst situation is at the measuring points in the Autonomous Province of Vojvodina: Backi Breg (Plazovic) with an unfavorable (increasing) trend and an average ten-year concentration of 0.579 (mg/l), Hetin (Stari Begej) - 0.396 (mg/l) and Vrbica (Zlatica) - 0.275 (mg/l) with insignificant trend in the observed period.

The analysis of **BOD5** value was performed at 39 measuring points where, in the period from 2009 to 2018, there was a continuity in sampling. The unfavorable (increasing) trend of BOD5 was determined at eight measuring points, which is 21% of the analyzed measuring points. It is good that the average ten-year concentration of BOD5 is low at these measuring points. The higher average ten-year concentration of BOD5 is measured at the measuring point Backo Gradiste (DTD

canals) in the Autonomous Province of Vojvodina, representing 2% of measuring points. An insignificant ten-year trend of water quality was been determined at this location.

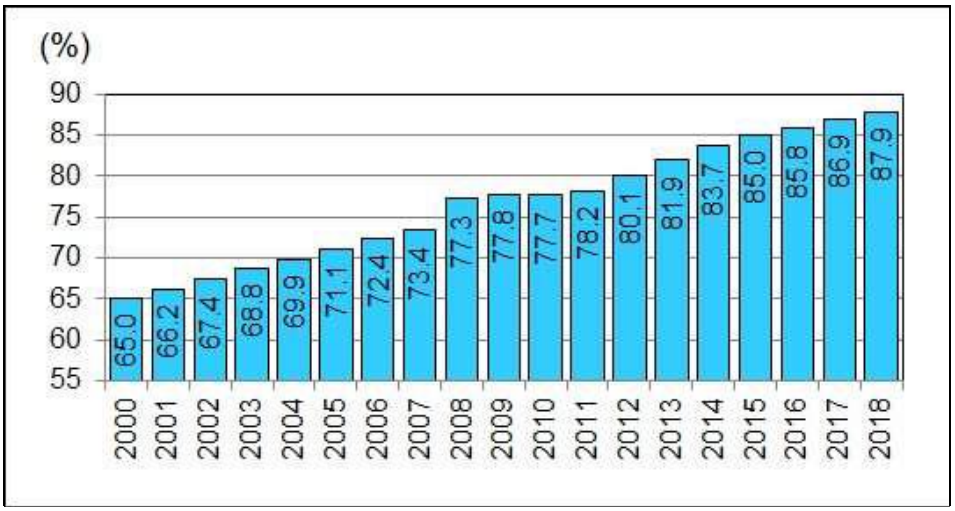
The analysis of **ammonium** shows a good ecological status, but also an unfavorable (growing) trend of ammonium was determined in the Sava River Basin. An insignificant trend in the same period is in the Morava and Danube basins as well as in the entire territory of the Republic of Serbia.

An unfavorable (increasing) trend of average values of ammonium was determined in the period from 2008 to 2018, at 26% of measuring points in the Republic of Serbia. In the Sava River Basin, an unfavorable (increasing) trend was determined at 71% measuring points (five of the seven), but it is good that the ammonium concentrations in the Sava River Basin are low.

In terms of sanitary and technical conditions of water supply and sewerage, the situation is not at a satisfactory level, although the number of new connections to public water supply and sewerage is increasing. The percentage of residents connected to public water supply is constantly growing, and the connection of 65% in 2000 has increased by 22.9% in 2018 reaching 87.9%, which will provide drinking water and a production which meets health safety requirements to a larger population and economy (Graph 1.9).

The most favorable situation is in West Backa, North Banat, Central Banat and South Banat districts, where almost 100% of residents are connected. The lowest percentage is in Nisava district (50.8%) and Toplica district (67.8%).

Graph 1.9. Percentage of inhabitants connected to public water supply system (2000-2018)



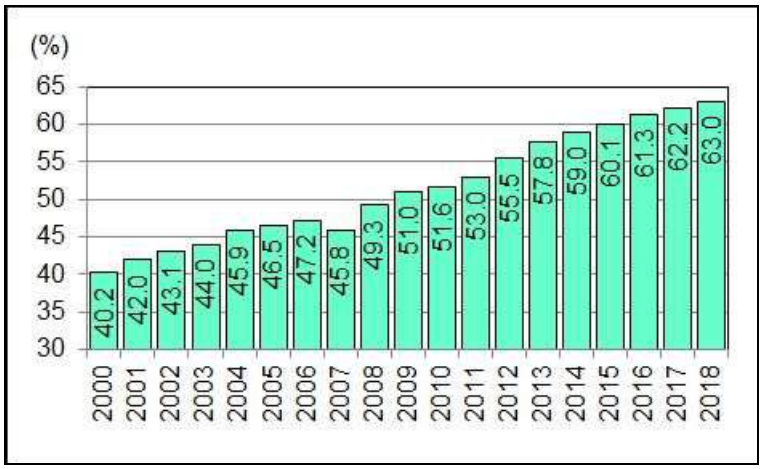
Source: Report on the Environmental Status in the Republic of Serbia for 2019

The percentage of residents connected to the public sewerage system (Graph 1.10) is also continuously growing, from 40.2% in 2000 it grew by 22.8% by 2018, when it was 63%.

The highest percentage of the population connected to the public sewerage system is in Belgrade (86.2%) and Sumadija area (74.4%), while the lowest percentage is in West Backa district (30.4%) and Nisava district (33.7%), where residents mostly connected to septic tanks.

There is a significant difference in the degree of connection of the population to the sewage system in relation to the connection to the water supply, especially in settlements with less than 50,000 inhabitants, which represents a special danger for groundwater pollution.

Graph 1.10. Percentage of inhabitants connected to public sewerage system (2000-2018)

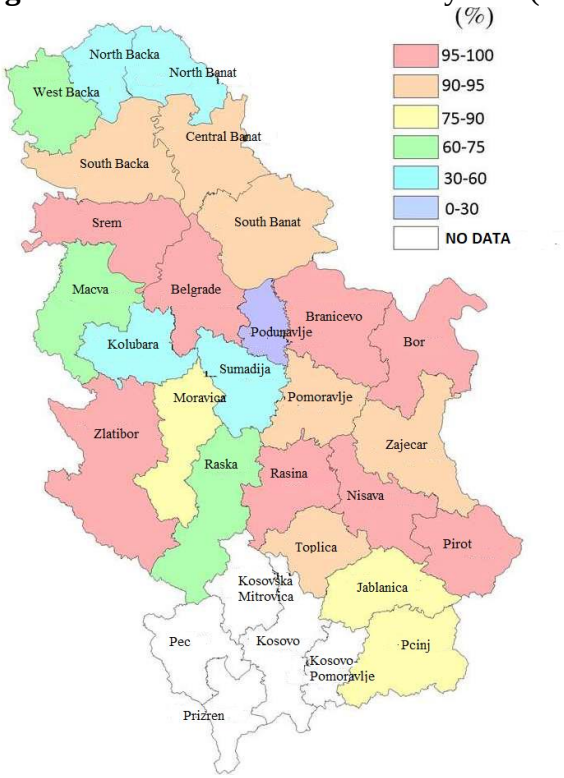


Source: Report on the Environmental Status in the Republic of Serbia for 2019

Within the National Register of Pollution Sources, data related to polluted (untreated) wastewater are monitored. The indicator monitors the share of discharged untreated wastewater into surface water bodies in relation to the total amount of discharged wastewater.

According to multiannual data, the quantities of total wastewater in the period 2008-2018 have a declining trend. If we have a look at the areas, the most untreated wastewater (95% - 100%) is in Nisava, Belgrade, Zlatibor, Bor, Rasina, Pirot, Toplica, Branicevo and Srem areas. The lowest number is in Podunavlje (24%), North Backa (28.6%), Sumadija (29.7%), North Banat (40.4%) and Kolubara (45.4%) areas (Figure 2).

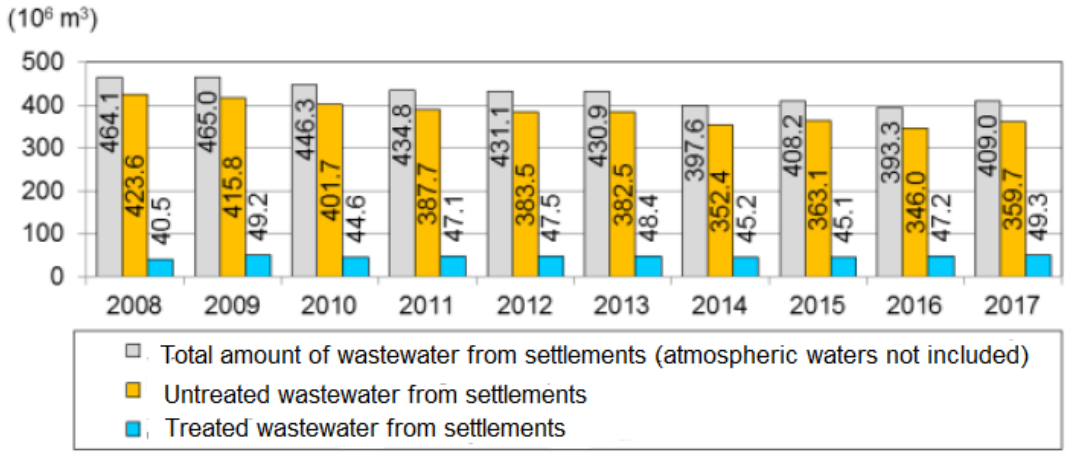
Diagram 1.2. Untreated wastewater by area (2018)



Source: Report on the Environmental Status in the Republic of Serbia for 2019

In Serbia, 409 million m^3 of wastewater is discharged into rivers and canals through public sewerage systems annually. The percentage of untreated wastewater has a favorable (declining) trend in the period 2008-2018. For example, in 2017, the largest percentage of wastewater was treated (12.1%) in the said period. A favorable data is that the quantities of total wastewater in the same period have a declining trend.

Graph 1.11 Wastewater quantities in the Republic of Serbia (2008-2017)



The analysis of pollutant emissions in municipal and industrial wastewater is performed based on the amount of **total nitrogen** and **total phosphorus**. The largest emitted amounts of nitrogen and phosphorus in industrial wastewater come from plants within the energy sector, chemical and mineral industries, as well as from public utility companies that manage waste and wastewater at the city or municipal level.

The following are the largest sources of *nitrogen* pollution in the Republic of Serbia:

1. PUC Belgrade Waterworks and Sewerage (*JKP Beogradski vodovod i kanalizacija*) (43%)
2. PUC Waterworks and Sewerage Novi Sad (*JKP Vodovod i kanalizacija Novi Sad)* (13%)
3. Electrical Power Industry of Serbia (*EPS*) – TPP NT B (14%)
4. Electrical Power Industry of Serbia – TPP NT A (11%)
5. PUC Naissus, Nis (10%)

The following are the largest sources of *phosphorus* pollution in the Republic of Serbia:

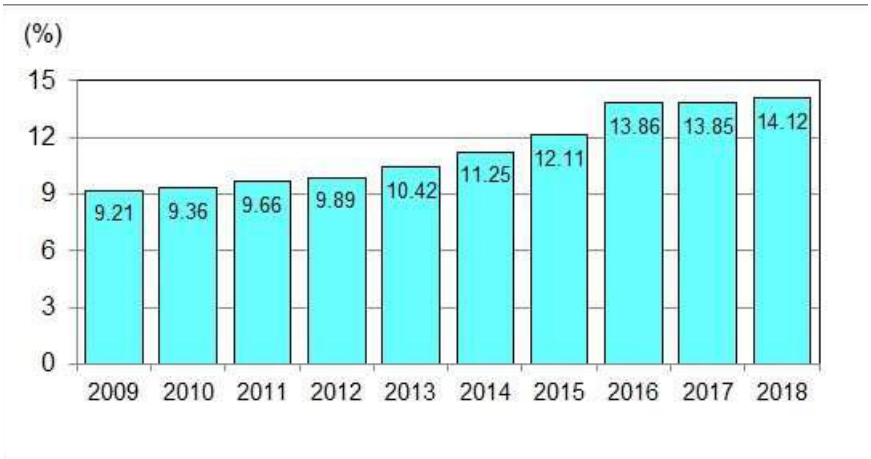
1. PUC Belgrade Waterworks and Sewerage (43%)
2. Electrical Power Industry of Serbia – TPP NT A (16%)
3. Electrical Power Industry of Serbia – TPP NT B (10%)
4. PUC Waterworks and Sewerage Novi Sad (9%)
5. PUC Waterworks Leskovac (*JKP Vodovod Leskovac)* (8%)

The percentage of the population included by the wastewater treatment was constantly growing in the period from 2009 to 2018. In 2018, it amounted to a maximum of 14.12% and compared to 2009, it increased by 4.91% (Graph 1.12). In the period from 2016 to 2018, tertiary treatment

increased significantly as the most perfect purification treatment, and 3.45% of the population was connected to this treatment in 2018. This type of wastewater treatment was higher by 2.14% in 2018 compared to 2009.

In 2018, the North Backa region had the highest quantity of treated wastewater through all types of treatment, discharged into wastewater disposal systems in 2018 (96%). In the same period, Central Banat, Belgrade, Zlatibor, Rasina, Toplica and Nisava regions did not treat wastewater.

Graph 1.12. Percentage of population included in the wastewater treatment in the Republic of Serbia (2008-2018)

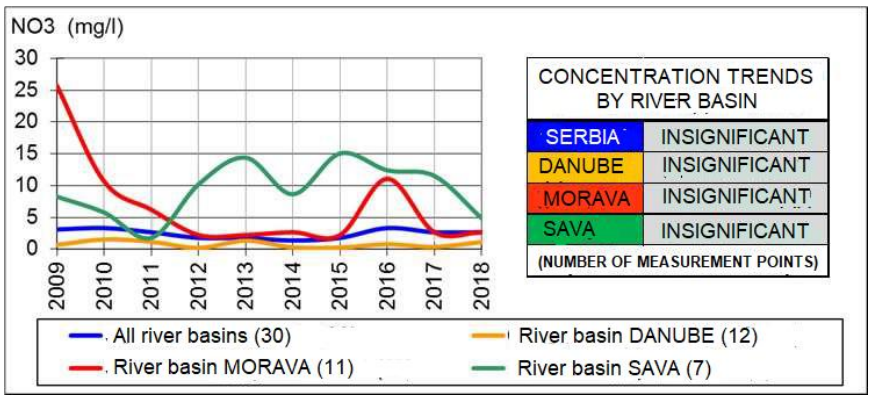


Source: Report on the Environmental Status in the Republic of Serbia for 2019

According to the Statistical Office of the Republic of Serbia, about 42% of the total amount of wastewater is treated (not taking into account the *Electric Power Industry of Serbia* wastewater used for cooling in the electricity production process). Also, the data of the Public Health Institute Batut indicate that 57% of the analyzed industrial *plants* do not have devices for wastewater treatment and about 50% of industrial wastewater samples do not meet the standards of wastewater quality.

To assess the groundwater quality, the Environmental Protection Agency monitors the concentration of nitrates (NO_3). Excessive amounts of nutrients that sink into the soil from urban areas, industry and agricultural areas lead to an increase in concentration, which causes groundwater pollution. This process has a negative impact on the use of water for human consumption and other purposes. In the period from 2008 to 2018, an insignificant trend of nitrates was recorded on the entire territory of the Republic of Serbia and in all catchment areas (Graph 1.13).

Graph 1.13 Median trends of nitrates in groundwaters of the Republic of Serbia (2009-2018)



Source: Report on the Environmental Status in the Republic of Serbia for 2019

1.2.3. Soil Quality

The soil cover of the Republic of Serbia is very diverse, which is a consequence of the diversity of conditions of origin and development of soil, due to which can be distinguished fertile plains in the north, limestone and base soils in the east, clay soils in the mountains and hills in the southeast, up to humus-clay, sand silicate soils, etc. Agricultural land dominates with over 54.7% of the total territory of the country.

Forests and semi-natural areas cover almost 39.96% of the country (deciduous forests - 27%), land classified as artificial areas covers almost 3.69% of the territory, and the remaining of approximately 1.65% is classified as wetlands and water basins.

The concept of sustainable soil management has an important agro-ecological and socio-economic dimension, and in order to preserve the soil, the condition and manner of its use are monitored, sensitive areas are identified, and the degree and characteristics of pollution are determined. For the purpose of monitoring the condition of the soil on the territory of the Republic of Serbia, it is necessary to ensure constant monitoring of certain pollutants and polluting substances that are the cause of degradation and have a significant impact on the environment and human health.

The area of the Region Serbia - South is dominated by soils with weakly acidic to acidic reaction, carbonate-free to weakly carbonate, weakly humus to humus, with low and very low content of easily accessible phosphorus, as well as soils with optimal and high content of easily accessible potassium.

In the area of AP Vojvodina, carbonates and readily available phosphorus are found in the soil in a varying amount, while readily available potassium is found in the amounts ranging from optimal to high content. The predominant soils are weakly alkaline, as well as weakly humus to humus soils.

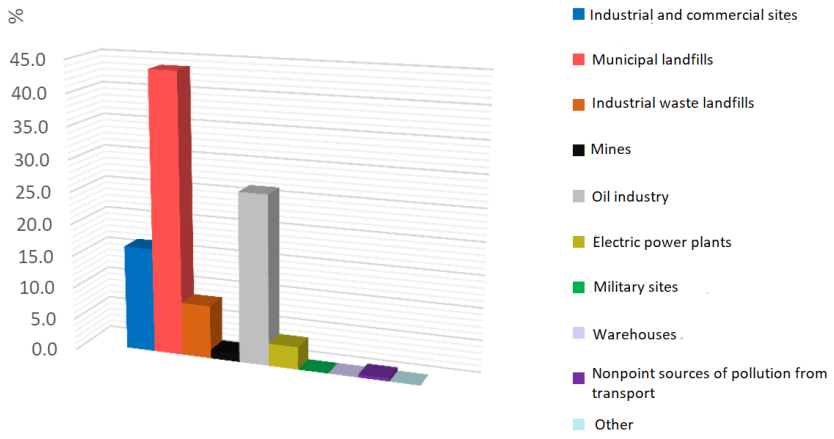
The following are the main threats leading to soil degradation in the Republic of Serbia, presented by intensity: erosion, reduction of organic matter, disruption of soil structure, soil acidification, soil pollution due to industrial activity, mining and energy, excessive use of chemicals in agriculture, and compaction of agricultural soil.

Local soil pollution is present in areas of intensive industrial activity, inadequate landfills, mines, at the sites of various accidents. Public utility landfills had the largest share in the identified localities, 43.7%, and are followed by borings and oil depots with 26.4% and industrial and commercial sites with 16.3%. (Graph 1.14).

In 2018, a total of 709 potentially contaminated and contaminated sites were identified in the Republic of Serbia (Figure 1.3). Of that number, restoration and remediation were carried out at 52 sites, and 76 sites were investigated in detail (Towards soil decontamination in the Republic of Serbia, 2018).

According to the research of the Environmental Protection Agency in 2017 and the content of potentially harmful elements in the soil (As, Cd, Pb, Cr, Cu, Ni, Zn), an 'alarmingly polluted soil' was identified where remediation values of the said harmful substances were exceeded and these are: Zorka – Non-ferrous metallurgy Sabac, Industry of Chemical Products (*IHP*) Prahovo - Phospho-gypsum landfill, PKS-LATEX HLC - Cacak and Chemical Industry (*HI*) Viskoza - Loznica.

Graph 1.14. Share of main types of localized sources of soil pollution in the total number of identified localities (%)



Source: Environment in Serbia 2004-2019

Figure 1.3. Map of potentially contaminated sites in the Republic of Serbia

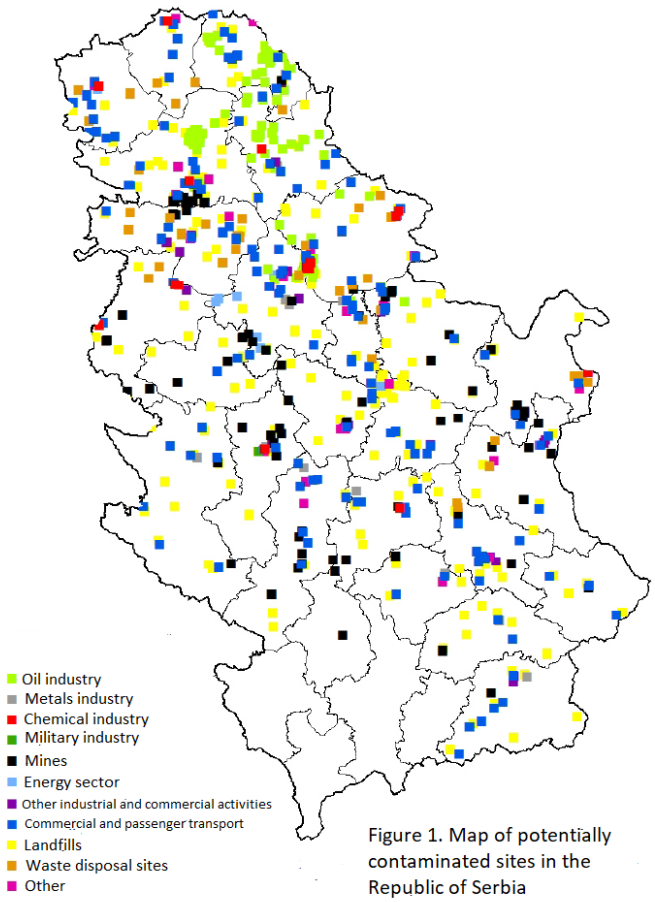


Figure 1. Map of potentially contaminated sites in the Republic of Serbia

Source: Towards soil decontamination in the Republic of Serbia

Soil in urban areas is a particularly endangered medium affected by the load of human activities. Intensive industrialization and urbanization are a cause having a negative impact on environment and the quality of life of the inhabitants, both in the city itself and in its peripheral settlements. Examination of soil conditions in urban areas includes determining of the concentration of hazardous and harmful substances in the soil in industrial zones, near the roads, in water supply source zones, recreational zones, residential zones, zones of pedagogical institutions, agricultural areas and zones near landfills.

The results of the examination of soil pollution conducted by the Environmental Protection Agency indicate that there is an increase in the concentration of certain parameters at certain sites. In the period from 2005 to 2018, the soil was monitored at 827 sites, some of which were tested in more detail using a larger number of samples.

- *Near industrial facilities,* the sampling covered 154 sites. The results obtained indicated the exceeding of limit values for Ni in 47.7% of soil samples. Concentrations of Co were exceeded in 47.0% of samples, of Cu in 38.3% of samples, of Hg in 23.7% of samples, of Cd in 22.3% of samples, while other metals slightly exceeded the limit value.
- *Near sites with heavy traffic*, the examination was conducted at 218 sites. Out of the total number of samples, it was ascertained that Ni concentration exceeded the limit value in 51.8% of samples. In 41.2% of the examined samples, an increased concentration of Co was registered. Cu content was exceeded in 28.9% of samples, Cd in 19.6% of samples, Zn in 14.6% and Hg in 14.4% of samples.
- In samples of *agricultural soil* located in immediate vicinity of urban zones, the total content of heavy metals was examined at 402 locations. Based on the obtained results, the highest

exceedance of the limit value was recorded for Ni in 52.4% of samples. Total Cu is above the limit value in 29.9% of samples, So in 26.5% of samples, Cd in 15.4% of samples.

- In *the vicinity of municipal waste landfills*, the examination was conducted at 53 sites. Ni concentration in examined samples exceeded the limit value in 59.6% of samples. Exceedance of Cu was recorded in 26.0% of samples, and of Cd in 17.3% of samples.

Deviations from the prescribed standard for nickel, copper, cobalt, cadmium, zinc and mercury were registered in most of the examined soil samples.

Urban development also leads to changes in the purpose of land use. The analysis of the contribution of certain categories of land use areas that were occupied by urban development in the Republic of Serbia in the period 1990-2018 shows that mostly occupied land was that under pastures, as well as mixed agricultural areas (Table 1.3).

Table 1.3. Origin of urban land expressed in %
of various land categories which underwent land conversion

Categories	**Occupation in ha**				
	1990-2000	2000-2006	2006-2012	2012-2018	**Total**
Pastures and mixed agricultural areas	2,818	2,280	1,148	2,930	6,539
Arable land and permanent crops	2,468	939	1,777	0	5,184
Water basins	58	0	14	91	164
Bare areas with little or no vegetation	0	0	0	0	0
Natural grasslands	12	3	8	0	23
Forests and transitional forest areas	2,094	1,066	1,264	1,768	6,192
Wetlands	21	36	30	0	87

Source: Environment in Serbia 2004-2019

Examination of soil in urban areas shows that these areas are under strong human influence and metals are the most common pollutants. The organic carbon content in the soil is declining and is lower than the original estimated value.

1.2.4. Noise Levels

The most common sources of noise in the Republic of Serbia come from traffic (road, railway and air), then industrial plants, while the problem is the noise coming from local sources (catering and craft shops, etc.).

Precise data on the part of the population endangered by communal noise are lacking for the entire territory of the Republic of Serbia. Noise intensity monitoring in 2019 was performed in 24 local self-government units (269 measuring points) and in five agglomerations (69 measuring points) which regularly submit data to the Environmental Protection Agency. The highest percentage of total noise indicators Lden is[2] in the range of 60-64 dB, while the highest percentage of night time noise indicators, Lnight, is in the range of 56-60 dB. The percentage of exceedence of 70 dB level is

[2] Total noise indicator Lden describes annoyance for a 24-hour period, for day-evening-night noise level, and represents an acoustic value used to describe noise in environment. Night time noise indicator, Lnight, describes annoyance during the night period from 22-06 hours. The unit of measurement used to express both indicators is decibel (dB).

negligible, if we observe certain urban areas within the territory of the Republic of Serbia where monitoring is performed. The city of Nis is the only one to have continuous noise monitoring.

Graph 1.15. Indicator of night time noise and total noise in towns on the territory of the Republic of Serbia

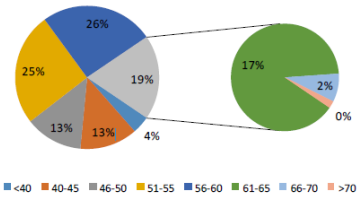


Figure 98. Percentage distribution of night-time noise indicator Lnight by scope for analysed towns in the Republic of Serbia

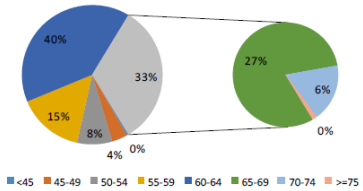


Figure 99. Percentage distribution of total noise indicator Lden for analysed towns in the Republic of Serbia

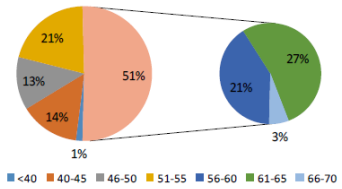


Figure 100. Percentage distribution of night-time noise indicator Lnight by scope for agglomerations

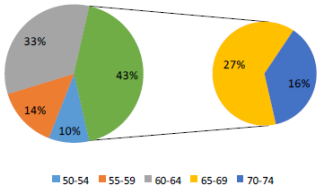
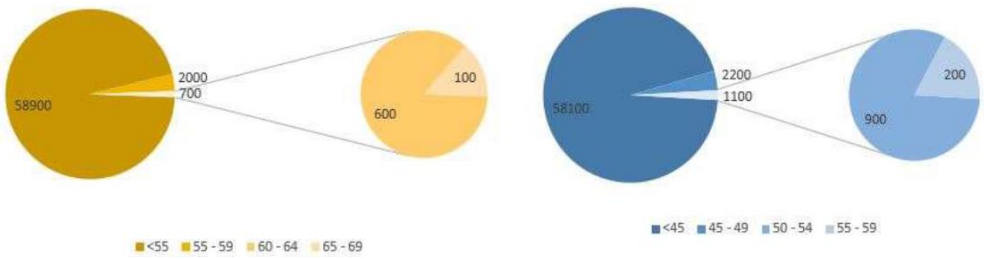


Figure 101. Percentage distribution of total noise indicator Lden by scope for agglomerations

Source: Report on the Environmental Status in the Republic of Serbia for 2019

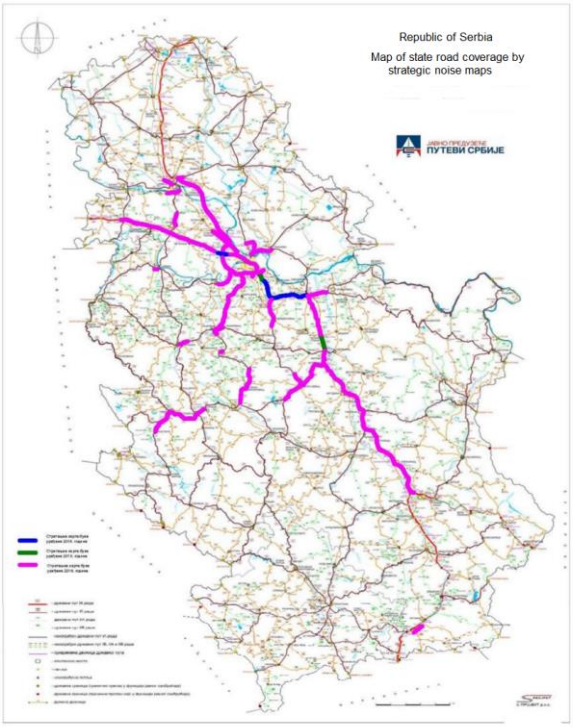
The public company Roads of Serbia (*Putevi Srbije)* has developed action plans for noise protection on the basis of developed strategic noise maps for 843 km of the state road network. The data analysis from strategic noise maps shows that the residents included in the statistics were exposed to noise of 55 dB and more for Lden and 45 dB and more for Lnight for all sections of the state road network of the Republic of Serbia for which strategic noise maps were made (Figure 1.4). The largest number of inhabitants, 58,900, was exposed to the total noise indicator Lden, which is less than 55dB, while 58,100 inhabitants were exposed to the night-time noise levels indicated by the night-time noise indicator Lnight of less than 45dB (Graph 1.16).

