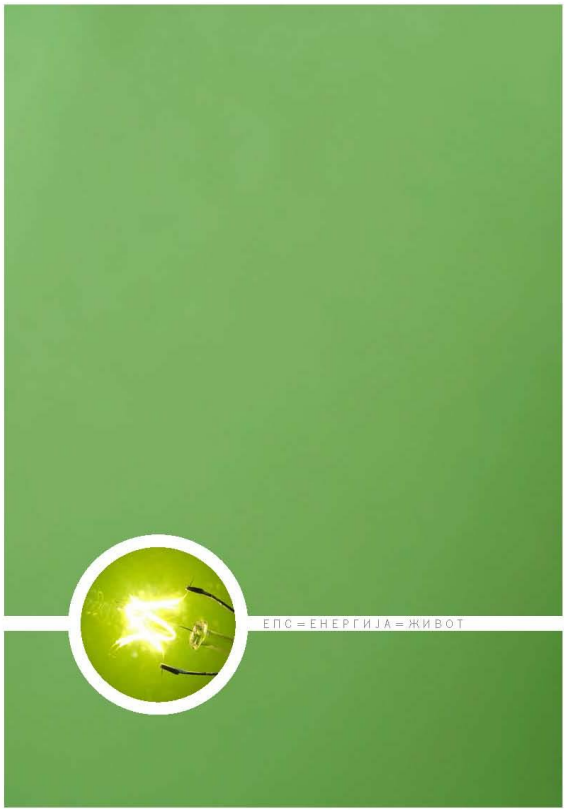
Joint Stock Company Elektroprivreda Srbije, Belgrade

2023 Environmental Report



Belgrade, April 2024

INTRODUCTION

The Joint Stock Company Elektroprivreda Srbije 2023 Environmental Report has been prepared on the basis of recommendations with respect to content and form – report template provided by the European Bank for Reconstruction and Development (APPENDIX 1) and on the basis of data on environmental state monitoring submitted by the responsible persons from EPS JSC Organizational Units.

The data on the quantities of emitted substances affecting air quality is given on the basis of the calculation based on measured mass concentrations, i.e., emission flows and power units (boilers) operating hours in the year 2023.

APPENDIX 2 provides an overview of the legislation of the Republic of Serbia referring to environmental protection which was used as the basis for evaluation and comparison of the measured values of pollutants and other parameters with the allowed values.

Abbreviations used during Report preparation are given in APPENDIX 3.

I JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE

The Joint Stock Company Elektroprivreda Srbije Belgrade is a vertically organized company 100% owned by the state. The founder of EPS JSC is the Republic of Serbia, and the Founder rights are exercised by the Government of the Republic of Serbia. The bodies of the Joint Stock Company Elektroprivreda Srbije are the Supervisory Board and the Director.

The predominant activity of the Joint Stock Company Elektroprivreda Srbije is energy related activity: electricity generation, activity code 35.11.

The mission of the Elektroprivreda Srbije is to provide secure electricity supply for consumers, according to market conditions, with continuous generation, increase in the quality of services and consumer satisfaction, improvement of environmental care and increase in general community wellfare.

The vision of the Elektroprivreda Srbije is to be a socially responsible, market-oriented and profitable company, competitive on the regional market while complying with the highest business and sustainable development standards, recognized as a reliable partner to domestic and international companies.

Public Enterprise EPS Trading LLC Ljubljana was founded on July 1st, 2014, as the first company founded abroad by EPS JSC with the purpose of electricity trade.

EPS JSC has founder rights in three public enterprises in Kosovo and Metohija. As of June 1999, EPS JSC has not been able to manage its capacities in K&M.

Company “Elektrosever”, LLC, was founded in North Mitrovica following the Governement of Serbia’s consent, number 05 023-923/2016 from 11 February 2016, and is conducting the activities of electricity distribution and supply in four municipalities of the North in AP Kosovo and Metohija: North Mitrovica, Zvečan, Leposavić and Zubin Potok.

EPS JSC Coal Production

In EPS JSC, coal production is performed within EPS JSC Organizational Units: Branch MB Kolubara, Branch TPP-OCM Kostolac and PE OCM Kosovo**. The quanitites of raw and dry coal produced in year 2023 are given in Table 1 (except for PE OCM Kosovo**).