Graph 1.16. Number of inhabitants exposed to the scopes of total noise indicator (Lden) and night-time noise (Lnight)



Source: Report on the Environmental Status in the Republic of Serbia for 2019

Figure 1.4. Map of state road coverage by strategic noise maps

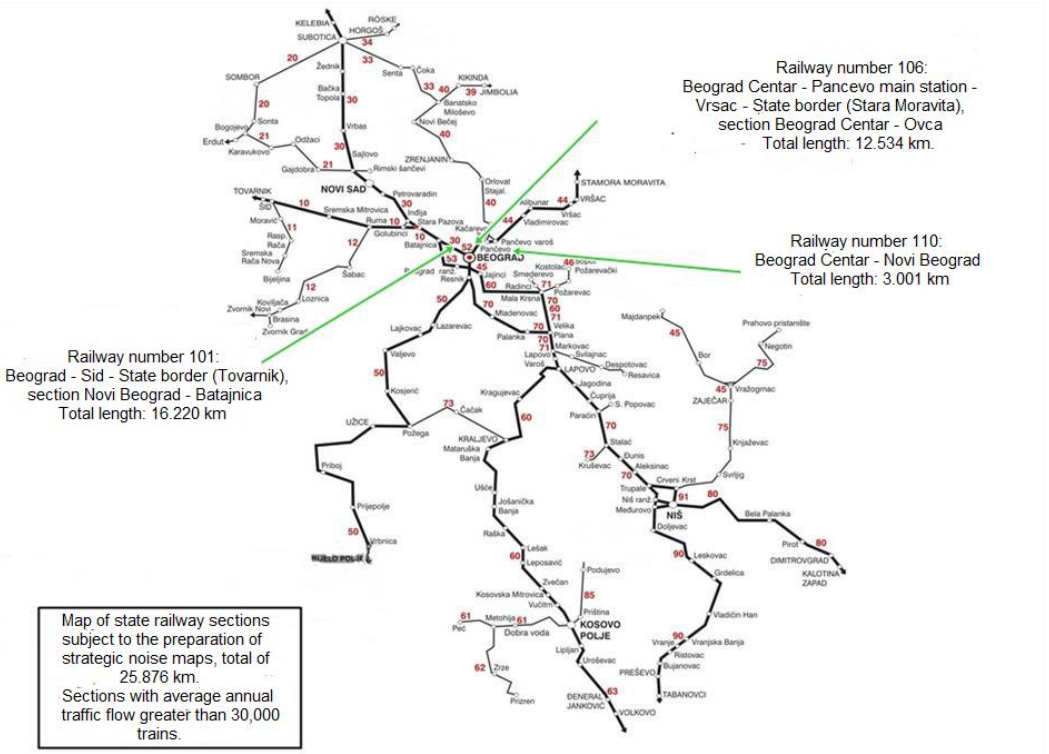


Source: Report on the Environmental Status in the Republic of Serbia for 2019

(Translator's note: in Figure 1.4, map legend and the line below the map title stating the annual average number of vehicles participating in traffic flow illegible)

In 2019, the JSC Infrastructure of Serbian Railways (*Infrastruktura železnice Srbije*) completed the development of strategic noise maps (SNM) for three sections of the railway: railway number 101: Belgrade-Sid-State border (Tovarnik), section Novi Beograd-Batajnica, total length of 16.22 km; railway number 106: Belgrade Center-Pancevo main station-State border (Stamora Moravita), section Belgrade Center-Ovca, total length of 12.54 km; railway number 110: Belgrade Center-Novi Beograd, total length of 3.00 km. The total required length of the railways for which strategic noise maps are planned is 25.88 km.

Figure 1.5. Map of state railway sections subject to the development of strategic noise maps



Source: Report on the Environmental Status in the Republic of Serbia for 2019

1.3. Environmental characteristics of the areas for which there is a possibility of exposure to significant impact

Environmental issues, considered in the course of the preparation of the Strategic Assessment and that are included in the content of the strategic assessment, are defined on the basis of the status of the environment and the requirements related to its protection in legal acts and planning and strategic documents. These issues represent strategically important elements to ensure environmental protection and improvement in the course of defining of the spatial development of the Republic of Serbia. The areas of the Plan for which the environmental issues were considered are as follows:

- Protection and use of agricultural land and the development of agriculture and fishery;
- Use of natural resources, forests, forest land, forestry and hunting;
- Protection and use of water and water management infrastructure;
- Mineral sources and mining;
- Tourism;
- Transport and communications;
- Energy, energy infrastructure and energy efficiency;
- Environmental management;
- Waste management;
- Protection, arrangement and sustainable use of natural values, cultural property and landscapes.

When discussing the spatial aspect of the environment and its characteristics for which there is a possibility of being exposed to a significant impact, it is important to pay attention to the following:

1. *Areas with extremely polluted environment* and high pressures on space, resources, population and environment (urban, industrial, and mining areas, as well as areas of

electricity production and other endangered areas with exceeded values of pollutants in air, water and soil, endangered flora, wildlife and habitats and endangered human health). For these areas, the SPRS and SIA should provide such solutions and commitments that prevent further degradation and reduce the effects of limiting the development. It is necessary to rehabilitate and revitalize degraded and endangered ecosystems and rehabilitate the consequences of pollution, in order to create a better environment.

2. *Sensitive areas* in terms of pollution and pressures on the environment (areas of protected natural and cultural assets, as well as the areas of high quality environment, with preserved potentials and without the presence of sources of pollution or where pollution is far below the permitted limits). For these areas, the SPRS and SIA should provide such solutions that maintain the existing status of environmental quality and protect naturally valuable and preserved ecosystems.

For the purpose of the Spatial Plan of the Republic of Serbia 2021-2035, the spatial differentiation of the environment according to international standards was performed, taking into account the existing status of environmental quality, distinguishing four categories.

Cat.	Description of the area according to its pollution degree	Characteristics of the area	Area of the Republic of Serbia
I	Areas of polluted and degraded environment	- exceeded air emissions limit values - large urban and industrial areas - thermal power plants - river flows of class IV and beyond the class - exceeded values of soil pollutants - highway corridors - areas of exploitation of mineral and energy raw materials with pronounced degradation and pollution - tailings and ash and slag landfills - large landfills for communal and industrial waste	- Pancevo, Bor, Obrenovac, Smederevo, Belgrade, Novi Sad, Subotica, Loznica, Kostolac, Cacak, Lucani, Krusevac, Sabac, Kikinda, Prahovo, - settlements within Kolubara basin, - corridors of the highway Belgrade – Novi Sad – Subotica, Belgrade – Sid, Belgrade – Nis - Presevo, Belgrade – Cacak, and Nis - Dimitrovgrad. - the largest gas emissions of SO_2, NO_x and suspended particles are in the area of the City of Belgrade, followed by Branicevo district, Bor district and South Banat district. - in Obrenovac, Lazarevac and Kostolac the largest landfills of fly ash from coal combustion in thermal power plants. - urban areas that belong to this category are as follows: Zrenjanin, Ruma, Valjevo, Kosjeric, Novi Popovac, Kraljevo, Nis, Vranje, Zajecar, Majdanpek, Vrbas, Mladenovac, Smedervska Palanka, Pozarevac, Sremska Mitrovica, Kragujevac, Gornji Milanovac, Uzice, Priboj, Trstenik, Prokuplje, Pirot, Novi Pazar, Leskovac, Jagodina, Paracin; - current watercourses of the fourth class and those 'beyond' the class.
II	Areas of endangered environment	- occasional exceeding of limit values of pollutants in the air - class III river flows - intensive agriculture zones - large farms	- Sombor, Apatin, Crvenka, Kula, Odzaci, Backa Palanka, Bajmok, Srbobran, Novi Knezevac, Coka, Senta, Ada, Temerin, Backa Topola, Kanjiza, Becej, Titel, Bac, Bela Crkva, Kovin, Indjija, Stara Pazova, Sid, Kucevo, Pozega, Ivanjica, Arilje, Guca,

		- state roads of I and II order - railways - suburban zones of urban centers - airports - river ports - areas of exploitation of mineral sources - tourist complexes and places with excess load on space	Raska, Cuprija, Negotin, Bujanovac, Dimitrovgrad, Knjazevac, Sjenica, Prijepolje, Ub, Osecina, Mionica, Krupanj, Petrovac, Zagubica, Svrljiv, Bela Palanka, Svilajnac, Golubac, Kladovo, - intensive agriculture zones (Vojvodina, Stig, Branicevo, larger part of Macva and Pomoravlje), - tourist centres on Kopaonik, Zlatibor and Divcibare, - lines od state roads of I and II order and of railways, - river ports (14 ports, of which 10 are international: Apatin, Backa Palanka, Beocin, Novi Sad, Belgrade, Pancevo, Bogojevo, Smederevo and Prahovo on the Danube river and Senta on the Tisza river and 4 national ports: Kovin, Sremska Mitrovica, Sabac and Sombor), - airports (Belgrade and Nis), - areas of exploitation of mineral sources: Jelen Do, Krupanj, Novi Pazar as well as the vicinity of Kanjiza, Kikinda and Novi Becej, Cerovo, Cikatovo – Glavica (Glogovac), Blagodat, Crnac, Suva ruda, Bela Stena, Zlatokop etc.
III	Areas of good quality environment	- No exceedance of limit values of air pollutants - water flows class II - forest areas - tourist complexes and places with controlled visits - areas of artificial reservoirs - local roads and railways - village settlements - agricultural orchard and vineyard zones - areas with natural degradation - meadows and pastures - hunting and fishing areas	- Sremski Karlovci, Grocka, Vrnjacka Banja, Sokobanja, Topola, Arandjelovac, Ljig, Zlatibor - parts of Stara mountain - suburban zones with country retreat buildings - orchard zones (Valjevska podgorina, Pocerina, area of Loznica, Arilje, Kraljevo, Dragacevo, Pozega and Grocka, Brankovina, Branicevo and other smaller areas) and vineyard zones (Timok region, Nisava-South Morava region, West Morava region, Sumadija – Great Morava region, Pocer, Srem and Banat region and region of Subotica-Horgos sands) - corridors of local roads - territories of village settlements of municipalities that do not belong to category II - areas with natural degradation: eroded areas, saline soils, landslides, floodplains, etc.
IV	Areas of very good quality environment	- areas of protected natural assets - wetlands - areas protected by international conventions - mountain peaks and terrains difficult to access - river flows of class I	- 5 national parks: Fruska gora, Djerdap, Kopaonik, Tara and Sara mountain, 18 nature parks, 21 landscape with outstanding features, 69 nature reserves, 6 protected habitats, 314 natural monuments (botanical, geological and hydrological character) and 36 areas of cultural-historical importance (spaces around immovable cultural property and historic sites)

			- special nature reserves: Deliblato sands, Karadjordjevo, Velika Droplja pastures, Kopacki rit - areas of international importance, protected according to Ramsar Convention: Obedska bara, Ludas lake, Carska bara – Stari Begej, Zasavica, Slano Kopovo, Koviljsko-petrovaradinski rit, Vlasina, Gornje Podunavlje, Labudovo okno and Pester field - areas protected according to the Convention on Natural and Cultural Heritage: biosphere reserves Golija – Studenica and Backo Podunavlje

1.4. Environmental protection issues and problems discussed in the Plan and the outline of the reasons for the omission of certain issues and problems from the assessment procedure

Problems of endangering and protection of the environment, as well as the cost-efficient use and protection of space in the course of the development of the Spatial Plan and the Strategic Assessment must be considered simultaneously with the planning of development activities. Environmental protection is a complex issue that encompasses all aspects of consideration of a possible impact of planned activities on the elements of the environment.

For these reasons, the Strategic Assessment addresses the issues of, primarily, harming the air, water, soil and noise levels, as well as the problem of waste and protected natural assets and biodiversity based on the characteristics of the existing status of the environment.

The issues discussed in the Strategic Assessment are defined by the Decision on the development of Strategic Environmental Assessment of the Spatial Plan of the Republic of Serbia from 2021 to 2035 (*Official Gazette of RS*, No. 41/19), which states that the *"Strategic Assessment will consider the issues of protection of air, water, soil, wildlife, nature, as well as other issues that are determined in the course of the development of the Strategic Assessment to require appropriate processing."*

Within the Strategic Assessment, issues related to the current status of the environment in the Republic of Serbia, the importance and characteristics of the Spatial Plan and the characteristics of the environmental impact of planning solutions were discussed.

In the course of the development of the Spatial Plan, the following problems were identified, i.e. the **limitations in the field of environment and its impact on the spatial development of the Republic of Serbia**:

- Excessive air pollution from the industry, energy and transport sectors. By types of pollutants, this would mean the following:
  - electricity and heat production were responsible for 91% of sulphur dioxide emissions (SO_2),
  - the highest emissions of nitrogen oxides (NO_x) come from thermal power plants as well as from mineral and chemical industry,
  - the dominant share of particles PM10 (57%) and PM2.5 (75%) comes from heating plants of power less than 50 MW and individual furnaces.
- Electricity sector is the largest air polluter in Serbia, due to outdated plants and the large share of coal in electricity production. Consumption is dominated by fossil fuels with 87.9%

(coal as much as 47.2%, oil 26.1%), while the share of renewable energy sources amounts to 12.1%. The energy sector is by far the largest emitter of greenhouse gases in Serbia, accounting for 80.6% of total emissions.

- Worryingly poor air quality, especially in larger cities. It is estimated that around 2.5 million of citizens live in areas with polluted air, i.e. breathe in the air of quality categories II and III.
- Excessive water pollution from settlements, industry and agriculture. The analysis of surface water quality (with 248 measuring points) in the period from 1998 to 2017 showed that the worst situation was on the territory of AP Vojvodina, where 40% of samples belonged to the category *poor* and *very poor*, and as much as 79% of samples belonged to the class *very poor*;
- A very prominent problem is a large percentage (around 88%) of untreated wastewater that is released into recipients without any treatment (mechanical, biological or chemical), which is a key source of water pollution in Serbia and has a negative impact on the environment;
- Insufficient treatment of industrial wastewater (42%), whereby 57% of industrial plants do not have wastewater treatment plants and where the treatment is performed, about half of the samples does not satisfy the standards of wastewater quality;
- The existence of ecological 'hot spots' of degraded spaces (haphazard exploitation of natural resources, brownfields, landfills);
- In 2018, the total of 709 potentially contaminated and contaminated sites were identified on the territory of the Republic of Serbia.

1.5. Outline and assessment of alternative solutions related to environmental protection in the Spatial Plan

Alternative solutions and reasons for the choice of the most favorable alternative are elaborated in chapter 3 of the Strategic Assessment. The choice of the most favorable alternative was performed based on the analysis and evaluation of alternative solutions and in accordance with the established positive and negative effects of alternative solutions in relation to the objectives of the Strategic Assessment.

1.6. Results of previous consultations with interested authorities and organizations

In the course of the development of the Spatial Plan and the implementation of the Strategic Assessment, consultations were held with representatives of interested authorities and organizations, in accordance with the provisions of Article 11 of the Law on Strategic Environmental Assessment. In addition, in the course of the development of the Spatial Plan and the Strategic Assessment, the data, requirements and opinions of competent authorities and organizations were obtained, which were taken into account when designing the planning solutions.

During the development of the Draft Spatial Plan, requirements, opinions and data were obtained from around 70 entities, of which 59 requirements or databases were obtained, i.e. around 84% of the total number of requirements.

Name of the institution	Submission deadline Submitted/Date
OFFICE OF THE PRIME MINISTER CABINET **SOCIAL INCLUSION AND POVERTY REDUCTION TEAM** 106 Milutin Milankovic Blvd. 11070 New Belgrade	Submitted via e-mail 01 April 2020 Internal number for connection 350-01-01063/2019-11 23.03.2020.

MINISTRY OF CONSTRUCTION, TRANSPORT AND INFRASTRUCTURE **Sector for Water Transport and Navigation Safety** 22-26 Nemanjina St., 11000 Belgrade	Internal number 11/94-1 18.03.2020.
MINISTRY OF CONSTRUCTION, TRANSPORT AND INFRASTRUCTURE **Sector for Air Traffic and Transport of Dangerous Goods** 22-26 Nemanjina St., 11000 Belgrade	
MINISTRY OF CONSTRUCTION, TRANSPORT AND INFRASTRUCTURE **Sector for Housing and Architectural Policy, Communal Activities and Energy Efficiency** 22-26 Nemanjina St. 11000 Belgrade	First memo of the MCTI – Housing and Architectural Policy, Communal Activities and Energy Efficiency Sector (number officially from 11 March 2020) Second memo of the Housing Sector (number officially from 12 March 2020)
MINISTRY OF CONSTRUCTION, TRANSPORT AND INFRASTRUCTURE **Group for Railway and Intermodal Transport and International Affairs** 22-26 Nemanjina St., 11000 Belgrade	Internal number: officially 16 March 2020
MINISTRY OF HEALTH **Sector for Organization of Health Service** **22-26 Nemanjina St.** **11000 Belgrade**	
MINISTRY OF FOREIGN AFFAIRS 24-26 Kneza Milosa St. 11000 Belgrade	350-01-1063/19 Internal number: 5832 17 March 2020
MINISTRY OF LABOUR, EMPLOYMENT, VETERAN AND SOCIAL AFFAIRS 22-26 Nemanjina St., 11000 Belgrade	350-01-1063/19 from 08 April 2020
MINISTRY OF AGRICULTURE, FORESTRY AND WATER MANAGEMENT 22-26 Nemanjina, 11000 Belgrade	Internal number: 350-01-21/2020-09 Date: 28 April 2020
MINISTRY OF AGRICULTURE, FORESTRY AND WATER MANAGEMENT **Republic Water Directorate** 2a Bulevar umetnosti, 11070 New Belgrade	
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL DEVELOPMENT 22-26 Nemanjina, 11000 Belgrade	Submitted via e-mail on 08 September 2020
MINISTRY OF YOUTH AND SPORTS 2 Mihajlo Pupin Blvd. 11070 New Belgrade	350-01-1063/2019 from 07 April 2020
MINISTRY OF CULTURE AND INFORMATION 3 Vlajkoviceva 11000 Belgrade	
MINISTRY OF EUROPEAN INTEGRATION 34 Nemanjina 11000 Belgrade	
MINISTRY OF TRADE, TOURISM AND TELECOMMUNICATIONS **Sector for electronic communications and postal services** 2 Mihajlo Pupin Blvd., 11070 Belgrade	350-02-1063/19 17 March 2020 ---------- 13 May 2020 - opinion

MINISTRY OF TRADE, TOURISM AND TELECOMMUNICATIONS **Sector for Tourism** 2 Mihajlo Pupin Blvd., 11070 Belgrade	Internal number: 350-01-00011/2020-08 Date: 13 May 2020
MINISTRY OF ENVIRONMENTAL PROTECTION 2 Mihajlo Pupin Blvd. 11000 Belgrade	350-01-1063/19 from 08 April 2020. --- 26 June 2020 – received the data from the memo with issued requirements
MINISTRY OF ENVIRONMENTAL PROTECTION ENVIRONMENTAL PROTECTION AGENCY 27a Ruza Jovanovic St., 11060 Belgrade	Internal number: 350-01-1/2020-01 Date: 04 May 2020
MINISTRY OF INTERIOR **Border Police Administration** 2 Mihajlo Pupin Blvd., 11070 Belgrade	Internal number: 404-481/20 22 April 2020
MINISTRY OF MINING AND ENERGY 22-26 Nemanjina St. 11000 Belgrade	Submitted via e-mail, via WeTransfer 27 March 2020. --- 08 June 2020, received via e-mail the supplement to the documentation for SPRS (Sector for Geology and Mining) --- Submitted on 24 June 2020 via e-mail 350-01-1063/19 from 18 June 2020. Internal number: 350-01-00016/2020-06 16 June 2020.
MINISTRY OF AGRICULTURE, FORESTRY AND WATER MANAGEMENT – VETERINARY DIRECTORATE **1 Omladinskih brigada St.** **11070 Novi Beograd**	
MINISTRY OF AGRICULTURE, FORESTRY AND WATER MANAGEMENT **DIRECTORATE FOR AGRARIAN PAYMENTS** 84 Kralj Aleksandar Blvd., 11050 Belgrade	350-01-1063/19 from 17 March 2020. Internal number: 350-01-00001/2020/09 from 11 March 2020.
MINISTRY OF AGRICULTURE, FORESTRY AND WATER MANAGEMENT – SECTOR FOR RURAL DEVELOPMENT 1 Omladinskih brigada St., 11070 Novi Beograd	E-mail received on 08 May 2020.
MINISTRY OF ECONOMY 20 Kneza Milosa St., 11000 Belgrade	Received via e-mail on 22 April 2020.
MINISTRY OF FINANCE **CUSTOMS ADMINISTRATION** 155a Zoran Djindjic Blvd., 11070 Belgrade	350-01-1063-19 Date: 09 April 2020.
JSC AIRPORT NIKOLA TESLA BELGRADE 59 Aerodrom Beograd 11180 Belgrade	350-01-1063/19 from 16.03.2020. Internal number :Gd-258/2020 Date: 16 March 2020.
PORT GOVERNANCE AGENCY **CENTER FOR PORT ACTIVITIES** 4 Nemanjina St., 11000 Belgrade	Internala number: 350-65/2020-2 Date: 21 April 2020.
DIRECTORATE FOR INLAND WATERWAYS – Department for information on the status of waterways, river information services, planning and implementation of international projects 9 Francuska Street, 11000 Belgrade	350-01-1063/2019 Date: 24 March 2020. Internal number 11/94-1 18 March 2020.
CIVIL AVIATION DIRECTORATE OF THE REPUBLIC OF SERBIA 23 Skadarska St., 11000 Belgrade	Internal number 4 13-10-0007/2020-0002 Date: 22 April 2020.

JSC ELEKTROMREZA SRBIJE 11 Kneza Milosa St. 11000 Belgrade	Internal number 130-00-UTD-003-399/2020-02 from 13 March 2020. 01 July 2020 – supplement to the material, submitted via e-mail 03 July 2020 – additional data submitted
JSC INFRASTRUKTURA ZELEZNICA SRBIJE 6 Nemanjina St. 11000 Belgrade	Internal number: 2/2020-1518 Date: 24 June 2020. --- 10 July 2020 – a supplement to the requirements received, Internal number: 413-1/20 Date: 09 July 2020.
PE ELEKTROPRIVREDA SRBIJE 13 Balkanska St. 11000 Belgrade	Internal number 12.01.20493/34-20. 17 March 2020. Supplement: 350-01-1272/70 from 09 April 2020.
PUBLIC ENTERPRISE PUTEVI SRBIJE 282 Kralj Aleksandar Blvd. 11000 Belgrade	15 May 2020 – requirements submitted Internal number: 953-5649/20-1 --- 24 June 2020 – submitted via e-mail preliminary requirements --- 17 July 2020 – submitted requirements Internal number: 953-5649/20-2 Date: 17 July 2020. --- 24 July 2020 – supplement to the requirements. 350-01-1063/19-11 from 22 July 2020 Internal number: 953-5649/20.2 --- 15 December 2020 – supplement via e-mail
PE FOR UNDERGROUND COAL EXPLOITATION RESAVICA 2 Petra Zalca St. 35237 Resavica	
PE SRBIJAGAS 12 Narodnog fronta St. 21000 Novi Sad	Received via e-mail 21 April 2020. --- 04 July 2020 – via e-mail received additional requirements Internal number: 11866 Date: 06 July 2020.
PUC BEOGRADSKE ELEKTRANE 11 Savski nasip St. 11070 Novi Beograd	Internal number: X-3746/2 Date: 28 April 2020.
JSC JUGOROSGAZ 8-10 Zmaj Jovina St. 11000 Belgrade	Submitted via e-mail on 21 April 2020. Internal number 86 Date on the memo 03 March 2020 --- Requirements were submitted via e-mail on 09 September 2020. Memo I-53, from 09 September 2020.
LLC KORIDORI SRBIJE 21 Kralja Petra St. 11000 Belgrade	Internal number I-689/20 Date: 05 March 2020.

JSC NIS 1 Milentija Popovica St., 11000 Belgrade	350-01-1063/19 18 March 2020.
PROVINCIAL SECRETARIAT FOR ENERGY, CONSTRUCTION AND TRANSPORT 16 Mihajlo Pupin Blvd. 21000 Novi Sad	350-01-1063-2019 from 27 March 2020. Internal number: 143-310-108/2020-02 and 143-310-114/2020-03 from 23 March 2020.
PROVINCIAL SECRETARIAT FOR THE PROTECTION OF NATURE 20a Radnicka St. 21101 Novi Sad	350-01-1063/2019 from 08 April 2020. Internal number: 03-653/2 from 24 March 2020. --- On 24 July 2020, a correction was submitted along with supplement to the requirements 350-01-1063/19 from 22 July 2020. Internal number: 03-653/4 Date 15 July 2020. --- On 20 January 2021, supplement to the data submitted via e-mail Received on 18 January 2021. 350-01-1063-19 Internal number: 03-653/2
RATEL **Regulatory Agency for Eelctronic Communications and Postal Services** 2 Palmoticeva St., 11103 Belgrade	350-01-1063/19 from 31 March 2019. Internal number: 1-01-3491-99/20-1 from 19 March 2020.
SERBIAN GEOLOGICAL INSTITUTE 12 Rovinjska St., 11050 Belgrade	16 March 2020.
STATISTICAL OFFICE OF THE REPUBLIC OF SERBIA 66 Milana Rakica St., 11000 Belgrade	17 March 2020.
Republic of Serbia **Serbia and Montenegro Air Traffic Services Llc** 10 Nikola Pasic Sq., 11100 Belgrade	350-01-1063/19 Date: 13 March 2020. Internal number CHS. 10-21/32
Srbija Kargo JSC. 6 Nemanjina St., 11000 Belgrade	On 24 April 2020, received an e-mail notification stating that they will be late for the submission of data
Srbija Voz JSC 6 Nemanjina St., 11000 Belgrade	On 20 May 2020, e-mail received informed about contact person
TRANSNAFTA JSC 7 Grckoskolska St. 21000 Novi Sad	16 March 2020 - the data submitted to the Ministry of Mining and Energy. On 21 April 2020, forwarded to the processor by an MCTI e-mail
INSTITUTE FOR PUBLIC HEALTH OF THE REPUBLIC OF SERBIA "DR MILAN JOVANOVIC BATUT" 5 Dr Subotica St., 11000 Belgrade	E-mail received on 25 May 2020.
PUBLIC WATER MANAGEMENT COMPANY "VODE VOJVODINE" – Sector for Development 25 Mihajlo Pupin Blvd., 21101 Novi Sad	E-mail received on 01 September 2020. --- E-mail received on 30 December 2020 with the supplement to requirements
REPUBLIC HYDROMETEOROLOGICAL INSTITUTE OF SERBIA 66 Kneza Viseslava St., 11000 Belgrade	350-01-1063/19 from 12 March 2020. Internal number: 922-3-25/2020-1 from 06 March 2020.
REPUBLIC INSTITUTE FOR THE PROTECTION OF CULTURAL MONUMENTS	350-01-1063-19 from 02 July 2020. Internal number:

11 Radoslava Grujica St., 11118 Belgrade	6-44/2020-1 from 01 July 2020.
PE SKI RESORTS OF SERBIA 9 Milutina Milankovica St. 11070 Novi Beograd	Submitted via E-account 24 March 2020. Memo of the PE "Ski Resorts of Serbia", 07 no. 16/2 from 01 September 2020.
INSTITUTE FOR NATURE CONSERVATION OF SERBIA 91 Dr Ivana Ribara St. 11070 Novi Beograd	350-01-1063/19 from 23 March 2020. ---------- 350-01-1063/19 from 25 August 2020. Internal number: 020-304/5 Date: 24 August 2020.
SEISMOLOGICAL SURVEY OF SERBIA Tasmajdan Park bb, 11000 Belgrade	Submitted via E-account
AEROCLUB NOVI SAD 257 Medjunarodni put St., 21233 Cenej	13 March 2020.
MINISTRY OF AGRICULTURE, FORESTRY AND WATER MANAGEMENT **Forest Directorate** 1 Omladinskih brigade St., 11070 Novi Beograd	Submitted via e-mail on 14 April 2020.
PE "SRBIJASUME" 13 Mihajlo Pupin Blvd., 11000 Belgrade	350-01-1063/2019 from 14 April 2020. Internal number 5589. Date – 07 April 2020.
MINISTRY OF DEFENSE 5 Bircaninova St. 11000 Belgrade	Submitted on 21 April 2020, as well as the supplement on 14 August 2020. P number 2830-9
REPUBLIC DIRECTORATE FOR THE PROPERTY OF THE REPUBLIC OF SERBIA 16 Kralja Milana St., 11000 Belgrade	350-01-1063/19 Date: 27 May 2020.
GASTRANS LLC. 12 Narodnog fronta St. 21000 Novi Sad	11 June 2020 – e-mail submission. 19 June 2020 – submitted a scanned memo via e-mail: Number: 350-01-1063/19 Received on 15 June 2020. Internal number: 311 Date: 05 June 2020.
CYCLING ASSOCIATION OF SERBIA 35 Terazije St. 11000 Belgrade	
PWMC SRBIJAVODE 2A Bulevar umetnosti 11070 Novi Beograd	On 28 January 2021 – received an e-mail with data.
"TELEKOM SRBIJA" JSC Directorate for Technique and Connections 2 Takovska St., 11000 Belgrade	350-01-1063/19 from 06 July 2020. Internal number: 198069/1 Date: 03 July 2020.
TELENOR LLC. 90 Omladinskih brigade St. 11070 Belgrade	
VIP MOBILE LLC. Sector for Access Network 1z Milutin Milankovic Blvd., 11070 Novi Beograd	28 May 2020. received via e-mail 26 June 2020. received via e-mail 350-01-1063/19. Internal number K75/20. From 19 June 2020.
AIRPORTS OF SERBIA LLC. 8a Decanska St., 11000 Belgrade, Serbia	15 June 2020. received via e-mail.

2. GENERAL AND SPECIFIC OBJECTIVES OF THE STRATEGIC ENVIRONMENTAL ASSESSMENT AND THE CHOICE OF INDICATORS

2.1 General and specific objectives

Pursuant to Article 14 of the Law on Strategic Environmental Assessment, general and specific objectives of strategic assessment are defined on the basis of requirements and objectives regarding environmental protection in other plans and programs, environmental protection objectives established at the national and international level, collected data on the state of the environment and significant issues, problems and proposals regarding the protection of the environment in the plan or program.

The general objectives of the Strategic Assessment have been prepared on the basis of the state of the environment, strategic environmental issues of importance to the Republic and the objectives and requirements in the field of environmental protection from relevant national sectoral strategic documents.

For the realization of general objectives, specific objectives of the Strategic Assessment in certain areas of protection are determined. Specific objectives of the Strategic Assessment represent a concrete, partially quantified statement of general objectives and in relation to specific objectives, the evaluation of planning solutions is performed. The specific objectives of the Strategic Assessment are a methodological measure through which the effects of the Spatial Plan are verified, i.e. the expected trends in the environment that are expected as a result (positive impacts) and/or consequences (negative impacts) of the implementation of planning solutions.

The general and specific objectives of the Strategic Assessment are divided into six areas (1. Air and climate change; 2. Water; 3. Soil; 4. Natural values, natural resources and landscape; 5. Waste management; 6. Socio-economic and institutional aspects (Table 2.1.).

2.2. Choice of indicators

Indicators of environmental management represent a very important segment in planning and one level within the complex spatial information system on the environment. The purpose of their use is to direct planning solutions towards the achievement of objectives in the field of environmental protection, partly through impact assessment, and partly through monitoring of the status of the environment during the implementation of the Spatial Plan.

Within the Strategic Assessment, the choice of indicators was performed from the Rulebook on the National List of Environmental Indicators (*Official Gazette of RS*, No. 37/2011). This set of indicators is based on the concept of 'cause-effect-response'. The indicators of 'causes' indicate human activities, processes and relationships that affect the environment, the indicators of 'consequences' indicate the status of the environment, while the indicators of 'response' define political options and other reactions to change the effects' on the environment. The set of indicators reflects the principles and goals of sustainable development (Table 2.1).

Each specific objective of the Strategic Assessment was assigned one or more indicators (39 in total). The choice of indicators is in line with the planning concept and predictions about possible impacts on the quality of the environment. The indicators will be used for the evaluation of planning solutions, on the one hand, and for the monitoring of the status of the environment during the implementation of the Spatial Plan, on the other.

Table 2.1. Objectives and indicators of the Strategic Assessment

SIA Area	SIA General Objectives	SIA Specific Objectives	Indicators*
AIR AND CLIMATE CHANGE	**Protection of Air Quality and the Reduction of the Impact on Climate Change**	- Protection of air quality - Reduction of the impact on climate change	Frequency of the exceedence of CO_2, NO2, PM10 and O3 daily values that exceed the limit (number of days within a year with exceeding daily limit values)
			Consumption of ozone depleting substances (tonnes of ODP)
			Annual air temperature and precipitation (Normalized standard deviation in relation to the period 1961-1990 and Normalized standard deviation of the logarithm of annual precipitation for the area of Serbia)
			Emission of acidifying gases (NOx, NH_3 and SO_2) (kt/year.)
			Greenhouse gas emissions (CO_2, N_2O, CH_4, SF6, HFC, PFC) (Gg CO_2eq/year and Gg/year.)
WATER	**Protection and sustainable use of water**	- Protection and sustainable use of water	Water Exploitation Index (WEI) (%)
			Water losses (%)
			Total quantity of water in reservoirs (millions of m^3/year.)
			Biological consumption of oxygen in surface waters (BOD5) (mg O2/l)
			Emissions of pollutants from point sources into water bodies (kg/year)
			Polluted (untreated) wastewater (%)
			Wastewater treatment plants from public sewerage (%)
			Population connected to public sewerage (%)
			Population connected to public water supply system (%)
SOIL	**Protection and sustainable use of soil**	- Protection and sustainable use of agricultural and forest land	Change in land use (%)
			Increase in the surface area of forest land (%)
			Forest management and forest consumption (%, m^3)
			Management of contaminated sites (number of sites expressed numerically, share expressed in%, costs of remediation and restoration expressed in RSD)
			Surface areas of land endangered by erosion (ha)
NATURAL VALUES, NATURAL RESOURCES	**Protection and sustainable use of natural values, resources and**	- Protection of biodiversity and geodiversity	Endangered and protected species (% of endangered and protected)

SIA Area	SIA General Objectives	SIA Specific Objectives	Indicators*
AND LANDSCAPE	**landscapes**	and natural property - Protection of landscape - Cost-efficient use of non-renewable sources and greater use of RES	Change in surface areas of protected areas (%, ha) Management of contaminated and degraded sites Increase in RES share in energy balance (%)
WASTE MANAGEMENT	**Improvement of waste management**	- Improvement of waste management system	Total amount of generated waste (t/year) Generation of waste (municipal, packaging, industrial, hazardous) (t/year.) Amount of separated, reused, and disposed waste (t/year.) Quantities of special waste streams (t/year) Transboundary movement of waste (t/year) Number of regional sanitary landfills
SOCIO-ECONOMIC AND INSTITUTIONAL ASPECTS	**Protection of public health, strengthening of institutional capacity for environmental management, protection of cultural heritage**	- Protection and improvement of public health - Institutional development and investments in the area of environmental protection - Protection of cultural heritage and preservation of historical and archeological sites	Drinking water quality (%) Percentage of population exposed to increased air pollution (%) Exposure of population to the effects of developmental projects in the area of energy and mining Total noise indicator (dB(A)) Sources of non-ionizing radiation of special interest (electric field strength E [V/m]; magnetic field strength H [A/m]; magnetic flux density B [μT]; power density (equivalent plane wave) – Sekv [W/m^2]) Investments and current expenses (thousands of dinars) Development of environmental management system Successful implementation of legislation and strategies Number and territorial distribution of measuring points Number and significance of immovable cultural heritage that may be under the impact of planning solutions

* - thematic area; definition of description of indicators; methodology for the calculation and collection of data; unit of measure; legal coverage of national and international regulations and reporting obligations; source and availability of data; manner and deadlines for the submission of data, information and reports to information system; are defined by the Rulebook on the National List of Environmental Indicators (*Official Gazette of RS*, number 37/11).

3. ASSESSMENT OF POSSIBLE ENVIRONMENTAL IMPACTS

The Spatial Plan will represent a framework for the spatial development of the Republic of Serbia with complex impacts on the quality of the environment. With this in mind, the main goal of the development of the Strategic Environmental Assessment of the Spatial Plan is to identify these impacts in relation to the defined goals of the Strategic Assessment.

The main task in this process is to avoid or minimize or identify possible conflicts in space, which may arise as a result of the implementation of national spatial development policy in various areas. In addition, the task of the Strategic Assessment is to identify positive impacts of planning concepts on space and the environment.

The main role of the Strategic Assessment in the planning process is inform the decision makers on the expected trends in space and environment that may occur during the implementation of the Spatial Plan.

Although the Strategic Assessment is not an instrument for direct implementation, but an instrument for decision-making on future development, and its role can also be achieved by giving up those strategic commitments that may imply significant problems in space and environment, which is however beyond the scope of the document and represents and issue of national politics of future spatial development in the context of environmental protection.

Pursuant to Article 15 of the Law on Strategic Assessment, this chapter contains the following elements:

- outline of the assessed impact of alternative solutions and programs which are favorable from the environmental point of view, with the description of measures to prevent and limit negative impacts and increase positive environmental impact;
- comparison of alternative solutions and outline of reasons for choosing the most favorable solution;
- outline of assessed environmental impact of the plan and program with the description of measures to prevent and limit negative impacts and increase positive environmental impact;
- the manner in which environmental factors have been taken into account, including the data on: air, water, soil, climate, ionizing and non-ionizing radiation, noise and vibration, flora and fauna, habitats and biodiversity; protected natural assets; population, human health, cities and other settlements, cultural-historical heritage, infrastructure, industrial and other facilities or other created values;
- the manner in which the following characteristics of the impact were taken into account in the course of the assessment: probability, intensity, complexity/reversibility, time dimension (duration, frequency, repetition), spatial dimension (site, geographic area, number of exposed inhabitants, transboundary nature of the impact), cumulative and the synergistic nature of the impact.

In accordance with the Law, by applying the method of multi-criteria impact assessment, the impact assessment of alternative spatial development solutions was initially performed in this chapter, followed by the impact assessment of those planning solutions that are classified as priorities, on the one hand, and which can have a significant environmental impact, on the other hand. The choice of planning solutions was made and grouped according to the areas of spatial development of importance for the Strategic Assessment, according to the areas/sectors of the Spatial Plan.

3.1 Impact assessment of alternative solutions and the reasons for the choice of the most favorable alternative

The overall effects of the Spatial Plan, as well as the impact on the environment, can be determined only by comparing the current situation with the objectives and solutions of the Spatial Plan. For spatial plans of a longer time horizon, such as this Spatial Plan, which have greater uncertainty of realization, the method of preparing the scenario of the development model enables the assessment of positive and negative effects of alternative solutions of the Spatial Plan. In the considered planning solutions and their alternatives in the Draft Spatial Plan, the solutions within the thematic units have been considered, the implementation of which may have significant effects on the protection of the quality of all environmental parameters given through the objectives of the Strategic Assessment.

The assessment has also included a key, only conceptually set, dilemma: whether the option without the implementation of the Spatial Plan is more acceptable for the protection and sustainable development of the planning area ('no plan and action') than the option with full implementation of the Spatial Plan ('protection, business as usual').

For the first option, without the implementation of the Spatial Plan, solutions by thematic units from the Spatial Plan 2010-2020 were taken into account, which, according to the evaluation given in the Implementation Programs (and accompanying reports on their implementation) were carried out to a greater or lesser extent.

For the second option within the Strategic Assessment, solutions in the same thematic units were evaluated, prescribed through the Draft Spatial Plan.

Therefore, the Strategic Assessment considers the alternative of spatial development without the application of the New Spatial Plan (current situation, implemented solutions from the previous Spatial Plan 2010-2020 – alternative A) and spatial development with the application of the Plan (alternative B) with special respect for all sectors of planning development.

When researching the area for the purpose of the Strategic Assessment, more precisely - for the assessment of the effects of the alternative planning solutions on the environmental quality, the matrix method was used. For each sector, taking into account that the Strategic Assessment is carried out for a Spatial Plan that is characterized by a longer period of time (which thus affects the uncertainty in implementation), the method of developing the scenarios of development for each sector of the Spatial Plan was applied to enable assessment of positive and negative impact of chosen alternatives. The sectors of the Spatial Plan within which the implementation of planning solutions can have a direct impact on the environment have been taken into account.

Within the matrix, comparisons of alternative solutions are given, named as alternative A (current situation, implemented solutions from the previous Spatial Plan 2010-2020) and alternative B (spatial development with the application of the Spatial Plan), and these solutions are evaluated in Table 3.1 based on the objectives of strategic assessment. Due to the expected minor inconsistency of planning solutions[3], there are minor deviations in evaluations which do not affect the assessment of positive and negative effects.

[3] Although the Spatial Plan from the year 2010 and the New Spatial Plan consistently follow the content prescribed by the Rulebook on the content, manner and procedure of the prapartion of documents of spatial and urban planning (*Official Gazette of RS*, number број 64/2015), certain chapters are inconsistent (do not appear in both documenets), which is why the term n/a (non applicable) was used in the evaluation matrices.

Table 3.1. Assessment of alternative solutions of spatial development with and without the application of the Spatial Plan

Objectives of the Strategic Assessment / Planning solutions	Development scenario	Protection of air quality and the reduction of the impact on climate change		Protection and sustainable use of water	Protection and sustainable use of land	Protection and sustainable use of natural values, resources and landscapes			Improvement of waste management	Protection of public health, strengthening of institutional capacity for environmental management, protection of cultural heritage		
		Protection of air quality	Reduction of the impact on climate change	Protection and sustainable use of water	Protection and sustainable us of agricultural and forest land	Protection of biodiversity and geodiversity of natural assets	Protection of landscape	Cost-efficient use of non-renewable energy sources and increased use of RES	Improvement of the water management system	Protection and improvement of public health	Institutional development and investments in the area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
Protection and use of agricultural land and the development of agriculture and fishery	A	0	+	+	+	+	+	0	0	+	0	0
	B	0	0	+	++	+	+	0	0	+	0	0
Use of natural resources, forests, forest land, forestry and hunting	A	+	+	+	+	+	+	0	0	+	0	0
	B	+	+	+	++	++	++	0	0	+	0	0
Protection and use of water and water management infrastructure	A	0	0	++	+	0	+	+	0	+	0	0
	B	0	+	+	+	0	+	++	0	+	+	0
Mineral sources and mining	A	- -	- -	0	- -	- -	- -	0	0	- -	0	0
	B	-	-	0	-	-	-	0	0	-	+	0
Tourism	A	-	0	-	0	-	-	0	+	+	0	+
	B	+	0	+	0	-	+	0	+	+	0	+
Development of transport infrastructure	A	- -	- -	-	-	0	-	0	0	- -	0	0
	B	-	-	-	-	0	-	0	0	-	-	0
Energy, energy infrastructure and energy efficiency	A	- -	- -	-	-	0	-	+	0	- -	+	0
	B	-	-	-	-	0	-	+	0	-	+	0
Environmental management	A	-	-	-	+	0	-	0	-	-	0	0
	B	+	+	+	+	0	+	0	+	+	+	0
Waste management	A	+	+	+	+	+	+	0	+	+	+	0
	B	+	+	+	+	+	+	0	+	+	+	0
Protection and sustainable use of natural values, natural assets and landscapes	A	0	0	+	+	+	+	0	0	+	0	0
	B	0	0	+	+	+	+	0	0	+	0	0
Adjustment to climate change	A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	B	+	+	+	+	+	0	+	0	+	0	0

Meaning of symbols: + total positive impact; - total negative impact; ++ exceptionally positive impact; -- exceptionally negative impact;

0 no direct impact, or unclear impact**, N/A –** not defined as a planning solution in the Spatial Plan

After assessing the impact of alternative solutions, their comparison was performed in the context of potential positive and negative influences, as a basis for the choice of the most favorable alternative solution. The results of the assessment of the environmental impact of alternative solutions and the objectives of the Strategic Assessment are shown in Table 3.2. and summarized according to the areas of the Spatial Plan.

Table 3.2. Overview of the basic positive and negative impacts of alternative solutions

Alternative of spatial development without the application of the New Spatial Plan – alternative A	**Alternative of spatial development with the application of the New Spatial Plan – alternative B**
Positive impacts	
High level of implementation of planning solutions in the area of agriculture given through the SPRS 2010 has provided a good basis for the implementation of the planning solutions of the new SPRS.	In addition to land protection and use, the new SPRS also provides recommendations, goals and priority activities related to the development of agriculture and fisheries, which will have positive effects on the objectives of the SIA. Stopping the conversion of agricultural land for other purposes can have multiple positive effects on the environment.
Regarding the development of forestry, the SPRS 2010 provided guidelines for the protection and expansion of protected areas and areas under forests, as well as for the replenishment of sparse forests and improvement of game populations, however, these goals have not been implemented in an adequate measure.	The new SPRS defines the necessary planning activities for the reconstruction of degraded forests and replenishment of sparse forests, improvement of the state of game populations and the protection and expansion of areas that are an integral part of forest and hunting areas.
Through the SPRS 2010, a number of planned activities in the field of quality improvement, water protection and use management were implemented, however, not all planning solutions covered incidents that manifested in the Republic of Serbia during the implementation period.	The new SPRS prescribes objectives and planning activities that will result in more adequate responses to future risks in the field of water protection and use management. This applies in particular to floods, torrents, erosion processes, as well as the protection of river flows against their inadequate use for energy purposes.
Inadequate implementation of planning solutions in the field of water infrastructure development from SPRS 2010 had extremely negative consequences on the quality of life and health of residents in the previous planning horizon.	The new SPRS provides guidelines for the regulation of watercourses and protection against flooding by external waters, in critical flood zones, as well as the implementation of a larger number of WWTPs.
The development of tourism in SPRS 2010 took into account the controlled development of mountain and river tourism, however, some of the objectives were not consistently implemented and created a pronounced anthropopressure on space.	The new SPRS envisages the development of tourism in the area of Belgrade and its surroundings, the development of mountain, river and nautical tourism, in accordance with the principles of sustainable development and a lower concentration of users in the same space.
The development of high mountain areas was addressed within the SPRS and its potential negative effects were determined, which were manifested to a greater or lesser extent.	The new SPRS does not address the separate issue of high mountain areas, although this aspect appears in the development of tourism and nature protection.
The development of transport infrastructure envisaged by the SPRS 2010 has had an impact on the increase of air, water and soil pollution, primarily due to inadequate emission control.	The new SPRS envisages relieving the traffic in urban centers through the construction of bypasses, which will significantly reduce new pollution. Reconstruction and rehabilitation of existing state roads of I and II order can also have a positive environmental impact while respecting all measures given by SPRS and this SIA.

Alternative of spatial development without the application of the New Spatial Plan – alternative A	Alternative of spatial development with the application of the New Spatial Plan – alternative B
Guidelines for the use of renewable energy sources and the increase of energy efficiency given in the SPRS 2010 have achieved a high degree of implementation and represent a good basis for further implementation of new planning solutions.	The new SPRS continues the tendency to increase the share of RES in total energy production, which directly reflects on the improvement of the environmental quality as well as the reduction of the impact on climate change.
In 2010, the SPRS foresaw an increase in the share of RES in total production, which was largely achieved, primarily in the field of wind energy.	The new SPRS envisages a continued increase in the share of RES in total electricity production, with capacity expansion as the use of solar and wind energy (and to a lesser extent other types of renewable sources).
Spatial distribution and development of industry, energy and mining, defined through the SPRS in 2010, have resulted in a high level of endangerment of environmental quality through the development of activities in these industries.	The new SPRS envisages more adequate and frequent control of the impact of activities in industry, mining and energy on environmental parameters, as well as the preparation of environmental impact studies for all potentially hazardous plants, which will include modeling of air, water and soil impacts, as well as other environmental parameters.
Although the 2010 SPRS was supposed to fully implement the Waste Management Strategy, most regional landfills did not start operating.	The new SPRS envisages the establishment of an integrated waste collection system, an increase in the percentage of collection as well as the construction of regional management centers (landfills and separation).
The protection and sustainable use of natural and cultural heritage during the previous planning horizon were mostly adequately implemented in accordance with the guidelines of the SPRS. This formed a good basis for the implementation of planning solutions of the new SPRS.	The new SPRS provides adequate guidelines for further implementation of protection and sustainable use of natural and cultural heritage, especially in the field of the increase of the area under protection by 10.5% compared to the current situation.
Preservation and improvement of landscape quality were mainly carried out in accordance with the solutions from the SPRS in 2010, although there were negative examples of landscape collapse due to the expansion of mining activities.	The new SPRS envisages the rehabilitation of degraded areas of protected and other areas, identification and determination of areas for the European ecological network NATURA 2000.
Adjustment to climate change was not specifically addressed within the SPRS 2010. However, since the consequences of climate change have had a significant impact not only on the environment but also on the quality of life, construction fund, industrial development, infrastructure development etc, the new SPRS recognizes the importance of planning activities aimed at reducing the impact of climate change.	The new SPRS addresses the issue of adjustment to climate change through a greater number of activities within each individual thematic unit of the spatial plan. Recognizing the importance of the development of the area in accordance with the new circumstances, through the New SPRS guidelines and recommendations are given for adjustment to climate change as well as their mitigation.
Negative impacts	
The SPRS 2010 foresaw the development of energy infrastructure that had significant negative impact on environmental parameters.	The new SPRS envisages the construction of new thermal energy capacities, which could, without the application of measures attributed through this SIA and SPRS, could cause significant negative impact on the environment. It is expected that the planned new thermal energy capacities will continue with the trend of pronounced negative impacts on the quality of the environment and the health of the inhabitants, which was given as an assessment of an alternative solution with the application of the Spatial Plan.
The 2010 SPRS provided recommendations and guidelines for the sustainable use of mineral sources, which are mainly implemented with partial respect of	The new SPRS provides guidelines for the construction of new thermal energy capacities, with recommendations to respect the quality of environmental parameters as well as to increase RES in the total use of energy. In

Alternative of spatial development without the application of the New Spatial Plan – alternative A	Alternative of spatial development with the application of the New Spatial Plan – alternative B
environmental protection measures.	order to reduce potential negative effects, it is necessary to directly implement the measures prescribed through this SIA as well as the New SPRS.

In addition to the stated alternative solutions, the Spatial Plan also considers development scenarios at the state level of planning, as follows:

1. **Pessimistic scenario**, which is possible but undesirable, because it essentially represents the continuation of existing, mostly negative tendencies of spatial development, and consequently negative implications in space and environment;

2. **Optimistic scenario**, which is possible and desirable but difficult to achieve because it implies valorization of all potentials, realization of a hard definition of sustainable development, reaching all European standards in all sectors and areas of spatial development in a short time. This type of scenario, although desirable, makes no sense to consider. Namely, in the time horizon of the Spatial Plan, this scenario represents a utopia that would lead to reliance on planning solutions that cannot be realized in the time horizon to which the Spatial Plan refers. Relying on such a planned solution would, as a result of their non-realization, imply significant conflicts in space and environment; and
3. **Realistic scenario,** which is possible and desirable, includes changes towards a balanced spatial development of the Republic of Serbia.

In the evaluation of alternative solutions within the Strategic Assessment, two scenarios were addressed, namely the following: pessimistic (A) as a 'scenario of continuation of unfavorable trends in spatial development'; and realistic (B) as a 'scenario of changes towards a balanced spatial development'.

Through the evaluation of these two scenarios (Table 3.3), an overview is given of the impact of these scenarios in all areas of spatial development and an assessment of environmental trends given in relation to the objectives of the Strategic Assessment.