Table 1

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE							
COAL PRODUCTION IN YEAR 2023							
Organizational part		**Coal production (t)**			**Overburden production (m^3sm)**		
		Plan	**Achieved**	**%**	**Plan**	**Achieved**	**%**
BRANCH MB KOLUBARA – OPEN CAST MINES							
Field E		8.000.000	6.310.735	78,88	32.781.000	27.219.344	83,03
Field G		5.200.000	4.399.578	84,61	7.700.000	7.865.276	102,15
Tamnava – West Field		11.550.000	11.477.311	99,37	28.040.000	27.798.216	99,14
Radljevo					4.479.000	3.003.389	67,05
TOTAL(RAW COAL***):** **BRANCH MB KOLUBARA – OPEN CAST MINES**		**24.750.000**	**22.187.624**	**89,65**	**73.000.000**	**65.886.225**	**90,25**
Kolubara Processing Plant (dry coal)	With dust	235.000	242.351	103,13			
	Without dust	214.000	232.867	108,82			
BRANCH TPP-OCM KOSTOLAC – OPEN CAST MINES							
Drmno		10.130.000	9.253.251	91,34	49.000.000	38.051.531	77,66
TOTAL: **BRANCH TPP-OCM KOSTOLAC – OPEN CAST MINES**		**10.130.000**	**9.253.251**	**91,34**	**49.000.000**	**38.051.531**	**77,66**
TOTAL: EPS JSC OPEN CAST MINES		**34.880.000**	**31.440.875**	**90,14**	**122.000.000**	**103.937.756**	**85,19**

* Total quantity of raw coal from which one portion is used for producing dry coal
** As of June 1999, EPS JSC has not been managing its capacitites in Kosovo and Metohija

Electricity Generation in EPS JSC

Electricity generation in EPS JSC is performed in thermal power facilities: TPP Nikola Tesla, TPP-OCM Kostolac, CHP Panonske, PE TPP Kosovo* and in hydro power plants: HPP Djerdap and HPP Drinsko–Limske. Data on electricity generation (except for PE TPP Kosovo*) in the year 2023 is given in Table 2.

Table 2

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE			
ELECTRICITY GENERATION IN YEAR 2023			
Organizational part	**Unit**	**Electricity generation (GWh)**	
		In generator	**Sent to grid**
BRANCH TPP NIKOLA TESLA			
	A1 - A2	1.672,40	1.502,700
	A3 - A5	4.446,80	4.035,0
TPP NIKOLA TESLA A	A6	1.805,20	1.612,80
TPP NIKOLA TESLA B	Б1 - Б2	7.966,50	7.460,60
TPP KOLUBARA A	A1 - A4	172,70	164,60
	A5	67,70	60,70
TPP MORAVA	A	391,00	355,50
TOTAL:		**16.522,40**	**15.191,90**
BRANCH TPPs-OCMs KOSTOLAC			
TPP KOSTOLAC A	A1	650,00	577,20
	A2	1.389,50	1.320,80
TPP KOSTOLAC B	Б1	2.414,60	2.170,30
	Б2	2.525,30	2.275,10
TOTAL:		**6.979,40**	**6.343,40**
BRANCH CHP PANONSKE			
CHP NOVI SAD		541,00	484,00
CHP ZRENJANIN		45,60	41,50
CHP SREMSKA MITROVICA		0	0
TOTAL:		**586,60**	**525,50**
TOTAL: TPP AND CHP		**24.088,30**	**22.060,80**
BRANCH HPP DJERDAP		8.614,80	8.578,10
BRANCH HPP DRINSKO-LIMSKE		4.049,50	4.026,60
RES BRANCH (SMALL HPPs)		54,50	54,50
TOTAL: HYDROPOWER PLANTS		**12.718,80**	**12.659,20**
PE ELEKTROKOSMET*	-		
TOTAL: EPS JSC (without K&M)		**36.807,10**	**34.720,00**

*As of June 1999, EPS JSC has not been managing its capacitites in Kosovo and Metohija

Fuel Consumption in EPS JSC Thermal Power Plants

Data on the consumption of solid, liquid and gaseous fuel in TPPs and CHPs of EPS JSC in 2023 is given in Table 3.

Table 3

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE						
FUEL CONSUMPTION IN 2023						
Organizational part	**Power unit /boiler**	**Fuel**				
		Coal	**Fuel oil**	**Oil**	**Gas**	**Biomass**
		t	t	t	Stm^3	t
BRANCH TPP NIKOLA TESLA						
TPP NIKOLA TESLA A	A1	1.201.731	18.711	-	-	-
	A2	1.439.465	14.233	-	-	-
	A3	2.727.142	10.645	-	-	-
	A4	3.158.928	6.216	-	-	-
	A5	1.483.179	7.119	-	-	-
	A6	3.032.723	6.829	-	-	-
TPP NIKOLA TESLA B	B1	5.862.102	6.806	-	-	-
	B2	5.337.581	5.305	-	-	-
TPP KOLUBARA A	K1	193.191	-	1.605	-	-
	K2	-	-	-	-	-
	K3	152	-	13	-	-
	K4	45.748	-	331	-	-
	K5	166.100	-	1.713	-	-
	K6	149.982	-	1.031	-	-
TPP MORAVA	A1	531.072	1.089	324	-	-
TOTAL:		**25.329.096**	**76.953**	**5.017**	**-**	**-**
BRANCH TPPs-OCMs KOSTOLAC						
TPP KOSTOLAC A	A1	936.797	-	2.005	-	-
	A2	1.751.713	-	4.865	-	-
TPP KOSTOLAC B	B1	2.860.832	2.954	-	-	-
	B2	3.001.746	2.224	-	-	-
TOTAL:		**8.551.088**	**5.178**	**6.870**	**-**	**-**
BRANCH MB KOLUBARA – OU PROCESSING						
HEATING PLANT VREOCI	K1 and K2	193.740	444,90	-	-	-
TOTAL:		**193.740**	**444,90**	**-**	**-**	**-**
BRANCH CHPs PANONSKE						
CHP NOVI SAD	A1 (K1 and K2)	-	-	-	-	-
	A2 (K3)	-	-	-	-	-
	Stack, both power units – continuous measuring	-	-	-	182.860,466	-
CHP ZRENJANIN	A1	-	-	-	19.083,598	-
	A2	-	-	-	265,089	-
CHP SREMSKA MITROVICA	A3 (K3 and K4)	-	-	-	-	-
	S24001-3	-	-	-	626,041	-
	Biomass boiler	-	-	-	124,780	4.754
TOTAL:		**-**	**-**		**202.959.974**	**4.754**
TOTAL: EPS JSC		**34.073.924**	**82.575,90**	**11.887**	**202.959.974**	**4.754**

Emission of Substances from Thermal Power Plants that Affect Air Quality

Data on the total emission of substances from thermal power plants that affect air quality in year 2023 for Organizational Units of EPS JSC (except for PE TPP Kosovo*) is given in Table 4.

Table 4

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE				
QUANTITY OF SUBSTANCES EMITTED FROM THERMAL POWER PLANTS THAT AFFECT AIR QUALITY IN 2023				
	t / year			
Organizational Part	Particulate matter	SO_2	NO_x(NO_2)	CO_2
BRANCH TPP NIKOLA TESLA	4.247,290	226.816,100	23.895,510	17.306.814,800
BRANCH TPPs-OCMs KOSTOLAC	1.374,400	92.656,580	8.158,100	7.125.739,000
BRANCH CHPs PANONSKE	570,497	181,811	1.353,489	341.709,702
BRANCH MB KOLUBARA - OU PROCESSING PLANT	219,300	3.191,700	181,400	156.295,500
TOTAL: EPS JSC	**6.411,487**	**322.846,191**	**33.588,499**	**24.930.559,002**

Injuries at Work in EPS JSC

Data on the number of injuries of employees at work in the year 2023 for Organizational units of EPS JSC is given in Table 5.

Table 5

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE						
INJURIES AT WORK IN 2023						
Organizational part	Number of employees	Injuries with respect to number of employees				
		Mild	Severe	Fatal	Total	%
BRANCH MB KOLUBARA	10.689	134	36	0	170	1,59
BRANCH TPPs-OCMs KOSTOLAC – OPEN CAST MINES	1.695	12	5	0	17	1,00
OPEN CAST MINES:	**12.384**	**146**	**41**	**0**	**187**	**1,51**
BRANCH TPP NIKOLA TESLA	2.258	34	10	0	44	1,95
BRANCH TPPs-OCMs KOSTOLAC – THERMAL POWER PLANTS	1.127	4	2	0	6	0,53
BRANCH CHPs PANONSKE	349	7	0	0	7	2,01
THERMAL POWER PLANTS:	**3.734**	**45**	**12**	**0**	**57**	**1,53**
BRANCH HPP DJERDAP	679	2	1	0	3	0,44
BRANCH HPP DRINSKO – LIMSKE	467	1	0	0	1	0,21
BRANCH RENEWABLE ENERGY SOURCES	52	0	0	0	0	0,00
HYDROPOWER PLANTS:	**1.198**	**3**	**1**	**0**	**4**	**0,33**
EPS JSC HEAD OFFICE	**802**	**6**	**3**	**0**	**9**	**1,12**
BRANCH EPS SUPPLY	**1.303**	**13**	**2**	**0**	**15**	**1,15**
TOTAL: EPS JSC	**19.421**	**213**	**59**	**0**	**272**	**1,40**

Health Protection of Employees in EPS JSC

Table 6 provides the data on health protection of employees which includes mandatory examinations upon entering employment, as well as periodic examinations performed with the aim of checking the work ability of employees, and which were performed in year 2023 in EPS JSC Organizational Units.