Table 3.3. Assessment of trends towards the spatial development scenarios

Development scenario	Protection of air quality and the reduction of the impact on climate change		Protection and sustainable use of water	Protection and sustainable use of soil	Protection and sustainable use of natural values, resources and landscapes			Improvement of waste management	Protection of public health, strengthening of institutional capacity for environmental management, protection of cultural heritage		
	Protection of air quality	Reduction of the impact on climate change	Protection and sustainable use of water	Protection and sustainable use of agriculture and forest land	Protection of biodiversity and geodiversity of natural assets	Protection of landscape	Cost-efficient use of non-renewable energy sources and increased use of RES	Improvement of waste management system	Protection and improvement of public health	Institutional development and investments in the area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
Pessimistic scenario A The market orientation of planning increases and private ones take precedence over public interests in terms of use, organization and protection of space;	**0**	**0**	**-**	**-**	**0**	**0**	**0**	**0**	**0**	**-**	**0**
Realistic scenario B The role of planning in articulating and protection public interests in terms of use, organization and protection of space;	**0**	**0**	**+**	**+**	**0**	**0**	**0**	**0**	**0**	**+**	**0**
Pessimistic scenario A Emigration and population decline, drastic inequalities in territorial distribution of the population and disparities in spatial and demographic structures continue; most mountainous, border and other less accessible areas are demographically depleted;	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-**	**-**	**0**
Realistic scenario B Emigration, especially of young and qualified people is subsiding, the base of human resources is strengthened, inequalities in the territorial distribution of human capital are alleviated;	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**+**	**+**	**0**
Pessimistic scenario A Regional economic disparities are increasing and regional social capacity in the Republic of Serbia is declining; the dominance of underdeveloped areas continues and increases, primarily in demographically depleted areas;	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-**	**-**	**0**
Realistic scenario B The use of territorial capital and geo-strategic position of the Republic of Serbia is being improved; regional competitiveness and regional development of the economy are getting stronger, regional economic and social development is more balanced, the share of underdeveloped areas is reduced;	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**+**	**+**	**0**
Pessimistic scenario A The demographic and economic-functional concentration in several large centers and their functional environment in relation to the rest of the territory of the Republic is pronounced;	**-**	**-**	**-**	**-**	**0**	**-**	**0**	**0**	**-**	**0**	**0**
Realistic scenario B Support for polycentric development of urban and rural structures, concentration of activities	**+**	**+**	**+**	**+**	**0**	**+**	**0**	**0**	**+**	**0**	**0**

Development scenario	Protection of air quality and the reduction of the impact on climate change		Protection and sustainable use of water	Protection and sustainable use of soil	Protection and sustainable use of natural values, resources and landscapes			Improvement of waste management	Protection of public health, strengthening of institutional capacity for environmental management, protection of cultural heritage		
	Protection of air quality	Reduction of the impact on climate change	Protection and sustainable use of water	Protection and sustainable use of agriculture and forest land	Protection of biodiversity and geodiversity of natural assets	Protection of landscape	Cost-efficient use of non-renewable energy sources and increased use of RES	Improvement of waste management system	Protection and improvement of public health	Institutional development and investments in the area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
and population in large urban centers is alleviated and the role of regional and subregional urban centers and settlements in their functional environment is getting stronger;											
Pessimistic scenario A Insufficient and uneven connection, accessibility and equipment of parts of the territory with traffic, communal and social infrastructure, depopulation and majority of mountainous, border and protected areas.	-	-	-	-	**0**	**0**	+	+	+	**0**	**0**
Realistic scenario B The connection, accessibility and equipment of parts of the territory with traffic, communal and social infrastructure are improved and balanced out, primarily the areas with natural resources and potentials for the development of economy and tourism,	+	+	+	+	**0**	**0**	+	+	+	**0**	**0**
Pessimistic scenario A There are large regional differences in the level of industrial development and pronounced spatial polarization while the industry is dominantly concentrated in the metropolitan area of Belgrade and Novi Sad;	-	-	-	-	**0**	**0**	**0**	-	-	-	**0**
Realistic scenario B Support is given to the polycentric development of industry and the development of a greater number of existing and new industrial centers on the territory of the Republic of Serbia is being achieved;	+	-	+	-	**0**	**0**	**0**	+	+	+	**0**
Pessimistic scenario A Unreasonable use of natural resources (agricultural land, forests, water and mineral resources) prevails;	-	-	-	-	-	-	-	**0**	-	-	**0**
Realistic scenario B Reasonable and wise use and protection of natural resources is achieved (agricultural land, forests, water and mineral resources);	+	+	+	+	+	+	+	**0**	+	+	**0**
Pessimistic scenario A The potential of natural and cultural heritage for sustainable spatial development remains insufficiently used;	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	-
Realistic scenario B Potential of natural and cultural heritage for sustainable spatial development is activated and used;	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	+

Development scenario	Protection of air quality and the reduction of the impact on climate change		Protection and sustainable use of water	Protection and sustainable use of soil	Protection and sustainable use of natural values, resources and landscapes			Improvement of waste management	Protection of public health, strengthening of institutional capacity for environmental management, protection of cultural heritage		
	Protection of air quality	Reduction of the impact on climate change	Protection and sustainable use of water	Protection and sustainable use of agriculture and forest land	Protection of biodiversity and geodiversity of natural assets	Protection of landscape	Cost-efficient use of non-renewable energy sources and increased use of RES	Improvement of waste management system	Protection and improvement of public health	Institutional development and investments in the area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
Pessimistic scenario A The development of tourist offer and the existing tourist centers has slowed down, the predominant part of primary tourist destinations has remained inactivated;	**0**	**0**	**-**	**-**	**-**	**-**	**0**	**0**	**-**	**+**	**-**
Realistic scenario B Attractive tourist offer from primary tourist destinations is developed;	**0**	**0**	**+**	**+**	**+**	**+**	**0**	**0**	**+**	**+**	**+**
Pessimist scenario A Uncontrolled urban growth, expansion of construction areas of settlements, unreasonable use of space and uncontrolled conversion of significant surface areas of agricultural and forest land into construction land continue;	**-**	**-**	**-**	**-**	**-**	**-**	**0**	**-**	**-**	**0**	**0**
Realistic scenario B Urban growth is controlled through planning, the construction area of settlements is minimally expanded or remains within the existing boundaries, the use and improved arrangement of urban and peri-urban space is more reasonable;	**+**	**+**	**+**	**+**	**+**	**+**	**0**	**+**	**+**	**0**	**0**
Pessimistic scenario A Insufficiently developed and unevenly accessible public services in relation to the needs of the population;	**-**	**-**	**-**	**0**	**0**	**0**	**-**	**-**	**-**	**0**	**0**
Realistic scenario B The availability of services is more evenly distributed and new modalities of public services have been developed in accordance with the needs of the population;	**+**	**+**	**+**	**0**	**0**	**0**	**+**	**+**	**+**	**0**	**0**
Pessimistic scenario A The level of housing affordability is unsatisfactory; pronounced imbalance between equipped land for construction and the need for affordable housing in zones of demographic concentration; along with an increase in the share of unused housing fund in depopulation areas;	**0**	**0**	**0**	**-**	**0**	**0**	**0**	**0**	**-**	**0**	**0**
Realistic scenario B The level of housing affordability has improved; the share of equipped land for the construction of affordable housing has increased; the available housing fund for housing and other purposes is better used;	**0**	**0**	**0**	**+**	**0**	**0**	**0**	**0**	**+**	**0**	**0**

Development scenario	Protection of air quality and the reduction of the impact on climate change		Protection and sustainable use of water	Protection and sustainable use of soil	Protection and sustainable use of natural values, resources and landscapes			Improvement of waste management	Protection of public health, strengthening of institutional capacity for environmental management, protection of cultural heritage		
	Protection of air quality	Reduction of the impact on climate change	Protection and sustainable use of water	Protection and sustainable use of agriculture and forest land	Protection of biodiversity and geodiversity of natural assets	Protection of landscape	Cost-efficient use of non-renewable energy sources and increased use of RES	Improvement of waste management system	Protection and improvement of public health	Institutional development and investments in the area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
Pessimistic scenario A Unused adaptive capacity to climate change in relation to the optimum forest cover of the territory; accompanied by an increase in problems in water supply, flood protection, electricity production, settlements, agriculture, tourism, etc.	-	-	-	-	-	**0**	-	-	-	**0**	**0**
Realistic scenario B The adaptive capacity for climate change of space and settlements has been increased, reliable water supply, flood protection, development of agriculture and tourism, etc. have been provided.	+	+	+	+	+	**0**	+	+	+	**0**	**0**

Meaning of symbols: + total positive impact; **-** total negative impact; **0 no** direct impact, or unclear impact**, N/A –** not defined as a planning solution in the Spatial Plan

The assessment of the spatial development scenario for the planning area was performed in Table 3.4.

Table 3.4. Review of the results of the evaluation of alternative solutions for the development scenario

Area of Spatial plan	Pessimistic scenario A	Realistic scenario B
Planning	The market orientation of planning is increasing and private interests are taking precedence over public interests when it comes to the utilization, organization and protection of space;	The role of planning in defining and protecting public interests when it comes to the utilization, organization and protection of space is increasing. This scenario has a positive contribution to the protection of environmental quality.
Demographic development	Emigration and decline in population is undergoing. Inequalities in the territorial distribution of the population and disparities in spatial and demographic structures are drastical as most mountainous, border and other less accessible areas are demographically depleted. The demographic and economic-functional grouping is in several large centers and their functional environment in relation to the rest of the territory of the Republic.	Emigration, especially of young and qualified people, is settling down. The base of human resources is getting stronger and the inequalities in the territorial distribution of human capital are being reduced. This scenario has a positive impact on the environmental protection in the field of strengthening human capital, which contributes to more intensive engagement in protection.
Regional development	regional economic disparities are increasing and regional social capacity in the Republic is declining; the dominance of underdeveloped areas continues and increases, primarily in demographically depleted areas;	Strengthened regional and cooperation with neighbors, as well as the spatial integration of the Republic into the wider environment. Stronger regional competitiveness and regional economic development, more balanced regional economic and social development and a reduced share of underdeveloped areas. The utilization of the territorial capital and geostrategic position of the Republic is being improved and support is given to the polycentric development of urban and rural structures. The concentration of activities and population in large urban centers is mitigated and the role of regional and sub-regional urban centers and settlements in their functional environment is strengthened. Strengthening regional ties can significantly affect the implementation of measures and monitoring in the field of environment and reduce the regional dispersion of adverse impacts.
Infrastructure	insufficient and uneven connection, accessibility and existence of parts of the territory with traffic, communal and social infrastructure, primarily depopulated and most mountainous, border and protected areas (with natural resources and values);	The connection, accessibility and equipping parts of the territory with traffic, communal and social infrastructure, primarily areas with natural resources and potentials for economic and tourism development, is being improved and balanced. Improving the infrastructure reduces the

Area of Spatial plan	Pessimistic scenario A	Realistic scenario B
		pollution of the basic parameters of the environment, provided that during the planning and design, the environmental protection measures prescribed through this Spatial Plan of the Republic of Serbia and Environmental Assessment are consistently implemented.
Industry	There are large regional differences in the level of industrial development. There is a pronounced spatial polarization and dominant concentration of industry in the metropolitan area of Belgrade and Novi Sad.	Support is given to the polycentric development of industry and the development of a number of existing and new industrial centers in the territory of the Republic of Serbia is being achieved. The development of the industry, without the application of the measures given through this Strategic Environmental Assessment, can have a negative impact on the environment. Therefore, it is necessary to consistently and timely harmonize the implementation of all measures prescribed by the Strategic Environmental Assessment.
Natural recourses	Irrational utilization of natural resources (agricultural land, forests, water and mineral sources) is overwhelmingly present.	Rational and wise utilization and protection of natural resources (agricultural land, forests, and water and mineral sources) is being achieved. This scenario can have multiple positive impacts on environmental protection and the quality of life for the population.
Natural and cultural heritage	The potential of natural and cultural heritage for sustainable spatial development remains underutilized.	The potential of natural and cultural heritage for sustainable spatial development has been activated and used. All of the above will have a direct positive impact on the status of the environment.
Tourism	The development of the tourist offer and the existing tourist centers has slowed down, the predominant part of the primary tourist destinations has not been activated.	An attractive tourist offer of primary tourist destinations is being developed. This development scenario must strictly follow the measures and recommendations given through the Stretegic Environmental Assessment in order to ensure the minimal impact of planned activities on environmental protection.
Construction zones	Uncontrolled urban growth, expansion of construction areas of settlements, irrational utilization of space and uncontrolled conversion of significant areas of agricultural and forest land into construction land continues.	Urban growth is systematically controlled, the construction areas of settlements is minimally expanded or remains within the existing boundaries. The utilization and improved arrangement of urban and peril-urban space is more rational. The stated planning solution, with respect to measures and recommendations for environmental protection, will not have a significant impact on the objectives of the strategic environmental assessment.
Public services	Public services are insufficiently developed and unevenly accessible when compared with	The availability of services is more uniform and new modalities of public services have

Area of Spatial plan	Pessimistic scenario A	Realistic scenario B
	the needs of the population;	been developed in accordance with the needs of the population. This scenario in this area has a positive impact in this area, primarily when it comes to increasing the quality of life for residents and indirectly on the quality of all environmental parameters.
Housing	The level of housing affordability is unsatisfactory. A pronounced imbalance exists between the land ready for construction and the need for affordable housing in zones of demographic concentration, along with an increase in the share of unused housing stock in depopulated areas.	The level of housing affordability has been improved, the share of equipped land for the construction of affordable housing has increased and a better utilization of available housing stock for housing and other purposes is present. This scenario for the housing sector will show a positive impact on the protection of agricultural and forest land and increase the quality of life for residents.
Climate changes	The adaptive capacity to climate change in relation to the optimum forest cover of the territory has not been sufficiently used. It is accompanied by an increase in the number of issues related to water supply, flood protection, electricity generation, settlements, agriculture, tourism, etc.	The adaptive capacity to climate change of space and settlements has been increased. Reliable water supply, flood protection, development of agriculture and tourism, etc. have been provided. With respect to all recommendations and measures, strategic and legal frameworks in this area, as well as the consistent implementation of planned activities, this scenario will have a very favorable impact on health protection and it will increase the quality of life for residents.

Positive and negative effects stated in the previous table imply the following:

1. If the solutions stated in the Spatial Plan are not implemented and the development (stagnation) continues as it has so far, negative effects are to be expected in the most areas of the Spatial Plan when compared with the goals from the Strategic Environmental Assessment, especially when compared with scenario B.

2. The implementation of the Spatial Plan will affect the development in a positive way in almost all planning sectors and minimize or eliminate the so far observed negative tendencies through strict and consistent compliance with legal regulations and provisions of the Strategic Environmental Assessment, especially in the field of mineral sources, energy and development of energy, transport and water infrastructure, planning of new economic capacities, planning and design of tourist facilities, as well as realization of other activities which individually, and especially collectively (Cumulative and synergistic effects), can have significant negative impacts on the environment and create conflicts between the need for development and environmental protection.

During the implementation of the Spatial Plan, it is necessary to conduct continuous monitoring of the state of the environment in relation to indicators that show changes in the environment. Based

on what has so far been said, it can be concluded that the alternative of application of the proposed Spatial Plan (realistic scenario B) is significantly more favorable than for the Plan not to be applied.

3.3. Characteristics and importance of the impact of planning solutions

In the continuation of the Strategic Environmental Assessment, the evaluation of the impact of planning solutions by areas of the Spatial Plan on the environment and elements of sustainable development was performed.
The environmental impact assessment, i.e. the goals of the Strategic Environmental Assessment and related indicators, were performed using the method of multi-criteria expert analysis and evaluation of planning solutions, with the aim of predicting future trends in space and environment which are to be expected during the implementation of the Spatial Plan. When evaluating planning solutions, the following were taken into account: type of impact, probability of a specific impact occurring, time dimension or duration of impact, impact frequency and the spatial dimension of the impact (Table 3.5).

Table 3.5. Criteria for evaluating planning solutions

Type of impact	Probability of impact	Impact duration	Impact frequency	Spatial dimension of the impact
Positive Negative Neutral	Possible (P) Likely (L) **Definite (D)**	Short-term (S) **Long-term (LT)**	Sporadic (SP) **Constant (C)**	Local (Lo) Regional (R) **National (N)** **Cross-border (CB)**

It is recognized that strategically significant impacts are those that have the following characteristics:

- definite impact,
- long-term impact,
- constant impact,
- national and cross-border impact.

The evaluation of the impact of planning solutions was performed in the summary matrix (Table 3.8). The evaluation of the impact is presented in the summary table using the appropriate colors (green for positive effects, red for negative, white for neutral) and the color intensity of the impact, according to the number of characteristics defined as **significant** (existence of one or two characteristics) and **very significant** (three or four characteristics), as shown in the following table.

Table 3.6. Impact evaluation

Impact Type/Significance	Strategically significant (one or two characteristics)	Strategically very significant (three or four characteristics)

Positive		
Negative		
Neutral		

The summary matrix of the impact of the Spatial Plan on the environment is shown in Table 3.8. The inclusion of priority planning solutions in the evaluation process within the Strategic Environmental Assessment is based on the principle of certainty, given that their implementation is planned in the short-term until 2025.

The list of planning solutions included in the Strategic Environmental Assessment process is given by areas of the Spatial Plan and is shown in Table 3.7.

Table 3.7. Planning solutions in the Spatial Plan included in the impact assessment

Area	Planning solution
Protection and utilization of agricultural land and development of agriculture and fisheries.	**Preventing the conversion of agricultural land for other purposes.**
	Reclamation and revitalization of the area degraded by mining and other economic activities.
	Better utilization of the irrigation system for agricultural land, with the development of an irrigation system adapted to climate changes.
	Restoration of ecosystem and production functions of abandoned and unused agricultural land or their utilization for the establishment of protective forests, plantations for the production of biofuels, agroforestry systems, etc.
Utilization of natural resources, forests, forest land. Forestry and hunting	**Reconstruction of degraded and reforestation of sparse forests**, followed by a change to trees and plants of more favorable degree of overgrowth in relation to different types of trees, vitality, self-renewal, quality, multifunctionality, etc.
	Improving the state of game population.
	Protection and expansion of protected areas that are an integral part of forest and hunting areas (areas of exceptional and unique parts of nature, landscapes and biodiversity).
Water protection and utilization. Infrastructure for water management.	**Water supply of settlements** by developing regional systems and subsystems, developing distribution network, sanitary protection of drinking water sources and raising the drinking water quality.
	Reconstruction, upgrade and development of multipurpose canal systems.
	Protection of water from pollution by expanding the sewerage system, construction of Waste Water Treatment Plant, regulation of watercourses and revitalization and reconstruction of drainage systems.
sou rce s an d	**Safe and reliable supply of coal** to thermal energy capacities.

Area	Planning solution
	Increasing energy production from liquid and gaseous energy minerals and geothermal energy.
	Elimination and mitigation of harmful consequences caused by mining activities, rehabilitation and remediation of abandoned mining facilities.
	Development of coal exploitation in the Kolubara and Kostolac basins.
Tourism	**Development of tourism in the area of Belgrade and its surroundings.**
	Development of mountain tourism.
	The development of river and nautical tourism
Transport and communication	**The development of road transportation**, the construction of highway sections and the completion of Belgrade bypass.
	The development of railway network.
	The development of air transport.
	The development of water transport.
Energy, energy sector infrastructure and energy efficiency	**Revitalization of hydro units with increase of installed capacity at several existing hydro power plants** (HPP Djerdap 1 and 2, RHE Bajina Basta, HPP Potpec with extension, Vlasina HPP, HPP Bistrica).
	The construction of new thermal capacity.
	The construction of new windmills.
	Reconstruction and construction of small hydro power plants "Elektroprivrede Srbije" connected to the distribution EMS with the resumption of production at the projected level; construction of SHPP Rovni and SHPP Celija.
Managing the environment	**Rehabilitation of polluted industrial and mining-energy sites** (implementation of the reconstruction and remediation of *hot spots* - contaminated industrial sites. Reclamation and remediation of sites most damaged by exploitation of mineral sources (RTB Bor, flotation tailings and smelter, Kolubara and Kostolac lignite basins and remediation of polluted watercourses (section of the Velika Backa Canal).
	Reduction of air pollution originating from energy sector and industry (creation of a register of pollutants with emission balance. Modernization and revitalization of existing TPPs and development of new capacities which must be conditioned by the implementation of Directive 2010/75 / EU on industrial emissions. Installation of new or reconstruction of existing electrostatic precipitators in plants emitting suspended particles above emission limit values. Shutdown of existing power units below 300MW. Use of the best available technology in the industry. Identification of zones of impact on the population using software models that will take the cumulative and synergistic impacts into account in order to protect the health of the population in these zones, reducing greenhouse gas emissions by about 5% by 2025 compared to 1990 levels).
	Improving the quality of surface and groundwater water through the development of water quality monitoring, which should be directed towards the formation and equipping of regional monitoring centers.

Area	Planning solution
	Preventing further loss of land, preserving and improving its quality.
	Reducing noise levels along roads and industries which endanger housing and other activities.
Waste management	**Establishment of an integrated municipal waste management system** (expansion of collection to 100%, construction of regional waste management centers - regional landfills with separation facilities, transfer stations and collection centers for recyclable waste including hazardous household waste in the following regions: Vranje, Novi Sad, Belgrade).
	Construction of a plant for treatment of construction and demolition waste in Belgrade, with a capacity of 200,000 t / year.
	Construction of plants for incineration of medical and hazardous pharmaceutical waste.
Protection, arrangement and sustainable utilization of natural resources, cultural goods and landscapes	**Protection of natural resources through the increase of the total area under protection to 10.5% of the territory of the Republic of Serbia**, mostly by declaring proposed (new and revised) protected areas for which appropriate study documentation has been prepared (declaring a part of Kucajske mountains a national park).
	Rehabilitation of degraded areas of protected areas (borrowing pits, quarries, fires, landfills, gravel pits, construction of facilities) with a strong adverse impact on natural values and the environment.
	Detailed determination of the boundaries of areas and other elements of the national ecological network, while ensuring the full status of the Emerald area in accordance with the Berne Convention.
	Area identification for the European ecological network NATURA 2000
	Design and presentation of cultural goods (Roman sites in Nis, Mediana, Sirmium, Viminacium, Drenovac and archeological sites along the Roman Limes).
	Defining, developing, arranging and presenting national and regional "cultural paths".

Table 3.8. Collective matrix of the impact of strategic impacts of the Spatial Plan on the environment and elements of sustainable development

Planning solutions per areas of Spatial Plan		Specific goals of the Strategic Environmental Assessment										
		Air quality protection	Reduction of the impact on climate change	Protection and sustainable utilization of water	Protection and sustainable utilization of land	Protection of biodiversity, geodiversity and natural resources	Landscape protection	Rational utilization of non – renewable sources of energy and greater utilization of renewable sources of energy	Improvement of the waste management system	Protection and improvement of population health	Institutional development and investment in area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
Agricultural land and development of agriculture and fisheries Preventing the conversion of agricultural land for other purposes	Preventing the conversion of agricultural land for other purposes				D LT C H D LT C R	P LT C Л	P LT C Л					
	Reclamation and revitalization of the areas degraded by mining and other economic activities	P LT D LO			D LT C LO	P LT C LO	D LT C LO			P LT C LO	D LT C R	
	More complete utilization of the irrigation system for agricultural land		B LT C H	B LT CB R	B LT C N						D LT C R	
	Restoration of ecosystem and production functions of abandoned and parched agricultural lands				B LT C N		P LT C LO				B LT C LO	
Nature - forest resources, forest land, forestry, hunting	Reconstruction of degraded and forestation of diluted forests	P LT C LO	P LT C LO		B LT C LO	D LT C LO	P LT C LO				D LT C N	
	The improvement of game population					B LT C LO						
	Protection and expansion of protected areas that are an integral part of forest and hunting areas	D LT C R	P LT C N	P LT C N	D LT C LO	D LT C R	P LT C R					
Water and water infrastructure	Water supply of settlements	P LT C LO	B LT C LO	B LT C LO			D LT C LO			D LT C LO		

Planning solutions per areas of Spatial Plan		Specific goals of the Strategic Environmental Assessment										
		Air quality protection	Reduction of the impact on climate change	Protection and sustainable utilization of water	Protection and sustainable utilization of land	Protection of biodiversity, geodiversity and natural resources	Landscape protection	Rational utilization of non – renewable sources of energy and greater utilization of renewable sources of energy	Improvement of the waste management system	Protection and improvement of population health	Institutional development and investment in area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
	Reconstruction, upgrade and development of multipurpose canal systems			B LT C LO							D LT C N	
	Water protection against contamination		P LT C R	D LT C LO	B LT C R	D LT C CB			P LT C LO		D LT C N	
Mineral sources and mining	Safe and reliable coal supply	D LT C LO		P LT C LO	D LT C LO	D LT C LO	D LT C LO	L LT C LO		L LT C LO		P LT C LO
	Increasing energy production from liquid and gaseous energy minerals and geothermal energy	P LT C LO P LT C LO						P LT C LO		P LT C LO P LT C LO	D LT C N	
	Elimination and mitigation of harmful consequences caused by mining activities	D LT C LO		L LT C LO	D LT C LO	P LT C LO	D LT C LO			L LT C LO	D LT C LO	
	Development of coal exploitation in Kolubara and Kostolac basins	D LT C R		P LT C LO	D LT C R	D LT C R	D LT C R	L LT C LO		L LT C LO		P LT C LO
Tourism	Development of tourism in the area of Belgrade and its surroundings				P LT C LO	P LT C LO	P LT C LO					D LT C LO
	Development of mountain tourism	P LT C LO P LT C LO		P LT C LO P LT C LO	P LT C LO P LT C LO	P LT C LO P LT C LO	P LT C LO P LT C LO					D LT C N

Planning solutions per areas of Spatial Plan		Specific goals of the Strategic Environmental Assessment										
		Air quality protection	Reduction of the impact on climate change	Protection and sustainable utilization of water	Protection and sustainable utilization of land	Protection of biodiversity, geodiversity and natural resources	Landscape protection	Rational utilization of non – renewable sources of energy and greater utilization of renewable sources of energy	Improvement of the waste management system	Protection and improvement of population health	Institutional development and investment in area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
	Development of river and nautical tourism			P LT C LO		P LT C LO						D LT C N
Traffic and communications	Development of road traffic	D LT C LO D LT C R	D LT C R	P LT SP R	D LT C R	P LT C R	D LT C LO			L LT C LO L LT C R		
	Railway network development				D LT C R	P LT C R	D LT C R					
	Development of air transport	D LT SP LO	D LT C LO		L LT C LO	P LT C LO	P LT C LO					
	Development of water transport			P S SP N P S SP N		P LT C N P S SP N					D LT C N/M	
Energy, energy infrastructure and energy efficiency	Revitalization of hydro units with increase of installed power at existing hydro power plants	D LT C N	L LT C N	D LT C N		P S SP LO		D LT C N			D LT C N	
	Construction of new thermal capacities	L LT C LO D LT SP R	L LT C N D LT SP N	P LT C R	D LT C LO	D LT C LO	D LT C LO	D LT C N	L LT C LO C LT C LO	D LT C R	D LT C N	
	Construction of new wind farms	D LT	D LT		D LT	P LT SP	L LT	D LT		L LT C N		

Planning solutions per areas of Spatial Plan		Specific goals of the Strategic Environmental Assessment										
		Air quality protection	Reduction of the impact on climate change	Protection and sustainable utilization of water	Protection and sustainable utilization of land	Protection of biodiversity, geodiversity and natural resources	Landscape protection	Rational utilization of non – renewable sources of energy and greater utilization of renewable sources of energy	Improvement of the waste management system	Protection and improvement of population health	Institutional development and investment in area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
		C H	C N		C LO	LO/M	C LO	C N		P LT SP LO		
	Reconstruction and construction of small hydropower plants	D LT C N	D LT C N	L LT C LO P LT C LO		L LT C LO P LT C LO		D LT C N		P LT C N	D LT C N	
Environmental management	Remediation of polluted industrial and mining-energy sites	D LT C N		D LT C R	D LT C LO	D LT C LO	D LT C LO		D LT C LO	D LT C LO	D LT C N	
	Reducing air pollution from energy and industry	D LT C R	D LT C N	P LT C R	P LT C LO	P LT C LO				D LT C N	D LT C N	
	Improving surface and groundwater quality through the development of water quality monitoring			D LT C N		P LT C N				P LT C N	D LT C N	
	Preventing further loss of land, preserving and improving its quality				D LT C N		D LT C N				D LT C N	
	Reducing noise levels along roads and industry					P LT C LO				L LT C LO	D LT C N	

Planning solutions per areas of Spatial Plan		Specific goals of the Strategic Environmental Assessment										
		Air quality protection	Reduction of the impact on climate change	Protection and sustainable utilization of water	Protection and sustainable utilization of land	Protection of biodiversity, geodiversity and natural resources	Landscape protection	Rational utilization of non – renewable sources of energy and greater utilization of renewable sources of energy	Improvement of the waste management system	Protection and improvement of population health	Institutional development and investment in area of environmental protection	Protection of cultural heritage and preservation of historical and archeological sites
Waste management	Establishment of an integrated municipal waste management system	L LT C R	D LT C N	P LT C LO	D LT C R	P LT C R	D LT C LO		D LT C N	P LT C LO	D LT C N	
	Construction of a plant for the treatment of construction and demolition waste in Belgrade				D LT C LO		C LT C LO		D LT C LO		D LT C LO	
	Construction of plants for incineration of medical and hazardous pharmaceutical waste	P S SP LO							D LT C N	P S SP LO	D LT C N	
Protection, arrangement and sustainable utilization of natural values, cultural goods and landscapes	Protection of natural values of through the increase of the total area under protection to 10.5% of the territory of the Republic of Serbia	L LT C N	P LT C N	L LT C N	D LT C N	D LT C R	D LT C R					
	Remediation of degraded parts of protected areas	L LT C LO		L LT C LO	D LT C LO	P LT C LO	D LT C LO		D LT C LO	P LT C LO	D LT C N	
	Detailed determination of area boundaries and other elements of the national ecological network	P LT C N	P LT C N	P LT C N	D LT C R	D LT C N/P	L LT C N					
	Area identification for the European ecological network NATURA 2000	P LT C N	P LT C N	P LT C N	D LT C R	D LT C N/P	L LT C N					
	Arrangement and presentation of cultural goods										D LT C N	D LT C N
	Defining, developing, arranging and presenting national and regional "cultural paths"										D LT C N	D LT C N

3.4. Cumulative and synergistic impacts

In accordance with the Law on Strategic Assessment (Article 15), Strategic Assessment also includes the assessment of cumulative and synergistic impacts. These impacts can occur as a result of the interaction between a number of minor impacts of existing facilities and activities and different planned solutions and activities in the area of the Spatial Plan.