Table 6

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE											
WORK ABILITY OF EMPLOYEES IN 2023											
Organizational Part	Number of employees	Periodic examinations				Work ability					
		Referred for examination		Examined		Able		Limited ability		Unable	
		n	%	n	%	n	%	n	%	n	%
BRANCH MB KOLUBARA	10.689	9.718	90,92	8.828	90,84	5.327	60,34	3.228	36,57	273	3,09
BRANCH TPPs-OCMs KOSTOLAC - OCM	1.695	1.231	72,63	1.218	98,94	1.080	88,67	122	10,02	16	1,31
OPEN CAST MINES	**12.384**	**10.949**	**88,41**	**10.046**	**91,75**	**6.407**	**63,78**	**3.350**	**33,45**	**289**	**2,88**
BRANCH TPP NIKOLA TESLA	2.258	1.856	82,20	1.810	97,52	1.626	89,83	175	9,67	9	0,50
BRANCH TPPs-OCMs KOSTOLAC	1.127	985	87,40	981	99,60	948	96,63	33	3,36	0	0,00
BRANCH CHPs PANONSKE	349	266	76,22	262	98,50	135	51,53	123	46,95	4	1,53
THERMAL POWER PLANTS	**3.734**	**3.107**	**83,21**	**3.053**	**98,26**	**2.709**	**88,73**	**331**	**10,84**	**13**	**0,43**
BRANCH HPP DJERDAP	679	356	52,43	352	98,88	314	89,20	38	10,80	0	0,00
BRANCH HPP DRINSKO–LIMSKE	467	132	28,27	132	100,00	109	82,58	22	16,67	1	0,76
BRANCH RENEWABLE ENERGY SOURCES	52	38	73,08	38	100,00	36	94,74	1	2,63	1	2,63
HYDROPOWER PLANTS	**1.198**	**526**	**43,91**	**522**	**99,24**	**459**	**87,93**	**61**	**11,69**	**2**	**0,38**
EPS JSC HEAD OFFICE	**802**	**0**	**0,00**	**0**	**0,00**	**0**	**0,00**	**0**	**0,00**	**0**	**0,00**
BRANCH EPS SUPPLY	**1.303**	**0**	**0,00**	**0**	**0,00**	**0**	**0,00**	**0**	**0,00**	**0**	**0,00**
TOTAL: EPS JSC	**19.421**	**14.582**	**75,08**	**13.621**	**93,41**	**9.575**	**70,30**	**3.742**	**27,47**	**304**	**2,23**

Submissions by Stakeholders to EPS JSC

Table 7 provides data on total number of submissions by stakeholders to EPS JSC for 2023 regarding environmental protection:

Table 7

JOINT STOCK COMPANY ELEKTROPRIVREDA SRBIJE	
SUBMISSIONS BY STAKEHOLDERS IN 2023	
Organizational Part	**Number of submissions**
BRANCH MB KOLUBARA	1
BRANCH TPPs-OCMs KOSTOLAC - OCM	0
BRANCH TPP NIKOLA TESLA	3
BRANCH TPPs-OCMs KOSTOLAC	1
BRANCH CHPs PANONSKE	0
BRANCH HPP DJERDAP	0
BRANCH HPPs DRINSKO-LIMSKE	2
BRANCH RENEWABLE ENERGY SOURCES	0
EPS JSC HEAD OFFICE	0
BRANCH EPS SUPPLY	0
TOTAL: EPS JSC	**7**

1. BRANCH MINING BASIN KOLUBARA

Branch MB Kolubara is a part of the company whose main activity is coal exploitation, processing and transport. In terms of organization, it consists of the Head Office and four organizational units:

1. Open cast mines
2. Processing plant
3. Project and
4. Metal

The following opet cast mines are active in the organizational unit Open Cast Mines - Baroševac:

1. Field B/C
2. Tamnava West Field
3. Field G, and
4. Field E

Environmental protection activities are performed by the Environmental Protection and Improvement Department the role of which is to prevent, control, reduce and remediate all forms of environmental pollution. The Department is organized into four Divisionepartments:

1. Environmental Protection and Improvement Division – organizational unit Open Cast Mines-Baroševac;
2. Biological Reclamation Division;
3. Waste and Hazardous Substances Division; and
4. Environmental Protection and Improvement Division – organizational unit Processing Plant - Vreoci.

A. BRANCH MB KOLUBARA – OU OPEN CAST MINES

1.1. Permits Overview and Status

The overview and status of permits, licences and other necessary approvals realized in the year 2023 is given in Table 8.

Table 8

BRANCH MB KOLUBARA– OU OPEN CAST MINES			
Overview and status of permits in 2023			
Open cast mine	**Permits, licenses and other necessary approvals, obtained in 2023** **Project name and status**	**New requests for obtaining or extending valid permits**	**Note**
Field E	-	-	-
Tamnava West Field	Technical mining project for the Open Cast Mine Tamnava West Field in 2023-2025 period	-	The application on commencement of mining works execution was submitted on 08.11.2023
Field G	-	-	-
Radljevo - North	Technical mining project for overburden excavation and disposal for 2023 and 2024 in OCM Radljevo - North	-	The application on commencement of mining works execution was submitted on 30.08.2023
Licenses overview and status in 2023			
Environmental Protection and Improvement Department	License for executing professional tasks in forest management (3 pcs)	Professional development	Professional development is carried out annually for keeping the licenses

Environmental Protection and Improvement Department	Decision on awarding marks for forest crime, decision by the Ministry of Agriculture, Forestry and Water Management, No. 322-01-299/1/2023-10 as of 28 April 2023	-	-
Environmental Protection and Improvement Department	Decision on awarding marks for a cut tree, decision by the Ministry of Agriculture, Forestry and Water Management, No. 322-01-299/2023-10 as of 28 April 2023	-	-

1.2. Monitoring and Environmental impact

1.2.1. Measuring Air Quality

In 2023, no air quality measuring was performed. In 2023, based on the inspection order, the public procurement of services number JN/4000/0470/2023, JANA number 3412/2023 "Interventions per extraordinary inspection decisions and unforeseen requirements" was initiated, where air quality measurements will be performed at two measuring points. The public procurement will be realized at the beginning of 2024.

1.2.2. Measuring the Emission of Substances Affecting Water Quality

- **Water from the Drainage System**

Water from the pre-drainage and drainage systems represents the technological part of the coal exploitation system. The water pumped out from these systems (mine wastewater) is released without treatment through sedimentation tanks into the nearby recepients, as follows:

- OCM Field E, Baroševac into the river Peštan and the river Turija, Medoševac into the river Peštan;
- OCM Tamnava West Field into the river Kolubara, and
- OCM Field G into the river Kolubara.

In accordance with the law, the quality control of recipients is performed by the authorised laboratory. The results of the quality of water pumped out from open cast mines (from the sedimentation tank into the recipient) for the year 2023 are shown in Table 9.

Table 9

BRANCH MB KOLUBARA– OU OPEN CAST MINES			
Water quality in 2023			
Parameters	**OCM Field G**	**OCM Field E, Baroševac**	**OCM Tamnava West Field**
Electrical conductivity (µs/cm)	498-576	485-816	428-865
pH	7.3 - 7.9	7.4 - 7.7	7.1 - 7.5

- **Sanitary Water**

The mines are supplied with drinking water from regional waterworks Medoševac, Kalenić, Junkovac, and Tamnava – East Field. The data on the quantity of wastewater produced by mine drainage and the quantity of drinking water consumed in 2023 is given in Table 10. The quantity of produced sanitary wastewater can be estimated based on the quantity of delivered drinking water.

Table 10

BRANCH MB KOLUBARA– OU OPEN CAST MINES			
Water quantity in 2023 (m^3/year)			
Open cast mine	**Total quantity of pumped out water (m^3)**	**Plant / type of water**	**Drinking water-delivered**
Field E	6.720.534,80	**Waterworks Medoševac Auxiliary Mechanization**	1.064.993
Field G	2.278.082,00	**Waterworks East Field Open Cast Mine Field TE**	176.302
Tamnava West Field	11.695.748,70		

Radljevo	665.296,00	**Waterworks Kalenić Open Cast Mine Field TW**	846.596
Auxiliary Mechanization	**-**		
TOTAL	**21.359.661,50**	**TOTAL**	**2.087.891**

1.2.3. Measuring the Concentration of Substances Affecting Soil Quality

In 2023, soil quality was not measured in the vicinity of the open cast mines of MB Kolubara, considering that the pollution values requiring remedial measures have not been reached in the previous measurements in accordance with the Regulation on systematic monitoring of soil condition and quality (Official Gazette of the RS, number 88/2020). Under the same Regulation, soil quality measurement is performed every five years, unless the pedological profile requires otherwise at the level of the local network.

During the previous years, the quality of native soil was measured at dozens of locations within the area directly influenced by MB Kolubara. For the ascertained excesses of certain heavy metals, after the spatial analysis and comparison with measurements from previous years, it was concluded that they originate from a natural background.

- **Overview of Expropriated and Reclaimed Areas**

In the Biological Reclamation Division, the Agriculture Office implements biological reclamation measures on 96.84 ha of reclaimed areas. In addition to reclaimed areas, regular agricultural production is also organized on expropriated plots on an area of 7.60 ha (6.00 ha of expropriated areas in 2023 were leased to third parties).

In the Biological Reclamation Division, the Forestry Office manages 611.30 ha of reclaimed areas (forests and forest land), where 8.58 ha are under the young plants over the final slope of Tamnava West Field, and 602.72 ha are in the Economic Unit MB Kolubara. In the farm unit, within Field D, there are also 49.28 ha of expropriated forests and forest land.

The Forestry Office implements preservation measures for reclaimed forests through protection measures against biotic factors (insects, diseases) and abiotic factors (protection against fires and illegal logging).