Cumulative impacts occur when individual planning solutions do not have a significant impact and several individual impacts together can have a significant effect. Synergistic impacts arise in the interaction of individual impacts that produce an overall impact that is greater than the simple sum of individual impacts.

In other words, it is an assessment of cumulative impacts, which may to a greater or lesser extent differ from the individual impacts of certain planning solutions, thus creating conflicts in space and the environment.

The analysis and identification of cumulative and synergistic impacts that may arise in the interaction of existing and planned activities is performed in the following table in relation to the areas of Strategic Environmental Assessment.

Table 3.9. Identification of cumulative and synergistic impacts of planning solutions

Area of strategic assessment	Identification of cumulative and synergistic impacts
Air and climate changes	The most significant negative impacts are in areas where pollution from mining, thermal energy, traffic, individual furnaces, industrial plants is superimposed. Although individual impacts may be within the emission limit values, their cumulative impacts may have a significant impact on air quality (primary), as well as on population health and other environmental elements (secondary). Particularly unfavorable (critical) period is in certain meteorological conditions, i.e. during specific directions of air currents (depending on the specific site), but also at low temperatures, high air pressure, temperature inversion, which are characteristics in the winter period. In urban areas, the most significant negative effects are during the superimposition of emissions from thermal plants, traffic and individual furnaces, and in certain unfavorable circumstances additionally from existing municipal waste landfills. Greenhouse gases are released in all processes of conversion of fossil fuels into energy (thermal power plants, thermal plants, traffic). Cumulatively, existing and new sources will increase greenhouse gas emissions. The Kyoto Protocol does not provide for the obligation of Serbia (as a developing country) to quantify the reduction of greenhouse gas emissions, although this should be pursued.
	Positive cumulative impacts for reducing the exposure of the population to polluted air are achieved through the reconstruction of thermal power plants, the utilization of renewable sources of energy, the construction of natural gas thermal power plants and the gasification of settlements. An indirect effect will be achieved by increasing the refinery depth of processing, which will use better quality fuel in traffic. Positive cumulative impacts for reducing the population's exposure to polluted air are achieved by successive withdrawal from thermal power plants below 300 MW and implementation of the National Emission Reduction Plan, as well as relocation of the population from settlements endangered by mining and energy activities and opening new mines. In addition, there is a positive contribution to the collection of landfill gas at the planned regional sanitary landfills, which will eliminate methane emissions into the air. The concept of using "clean coal" with increased efficiency and the application of state-of-the-art technologies in TPPs should lead to a reduction in emissions of CO2, SO2, NOx and powdery substances. In order to reduce greenhouse gas emissions, in addition to commercially available technologies and the application of energy efficiency measures, the concept of protection and expansion of protected areas that are an integral part of forest areas may also have an impact.
Water	The proposed development of mining activities will inevitably affect the hydrogeological regime within

Area of strategic assessment	Identification of cumulative and synergistic impacts
	the mines and Cumulatively in the wider environment. Disruption of the water regime can have indirect effects on surface water regimes, soil fertility and water supply of the population. Due to the development of mines, a number of watercourses will have to be relocated. Infiltration of pollutants in mines and tailings is possible. The development of tourism in protected and naturally valuable areas can lead to pressure and pollution of water resources.
	The application of the most modern technologies in thermal power plants will contribute to the efficient treatment of wastewater, with the support of legal regulations and institutional organization that is harmonized with international obligations and EU regulations. A positive impact on water is the construction of regional waste management centers where the collection and treatment of leachate will be performed. In addition, this will lead to the closure and reclamation of existing municipal and illegal landfills which now imply great pressures on water resources. The collection and treatment of leachate from the new regional landfill in Novi Sad will make the greatest contribution in this context
Land	The construction of new TPPs will, along with the development of surface mines that are in the function of their work, lead to the conversion of agricultural and forest land. This could also Cumulatively and indirectly affect soil pollution as a result of the deposition on the ground of pollutants emitted into the air. The same is the case with the development of traffic infrastructure. The development of tourism in mountainous areas might lead to a decrease of forests and forest land in valuable natural areas.
	The application of the most modern technologies in thermal power plants and thermal plants and in the production of petroleum products, as well as the utilization of Renewable Sources of Energy and gasification of Serbia, will contribute to the reduction of soil pollution as a result of reducing air pollutants deposited on the ground. Areas of land polluted due to waste management activities are drastically reduced by closing, rehabilitating and remediating existing municipal and illegal landfills. Protection and expansion of protected areas that are an integral part of forest and hunting areas, as well as the application of other measures for the protection of nature and the environment, will have a positive impact on sustainable land utilization.
Natural values, natural resources and landscape	Mining activities and degradation of forest land and destruction of vegetation at mining sites have an effect on habitat loss of most plant and animal species that will lead to species extinction (pessimistic scenario) or their relocation outside the wider zone of active mines (optimistic scenario in accordance with species adaptive abilities). Negative impacts of wind farm construction on the landscape and biodiversity (predominantly on ornithofauna and chiropterofauna) are possible, and due to the reconstruction of the existing SHPPs, the impact on aquatic organisms is possible. Irrational development of tourism in protected and valuable natural areas can adversely affect habitats and landscapes. The development of transport infrastructure can lead to the intersection of ecological corridors (networks) and the diversification of habitats.
	The positive impact on biodiversity and landscape is the result of the closure, reclamation and remediation of contaminated areas, black spots and existing landfills, as the application of a range of measures to protect the environment and nature. A special contribution is reflected in the expansion of protected areas. In the area of natural resource utilization, the Cumulative contribution is to increase the utilization of energy from renewable sources. Energy efficiency has a strategically significant impact on the protection and sustainable utilization of natural resources, as a result of reducing the amount of energy consumed, and thus the required amount of energy produced by coal mining activity, which has a pronounced negative impact on the environment. Strategically significant impact is also expected in the area of greater utilization of renewable energy sources. Impacts are also possible in the field of reducing pollution and pressures on the environment, because higher energy efficiency enables a reduction in the amount of energy produced by the exploitation and combustion of lignite.
Waste management	Positive impact on reducing greenhouse gas emissions caused by inadequate municipal waste management. Establishment of a sustainable waste management system, landfill gas collection. Creating preconditions for obtaining energy from waste in waste treatment plants, closing and remediating existing municipal waste, illegal dumps coverage of waste collection up to 100%, etc. Utilization of modern technologies when disposing mining waste in mining and energy complexes and remediation of polluted industrial and mining sites. Efficient treatment of construction waste and medical and hazardous pharmaceutical waste. An overall positive effect on the quality of basic environmental

Area of strategic assessment	Identification of cumulative and synergistic impacts
	factors.
Socio-economic and institutional aspects	Small impacts limited to the sites of thermal power plants and surface mines can become significant Cumulatively with other sources of air and noise pollution (traffic, industry, individual focal points, and thermal plants) inside and outside the exploitation area. Cumulative negative impact on the health of the population, quality of life, number and structure of inhabitants and characteristics of settlements due to the development of mining and energy activities. Short-term minor negative impacts on living standards as a result of market correction of electricity prices.
	Defined planning solutions in the field of: protection of certain basic factors of natural and environmental protection; waste management; increasing the utilization of Renewable Sources of Energy, application of the most modern technologies in thermal energy and industry can have a Cumulative contribution to reducing the spatial dispersion of pollutant emissions into the environment and reducing the exposure of the population to exceeded emission limit values. Increasing investments in the field of environmental protection at the national level will create preconditions for efficient and preventive environmental protection in all these areas. Unlike the negative impacts expected in these development sectors, the positive effects can have long-term positive impacts on socio-economic development in the context of creating the preconditions for economic growth and employment.

3.5. A summary of important impacts brought by planning solutions

Based on the evaluation of the impact of planning solutions and possible Cumulative and synergy effects, it can be concluded that the Spatial Plan produces strategically significant negative and strategically positive impacts in the planning area. A summary of the impact of the planning solutions included in the Strategic Environmental Assessment is given below for each individual planning solution.

Planning solution: Stopping the conversion of agricultural land for other purposes - will have direct positive impacts in the context of protection and sustainable land utilization, and indirect in the context of protection of biodiversity, geodiversity, natural resources and landscapes. The negative aspect of this planning solution is that the realization of priority energy and other infrastructure investments is excluded from it, so that in synergy with other planning solutions in the field of mining and energy reduces the positive effects of this planning solution.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Reclamation and revitalization of the area degraded by mining and other economic activities - this planning solution has only positive effects on the objectives of the Strategic Environmental Assessment, without any negative impact. Positive impacts are in relation to the increase of air quality in mining and other economic areas, in relation to: land quality; biodiversity, geodiversity, natural resources, landscape, and as a result of all that, the health of the

population. It will be realized with additional investments in the field of environmental protection in these areas.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: More complete utilization of the irrigation system for agricultural land - this planning solution has only positive effects on the goals of the Strategic Environmental Assessment, without any negative impact. The positive effects are reflected in the investment in modern irrigation systems, which in terms of climate change, help to achieve stable yields, satisfactory quantity and quality of all plant products.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Restoration of ecosystem and production functions of abandoned and steamed agricultural land - is achieved by sanctioning the legal obligation of their regular cultivation, or conversion for establishing protective forests, plantations for the production of biofuels, agroforestry systems, etc. This planning solution has a positive impact on the protection and sustainable utilization of land and landscapes. The planned solution does not imply negative effects.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reconstruction of degraded and filling of sparse forests - includes change into stands of more favorable degree of overgrowth in relation to diversity, vitality, self-renewal, quality, higher functionality, etc. This planning solution does not imply negative effects, and the positive effects are directly related to the protection and sustainable utilization of forests and forest land, protection of biodiversity and natural values, landscapes. Indirect positive impacts are in the context of protecting air quality and reducing the impact of climate change.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Improving the state of game population - positively contributes to the biodiversity of the area (especially hunting areas).

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Protection and expansion of protected areas that are an integral part of forest and hunting areas - refers to areas of exceptional and unique parts of nature, landscapes and biodiversity, and therefore a positive impact on these elements of the environment is certain, as well as the impact on basic environmental factors (water, air and soil). The planning solution does not imply negative impacts in the planning area.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Water supply of settlements - includes the development of regional systems and subsystems, distribution networks, sanitary protection of drinking water sources, with raising the quality of drinking water and construction of water treatment plant. The dominant positive impact refers to the protection and sustainable utilization of water, and the formation of zones of sanitary protection of drinking water sources will affect the protection of other elements of the environment in these zones.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reconstruction, upgrade and development of multi-purpose canal systems - positive impacts will be achieved in the context of protection and, above all, sustainable water utilization. Activities are expected in settlements, wells, reservoirs and pumping stations, replacement of dilapidated, mostly asbestos-cement pipes (with possible impacts on the health of the population), reduction of water losses, development of measurement and information system for reliable water supply management. No negative effects of this planning solution are expected.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Protection of water from pollution - by expanding the sewerage system, construction of waste water treatment plants, regulation of watercourses and revitalization and reconstruction of drainage systems. Positive impacts will be achieved on most of the goals of the Strategic Environmental Assessment. The most pronounced impacts are expected in the field of water protection and sustainable utilization with the support of financial and institutional measures, and in the field of biodiversity protection and aquatic environments. The planning solution does not imply negative impacts in the planning area.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: **Safe and reliable supply of coal** - means the exploitation of ore resources with all the implications for space and the environment. Negative impacts relate to air and water quality, conversion of agricultural and forest land, impact on biodiversity, landscape, population health, settlements and infrastructure. Looking exclusively at the context of environmental impacts, no positive impacts of this planning solution have been identified. In synergy with other activities in the field of ore exploitation (energy, traffic, individual furnaces, etc.), the negative impacts of this planning solution are increasing.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Increasing energy production from liquid and gaseous energy mineral sources and geothermal energy - the positive effects of this planning solution are reflected in the reduction of emissions of pollutants into the air using cleaner and renewable energy sources and modern technologies. In that way, the exposure of the population to polluted air can be reduced, especially in urban agglomerations. At the same time, the negative effects are related to the emission of pollutants into the air, which has negative effects on the health of the population. Negative impacts increase in synergy with other emitters of pollutants (traffic, individual furnaces, industry, etc.).

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Elimination and mitigation of harmful consequences caused by mining activities - implies rehabilitation and remediation of abandoned mining facilities and the elimination of a part of the current consequences of mining in the environment and space in general. This planning solution does not imply any negative effect in relation to the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of coal exploitation in Kolubara and Kostolac basins - includes: coal exploitation in the eastern part of Kolubara basin on surface mine Polje C and transition to surface mine Polje E, remediation of landfills, permanent relocation of the river Pestan with accompanying dams and canals; in the central part of the Kolubara basin, development of coal exploitation on surface mine Polje G Juzno Polje and relocation of infrastructure facilities; opening of Radljevo North and reaching full capacity, relocation of infrastructure facilities, expropriation and resettlement of settlements; development of coal exploitation at SM Tamnava-Zapadno Polje with relocation of infrastructure facilities; increase of coal production at SM Drmno to 12 Mt in Kostolac basin. This planning solution has negative implications for most of the objectives of the Strategic Environmental Assessment. Negative impacts relate to air and water quality, conversion of agricultural and forest land, impact on biodiversity, landscape, population health, settlements and infrastructure. Looking exclusively at the context of environmental impacts, no positive impacts of this planning solution have been identified. In synergy with other activities in the field of ore exploitation (energy, traffic, individual furnaces, etc.), the negative impacts of this planning solution are increasing.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Development of tourism in the area of Belgrade and its surroundings - the positive impacts of this planning solution are expressed in relation to the protection and presentation of environmental elements (land, biodiversity, landscapes, cultural assets), as a basis for its implementation. No negative effects of the planning solution on the goals of the Strategic Environmental Assessment are expected.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planned solution: Development of mountain tourism - especially the destination Kopaonik, Stara mountain, Tara, Zlatibor, with the commenced and formed offer and its integration, can have significant positive impacts on the protection of air, water, land, biodiversity, natural and cultural assets and landscapes, as the backbone of the development of mountain tourism. At the same time, the development of the tourist offer can imply pressures on all elements of the environment that are actually the backbone for the development of mountain tourism. Some of these consequences are already visible in mountainous areas (urbanization - Zlatibor, urbanization and development of ski resorts - Kopaonik, with the decrease of forest areas and change of valuable landscapes) and create certain conflicts between the need for development and environmental protection. These negative impacts are exacerbated by the effects of increased traffic, the problem of providing communal infrastructure, etc.)

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Development of river and nautical tourism - Danube Navigation Corridor with a new offer in terms of coastal arrangement and content of nautical tourism together with the development of cross-border cooperation with Croatia and Romania. Destination Drina, destination Gornje Potisje with the commenced offer. Destination Drina will affect the preventive utilization and sustainable utilization of water, biodiversity and cultural assets, because only in this way will these areas be attractive for the development of the tourist offer. No negative impacts of this planning solution have been identified.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of road transport - includes the construction of sections of highways, state roads of the first and second order and the completion of the bypass around Belgrade. Apart from the solution related to the Belgrade bypass with its positive effects on the air quality in the capital and reduction of the population's exposure to polluted air in traffic noise, other segments of this planning solution will have negative implications for basic environmental factors and most goals of the Strategic Environmental Assessment. In interaction with other negative influences, these negative influences will increase cumulatively and synergistically.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Development of the railway network - this planning solution will have negative impacts in the areas where land conversion will take place, ecological corridors will be cut and habitats will be differentiated. It will also affect the change of landscape.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of air transport - implies improvement and expansion of the existing capacities of the airport infrastructure through activities on the realization of the planning solutions at the airports "Nikola Tesla" Belgrade, "Konstantin Veliki" Nis and "Morava" Kraljevo. At the micro-location level, it is possible to expect negative impacts on air quality, soil and its conversion, biodiversity and landscape.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of water transport - includes reconstruction and construction of terminals for bulk and general cargo of the Port of Smederevo; construction of a new port in Belgrade and other sites; hydraulic works and adaptation of navigation locks within HENS "Djerdap 1" and HPP "Djerdap 2" and on the river Tisa; extraction of the sunken German navy from World War II (Danube River). Part of the planning solution may have negative impacts on water quality and aquatic biodiversity during the execution of works, while part is in the function of protection and sustainable utilization of water, which will be achieved through appropriate investments.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Revitalization of hydro aggregates with increase of installed capacity at several existing hydro power plants - refers to projects: HPP Djerdap 1 and 2, RHE Bajina Basta, HPP Potpec with extension, Vlasina HPP, HPP Bistrica. The planned solution has a positive impact on the protection of air quality and reduction of the impact on climate change in a broader context through increased investment in Renewable Sources of Energy. Negative impacts on the biodiversity of aquatic habitats during the implementation of revitalization works are possible. These influences are temporary.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Construction of new thermal capacities will imply negative impacts in relation to most of the goals of the Strategic Environmental Assessment and cause pressures in space and environment. Part of the negative impact will be offset by investments in the best available technologies to reduce particulate pollutant emissions. However, observing the interaction with other broadcasters in the areas of planned new thermal capacities, especially surface mines that are in the function of thermal power plants, cumulative and serious negative impacts are expected in the wider area of planned projects.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Construction of new wind farms - the utilization of Renewable Sources of Energy in the case of wind farms, has a positive impact in the broader context of air protection and reduction of impact on climate change, and the project planning concept allows maintaining the existing land utilization after the project. These are the positive impacts of building wind farms. Negative influences can occur in relation to the flying fauna (ornithofauna and chiropterofauna) and the change of the character of the landscape. Negative impacts on flying fauna can be prevented by the optimal number and position of wind turbine poles, which is a common practice when planning wind farms.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reconstruction and construction of small hydro power plants - refers to: projects of "Elektroprivreda Srbije" connected to the electricity distribution network with the renewal of production at the projected level; construction of small hydro power plants on water management facilities (SHPP Rovni and SHPP Celije). The planning solution implies the utilization of Renewable Sources of Energy with positive impacts on most of the objectives of the Strategic Assessment. During the reconstruction of existing SHPPs, short-term negative impacts on water resources and biodiversity, local and temporary, are possible. The construction of two planned SHPPs on the water management facilities in Rovni and Celija may adversely affect the same objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Rehabilitation of polluted industrial and mining-energy sites – has only positive impacts on almost all goals of the Strategic Environmental Assessment, through the implementation of the procedure of rehabilitation and remediation of hot spots - contaminated industrial sites; reclamation and remediation of the sites most damaged by the exploitation of mineral sources (RTB Bor, flotation tailings and smelter, Kolubara and Kostolac lignite basins) and rehabilitation and remediation of polluted watercourses (section of the Velika Backa Canal). The planning solution does not imply any negative effect on the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reduction of air pollution originating from energy and industry - includes: creation of a register of pollutants with emission balance; modernization and revitalization of existing thermal power plants conditioned by the implementation of Directive 2010/75 / EU on industrial emissions; shutdown of existing power units below 300MW; utilization of the best available technology in the industry; identification of zones of impact on the population using software models that will take into account cumulative and synergistic impacts and taking measures to protect the health of the population in these zones; reduction of greenhouse gas emissions by about 21% by 2025 compared to the 1990 level. Positive effects of this planning solution and no negative impact are expected.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Improving the quality of surface and groundwater through the development of water quality monitoring - is aimed at establishing and equipping regional monitoring centers as a basis for monitoring water quality and effective protection of water resources. The planned solution, in addition to the positive impact on water quality, has a positive impact on biodiversity and indirectly on the health of the population. No negative impacts have been identified on the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Prevention of further loss of land, preservation and improvement of its quality - includes the identification of sites where it is necessary to implement programs to protect against pollution by nitrates, agrochemicals and other harmful agents of agricultural origin; and implementation of erosion protection measures. The planning solution has only positive effects on the protection of land and landscapes.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reduction of noise levels in the vicinity of roads and industry - involves the application of technical and biological measures to mitigate noise, in order to reduce the exposure of the population to elevated noise levels. The positive effects of the planning solution are precisely in relation to the stated goals of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Establishment of an integrated municipal waste management system - implies expansion of the collection scope to 100%, construction of regional waste management centers - regional landfills with waste separation facilities, transfer stations and collection centers for recyclable waste including hazardous household waste in the following regions: Vranje, Novi Sad, and Belgrade. This planning solution will have multiple positive effects in all areas of the Strategic Environmental Assessment and will significantly change the existing situation in waste management, without any identified negative strategic impacts.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Construction of a plant for treatment of construction and demolition waste in Belgrade with a capacity of 200,000 t / year, will have a positive impact on the quality of land at micro-sites and landscape characteristics. No strategic negative impacts are expected on any of the objectives from the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Construction of a plant for incineration of medical and hazardous pharmaceutical waste - a positive impact on air quality is expected in relation to the existing situation in this area.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Protection of natural resources through an increase of total area under protection to 10.5% within the territory of the Republic of Serbia, mostly by declaring proposed (new and revised) protected areas for which appropriate study documentation has been prepared (declaring part of Kucajske mountains a national park). The planning solution will have a positive impact on most of the goals of the Strategic Environmental Assessment, especially on the basic environmental factors, biodiversity, geodiversity, protected natural assets and landscape.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Rehabilitation of degraded parts of protected areas - the planning solution refers to borrowing pits, quarries, fires, landfills, gravel pits, construction of facilities, and other sites with a high adverse impact on natural values and the environment. This planning solution has a positive impact on the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Detailed determination of the boundaries of the area and other elements of the national ecological network - implies ensuring the full status of the Emerald area according to the Bern Convention with all positive impacts on natural values, biodiversity, geodiversity, landscape, and indirectly on basic environmental factors. There are no negative impacts of this planning solution in relation to the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Identification of the area for the European ecological network NATURA 2000 - with positive impacts on natural values, biodiversity, geodiversity, landscape, and indirectly on the basic environmental factors. There are no negative impacts of this planning solution in relation to the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Design and presentation of cultural goods - especially Roman sites in Nis, Mediana, Sirmium, Viminacium, Drenovac and archaeological sites along the Roman Limes, will positively affect the protection and presentation of immovable cultural goods. There are no negative impacts on the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Defining, developing, designing and presenting national and regional "cultural paths" - will have a positive impact on the protection and presentation of immovable cultural property. There are no negative impacts on the objectives of the Strategic Environmental Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

3.6. Description of guidelines for prevention and reduction of negative impacts and the increase of positive impacts on the environment

Based on the assessed possible impacts on the quality of the environment, measures (guidelines) are determined and should be applied during the implementation of the Spatial Plan, in order to prevent or reduce the negative impacts of planning solutions, i.e. increase the positive impacts of those planning solutions which have a favorable impact.

Solutions for reducing the negative and increasing the positive environmental impacts of the Spatial Plan have been prepared for each category according to the existing level of pollution, degradation and environmental pressures (planned spatial differentiation of the Republic of Serbia, Table 3.9), in the form of strategic solutions and concepts aimed at improving the environment in the categories of polluted and degraded environment, i.e. ensuring the maintenance of the existing situation in the categories of quality environment.

Table 3.9. Spatial differentiation according to the quality of environment

1. **Areas of polluted and degraded environment** (localities exceeding the limit values of pollution, urban areas, areas of open lignite mines, tailings, regional landfills,	In this category, the most endangered areas are: Pancevo, Bor, Obrenovac, Smederevo, Belgrade, Novi Sad, Subotica, Loznica, Kostolac, Cacak, Lucani, Krusevac, Sabac, Kikinda, Prahovo, settlements in the Kolubara basin, and corridors of the Belgrade-Novi Sad highway - Subotica, Belgrade-Sid,

thermal power plants, highway corridors, watercourses IV "without a class") with negative impacts on humans, flora and fauna and quality of life. For this category, solutions and decisions which prevent further degradation and reduce the effects of limiting development should be provided. It is necessary to rehabilitate and revitalize degraded and endangered ecosystems and rehabilitate the consequences of pollution, in order to create a better environment.	Belgrade-Nis-Presevo, Belgrade-Cacak and Nis-Dimitrovgrad. The largest emissions of SO2, NOx and suspended particles are in the area of the City of Belgrade, followed by the Branicevo District, the Bor District and the Juzni Banat District. In Obrenovac, Lazarevac and Kostolac, are the largest landfills of released ash from coal combustion in thermal power plants. Urban areas that fall into this category are: Zrenjanin, Ruma, Valjevo, Kosjeric, Novi Popovac, Kraljevo, Nis, Vranje, Zajecar, Majdanpek, Vrbas, Mladenovac, Smederevska Palanka, Pozarevac, Sremska Mitrovica, Kragujevac, Gornji Milanovac, Uzice, Priboj, Trstenik, Prokuplje, Pirot, Novi Pazar, Leskovac, Jagodina, Paracin, as well as the current watercourses of the fourth class and "without a class".
2. Areas of endangered environment (localities which occasionally exceed limit values, suburban zones of settlements of the most endangered areas from the I category, rural and weekend settlements, tourist zones with excessive burden on space, areas of mineral exploitation, state roads of I and II order, railways, large farms, intensive agriculture zones, airports, river ports, class III watercourses) with less impact on humans, wildlife and quality of life. For these areas, further degradation should be prevented and the existing situation should be improved, in order to reduce the degradation of the environment as a limiting factor of development. It is necessary to determine the most adequate way of using natural resources and space in order to preserve natural values and improve the environment.	In this category are: Sombor, Apatin, Crvenka, Kula, Odzaci, Backa Palanka, Bajmok, Srbobran, Novi Knezevac, Coka, Senta, Ada, Temerin, Backa Topola, Kanjiza, Becej, Titel, Bac, Bela Crkva, Kovin, Indjija, Stara Pazova, Sid, Kucevo, Pozega, Ivanjica, Arilje, Guca, Raska, Cuprija, Negotin, Bujanovac, Dimitrovgrad, Knjazevac, Sjenica, Prijepolje, Ub, Osecina, Mionica, Krupanj, Petrovac, Zagubica, Svrljig, Bela Palanka, Svilajnac, Golubac, Kladovo, zones of intensive agriculture (Vojvodina, Stig, Branicevo, most of Macva and Pomoravlje), tourist centers on Kopaonik, Zlatibor and Divcibare, corridors of state roads of I and II order and railways, river ports (Apatin, Backa Palanka, Beocin, Novi Sad, Belgrade, Pancevo, Bogojevo, Smederevo and Prahovo on the Danube River, Senta on the Tisa River, as well as Kovin, Sremska Mitrovica, Sabac and Sombor) and airports (Belgrade and Nis). Areas of exploitation of mineral sources include: Jelen Do, Krupanj, Novi Pazar, as well as the vicinity of Kanjiza, Kikinda and Novi Becej, Cerovo, Cikatovo-Glavica (Glogovac), Blagodat, Crnac, Suva ruda, Bela Stena, Zlatokop and others.
3. Areas of quality environment (forest areas, tourist zones of controlled development, agricultural fruit and vineyard zones, areas with natural degradation, meadows and pastures, hunting and fishing areas, class II watercourses) with predominant positive impacts on humans, wildlife and quality of life. For these areas, solutions which eliminate or reduce the existing sources of negative impacts would be provided, i.e. increase the positive ones as a comparative advantage in development planning. It is necessary to preserve and protect areas from pollution for strategic reasons.	In this category are: Sremski Karlovci, Grocka, Vrnjacka Banja, Sokobanja, Topola, Arandjelovac, Ljig, Zlatibor, parts of Stara Planina, as well as suburban areas with weekend construction activities, fruit growing zones (Valjevo foothills, Pocerina, Loznica area, Arilje, Kraljevo , Dragacevo, Pozega and Grocka, Brankovina, Branicevo and other smaller regions) and viticulture (Timok region, Nisava-South Moravian region, West Moravian region, Sumadija-Greater Moravian region, Pocer, Srem and Banat regions and region of The Subotica-Horgos sandy area) roads, as well as the territories of rural settlements of municipalities that belong to the II category, areas with natural degradation (eroded areas, saline lands, landslides, floodplains, etc.).
4. Areas of high quality environment (areas protected and planned for the protection of natural resources, wetlands, areas protected by international conventions, mountain peaks and difficult-to-reach terrains, watercourses of class I) where positive impacts on humans and wildlife dominate. Solutions which maintain the existing state of environmental quality and protect naturally valuable and preserved ecosystems should be provided.	This category includes: 5 national parks (Fruska gora, Djerdap, Kopaonik, Tara and Sar-mountain), 1 geopark (Djerdap), 18 nature parks, 21 landscapes of exceptional features, 69 nature reserves, 6 protected habitats, 314 natural monuments (botanical, geological and hydrological character) and 36 areas of cultural and historical significance (areas around immovable cultural assets and landmarks). Ten areas of international importance are protected under the Ramsar Convention: Obedska bara, Ludasko lake, Carska bara-Stari Begej, Zasavica, Slano Kopovo, Koviljsko-petrovaradinski rit, Vlasina, Gornje Podunavlje, Labudovo okno and Pestersko field, and according to the Convention on Natural and cultural heritage, Golija-Studenica and Backo Podunavlje are protected

	as biosphere reserves. Special nature reserves also include: Deliblatska sand area, Karadjordjevo, pastures of Velika Droplja, Kopacki rit. According to the share of protected areas in the total territory, the Republic of Serbia belongs to countries with a medium lower level of protection (6.19%). In addition to national parks, nature reserves, landscapes of exceptional features, natural monuments and nature parks, 860 wild species are protected in Serbia, and 1783 are under extreme protection.