In 2023, the Republic Forestry and Hunting Inspector carried out three inspections, as follows:

- Pursuant to Articles 39-41 of the Law on Forests (Forest Protection, Forest Guard and Forest Guard's Powers). The suggestion was to follow up the Reports for forest crime after sending them to the Public Prosecutor's Office and the police aiming at speeding up the prosecution of the perpetrators.

- Pursuant to Article 31 of the Law on Forests (Annual Management Plan)

- Pursuant to Article 46 of the Law on Forests (Plan for forest fire protection)

Table 11 presents an overview of areas expropriated and reclaimed by the end of 2023.

Table 11

BRANCH MB KOLUBARA– BRANCH OPEN CAST MINES BAROŠEVAC

Overview of expropriated and reclaimed areas by the end of 2023

Open cast mine/ Facility	Expropr. area (ha)	Area of land registered at the cadaster (ha)		Area of land which purpose was changed (ha)		Area of land under civil structures (ha)		Areas of land used as dump site (ha)				Reclaimed area (ha)							
								Internal		External		Forrest		Arable land		Orchard		Nursery garden	
		by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023	by the end of 2022	in 2023
Field D	2.344,61	2.334,28	-2,11	810,24	0,00	18,65	0,00	1.228,82	-22,93	0,00	0,00	430,44	0,00	40,44*	0,00	7,00	0,00	0,00	0,00
Field B	1.176,35	1.171,36	0,69	526,36	0,00	18,84	0,00	461,44	53,16	0,00	0,00	111,65	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Auxiliary mechanization	3,98	3,98	0,00	0,54	0,00	3,98	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
OCM Head office	4,53	4,39	0,00	0,67	0,00	4,07	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
South field	456,28	461,63	-5,84	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Field G	438,41	483,19	-15,39	0,00	0,00	0,00	0,00	78,45	34,15	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Field E	727,33	718,17	-1,05	7,07	0,00	13,18	-0,41	0,00	0,21	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Tamnava East Field	2.003,22	1.949,69	-0,41	82,67	-82,67	94,04	-94,04	483,07	-152,39	0,00	0,00	60,63	0,00	49,40	0,00	0,00	0,00	0,00	0,00
Field Veliki Crljeni	157,70	162,04	-162,04	0,00	0,00	23,21	-23,21	17,82	2,85	27,98	-27,98	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Tamnava West Field	1.925,02	1.862,83	-0,50	70,13	0,00	46,45	0,00	918,09	-7,19	0,00	0,00	8,58	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Radljevo	482,07	457,57	24,50	2,13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL:	**9.719,50**	**9.446,98**		**1.417,14**		**104,76**		**3.095,55**		**0,00**		**611,30**		**89,84**		**7,00**		**0,00**	

Note: *- The reclaimed area was reduced by 10.56 ha compared to the total value, because it was used for mining works, for the purpose of expanding the mine

1.2.4. Environmental Noise Measurements

In 2023, no environmental noise measuring was performed. In 2023, based on the inspection order, the public procurement of services number JN/4000/0470/2023, JANA number 3412/2023 "Interventions per extraordinary inspection decisions and unforeseen requirements" was initiated, where environmental noise measurements will be performed at two measuring points. The public procurement will be realized at the beginning of 2024.

1.2.5. Waste

In 2023, the activities of the Waste and Hazardous Substances Division referred to establishing the waste management system, procuring environmental protection equipment with respect to waste management, concluding contracts with authorised operators for the sale - disposal of waste, reporting to competent authorities, preparation of tender documentation and implementation of contracts for the sale of waste.

The waste generated in the Branch Open Cast Mines Baroševac in 2023 is presented in Table 12 as per the legal regulations of the Republic of Serbia within the scope of waste management.

Table 12

BRANCH MB KOLUBARA – BRANCH OPEN CAST MINES										
Types of waste generated in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Open Cast Mine/Facility**						
				Field E	**Field B**	**Tamnava West Field**	**Tamnava East Field**	**Auxiliary Machi.**	**Total:**	**Note**
	Name	**Index number**		**Generated waste quantities**						
1.	Waste paint and varnish containing organic solvents or other hazardous matter	08 01 11*	t	0,050	0,000	0,000	0,000	0,000	**0,050**	Expired paints
2.	Waste printing toners other than those mentioned in 08 03 17	08 03 18	t	0,069	0,000	0,000	0,000	0,000	**0,069**	Waste printing toners
3.	Waste adhesives and sealants containing organic solvents or other hazardous substances	08 04 09*	t	0,030	0,000	0,000	0,350	0,000	**0,380**	Waste adhesives
4.	Scraping and processing of ferrometals	12 01 01	t	15,000	13,680	0,000	0,000	0,000	**28,680**	Iron and steel scrap, metal chip, clean waste ferrous metals chip without impurities, waste ferrous metals chip with impurities
5.	Scraping and processing of non-ferrometals	12 01 03	t	0,350	0,000	0,000	0,000	0,000	**0,350**	Bronze chips Aluminum chips
6.	Spent waxes and oils	12 01 12*	t	0,000	0,000	0,000	0,540	0,000	**0,540**	Waste oils
7.	Mineral-based non-chlorinated engine, gear and lubricating oils	13 02 05*	t	0,000	0,000	0,000	0,000	62,387	**62,387**	Engine oil, gear oils
8.	Other insulating and heat transmission oils	13 03 10*	t	0,400	0,000	0,000	0,000	0,000	**0,400**	Transformer oils
9.	Oily water from oil/water separators	13 05 07*	t	17,180	0,000	18,680	0,000	19,880	**55,740**	Separator residue, liquid waste from the oil pit (emulsion)
10.	Other emulsions	13 08 02*	t	0,000	1,020	1,040	1,000	16,400	**19,460**	Waste emulsions, mechanical emulsions and solutions without halogenated matters, waste sludge from cleaning facilities, oiled water
11.	Plastic packaging	15 01 02	t	0,000	0,440	0,000	0,000	0,000	**0,440**	Plastic packaging waste

BRANCH MB KOLUBARA – BRANCH OPEN CAST MINES										
Types of waste generated in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Open Cast Mine/Facility**						
				Field E	**Field B**	**Tamnava West Field**	**Tamnava East Field**	**Auxiliary Machi.**	**Total:**	**Note**
	Name	**Index number**		**Generated waste quantities**						
12.	Packaging containing residues of or contaminated by hazardous substances	15 01 10*	t	0,000	0,000	2,000	0,000	13,280	**15,280**	Waste metal barrels of oil and lubricants, waste barrels of grease and oil, metal packaging of paints, varnishes and thinners
13.	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by hazardous substances	15 02 02*	t	0,110	0,000	0,100	0,000	1,500	**1,710**	Oily wiping cotton fibers, workwear, wiping cloths
14.	Absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	15 02 03	t	0,031	1,245	0,050	0,080	5,462	**6,868**	PP equipment, workwear, personal protective equipment, air filters
15.	Waste rubber	16 01 03	t	0,000	0,000	0,000	0,000	25,000	**25,000**	Tires
16.	Oil filters	16 01 07*	t	0,000	0,000	0,000	0,000	6,952	**6,952**	Waste oil filters
17.	Brake pads containing asbestos	16 01 11*	t	0,100	0,350	0,000	1,200	0,000	**1,650**	Waste from asbestos braids and brake linings
18.	Antifreeze agent containing hazardous matters	16 01 14*	t	0,000	0,000	0,000	1,020	0,000	**1,020**	Waste antifreeze agents
19.	Hazardous components other than those mentioned in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14	16 01 21*	t	0,000	0,000	0,000	0,000	0,680	**0,680**	Greased hydraulic hoses
20.	Laboratory chemicals including or containing hazardous matters, including laboratory mixtures	16 05 06*	t	0,000	0,000	0,002	0,000	0,000	**0,002**	Chemicals – disposed from the warehouse
21.	Lead batteries	16 06 01*	t	0,985	0,000	0,400	0,000	13,921	**15,306**	Lead-acid batteries
22.	Nickel-cadmium batteries	16 06 02*	t	0,000	0,000	0,300	0,000	0,000	**0,300**	Nickel-cadmium batteries

BRANCH MB KOLUBARA – BRANCH OPEN CAST MINES										
Types of waste generated in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Open Cast Mine/Facility**						
				Field E	**Field B**	**Tamnava West Field**	**Tamnava East Field**	**Auxiliary Machi.**	**Total:**	**Note**
	Name	**Index number**		**Generated waste quantities**						
23.	Copper, bronze, brass	17 04 01	t	0,780	0,000	0,098	0,000	0,000	**0,878**	Copper, copper strips, copper lacquer wire, insulated copper coils, scrap tin bronze, scrap aluminum bronze, bushings
24.	Aluminum	17 04 02	t	30,000	0,000	0,000	0,000	0,000	**30,000**	Waste aluminum ropes with iron core
25.	Iron and steel	17 04 05	t	0,000	0,000	0,000	0,000	1.020,000	**1.020,000**	Waste mechanization
				102,500	5,240	0,000	0,000	0,000	**107,740**	Alloy steel (crawler track links, crusher hammers, excavator teeth)
				18,000	0,000	0,000	0,000	0,000	**18,000**	Iron and steel with rubber coating, padded idlers
				70,150	45,590	0,000	0,000	0,000	**115,740**	Iron over 6 mm (rails, parts of structures, idlers and shafts)
				25,500	39,880	0,000	73,500	0,000	**138,880**	Iron and steel up to 3 mm (sheets, electrical switching cabinets, vulcanization container, sheet metal profiles, mixed category cabinets)
				119,900	0,830	23,715	20,000	0,000	**164,445**	Iron and steel over 3 mm (sheets, idlers, shafts, structures, steel ropes, pieces of various sizes and shapes, unclassified, steel ropes, sheets, steel bodies of