In accordance with the above stated, the following concepts and solutions for environmental protection are envisaged:

1. **For areas of polluted and degraded environment** exposed to great pressure, with negative impacts on humans, all other forms of life and the quality of life, solutions and commitments which prevent further degradation and reduce the effects of limiting development are provided. In these areas, it is necessary to take measures to stop further pollution, degradation and pressure on the environment, limit the site of activities that are large polluters and take protection measures when locating new sources of pollution and degradation, especially in the case of large polluters. Improving the quality of life for the population living in areas belonging to this category is the next necessary condition that compensates for environmental pollution by improving quality and greater access to educational, health, cultural, sports, recreational and other services.

2. **For areas where environment is endangered** with negative impacts on humans, other forms of life and the quality of life, solutions and determinations which prevent further degradation and improve the existing situation are provided, in order to reduce the effects of degraded environment as a limiting factor of development. In these areas, it is necessary to prevent further pollution and degradation of the environment, limit the site of activities that pollute and degrade the environment and take protection measures when locating new activities, especially those with extremely negative impacts on the environment.

3. **For areas of relatively high quality environment**, with predominant positive impact in relation to negative impacts on humans, wildlife and quality of life, solutions and commitments that eliminate or reduce existing sources of negative impacts or increase the effect of positive impacts are provided, which is used as a comparative advantage in development planning. In these areas, it is necessary to prevent the site of activities that pollute or degrade the environment, and all other activities should be carried out with the application of appropriate protection measures.

4. **For areas of high quality environment**, where positive impacts on humans, wildlife and quality of life are predominant, solutions and commitments which improve the existing situation are provided, which is used as a comparative advantage in development planning. In these areas, it is necessary to prevent the site of activities that pollute or degrade the environment, and all other activities should be carried out with the application of appropriate protection measures.

Priorities in the area of environmental protection are:

1. **Rehabilitation of polluted industrial and mining-energy sites**, which includes: implementation of decontamination and remediation of black spots (contaminated industrial sites), reclamation and remediation of sites most damaged by exploitation of mineral sources (Kolubara and Kostolac lignite basins), and recultivation and remediation of pollution section of the Velika Backa Canal);

2. **Reduction of air pollution originating from energy and industry sectors**, which includes: the creation of a register of pollutants with emission balance, construction of desulphurization and denitrification plants in thermal power plants, and installation of new or reconstruction of existing electrostatic precipitators in plants emitting suspended particles above emission limit values and which are the greatest source of risk for the environment and human health, as well as the utilization of the best available technologies and the reduction of greenhouse gas emissions.

3. **Identifying zones of impact of mining and energy activities on the population** using software models that will take into account cumulative and synergistic impacts (and not just individual) and take all legal measures to protect the health of the population in these zones.

4. **Improving the quality of surface and groundwater**, which includes: the development of water quality monitoring, which should be directed towards the establishment of regional monitoring centers and equipping them.

5. **Prevention of further loss of land and preservation and improvement of its quality**, which includes: protection against pollution by nitrates, agrochemicals and other harmful agents of agricultural origin and implementation of measures for protection against erosion.

6. **Reduction of noise levels near roads and industries that endanger housing** and other activities, which includes: the identification of the most used parts of state roads that require noise monitoring, and reduction of noise levels at endangered sites, next to roads and industries that affect housing;

7. **Establishment of an integrated waste management system** through: the expansion of the coverage of municipal waste collection to 100% and construction of regional waste management centers, construction of energy recovery plants, construction of medical and hazardous pharmaceutical waste incineration plants.

8. **Protection, management and sustainable utilization of natural resources, cultural goods and landscapes** through: increasing the total area under protection to 10.5% of the territory of the Republic of Serbia, rehabilitation of degraded parts of protected areas, revision of the status of protected species of wild flora and fauna, determining borders for areas and other elements of the national ecological networks and European ecological networks NATURA 2000, as well as the management of immovable cultural goods - Roman sites and cultural routes.

The strategic commitment to development is aimed at the realization of the protection of spatial units with significant natural value and the rehabilitation, protection and improvement of natural and work-created values. In order to protect natural resources, their further degradation will be prevented by improving the communal infrastructure of the settlement, introducing a gasification network, adequate forest management, etc.

The Spatial Plan of the Republic of Serbia is harmonized with the existing strategic and planning documents at the level of the Republic of Serbia.

3.6.1. Measures for the protection of air quality

Air quality will be achieved through the following measures:

- the application of environmentally friendly technologies and materials in the implementation of planning solutions in order to meet the limit values of emissions of pollutants.

- reducing air pollution from the energy, industry, agriculture, transport and waste management sectors.
- improving the air quality monitoring system in urban areas.
- strengthening the institutional framework and administrative capacity to address air protection, climate change and the protection of the ozone layer.
- by afforestation and formation of protective belts along roads and on degraded surfaces.

3.6.2. Measures to reduce the impact on climate change

In order to reduce the impact on climate change, the following activities will be undertaken:

- all infrastructure projects, arising from the measures of the Spatial Plan, should be planned while taking the potential climatic phenomena in the area of implementation of the measure into account. The design needs to be implemented in accordance with the guidelines from the national climate change adaptation plan.
- adoption of sectoral plans and programs of measures for adaptation to climate change and harmonization of sectoral strategies with European strategies for adaptation to climate change and relevant EU directives.
- development of regional and local disaster risk maps related to observed and projected climate change in order to integrate climate change into national and local plans for the protection of population, material goods, environment and natural resources.
- defining climate change vulnerability zones in order to structure adaptation and protection measures, revising sectoral strategies (in the field of population health, natural resources and environmental protection) in order to include climate change as an important factor of sustainable development in sectors vulnerable to climate change.
- improvement of existing systems for monitoring, studying and forecasting climate change through the formation of monitoring units at local levels of government.
- encouraging the revision of existing and the introduction of new methods in the process of applying climate data and information in planning and design.
- improvement of irrigation systems for agricultural land.
- gradual reduction of consumption of ozone-depleting substances (HCFC) in accordance with the adopted reduction plan.
- raising public awareness of climate change.

3.6.3. Measures for protection and sustainable utilization of water

In order to protect the quality of surface and groundwater, the following activities will be undertaken:

- increasing the availability of quality water by improving the population’s connection to public water supply systems.
- reduction of losses in water supply systems.
- protection and improvement of water quality in reservoirs intended for water supply.
- improving the quality of water in watercourses, primarily through the construction and more efficient operation of existing wastewater treatment plants, as well as the controlled utilization of fertilizers and plant protection products.
- rehabilitation and remediation of polluted watercourses.
- establishing economic value of water and services, applying the principles of "polluter pays" and "user pays" systems.
- appropriate institutional and territorial organization of the water sector.
- defining the legal status and ownership transformation of water management companies.

- solving the problem of communal wastewater, according to the model of public-private partnership for larger cities, and through state investment activities for smaller settlements.
- introduction of a regulatory function.
- defining source zones and determining zones and measures of sanitary protection of all sources (republic, regional and local) of surface and groundwater.
- mandatory preservation of surface and groundwater quality in accordance with the required class.
- improving the systematic measurement and monitoring of surface water and groundwater quality, developing the culture of the population on the need to conserve water resources;
- implementation of restrictive measures in order to preserve water in source areas and in areas of special natural or environmental importance.
- rationalization of water consumption by individual consumers.
- quality control of drinking water (physico-chemical and microbiological standards) by professional services at the local level.
- wastewater from commercial facilities is necessary to meet effluent standards.
- drainage and treatment of municipal wastewater in settlements.
- increasing the degree of connection to public sewerage systems.
- establishment of groundwater monitoring within the entire territory of the Republic of Serbia.
- establishment of a reference laboratory for water testing.
- protection of mountain rivers and controlled construction of SHPPs with respect for natural resources and consideration of cumulative and synergistic effects of several SHPPs on one watercourse.

3.6.4. Measures for protection and sustainable utilization of agricultural and forest land

Land protection is achieved through the application of the following measures:

- prevention of further loss of land and preservation and improvement of its quality, especially in the field of industrial, mining, energy, transport and other activities.
- protection against degradation and repurposing of agricultural land.
- ban on unorganized waste disposal and closure of unregulated landfills in order to protect the land.
- controlled application of chemical agents in agricultural production and agrotechnical measures.
- protection from wind erosion (formation of protective belts).
- reduced risk of soil erosion by performing anti-erosion works and introducing effective erosion control measures.
- remediation of contaminated sites from the priority list.
- development of systems for monitoring, protection and improvement of soil quality by polluters.
- development of modern standard operating procedures and instructions for fulfilling obligations in the field of land protection.
- poverty reduction as a contribution to combating desertification and mitigating the effects of drought.
- promotion of subregional, regional and international cooperation between parties affected by drought in the field of environmental protection and conservation of land and water resources.
- increasing areas under organic and other environmentally friendly agricultural production systems.

3.6.5. Measures to protect biodiversity, geodiversity and natural resources

Biodiversity, forest protection and nature protection are achieved through the utilization of the following measures:

- increasing the area of protected natural assets to 10.5% of the territory of the Republic of Serbia, i.e. expanding the network of protected areas;
- ecological corridors within construction areas must be maintained by establishing the continuity of green areas whose structure and purpose support the functions of the corridor;
- establishment of an information system on all forms of life and other natural values of the Republic of Serbia;
- improving the monitoring of biodiversity components;
- implementation of effective control measures for genetically modified organisms (GMOs) in line with EU practice;
- improvement of methods for sustainable utilization of the gene pool and the establishment of a bank for the conservation of genetic material, with increasing support for the conservation of genetic resources, and an increase in the number of entities and areas involved in conservation activities;
- improving the condition of forests: by converting coppice forests into high ones, reclamation of degraded forests and coppice forests of poor quality, supporting natural regeneration and forest protection;
- promoting sustainable management of forests and protected natural assets;
- increase of forest areas to 41% of the territory of the Republic of Serbia;
- preservation, improvement and expansion of existing forests (increase of areas under forests and improvement of forest structure);
- improvement of the management system of protected areas of national and international importance (including information system, supervision of economic activities and tourism, implementation of management plans for a period of 10 years, harmonization of competencies, etc.);
- improving the protection of special protection zones for birds;
- implementation of international obligations in documents such as conventions, agreements and treaties related to the protection of biodiversity and forests and nature protection;
- development of the ecological network in accordance with international standards;
- improvement of the ecological network management system (Emerald network, NATURA 2000, corridors, cross-border areas within the EU Green Belt in Serbia, cross-border Biosphere Reserves, etc.);
- improving the management of individual habitats, species and corridors of migratory species of international importance on the territory of Serbia;
- establishing management of populations of strictly protected and protected wild species;
- establishing management of populations of large carnivores - wolves, bears and lynxes;
- establishing management of game game populations;
- establishing measures to mitigate the impact of energy plants on nature;
- establish harmonization of the scope of tourism development in order to protect and preserve natural values and the environment.

3.6.6. Landscape protection measures

Landscape protection is secured through the implementation of the following measures:

- within the green belt, it is necessary to remove and replace damaged or dry vegetation with the same specimens of the species, in accordance with the landscaping project;

- interventions in space should disturb the natural and ambient characteristics of space as little as possible;
- planning and constructing facilities and infrastructure must be done so that they fir into the landscape depending on its type, and must follow the configuration of the terrain.

3.6.7. Measures of rational utilization of non-renewable sources of energy and greater utilization of renewable sources of energy

Rational utilization of non-renewable sources of energy and greater utilization of renewable sources of energy is ensured by applying the following measures:

- intensifying research on the potential of renewable energy sources in order to verify them and achieve more realistic balancing;
- significant improvement of energy efficiency in order to make more rational utilization of non-renewable energy sources;
- increasing the utilization of renewable sources of energy;
- encouraging the rational utilization of natural resources, reducing the emission of pollutants into the air, reducing the generation and achieving greater utilization of waste.

3.6.8. Measures to improve the waste management system

Improvement of the waste management system is ensured by applying the following measures:

- establishment of an integrated waste management system;
- organized waste collection on the entire territory of the Republic;
- construction of the necessary infrastructure for waste treatment and disposal;
- sort and safely store all types of waste which can be used before they are handed over to an authorized operator for further treatment; mixing of different types of waste is prohibited;
- greater utilization of waste by applying the principles of circular economy;
- greater utilization of construction and demolition waste;
- solving the problem of waste management in energy.

3.6.9. Measures to protect and improve the health of the population

Although most of the protection measures defined in Chapter 3.6 directly or indirectly relate to the protection and improvement of the health of the population, it is necessary to pay special attention to the implementation of the following measures:

- during all activities related to the implementation of the Spatial Plan, the principle of precaution should be taken into account, which is achieved by planning and consistent implementation of legally prescribed measures to reduce the possible impact on the health of the population;
- establish mechanisms for comprehensive and continuous monitoring of the effects of environmental factors on health;
- establish a health risk assessment system which assesses risks originating from the most important environmental factors (air, water, noise and food);
- improvement of preventive activities for the protection of the health of the population on the territory of the Republic of Serbia.

3.6.10. Measures for the protection of cultural heritage and preservation of historical and archaeological sites

Protection of cultural heritage and preservation of historical and archaeological sites is ensured by applying the following measures:

- protection and presentation of protected cultural property, and which is planned to be protected, in cooperation with the competent institutes for the protection of cultural monuments during the process of planning and design.

3.6.11. Protection measures in case of emergency or disaster

Earthquake protection is achieved:

- by earthquake resistance calculation of at least 7^{o} MCS for all objects;
- by respecting the norms for building construction, by respecting the prescribed minimum width of traffic corridors, in order to ensure free passage in case of collapse.

Flood protection is achieved:

- by developing maps of flood risk assessment on the territory of the Republic;
- construction of embankments on endangered sections;
- respecting the basic purpose and maintenance of all canals, which have the most important role in the evacuation of atmospheric water from the settlement;
- by respecting the applicable regulations during the design and construction of hydraulic structures (characteristics of canals, culverts, etc.).

Protection against fire is achieved:

- compliance with regulations in the design and construction of facilities (distance between facilities, storage conditions of flammable liquids, gases and explosives);
- construction of roads according to defined rules (necessary minimum widths, minimum radii of curves, etc.);
- providing adequate capacity of the water supply network for efficient fire extinguishing;
- by providing conditions for the work of the fire service.

Protection against technical and technological accidents is achieved:

- taking measures to prevent the release of any substance that is harmful or destructive to the soil or its characteristics, in particular within the SEVESO plants;
- in the event of a breakdown of a plant containing hazardous substances, notify the competent services and specialized teams in accordance with the accident protection plans of the plant in which the hazardous substance is present or may be present in equal or greater quantities than prescribed (SEVESO plants). In accordance with the regulations governing environmental protection, the obligation to draft an Accident Prevention Policy, Safety Report and Accident Protection Plan is determined, a list of hazardous substances and their quantities and criteria for determining the type of document prepared by the seveso plant operator are prescribed. The local self-government is obliged to, based on the accident protection plans of the operator, develop an External Plan for protection against major accidents, the content and methodology of which are prescribed by the Law on Disaster Risk Reduction and Emergency Management (*Official Gazette of RS*, No. 87 / 18).

3.6.12. Environmental protection measures from transboundary impacts

As a signatory to the Espoo Convention and the Kiev Protocol, the Republic of Serbia has also undertaken to inform other states regarding projects that may have a cross-border impact. Under the terms of the Espoo Convention on Impact Assessment, transboundary impact is defined as: "Any impact, not only of a global nature, within an area under the jurisdiction of one Party, caused by physical activity, located in whole or in part, in an area under the jurisdiction of the other Party." .

At the strategic level of planning, such as the Spatial Plan of the Republic of Serbia, it is not possible to identify specific projects that may imply cross-border impacts. In this context, it is possible to identify only areas of spatial development within which certain projects located in the border zone with other countries, whose mode of operation could cause cross-border impacts. The area of energy stands out above all due to the possible transboundary impact on the air, watercourses, internationally protected flying fauna (ornithofauna and chiropterofauna).

Border areas in the segment of environmental protection should be considered in the context of the entire ecosystem, i.e. in cross-border cooperation with neighboring countries, with which we should work together to prevent transboundary environmental impacts, especially in the project documentation phase, i.e. Environmental Impact Assessment for a project. Only in this phase, when all relevant inputs are available, is it possible to determine on the basis of appropriate simulation models whether and what kind of cross-border impacts can be expected during the implementation of specific investment projects.

On the other hand, a number of strategically significant positive impacts have been identified: reduction of air, water and soil pollution and reduction of greenhouse gas emissions due to increased utilization of renewable energy sources and application of clean technologies for new projects; withdrawal from utilization of all thermal power units with power below 300MW; development of transport infrastructure and connection with the region; integration of the Serbian electricity transmission system into the regional interconnection; construction of the main gas pipeline; etc.

4. GUIDELINES FOR MAKING IMPACT ASSESSMENTS AT LOWER HIERARCHY LEVELS

According to Article 16 of the Law on Strategic Environmental Assessment, the Strategic Assessment Report contains elaborated guidelines for plans or programs at lower hierarchical levels, which include defining the need for strategic assessments and environmental impact assessments, environmental aspects and other issues of importance in order to assess the environmental impact of plans and programs of a lower hierarchical level.

The spatial plan will be the basis for the development of planning documentation at lower hierarchical levels of planning. For lower-level plans, the decision to proceed with the development of a strategic assessment is made in accordance with the provisions of Articles 5 and 6 of the Law on Strategic Assessment. Applying the criteria contained in Annex I of the Law on Strategic Assessment, it is proposed to prepare a strategic assessment for the following planning documents (Table 4.1):

Table 4.1. Proposed impact assessment at a lower hierarchical level of planning

Type of planning document	Type of impact assessment	Note
Regional spatial plan	Strategic assessment	All plans
Spatial plan of special purpose area	Strategic assessment	All plans
Spatial plan of the local self-government unit	Strategic assessment	All plans
Urban plan	Strategic assessment	Plans intended for one or more projects for which an Environmental Impact Assessment Study is required*

*The project holder, in accordance with Article 8 of the Law on Environmental Impact Assessment (*Official Gazette of RS*, No. 135/04 and 36/09), is obliged to contact the competent authority for environmental protection with the Request for determining the need for preparation of the Environmental Impact Assessment Study for individual projects, in accordance with the Law on Environmental Protection (*Official Gazette of RS*, no. 135/04, 36/09 and 72/09 - 43/11 - Constitutional Court, 14/16, 76/18 and 95/18 - other law), the Rulebook on the content of the study on environmental impact assessment (*Official Gazette of RS*, No. 69/2005), and the Regulation on determining the List of projects for which an impact assessment is mandatory and the List of projects for which an environmental impact assessment may be required ('*Official Gazette of RS*', No. 114/08).

5. ENVIRONMENTAL MONITORING PROGRAM DURING THE PLAN IMPLEMENTATION

Establishment of a monitoring system is one of the priority tasks so that all proposed environmental protection measures can be successfully implemented in practice.

The state of the environment in terms of the realization of the anticipated impacts and the application of protection measures and solutions is monitored within the existing environmental monitoring programs and within the monitoring of the implementation of the Spatial Plan.

5.1. Description of the objectives of the Spatial Plan

A description of the objectives of the Spatial Plan, general and specific, is given in more detail in the chapter "Basis of the Strategic Environmental Assessment" in the introductory part of the Strategic Environmental Assessment. As stated, the vision of long-term spatial development is "balanced spatially developed territory of the Republic of Serbia on the principles of economic, social and territorial cohesion, with higher and more uniform quality of life and environment, preserved identity and diversity of space, adapted and resistant to climate changes".

The general goal of the Plan is sustainable and more even spatial development, mitigation of regional differences and greater degree of territorial cohesion in order to improve the quality of life, slow down unfavorable demographic processes and create conditions for young people to stay in the country, improve competitiveness, accessibility and preservation activities in space and settlements on climate change.

Specific goals of spatial development are:

- Better utilization of Serbia's territorial capital, in order to take advantage of its geostrategic position as a central Balkan country;
- Reduced pace and dynamics of depopulation and more optimal territorial distribution of the population;
- A more balanced spatial organization with a polycentric structure of urban systems and a higher degree of achieved economic and social cohesion of urban and rural areas, as well as partnerships between urban and rural settlements;
- More harmonized spatial distribution of the economy (at the national and regional level) in order to strengthen its role as a driver of dynamic, sustainable, more balanced and inclusive socio-economic growth, employment and higher quality of life;
- More connected territory with the Balkan, neighborhood, European and wider environment, more accessible territory equipped with infrastructure (transport, energy, water and communal) and digital networks;
- Preserved identity and strengthened resistance of the space to changes and pressures, sustainable utilization and protection of natural resources, environment, biological diversity, natural and immovable cultural values, development and arrangement of landscapes and green infrastructure.

The main goal of establishing the Environmental Monitoring Program is to provide, among other things, timely response and warning of possible negative processes and accident situations, as well as a more complete insight into the state of the environment and the identification of needs for protection measures depending on the degree of threat and types of pollution. It is necessary to

ensure continuous monitoring of the state of environmental quality and activities in space, which creates the possibility for its rational management.

According to the Law on Environmental Protection (*Official Gazette of RS* No. 135/04, 36/09, 72/09, 43/11 - decision of the US, 14/16, 76/18, 95/18), the Republic, autonomous province, i.e. the unit of local self-government within its competence determined by the Law, provides continuous control and monitoring of the state of the environment in accordance with these and special laws.

Monitoring is an integral part of a single environmental information system. The government adopts monitoring programs based on special laws. The Autonomous Province, i.e. the unit of local self-government shall adopt a monitoring program on its territory, which must be in accordance with the program of the Government of the Republic of Serbia. The objectives of the Environmental Monitoring Program would be:

- reports on the state of the environment
- providing monitoring,
- defining the content and manner of monitoring,
- designation of authorized organizations for monitoring,
- defining pollutant monitoring,
- establishing an information system and defining the manner of submitting data, and
- introduction of the obligation to report on the state of the environment according to the prescribed content of the report on the state of the environment.

According to Article 70 of the said Law, monitoring is performed through a systematic monitoring of indicator values, i.e. monitoring of negative impacts on the environment, environmental conditions, measures and activities undertaken in order to reduce negative impacts and raise the level of environmental quality.

The Government defines the criteria for determining the number and arrangement of measuring points, the network of measuring points, the scope and frequency of measurements, the classification of monitored phenomena, the methodology of work and indicators of environmental pollution and their monitoring, deadlines and data submission, based on special laws.

5.2. Indicators for monitoring the state of the environment

Monitoring is performed by systematic measurement, testing and evaluation of indicators of the state and pollution of the environment, which includes monitoring of natural factors, i.e. changes in the state and characteristics of the environment, including transboundary monitoring, namely: air, water, land, forests, biodiversity, flora and fauna, elements of climate, ozone layer, ionizing and non - ionizing radiation, noise, waste, early warning of accidents with monitoring and assessment of the development of environmental pollution, as well as commitments from international agreements.

In Table 5.1. Indicators that provide information or describe phenomena in the field of environment are given by areas of Strategic Environmental Assessment. For each indicator, the competence (source and availability of data) and the periodicity of data collection are given.

Table 5.1. Indicators, jurisdiction and the frequency of environmental monitoring

Area of Strategic Environmental Assessment	Indicators	Jurisdiction	Frequency
AIR AND CLIMATE CHANGE	Frequency of exceeding daily values of SO2, NO2, PM10 and O3 that exceed the limit (number of days during the year with exceeding the daily limit value)	National and local air quality monitoring networks	In accordance with legal obligations and used monitoring methods (from 1 hour to annual reporting)
	Consumption of ozone depleting substances (tonnes of ODP)	Ministry of Environmental Protection	Once per year
	Annual air temperature (Normalized standard deviation in relation to the period 1961-1990) and annual precipitation (Normalized standard deviation of the logarithm of annual precipitation for the area of Serbia)	Republic Hydrometeorological Institute of Serbia	Once per year
	Emission of acidifying gases (NOx, NH3 and SO2) (kt / year)	Republic Hydrometeorological Institute	Once per year
	Greenhouse gas emissions (CO2, N2O, CH4, SF6, HFC, PFC) (Gg CO2eq / year and Gg / year)	Environmental Protection Agency	Once per year
WATER	Water Exploitation Index (WEI) (%)	Statistical Office of the Republic of Serbia	Data on statistical surveys in the field of water are obtained through regular annual reports
	Water losses (%)	Environmental Protection Agency	Regular annual reports
	Total amount of water in reservoirs (million m3 / year)	State Water Directorate	Once per year
	Biological oxygen demand in surface waters (BOD5) (mg O2 / l)	Republic Hydrometeorological Institute	Quarterly reports and annual report
	Emissions of pollutants from point sources into water bodies (kg / year)	Statistical Office of the Republic of Serbia	Once per year
	Polluted (untreated) wastewater (%)	Republic Water Directorate5.	Once per year
	Wastewater treatment plants from public sewerage (%)	Ministry of Agriculture, Forestry and Water Management - Republic Water Directorate	Once per year
	Population connected to public sewerage (%)	Environmental Protection Agency	Once per year
	Population connected to public water supply (%)	Statistical Office of the Republic of Serbia	Once per year
LAND	Change of land utilization (ha, km2)	Environmental Protection Agency	Periodicity of data collection on a five-year basis
	Increase in forest land area (ha, %)	Ministry of Agriculture, Forestry and Water Management - Republic Water Directorate	Periodicity of data collection: once a year Once in two years
	Forest management and forest consumption (%, m3, km, ha, kg)	Ministry of Agriculture, Forestry and Water Management - Forest Administration Statistical Office of the Republic of Serbia	Once in ten years or periodically in accordance with the monitoring and Forest Inventory

Area of Strategic Environmental Assessment	Indicators	Jurisdiction	Frequency
			Once in two years
	Management of contaminated sites (number of sites expressed numerically, share expressed in %, costs of remediation and remediation expressed in RSD)	Ministry of Environmental Protection Environmental Protection Agency	Once per year
	Soil erosion - soil area and intensity of erosive processes (t / ha / year of eroded soil)	Faculty of Forestry BU Faculty of Geography BU Ministry of Agriculture, Forestry and Water Management Ministry of Environmental Protection Environmental Protection Agency	Frequency of data collection at a ten-year level
NATURAL VALUES, NATURAL RESOURCES AND LANDSCAPE	Endangered and protected species (% of endangered and protected)	Ministry of Environmental Protection Institute for Nature Protection of Serbia Provincial Institute for Nature Protection Environmental Protection Agency	Periodically in accordance with changes in the IUCN endangerment categorization and changes in the List of protected species at the international and national level
	Change of areas of protected areas (%, ha)	Institute for Nature Protection of Serbia Provincial Institute for Nature Protection	Once per year
	Areas of degraded land (%, ha)	Ministry of Environmental Protection Ministry of Agriculture, Forestry and Water Management Environmental Protection Agency	Continuously
	Share of RES share in total electricity consumption (%)	Ministry of Mining and Energy Statistical Office of the Republic of Serbia	Once per year
WASTE MANAGEMENT	Total amount of waste generated (t / year)	Environmental Protection Agency	Once per year
	Production of waste (municipal, industrial, hazardous) (t / year)	Environmental Protection Agency	Once per year
	Quantity of separated, collected, reused and disposed waste (t / year)	Environmental Protection Agency	Once per year
	Quantities of special waste streams (t / year, kg / year, l / year, pcs / year, number / year, %)	Environmental Protection Agency	Once per year
	Transboundary movement of waste (t / year)	Ministry of Environmental Protection Customs Administration	Once per year
	Number of sanitary regional landfills	Environmental Protection Agency	Continuously
SOCIO-ECONOMIC AND INSTITUTIONAL ASPECTS	Drinking water quality (%)	Institute of Public Health of Serbia "Batut"	Once per year
	Percentage of population exposed to increased air pollution (%)	Environmental Protection Agency	Once per year
	Exposure of the population to the effects of development projects in the field of energy and mining	Local self-government unit Line public enterprises Environmental Protection Agency	Once per year
	Total noise indicator (dB (A))	Monitoring and individual measurements are performed by authorized organizations	Monthly or annual reports on noise levels
	Sources of non-ionizing radiation of special interest (electric field	Ministry of Environmental Protection Line body of the autonomous	Frequency determined by the Rulebook on sources

Area of Strategic Environmental Assessment	Indicators	Jurisdiction	Frequency
	strength E [V / m]; magnetic field strength H [A / m]; magnetic flux density B [μT]; power density (equivalent flat wave) - Seq [W / m2])	region	of non-ionizing radiation of special interest, types of sources, manner and period of their testing
	Investments and current expenses (thousands of dinars)	Statistical Office of the Republic of Serbia Statistics related to Environment	Once per year
	Environmental management system	Serbian Chamber of Commerce International Organization for Standardization Ministry of Environmental Protection	Once per year
	Successful implementation of legislation	Ministry of Environmental Protection	Once per year
	Number and territorial distribution of measuring points in climate change monitoring systems	Environmental Protection Agency	Once per year
	The number and importance of immovable cultural heritage that may be influenced by planning solutions	Institute for the Protection of Cultural Monuments of Serbia - Belgrade	Once per year

The system of monitoring the state of the environment has been established through the following legal acts:

- Law on Environmental Protection (*Official Gazette of RS* No. 135/04, 36/09, 72/09, 43/11 - decision of the Constitutional Court, 14/16, 76/18, 95/18);
- Law on Air Protection (*Official Gazette of RS* No. 36/09 and 10/13);
- Decree on conditions for monitoring and air quality requirements (*Official Gazette of RS*, No. 11/10, 75/10 and 63/13)
- Decree on limit values for emissions of pollutants into the air from combustion plants (*Official Gazette of RS* No. 6/16);
- Decree on Limit Values of Air Pollutant Emissions from Stationary Pollution Sources, Except for Combustion Plants (*Official Gazette of RS*, No. 111/15);
- Law on Waters (*Official Gazette of RS* No. 30/10, 93/12, 101/16 and 95/18),
- Decree on limit values of priority and priority hazardous substances that pollute surface waters and deadlines for their achievement (*Official Gazette of RS*, No. 24/14);
- Decree on limit values for emissions of pollutants into water and deadlines for their achievement (*Official Gazette of RS*, No. 67/11, 48/12 and 1/16);
- Decree on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement (*Official Gazette of RS*, No. 50/12)
- Law on Land Protection (*Official Gazette of RS* No. 112/15);
- Decree on limit values of polluting, harmful and dangerous substances in the soil (*Official Gazette of RS*, No. 30/18 and 64/19);
- Law on Environmental Noise Protection (*Official Gazette of RS* No. 36/09 and 88/10);
- Decree on noise indicators, limit values, methods for assessing indicators of noise, disturbance and harmful effects of noise in the environment (*Official Gazette of RS*, No. 75/10).
- Law on Environmental Protection (*Official Gazette of RS* No. 135/04, 36/09, 72/09, 43/11 - US decision, 14/16, 76/18, 95/18);
- Law on Air Protection (*Official Gazette of RS* No. 36/09 and 10/13);

- Decree on conditions for monitoring and air quality requirements (*Official Gazette of RS*, No. 11/10, 75/10 and 63/13)
- Decree on limit values for emissions of pollutants into the air from combustion plants (*Official Gazette of RS* No. 6/16);
- Decree on Limit Values of Air Pollutant Emissions from Stationary Pollution Sources, Except for Combustion Plants (*Official Gazette of RS*, No. 111/15);
- Law on Waters (*Official Gazette of RS* No. 30/10, 93/12, 101/16 and 95/18),
- Decree on limit values of priority and priority hazardous substances that pollute surface waters and deadlines for their achievement (*Official Gazette of RS*, No. 24/14);
- Decree on limit values for emissions of pollutants into water and deadlines for their achievement (*Official Gazette of RS*, No. 67/11, 48/12 and 1/16);
- Decree on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement (*Official Gazette of RS*, No. 50/12)
- Law on Land Protection (*Official Gazette of RS* No. 112/15);
- Decree on limit values of polluting, harmful and dangerous substances in the soil (*Official Gazette of RS*, No. 30/18 and 64/19);
- Law on Environmental Noise Protection (*Official Gazette of RS* No. 36/09 and 88/10);
- Decree on noise indicators, limit values, methods for assessing indicators of noise, disturbance and harmful effects of noise in the environment (*Official Gazette of RS*, No. 75/10).

The task of monitoring the state of the environment is to, in accordance with legal regulations, perform regular sampling, reading or laboratory analysis of samples in a certain time interval. Then, on the basis of defined limit values, the impact on the examined environmental factors is determined and, if necessary, measures are defined to reduce the observed negative impacts.

- *Air quality monitoring* is achieved by systematic measurement of concentrations of pollutants in the air, monitoring and research of the impact of air quality on the environment and reporting on the results of measurement, monitoring and research. Law on Air Protection (*Official Gazette of RS* No. 36/09 and 10/13) and the Regulation on Conditions for Monitoring and Air Quality Requirements, *Official Gazette of RS*, No. 11/10, 75/10 and 63 / 13), prescribes guidelines for research, monitoring and determination of the general state of air pollution in populated places and uninhabited areas. Based on the performed analyzes, the condition and trends are determined, on the basis of which appropriate air protection measures are taken.
- *Monitoring of surface water quality* is to be done in accordance with the Regulation on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement (*Official Gazette of RS*, No. 50/2012), Regulation on limit values of priority and priority hazardous substances which pollute surface waters and deadlines for their achievement (*Official Gazette of RS*, No. 24/2014) and the Rulebook on parameters of ecological and chemical status of surface waters and parameters of chemical and quantitative status of groundwater (*Official Gazette of RS*, No. 74 / 2011);
- *Groundwater monitoring* is to be done in accordance with the Regulation on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement (*Official Gazette of RS*, No. 50/12) and the Regulation on limit values of pollutants, harmful and dangerous substances in the land (*Official Gazette of RS*, No. 30/2018, 64/2019);
- *Monitoring of wastewater quality* is to be done in accordance with the Regulation on emission limit values for pollutants in water and deadlines for their achievement (*Official Gazette of RS*, No. 67/2011, 48/2012 and 1/2016) and the Rulebook on the procedure and conditions for measuring the quantity and testing of wastewater quality and the content of the report on performed measurements (*Official Gazette of RS*, No. 33/2016);

- *Land monitoring* is to be done in accordance with the Regulation on limit values of polluting, harmful and dangerous substances in the land (*Official Gazette of RS*, No. 30/2018, 64/2019);
- *Noise monitoring* is to be done in accordance with the Rulebook on noise measurement methods, content and scope of noise measurement reports (*Official Gazette of RS*, No. 72/10) and the Regulation on noise indicators, limit values, methods for assessing noise indicators, harassment and harmful effects of environmental noise (*Official Gazette of RS*, No. 75/10);
- *Monitoring of waste* is to be done in accordance with the Law on Waste Management (*Official Gazette of RS*, No. 36/2009, 88/2010, 14/2016 and 95/2018 - other law), the Rulebook on the form of documents on the movement of waste and instructions for its completion (*Official Gazette of RS*, No. 72/09, 114/13) and the Rulebook on the form of documents on the movement of hazardous waste, the form of prior notification, the manner of its delivery and instructions for its completion (*Official Gazette of RS*, No. 17 / 2017);

5.3. Rights and obligations of competent authorities

In accordance with the Law on Strategic Environmental Assessment (*Official Gazette of RS* No. 135/04 and 88/10), the obligations of the competent authorities are:

- Article 18 of the Law on Strategic Assessment defines the participation of interested bodies and organizations, which can give their opinion within 30 days;
- Prior to submitting the request for approval of the strategic assessment report, the body responsible for the preparation of the plan shall ensure the participation of interested bodies and organizations and the public in the review of the Strategic Environmental Assessment Report;
- The body responsible for the preparation of the Plan prepares a report on the participation of interested bodies and organizations and the public containing all requested opinions, as well as opinions expressed during the public review and public discussion on the Plan and the Strategic Environmental Assessment Report;
- The body responsible for preparing the plan informs the public about the manner and deadlines for reviewing the content of the report and submitting opinions, as well as the time and place of the public hearing in accordance with the law governing the procedure for adopting the plan;
- The body responsible for the preparation of the Plan submits to the body responsible for environmental protection a request for assessment and approval of the Strategic Environmental Assessment Report with a report on the participation of interested bodies and organizations and the public;
- The body responsible for environmental protection evaluates the Strategic Environmental Assessment Report on the basis of the criteria contained in Annex II of the Law on Strategic Environmental Assessment and gives consent or rejects the request for approval;
- The body responsible for the preparation of the Plan may not send the Plan to a further adoption procedure without the consent of the Strategic Environmental Assessment Report from the body responsible for environmental protection.

State bodies, bodies of the autonomous province, bodies of local self-government units and authorized and other organizations are obliged to regularly, timely, completely and objectively inform the public about the state of the environment, i.e. about any phenomena monitored during the monitoring of pollutants and emissions, as well as measures of warning or development of pollution that may pose a danger to human life and health, in accordance with this law and other

regulations. Access to environmental information is exercised in accordance with the law governing access to information of public importance.

When it comes to the rights and obligations of the competent authorities in charge of environmental protection, they stem from the Law on Environmental Protection (*Official Gazette of RS*, no. 135/04, 36/09, 72/09, 43/11 - decision of the Constitutional Court, 14/16, 76/18, 95/18) Article 80, and part of the rights and obligations stem from international conventions and treaties to which we are signatories. Public authorities are obliged to take all necessary measures and ensure that environmental information in their possession or kept on their behalf is actively and systematically disseminated to the public, in particular by means of computer telecommunications and electronic technology.

Public authorities are obliged to ensure that environmental information is gradually made available in the form of electronic databases that are easily accessible to the public via public telecommunications networks. Also, public authorities are obliged to regularly update and regularly publish or disseminate information on the environment, in particular:

1. texts of international treaties and agreements, as well as regulations in the field of environmental protection or in connection with it;
2. strategies, plans, programs and other documents related to environment
3. reports on the implementation of regulations in the field of environmental protection, including the implementation of international agreements, strategic documents, plans and programs in the field of environmental protection, when they have been prepared or kept in electronic form by public authorities;
4. reports related to the status of environment;
5. data received from monitoring activities which impact or might impact the environment;
6. permits and authorizations for performing activities which have a significant impact on the environment;
7. contracts concluded for the purpose of environmental protection;
8. environmental impact assessment and risk assessment studies related to environmental factors, as well as decisions made in all three phases of the impact assessment process.

The public authority is obliged to, without delay, inform the public through the media or in any other appropriate manner about the existence of danger to human life and health, environment or material goods, regardless of whether the danger is caused by human activity or is a consequence of natural phenomena.

Due to the importance of the possible impacts of the proposed Spatial Plan on the environment, safety and human health, social and economic status, it is especially important to adequately and transparently involve stakeholders in the decision-making process on environmental issues. The participation of competent bodies and organizations is ensured in writing and by consultations during all stages of the preparation and review of the Strategic Environmental Assessment Report. Having in mind the strategic framework of the Spatial Plan for directing sustainable, integral and resilient spatial development in the Republic of Serbia, it is extremely important to ensure that all citizens are adequately informed about key decisions.

6. OVERVIEW OF THE METHODOLOGY USED IN MAKING THE STRATEGIC ENVIRONMENTAL ASSESSMENT

The details of specific conditions related to the large spatial coverage and strategic planning solutions for the future spatial development of the Republic of Serbia also conditioned the specific methodological approach in the preparation of the Strategic Environmental Assessment. Part of the specificity also refers to the following facts:

- The Spatial Plan of the Republic of Serbia is extremely complex, it deals with strategic issues in all areas of importance for spatial development. It has less detailed information on planning solutions, on micro-localities for their realization and the environment at these sites which makes it more difficult to see the complex interaction of all activities in the planning area and their impact on space and the environment;
- The backbone of planning solutions in the Spatial Plan of the Republic of Serbia is the application of the concept, rules and principles of sustainable development, which means that it is necessary to consider, in addition to environmental, the social and economic issues in an extremely large area;
- Due to the complexity of structures and processes, as well as cumulative and synergistic effects that may occur in the interaction of existing and planned activities in the planning area, sophisticated simulation mathematical methods are not applicable;
- When making decisions, the influence of stakeholders and especially the public is exceptional, which is why the applied methods and results of assessment should be simply presented and understood by the participants in the Strategic Environmental Assessment process and decision-makers (decision-makers).

The content of the strategic environmental assessment and the methodological framework of development and procedures are defined by the Law on Strategic Environmental Assessment and the Law on Environmental Protection.

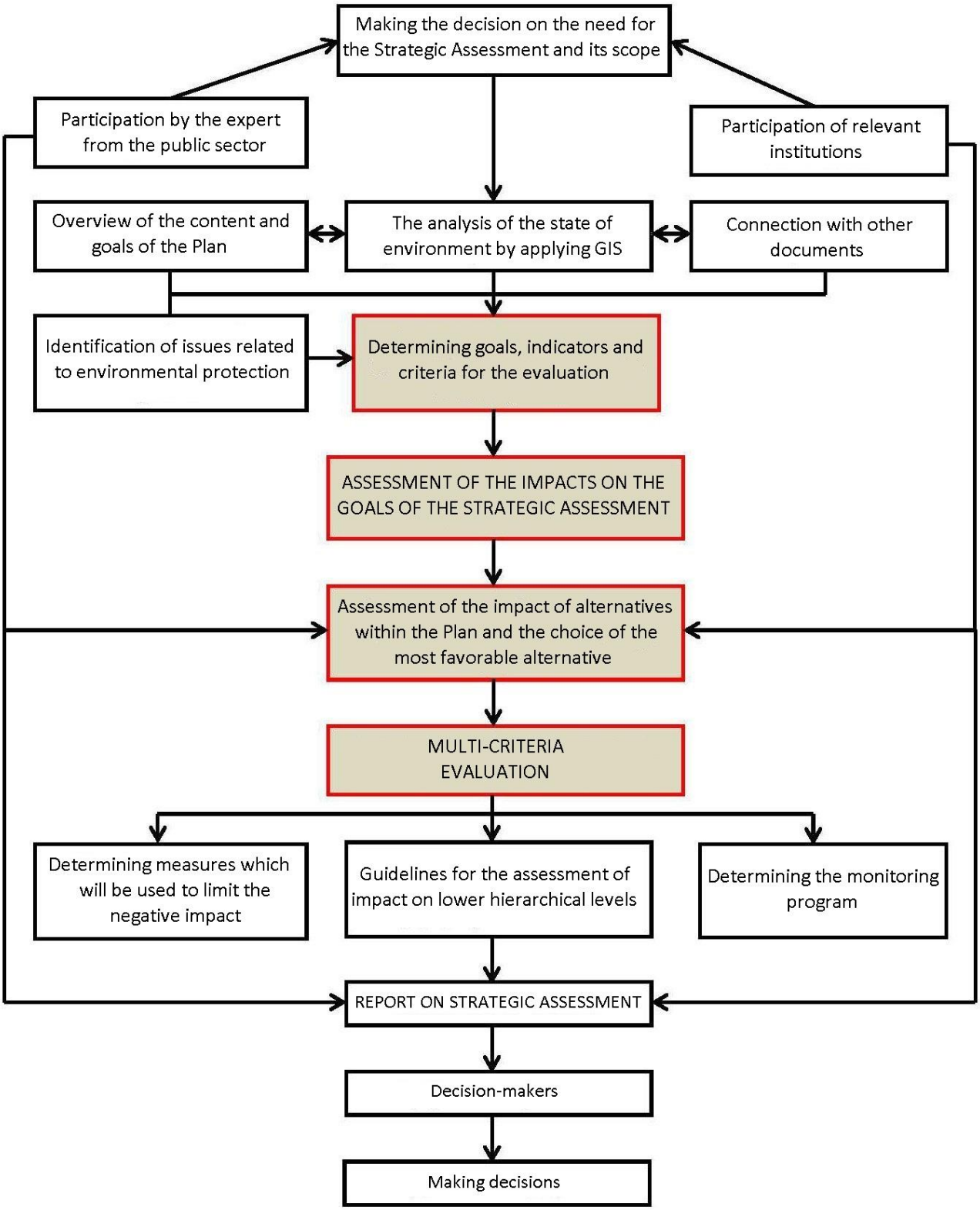
For the preparation of the Strategic Environmental Assessment in this particular case, a methodology based on multi-criteria expert evaluation of planning solutions in relation to the defined objectives of the Strategic Environmental Assessment and related indicators was applied, as a basis for valorization of space for further sustainable development.

In terms of general methodological principles, the Strategic Environmental Assessment was done by previously analyzing the starting points in accordance with the Law on Strategic Environmental Assessment, with special reference to the current state of the environment in the Republic of Serbia.

After that, the goals and indicators of the Strategic Environmental Assessment were defined, which were the basis for the evaluation of alternative and priority solutions defined during the previous year from the Spatial Plan. Based on the results of the evaluation, guidelines for environmental protection and monitoring of the state of the environment during the implementation of the Spatial Plan have been defined.

The special significance of the Strategic Environmental Assessment is also in the guidelines which have been defined for impact assessments at lower hierarchical levels.

Diagram 6.1. Procedure and methodology for preparing the Strategic Environmental Assessment Report



7. PRESENTATION OF THE DECISION-MAKING METHOD

According to Article 18 of the Law on Strategic Assessment, the body responsible for the preparation of the Spatial Plan submits the Report on Strategic Environmental Assessment to the interested bodies and organizations for opinion. Interested bodies and organizations are obliged to submit an opinion within 30 days from the day of receipt of the request for giving an opinion.

According to Article 19 of the Law on Strategic Assessment, it is necessary to ensure public participation in the consideration of the report within the presentation of the Spatial Plan for public inspection and holding a public hearing.

The body responsible for the preparation of the Spatial Plan informs the public about the manner and deadlines for insight into the content of the report and submission of opinions, as well as the time and place of the public hearing in accordance with the Law.

The current way of public debate within the process of adopting development planning documents is not harmonized with modern practice in most European countries, and especially deviates from the propositions of the "Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters" CEP / 43/98), which have found their place in the Law on Environmental Protection (Article 81).

Due to the importance of the Spatial Plan at the national level, i.e. the possible impacts of the proposed planning solutions on space and environment, social and economic status of local communities throughout the Republic of Serbia, adequate and "transparent" involvement of stakeholders (investors, competent state bodies, local administration, NGOs and the population) in the decision-making process on environmental issues.

The participation of competent authorities and organizations is provided in writing and through presentations and consultations in the review phase of the Strategic Assessment Report. The participation of the interested public and non-governmental organizations is provided within the presentation of the Spatial Plan, together with the Report on Strategic Environmental Assessment.

Regarding the way in which environmental issues are included in the Spatial Plan, the Strategic Assessment points out that the development of the Spatial Plan and the Strategic Environmental Assessment went hand in hand, which created the possibility to include the goals of the Strategic Environmental Assessment in the earliest phase of defining planning concepts according to areas of spatial development, thus achieving an integrated approach to environmental planning and protection. The result is that planning solutions are mostly created in the context of environmental protection.

8. CONCLUSIONS REACHED WHEN DRAFTING THE STRATEGIC ENVIRONMENTAL ASSESSMENT (NON-TECHNICAL SUMMARY)

The Spatial Plan of the Republic of Serbia (hereinafter: the Spatial Plan), for which the Strategic Environmental Assessment is performed (hereinafter: the Strategic Assessment), is the basic, but also the most general planning document of spatial planning and development in the Republic. In accordance with the stated statement, the manner of processing and determining the possible impacts (positive and negative) of the Spatial Plan on the environment within the Strategic Assessment, has been adjusted to such circumstances.

Strategic assessment is part of the documentation basis of the Spatial Plan. It was made in accordance with the provisions of the Law on Environmental Protection (*Official Gazette of RS*, No. 135/04, 36/09, 72/09, 43/11 - decision of the Constitutional Court, 14/16, 76/18, 95/18) and the Law on Strategic Assessment (*Official Gazette of RS*, No. 135/04 and 88/10) as well as other relevant legislation in the field of environmental protection.

In methodological terms, the Strategic Assessment is conceived through several basic methodological steps:

- determining the current state of the environment,
- identification of possible impacts of the Spatial Plan on the environment, including alternative solutions, individual solutions, and cumulative impacts (cumulative and synergistic),
- determining measures for protection and monitoring of the state of the environment.

Following the above stated basic methodological steps, in the first phase of the Strategic Assessment, an analysis of the current state of the environment in the Republic of Serbia was performed. The Strategic Assessment considers issues, primarily threats to air, water, soil and noise levels, as well as the problem of waste and protected natural resources and biodiversity based on the characteristics of the existing state of the environment. The issues considered in the Strategic Assessment are defined by the Decision on the Strategic Assessment of the Spatial Plan of the Republic of Serbia from 2021 to 2035 (*Official Gazette of RS*, No. 41/19), which states that *"Strategic Assessment will consider issues related to the protection of air, water, soil, wildlife, nature, as well as other issues for which appropriate processing is required as it is determined during development."*

During the development of the Spatial Plan, the following problems, i.e. limitations in the field of environment and its impact on the spatial development of Serbia were identified:

- Excessive air pollution from the industry, energy and transport sectors. By types of pollutants, this would mean:
  - electricity and heat production were responsible for 91% of sulfur dioxide (SO2) emissions,
  - the highest emissions of nitrogen oxides (NOx) come from thermal power plants as well as the mineral and chemical industries,
  - the dominant share of PM10 (57%) and PM2.5 (75%) comes from heating plants with a capacity of less than 50MW and individual combustion plants.
- The electricity sector is the largest air pollutant in Serbia due to the obsolescence of the plant and the large share of coal in electricity production. Consumption is dominated by fossil fuels with 87.9% (coal as much as 47.2%, oil 26.1%), while the share of renewable

energy sources is 12.1%. The energy sector is by far the largest emitter of greenhouse gases in Serbia, accounting for 80.6% of total emissions.

- Worryingly poor air quality, especially in larger cities. It is estimated that approximately 2.5 million citizens live in areas with polluted air, i.e. breathes air of II and III quality category.
- Excessive water pollution from settlements, industry and agriculture. The analysis of surface water quality (with 248 measuring points) in the period 1998-2017 showed the worst situation on the territory of AP Vojvodina, where 40% of samples belonged to the category of poor quality and very poor, and only 79% of samples to the very bad class;
- A very pronounced problem of a large percentage (about 88%) of untreated wastewater that enters the recipients without any treatment (mechanical, biological or chemical), which is a key source of water pollution in Serbia and has a negative impact on the environment;
- Insufficient treatment of industrial wastewater (42%), where 57% of industrial plants do not have wastewater treatment plants and where about half of the samples are treated, they do not meet the standards on wastewater quality;
- Existence of ecological black spots ("hot spots") and degraded areas (unplanned exploitation of natural resources, brownfields, landfills);
- In 2018, a total of 709 potentially contaminated and contaminated sites were identified in the territory of the Republic of Serbia.

In accordance with the identified current state of environmental quality and according to international standards, for the needs of the Spatial Plan and Strategic Assessment, the spatial differentiation of the environment into four categories was done:

1. Areas of polluted and degraded environment (localities exceeding the limit values of pollution, urban areas, areas of open lignite mines, tailings, regional landfills, thermal power plants, highway corridors, watercourses IV "out of class") with negative impacts on humans, flora and fauna and quality of life. For this category solutions and determinations which prevent further degradation and reduce the effects of limiting development should be provided. It is necessary to rehabilitate and revitalize degraded and endangered ecosystems and rehabilitate the consequences of pollution, in order to create a better environment.	In this category, the most endangered areas are: Pancevo, Bor, Obrenovac, Smederevo, Belgrade, Novi Sad, Subotica, Loznica, Kostolac, Cacak, Lucani, Krusevac, Sabac, Kikinda, Prahovo, settlements in the Kolubara basin, corridors of the Belgrade-Novi Sad highway - Subotica, Belgrade-Sid, Belgrade-Nis-Presevo, Belgrade-Cacak and Nis-Dimitrovgrad. The largest emissions of SO2, NOx and suspended particles are in the area of the City of Belgrade, followed by the Branicevski District, the Bor District and the South Banat District. In Obrenovac, Lazarevac and Kostolac, there are largest landfills of fly ash from burning coal in thermal power plants. Urban areas that fall into this category are: Zrenjanin, Ruma, Valjevo, Kosjeric, Novi Popovac, Kraljevo, Nis, Vranje, Zajecar, Majdanpek, Vrbas, Mladenovac, Smederevska Palanka, Pozarevac, Sremska Mitrovica, Kragujevac, Gornji Milanovac, Uzice, Priboj, Trstenik, Prokuplje, Pirot, Novi Pazar, Leskovac, Jagodina, Paracin, as well as the current watercourses of the fourth class and "out of class".
2. Areas of endangered environment (localities with occasional occurrences of exceeding limit values, suburban zones of settlements of the most endangered areas from category I, rural and weekend settlements, tourist zones with excessive pressure on space, areas of mineral exploitation, state roads of I and II order, railways, large farms, intensive agriculture zones, airports, river ports, class III watercourses) with less impact on humans, wildlife and quality of life. For these areas, further degradation should be prevented and the existing situation should be improved, in order to reduce the degradation of the environment as	In this category are: Sombor, Apatin, Crvenka, Kula, Odzaci, Backa Palanka, Bajmok, Srbobran, Novi Knezevac, Coka, Senta, Ada, Temerin, Backa Topola, Kanjiza, Becej, Titel, Bac, Bela Crkva, Kovin , Indjija, Stara Pazova, Sid, Kucevo, Pozega, Ivanjica, Arilje, Guca, Raska, Cuprija, Negotin, Bujanovac, Dimitrovgrad, Knjazevac, Sjenica, Prijepolje, Ub, Osecina, Mionica, Krupanj, Petrovac, Zagubica, Svrljig, Bela Palanka , Svilajnac, Golubac, Kladovo, zones of intensive agriculture (Vojvodina, Stig, Branicevo, most of Macva and Pomoravlje), tourist centers on Kopaonik, Zlatibor and Divcibare, corridors of state roads of I and II order and railways, river ports (Apatin, Backa Palanka, Beocin, Novi Sad, Belgrade, Pancevo, Bogojevo, Smederevo and Prahovo on the Danube River, Senta on the Tisa River, Kovin, Sremska Mitrovica, Sabac and Sombor), as well as airports (Belgrade and Nis). Areas of exploitation of mineral sources include: Jelen Do, Krupanj,

a limiting factor of development. It is necessary to determine the most adequate way of using natural resources and space in order to preserve natural values and improve the environment.	Novi Pazar, as well as the surroundings of Kanjiza, Kikinda and Novi Becej, Cerovo, Cikatovo-Glavica (Glogovac), Blagodat, Crnac, Suva ruda, Bela Stena, Zlatokop and other.
3. Areas of quality environment (forest areas, tourist zones with controlled development, agricultural fruit and vineyard zones, areas with natural degradation, meadows and pastures, hunting and fishing areas, class II watercourses) with predominant positive impacts on humans, wildlife and quality of life. For these areas, solutions which eliminate or reduce the existing sources of negative impacts, i.e. increase the positive ones as a comparative advantage in development planning should be provided. It is necessary to reserve and protect areas from pollution for strategic reasons.	In this category are: Sremski Karlovci, Grocka, Vrnjacka Banja, Sokobanja, Topola, Arandjelovac, Ljig, Zlatibor, parts of Stara Planina, as well as suburban zones with weekend construction, fruit growing zones (Valjevo foothills, Pocerina, Loznica area, Arilje, Kraljevo , Dragacevo, Pozega and Grocka, Brankovina, Branicevo and other smaller regions) and viticulture (Timok region, Nisava - Juzno Moravski region, West Moravian region, Sumadija- Veliko Moravski region, Potcer, Srem and Banat region and the area of the local choir of Subotica-Horgos) roads, as well as the territories of rural settlements of municipalities that belong to the II category, areas with natural degradation (eroded areas, saline lands, landslides, floodplains, etc.).
4. Areas of very high quality environment (areas protected and planned for the protection of natural resources, wetlands, areas protected by international conventions, mountain peaks and difficult-to-reach terrains, watercourses of class I) where positive impacts on humans and wildlife dominate. Such solutions which maintain the existing state of environmental quality and protect naturally valuable and preserved ecosystems should be provided.	This category includes: 5 national parks (Fruska gora, Djerdap, Kopaonik, Tara and Sar mountain), 1 geopark (Djerdap), 18 nature parks, 21 landscapes of exceptional features, 69 nature reserves, 6 protected habitats, 314 natural monuments (botanical, geological and hydrological character) and 36 areas of cultural and historical significance (areas around immovable cultural assets and landmarks). Ten areas of international importance are protected under the Ramsar Convention: Obedska bara, Ludasko lake, Carska bara-Stari Begej, Zasavica, Slano Kopovo, Koviljsko-petrovaradinski rit, Vlasina, Gornje Podunavlje, Labudovo okno and Pestersko polje, and according to the Convention on Natural and cultural heritage, Golija-Studenica and Backo Podunavlje are protected as biosphere reserves. Special nature reserves also include: Deliblato Sands, Karadjordjevo, pastures of Velika Droplje, Kopacki rit. According to the share of protected areas in the total, the Republic of Serbia belongs to the countries with a medium lower level of protection (6.19%). In addition to national parks, nature reserves, landscapes of exceptional features, natural monuments and nature parks, 860 wild species are protected in Serbia, and 1783 are strictly protected.

Based on the current state of environmental quality, which was used to determine the objectives and indicators of the Strategic Assessment (6 general and 11 specific objectives and 39 related indicators), by areas of Strategic Assessment, and after defining the criteria for impact assessment, the phase of assessing possible impacts plan on the objectives of the Strategic Assessment. The method of multicriteria expert evaluation of planning solutions (semiquantitative method) was applied, with the aim of giving predictions about future trends in space and environment that are expected during the implementation of the Spatial Plan.

In the first part, an assessment of alternative solutions was performed. The assessment also includes a key, only conceptually set dilemma: whether an option without the implementation of the Spatial Plan is more acceptable for the protection and sustainable development of the planning area, or an option with full implementation of the Spatial Plan. For the first option, without the implementation of the Spatial Plan, the solutions by thematic units from the previous Spatial Plan 2010-2020 were taken into account, and were, according to the evaluation given in the Implementation Programs (and accompanying reports on their implementation), carried out to a greater or lesser extent. For the second option within the Strategic Assessment, solutions in the same thematic units, which are prescribed through the Draft Spatial Plan, were evaluated. In this part, it was concluded that the alternative with the application of the Spatial Plan is more favorable because it will create

preconditions for development with positive effects in almost all planning sectors and minimize or eliminate negative tendencies observed during the implementation of the previous spatial plan of the Republic of Serbia from 2010. The precondition for that is a strict and consistent compliance with legal regulations and propositions of the Strategic Assessment, especially in the field of mineral sources, energy and development of energy, transport and water infrastructure, planning of new economic capacities, planning and design of tourist facilities and realization of other activities that individually, and especially collectively (cumulative and synergistic effects), can have significant negative impacts on the environment, and even create conflicts in the relationship between the need for development and the need to protect the environment.

What has been noticed is that the policy in the field of energy (thermo energy), as the most important area that implies negative impacts on the environment and health of the population, has not changed significantly compared to the Spatial Plan of the Republic of Serbia from 2010, except in part related to the prepared and adopted National Plan for Reduction of Emissions from Large Furnaces and that the planned new thermal energy capacities due to interaction with other emitters in the area of their implementation, regardless of the application of BAT, will continue with a trend of negative impacts on quality of life, environment and people's health, which the Strategic Assessment indicates in several places. Additionally, this issue should be viewed in the context of: Law on Climate Change of the Republic of Serbia, the Energy Community Treaty, the UN Framework Convention on Climate Change and its Paris Agreement, to which the Strategic Assessment draws the attention of decision makers.

In the following text, there is an evaluation of the characteristics and significance of the impact of 39 priority planning solutions grouped by areas of the Spatial Plan, followed by possible cumulative (symmetrical and synergistic) impacts that may occur in interaction with existing or planned activities in a particular area. Summarizing the significant impacts of planning solutions, it was stated that the Spatial Plan produces strategically significant negative and strategically positive impacts in the planning area. Most planning solutions (29 out of 39) are conceived in the context of environmental protection and are not expected to create conflicts in space. On the other hand, a small part of the planning solutions (10 out of 39) will imply certain conflicts in terms of space. A summary of the impact of the planning solutions included in the Strategic Assessment is given below for each individual planning solution.

Planning solution: Stopping the conversion of agricultural land for other purposes - will have direct positive impacts in the context of protection and sustainable land utilization, and indirect in the context of protection of biodiversity, geodiversity, natural resources and landscapes. The negative aspect of this planning solution is that the realization of priority energy and other infrastructure investments is excluded from it, so that in synergy with other planning solutions in the field of mining and energy implies impacts which reduce the positive effects of this planning solution.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Reclamation and revitalization of the area degraded by mining and other economic activities - this planning solution has only positive effects on the goals of the Strategic Assessment, without any negative impact. Positive impacts are in relation to the increase of air quality in mining and other economic areas, in relation to: land quality; biodiversity; geodiversity; natural resources; landscape, and as a result of all that, the health of the population. It will be realized with additional investments in the field of environmental protection in these areas.

Conflict in relation to the goals of the Strategic Assessment	-

Cumulative conflicts or those in synergy with other activities	-

Planning solution: More complete utilization of the irrigation system for agricultural land - this planning solution has only positive effects on the goals of the Strategic Assessment, without any negative impact. The positive effects are reflected in the investment in modern irrigation systems, which in the sense of climate change, help to achieve stable yields of all plant products, satisfactory quantity and quality.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Restoration of ecosystem and production functions of abandoned and unused agricultural land - is achieved by sanctioning the legal obligation of their regular cultivation, or conversion for raising protective forests, plantations for the production of biofuels, agroforestry systems, etc. This planning solution has a positive impact on the protection and sustainable utilization of land and landscapes. The planned solution does not imply negative effects.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reconstruction of degraded and filling of sparse forests - includes translation into stands of more favorable degree of overgrowth in relation to mixing, vitality, self-renewal, quality, higher functionality, etc. This planning solution does not imply negative effects, and the positive effects are directly related to the protection and sustainable utilization of forests and forest land, protection of biodiversity and natural values, landscapes. Indirect positive impacts are in the context of protecting air quality and reducing the impact of climate change.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Improving the state of game populations - positively contributes to the biodiversity of the area (especially hunting areas).

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Protection and expansion of protected areas that are an integral part of forest and hunting areas - refers to areas of exceptional and unique parts of nature, landscapes and biodiversity, and therefore a positive impact on these elements of the environment is known, as well as the impact on basic environmental factors (water, air and soil). The planning solution does not imply negative impacts in the planning area.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Water supply of settlements - includes the development of regional systems and subsystems, distribution networks, sanitary protection of drinking water sources, with an increase of the quality of drinking water and construction of water treatment plant. The dominant positive impact refers to the protection and sustainable utilization of water, and the formation of zones of sanitary protection of drinking water sources will affect the protection of other elements of the environment in these zones.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reconstruction, upgrade and development of multi-purpose canal systems - positive impacts will be achieved in the context of protection and, above all, sustainable water utilization. Activities are expected in settlements, wells, reservoirs and pumping stations, replacement of dilapidated, mostly asbestos-cement pipes (with possible impacts on the health of the population), reduction of water losses, development of measurement and information system for reliable water supply management. No negative effects of this planning solution are expected.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Protection of water from pollution - by expanding the sewerage system, construction of WWTP, regulation of watercourses and revitalization and reconstruction of drainage systems, positive impacts will be achieved on most of the goals of the Strategic Assessment. The most pronounced impacts are expected in the field of protection and sustainable utilization of water with the support of financial and institutional measures, and in the field of protection of biodiversity and aquatic environments. The planning solution does not imply negative impacts in the planning area.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Safe and reliable supply of coal - means the exploitation of ore resources with all the implications for space and the environment. Negative impacts relate to air and water quality, conversion of agricultural and forest land, impact on biodiversity, landscape, population, settlements and infrastructure. Looking exclusively at the context of environmental impacts, no positive impacts of this planning solution have been identified. In synergy with other activities in the field of ore exploitation (energy, traffic, individual furnaces, etc.), the negative impacts of this planning solution are increasing.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Increasing the production of energy from liquid and gaseous energy minerals and geothermal energy - the positive effects of this planning solution are reflected in the reduction of emissions of pollutants into the air by using cleaner and renewable energy sources and modern technologies. In that way, the exposure of the population to polluted air can be reduced, especially in urban agglomerations. At the same time, the negative effects are related to the emission of pollutants into the air, which has negative effects on the health of the population. Negative impacts increase in synergy with other emitters of pollutants (traffic, individual furnaces, industry, etc.).

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Elimination and mitigation of harmful consequences caused by mining activities - implies rehabilitation and remediation of abandoned mining facilities and elimination of

part of the current consequences of mining in the environment and space in general. This planning solution does not imply any negative effect in relation to the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of coal exploitation in Kolubara and Kostolac basins - includes: coal exploitation in the eastern part of Kolubara basin on surface mine Polje C and transition to surface mine Polje E, remediation of landfills, permanent relocation of the river Pestan with accompanying dams and canals; in the central part of the Kolubara basin, development of coal exploitation on surface mine Polje G Juzno Polje and relocation of infrastructure facilities; opening of surface mine Radljevo Sever and achieving full capacity, relocation of infrastructure facilities, expropriation and resettlement of settlements; development of coal exploitation at surface mine Tamnava-Zapadno Polje with relocation of infrastructure facilities; increase of coal production at surface mine Drmno to 12 Mt in Kostolac basin. This planning solution has negative implications for most of the objectives of the Strategic Assessment. Negative impacts relate to air and water quality, conversion of agricultural and forest land, impact on biodiversity, landscape, population, settlements and infrastructure. Looking exclusively at the context of environmental impacts, no positive impacts of this planning solution have been identified. In synergy with other activities in the field of ore exploitation (energy, traffic, individual furnaces, etc.), the negative impacts of this planning solution are increasing.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Development of tourism in the area of Belgrade and its surroundings - the positive impacts of this planning solution are expressed in relation to the protection and presentation of environmental elements (land, biodiversity, landscapes, cultural assets), as a basis for its implementation. No negative effects of the planning solution on the goals of the Strategic Assessment are expected.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of mountain tourism - especially destinations Kopaonik, Stara planina, Tara, Zlatibor, with the started and formed offer and its integration, can have significant positive impacts on the protection of air, water, land, biodiversity, natural and cultural assets and landscapes, as the backbone of the development of mountain tourism. At the same time, the development of the tourist offer can lead to pressures on all elements of the environment that are actually the backbone for the development of mountain tourism. Some of these consequences are already visible in mountainous areas (urbanization - Zlatibor, urbanization and development of ski resorts - Kopaonik, with the reduction of forest areas and change of valuable landscapes) and create certain conflicts between the needs for development and nature and environmental protection. These negative impacts are exacerbated by the effects of increased traffic, the problem of providing communal infrastructure, etc.)

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Development of river and nautical tourism - Danube Navigation Corridor with a new offer in terms of coastal arrangement and content of nautical tourism, with the development of cross-border cooperation with Croatia and Romania; destination Drina; Destination

Gornje Potisje with the started offer; destination Drina; will affect the preventive utilization and sustainable utilization of water, biodiversity and cultural assets, because only in this way will these areas be attractive for the development of the tourist offer. No negative impacts of this planning solution have been identified.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of road traffic - includes the construction of sections of highways, state roads of the first and second order and the completion of the bypass around Belgrade. Apart from the solution related to the Belgrade bypass with its positive effects on the air quality in the capital and reduction of the population's exposure to polluted air in traffic noise, other segments of this planning solution will have negative implications for basic environmental factors and most goals of the Strategic Assessment. In interaction with other negative influences, these negative influences will increase cumulatively and synergistically.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Development of the railway network - this planning solution will have negative impacts in the areas where land conversion will take place, ecological corridors will be cut and habitats will be relocated. It will also affect the change of landscape.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of air traffic - implies improvement and expansion of the existing capacities of the airport infrastructure through activities on the realization of the planning solutions at the airports "Nikola Tesla" Belgrade, "Konstantin Veliki" Nis and "Morava" Kraljevo. At the micro-location level, it is possible to expect negative impacts on air quality, soil and its conversion, biodiversity and landscape.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Development of water transport - includes reconstruction and construction of terminals for bulk and general cargo of the Port of Smederevo; construction of a new port in Belgrade and other sites; hydro-technical works and adaptation of navigation locks within HEPS "Djerdap 1" and HPP "Djerdap 2" and on the Tisza; extraction of the sunken German navy from World War II (Danube River). Part of the planning solution may have negative impacts on water quality and aquatic biodiversity during the execution of works, while a part is in the function of protection and sustainable utilization of water, which will be achieved through appropriate investments.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Revitalization of hydro units with increase of installed capacity at several existing hydro power plants - refers to projects: HPP Djerdap 1 and 2, RHE Bajina Basta, HPP Potpec with extension, Vlasina HPP, HPP Bistrica. The planned solution has a positive impact on the protection of air quality and the reduction of the impact on climate change in a broader context through increased investment in renewable sources of energy. Negative impacts on the biodiversity

of aquatic habitats during the implementation of revitalization works are possible. These influences are temporary.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Construction of new thermal capacities brings negative impacts in relation to most of the goals of the Strategic Assessment and causes pressures in terms of space and environment. Part of the negative impact will be offset by investments in the best available technologies to reduce particulate pollutant emissions. However, observing the interaction with other broadcasters in the areas of planned new thermal capacities, especially surface mines that are in the function of thermal power plants, cumulative and serious negative impacts are expected in the wider area of planned projects.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	√

Planning solution: Construction of new wind farms - the utilization of renewable sources of energy in the case of wind farms, has a positive impact in the broader context of air protection and reduction of the impact on climate change, whereas the project planning concept allows for maintaining the existing land utilization after the project. These are the positive impacts of building wind farms. Negative influences can occur in relation to the flying fauna (ornithofauna and chiropterofauna) and the change in the character of the landscape. Negative impacts on flying fauna can be prevented by the optimal number and position of wind turbine poles, which is a common practice when planning wind farms.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reconstruction and construction of small hydro power plants - refers to: projects of "Elektroprivrede Srbije" connected to the electricity distribution network with the resumption of production at the projected level; construction of small hydro power plants on water management facilities (SHPP Rovni and SHPP Celije). The planning solution implies the utilization of renewable sources of energy with positive impacts on most of the objectives of the Strategic Assessment. During the reconstruction of existing SHPPs, short-term negative impacts on water resources and biodiversity, local and temporary, are possible. The construction of two planned SHPPs on the water management facilities in Rovni and Celija may adversely affect the same objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	√
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Remediation of polluted industrial and mining-energy sites – achieves only positive impacts on almost all goals of the Strategic Assessment, through the implementation of the procedure of rehabilitation and remediation of hot spots - contaminated industrial sites; reclamation and remediation of the sites most damaged by the exploitation of mineral sources (RTB Bor, flotation tailings and smelter, Kolubara and Kostolac lignite basins) and rehabilitation and remediation of polluted watercourses (section of the Velika Backa Canal). The planning solution does not imply any negative effect on the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-

Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reduction of air pollution originating from energy and industry - includes: creation of a register of pollutants with emission balance; modernization and revitalization of existing TPPs conditioned by the implementation of Directive 2010/75 / EU on industrial emissions; shutdown of existing power units below 300MW; utilization of the best available technology in the industry; identification of zones of impact on the population using software models that will take into account cumulative and synergistic impacts and taking measures to protect the health of the population in these zones; reduction of greenhouse gas emissions by about 21% by 2025 compared to the 1990 level. Positive effects of this planning solution are expected with no negative impacts.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Improving the quality of surface and groundwater through the development of water quality monitoring - is aimed at establishing and equipping regional monitoring centers as a basis for monitoring water quality and effective protection of water resources. The planned solution, in addition to the positive impact on water quality, has a positive impact on biodiversity and indirectly on the health of the population. No negative impacts have been identified on the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Prevention of further loss of land, preservation and improvement of its quality - includes the identification of sites where it is necessary to implement programs to protect against pollution by nitrates, agrochemicals and other harmful agents of agricultural origin; and implementation of erosion protection measures. The planning solution has only positive effects on the protection of land and landscapes.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Reduction of noise levels next to roads and industry - implies the application of technical and biological measures related to noise protection, in order to reduce the exposure of the population to increased noise levels. The positive impacts of the planning solution are precisely in relation to the stated goals of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Establishment of an integrated municipal waste management system - implies expansion of the collection scope to 100%, construction of regional waste management centers - regional landfills with waste separation facilities, transfer stations and collection centers for recyclable waste including hazardous household waste in the following regions: Vranje, Novi Sad, and Belgrade. This planning solution will have multiple positive effects in all areas of the Strategic Assessment and will significantly change the existing situation in waste management, without any negative strategic impacts.

Conflict in relation to the goals of the Strategic Assessment	-

Cumulative conflicts or those in synergy with other activities	-

Planning solution: Construction of a plant for treatment of construction and demolition waste in Belgrade with a capacity of 200,000 t / year, will have a positive impact on the quality of land in micro-localities and landscape characteristics. No strategic negative impacts are expected on any of the Strategic Assessment objectives.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Construction of a plant for incineration of medical and hazardous pharmaceutical waste - a positive impact on air quality is expected in relation to the existing situation in this area.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Protection of natural values by increasing the total area of the Republic of Serbia under protection to 10.5%, mostly by declaring proposed (new and revised) protected areas for which appropriate study documentation has been prepared (declaring part of Kucajske mountains a national park). The planning solution will have a positive impact on most of the goals of the Strategic Assessment, especially on the basic environmental factors, biodiversity, geodiversity, protected natural assets and landscape.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Rehabilitation of degraded areas of protected areas - the planning solution refers to borrowings pits, quarries, fires, landfills, gravel pits, construction of facilities, and other sites with a definite adverse impact on natural values and the environment. This planning solution has a positive impact on the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Detailed determination of the boundaries of the area and other elements of the national ecological network - implies ensuring the full status of the Emerald area according to the Bern Convention with all positive impacts on natural values, biodiversity, geodiversity, landscape, and indirectly on basic environmental factors. There are no negative impacts of this planning solution in relation to the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Identification of the area for the European ecological network NATURA 2000 - with positive impacts on natural values, biodiversity, geodiversity, landscape, and indirectly on the basic environmental factors. There are no negative impacts of this planning solution in relation to the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-

Cumulative conflicts or those in synergy with other activities	-

Planning solution: Arrangement and presentation of cultural goods - especially Roman sites in Nis, Mediana, Sirmium, Viminacium, Drenovac and archaeological sites along the Roman line, will positively affect the protection and presentation of immovable cultural goods. There are no negative impacts on the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

Planning solution: Defining, developing, arranging and presenting national and regional "cultural paths" - will have a positive impact on the protection and presentation of immovable cultural property. There are no negative impacts on the objectives of the Strategic Assessment.

Conflict in relation to the goals of the Strategic Assessment	-
Cumulative conflicts or those in synergy with other activities	-

After the prediction on the possible impacts of planning solutions on the environment, measures for prevention and reduction of negative impacts and the increase of positive impacts on the environment and monitoring of the state of the environment (monitoring) were determined.

Solutions for reducing the negative and increasing the positive environmental impacts of the Spatial Plan have been prepared for each category according to the existing level of pollution, degradation and environmental pressures (planned spatial differentiation of the environment of the Republic of Serbia), in the form of strategic solutions and concepts which improve the environment in the categories of polluted and degraded environment, i.e. ensures the maintenance of the existing situation in the categories of quality environment.

In accordance with the above stated, the following concepts and solutions for environmental protection are envisaged:

1. **For areas of polluted and degraded environment** exposed to great pressure, with negative impacts on humans, living world and quality of life, solutions and commitments which prevent further degradation and reduce the effects of limiting development are provided. In these areas, it is necessary to take measures to stop further pollution, degradation and pressure on the environment, to limit the appearance of activities which are large polluters and to take protection measures when locating new sources of pollution and degradation, especially in the case of large polluters. Improving the quality of life for the population living in areas belonging to this category is the next necessary condition that compensates for environmental pollution by improving quality and greater access to educational, health, cultural, sports, recreational and other services and services.

2. **For areas of endangered environment** with negative impacts on humans, living world and quality of life, solutions and determinations which prevent further degradation and improve the existing situation are provided, in order to reduce the effects of degraded environment as a limiting factor of development. In these areas, it is necessary to prevent further pollution and degradation of the environment, limit the appearance of activities which pollute and degrade the environment and take protection measures when locating new activities, especially those with extremely negative impacts on the environment.

3. **For areas of relatively high quality environment**, with predominant positive impacts when compared to negative impacts on humans, wildlife and quality of life, solutions and commitments which eliminate or reduce existing sources of negative impacts or increase the effect of positive impacts are provided, and are used as a comparative advantage in development planning. In these areas, it is necessary to prevent the appearance of activities which pollute or degrade the environment, and all other activities should be carried out with the application of appropriate protection measures.

4. **For areas of high quality environment**, dominated by positive impacts on humans, wildlife and quality of life, solutions and commitments which improve the existing situation are provided and are used as a comparative advantage in development planning. In these areas, it is necessary to prevent the appearance of activities which pollute or degrade the environment, and all other activities should be carried out with the application of appropriate protection measures.

Priorities for the environmental protection are:

- **Rehabilitation of polluted industrial and mining-energy sites**, which includes: implementation of decontamination and remediation of hot spots (contaminated industrial sites), reclamation and remediation of sites most damaged by exploitation of mineral sources (Kolubara and Kostolac lignite basins), and rehabilitation and remediation of pollution section of the Velika Backa Canal);
- **Reduction of air pollution originating from energy and industry**, which includes: creation of a register of pollutants with emission balance, construction of desulphurization and denitrification plants in thermal power plants, and installation of new or reconstruction of existing electrostatic precipitators in plants emitting suspended particles above emission limit values which have an adverse impact on the environment and human health, as well as the use of best available technologies and the reduction of greenhouse gas emissions;
- **Identification of zones of impact of mining and energy activities on the population** using software models which will take cumulative and synergistic impacts into account (and not just individual) and take all legal measures to protect the health of the population in these zones;
- **Improving the quality of surface and groundwater** which includes: the development of water quality monitoring, which should be directed towards the establishment and equipping of regional monitoring centers;
- **Prevention of further loss of land and preservation and improvement of its quality, which includes**: protection against pollution by nitrates, agrochemicals and other harmful agents of agricultural origin and implementation of measures for protection against erosion;
- **Reduction of noise levels near roads and industries that endanger housing** and other activities which includes: identification of the most frequent parts of state roads that require noise monitoring, and reduction of noise levels at endangered sites, next to roads and industries that affect housing;
- **Establishment of an integrated waste management system through**: expansion of the coverage of municipal waste collection to 100% and construction of regional waste management centers, construction of energy recovery plants, construction of medical and hazardous pharmaceutical waste incineration plants;
- **Protection, arrangement and sustainable utilization of natural values, cultural goods and landscapes through**: increasing the total area under protection to 10.5% of the territory of the Republic of Serbia, rehabilitation of degraded parts of protected areas, revision of the status of protected species of wild flora and fauna, determination of areas and other elements of national ecological networks and European ecological network NATURA 2000, as well as the arrangement of immovable cultural goods - Roman sites and cultural routes.

The strategic commitment to development is aimed at the realization of the protection of spatial units with significant natural values and the rehabilitation, protection and improvement of natural and man-made values. In order to protect natural resources, their further degradation will be prevented by improving the communal infrastructure of the settlement, introducing a gasification network, adequate forest management, etc.

In addition, the measures are grouped by categories (elements) of the environment, within which measures and guidelines for reducing the negative effects of planning solutions on the environment are described in detail:

- Air quality protection measures;
- Climate change mitigation measures;
- Measures for protection and sustainable utilization of water;
- Measures for protection and sustainable utilization of agricultural and forest land;
- Measures to protect biodiversity, geodiversity and natural resources;
- Landscape protection measures;
- Measures for the rational utilization of non-renewable sources and a greater utilization of renewable sources of energy;
- Measures to improve the waste management system;
- Measures to protect and improve the health of the population;
- Measures for the protection of cultural heritage and preservation of historical and archaeological sites;
- Disaster and emergency protection measures;
- Environmental protection measures from transboundary impacts.

These protection measures create a starting point in environmental protection during the implementation of planning solutions. They do not provide absolute protection of environmental elements in the areas of implementation of those planning solutions which have been determined to imply conflicts in spatial arrangements, but create a precondition for their implementation to be decided on the basis of a series of procedures that can identify and quantify expected changes in the environment in case of their realization.

Additional support in checking the effectiveness of planned protection measures is provided by environmental monitoring, which is realized by systematic measurement, testing and evaluation of indicators of the state and pollution of the environment, which includes monitoring of natural factors, i.e. changes in the state and characteristics of the environment, land, forests, biodiversity, flora and fauna, climate elements, ozone layer, ionizing and non-ionizing radiation, noise, waste, early warning against accidents with monitoring and assessment of the development of environmental pollution, as well as commitments from international agreements.

In this context, indicators which provide information or describe phenomena in the field of environment are indicated for each area of the Strategic Assessment. For each indicator, the competence (source and availability of data) and the frequency of data collection are given. Monitoring indicators are fully in line with the objectives of the Strategic Assessment.

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Given that the Strategic Assessment is not an instrument to be used for direct implementation, but rather an instrument for making decisions on future development, we believe that the Strategic Assessment showcased environmental trends which can be expected as a result (positive impact) or

consequence (negative impact) of the implementation of the Spatial Plan, plan, thus fulfilling its role in making appropriate decisions concerning spatial development and environmental protection.

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