BRANCH MB KOLUBARA – BRANCH OPEN CAST MINES										
Types of waste generated in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Open Cast Mine/Facility**						
				Field E	**Field B**	**Tamnava West Field**	**Tamnava East Field**	**Auxiliary Machi.**	**Total:**	**Note**
	Name	**Index number**		**Generated waste quantities**						
										idlers, structures, crates, pontoons, rails)
26.	Cables other than those mentioned in 17 04 10	17 04 11	t	15,000	0,000	105,480	50,000	0,000	**170,480**	High voltage copper cables incl. insulation, low voltage copper cables incl. insulation, telephone cable
27.	Insulation material other than those provided in 17 06 01 and 17 06 03	17 06 04	t	13,060	0,000	0,000	0,000	0,000	**13,060**	Waste ceramic insulators, sandwich panels
28.	Construction materials containing asbestos	17 06 05*	t	0,000	0,000	0,650	0,000	0,000	**0,650**	Asbestos pipes – disposed from the warehouse
29.	Plastic and rubber	19 12 04	t	0,300	0,000	31,762	0,000	0,000	**32,062**	Waste rubber, plastic and rubber, waste rubber rings, rubber cuttings from trimmed rubber drum lining, waste conveying belt
30.	Paper and cardboard	20 01 01	t	0,000	0,000	0,279	0,000	0,000	**0,279**	Plastic and paper, paper and cardboard
31.	Fluorescent tubes and other mercury-containing waste	20 01 21*	t	0,000	0,110	0,000	0,000	0,000	**0,110**	Waste fluorescent tubes
32.	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	20 01 35*	t	0,000	0,207	0,050	0,000	0,000	**0,257**	Electro-hydraulic thrusters, electronic equipment, other
33.	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	20 01 36	t	0,000	0,245	0,070	0,500	0,000	**0,815**	El. tools, devices and equipment (used electric machines and electric motors, tools, other)

BRANCH MB KOLUBARA – BRANCH OPEN CAST MINES										
Types of waste generated in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Open Cast Mine/Facility**						
				Field E	**Field B**	**Tamnava West Field**	**Tamnava East Field**	**Auxiliary Machi.**	**Total:**	**Note**
	Name	**Index number**		**Generated waste quantities**						
34.	Plastics	20 01 39	t	0,000	0,260	0,010	0,000	0,000	**0,270**	Plastic rings, chairs, PET packaging, cotherm boards

* hazardous waste

B. BRANCH MB KOLUBARA - OU PROCESSING PLANT AND OU KOLUBARA - METAL

B.1. OU PROCESSING PLANT

Within the Branch MB Kolubara - OU Processing Plant, processing and refinement of open cast coal from the open cast mines Field E is carried out. The obtained coal is used to supply thermal power plants, general consumption, industry, etc.

The following organizational units are part of OU Processing Plant:

- Operations Centre
- Dry Separation - plant
- Coal Refinement - plant
  - Wet Separation
  - Drying and Classification Plant
  - Heating Plant
  - Maintenance
- Railway transport - plant
- Coal and wastewater testing center (accredited laboratory)

All plants were constructed based on valid designs and they possess the necessary certificates of occupancy.

1.1. Overview and Status of Permits

The overview and status of permits for 2023 for OU Processing Plant is given in Table 13.

Table 13

BRANCH MB KOLUBARA – OU PROCESSING PLANT			
Overview and Status of Permits in 2023			
Plant	**Permits, licenses and other necessary approvals, obtained in 2021 (number and date). Project name and status**	**New applications for obtaining or extension of valid permits**	**Note**
OU Processing Plant Vreoci	Decision - on issuing the water permit - to the applicant PE “Electric Power Industry of Serbia“, Belgrade, Branch MB Kolubara, - OU Processing Plant, a water permit is issued for the supply of technical water (water intake, pumping station, pipeline and access road) from the river Kolubara CM Vreoci, the municipality of Lazarevac, for the needs of the OU Processing Plant (No. 325-04-0:433/2019-07).	-	Expiry date 14.07.2026.
OU Processing Plant Vreoci	The water permit with a new validity period is issued to the applicant PE “Electric Power Industry of Serbia“ Branch MB Kolubara OU Processing Plant, for the storage of petroleum products for the needs of the “Heating Plant" facility and the discharge of atmospheric wastewater and steam condensate used for heating the fuel oil from the “Heating Plant“ complex within the OU Processing Plant, which is located at CP 1828/1 CM Vreoci, the municipality of Lazarevac on the territory of the city of Belgrade (No. 04.08-584512/1-2021)	-	Expiry date 31.10.2024.
OU Processing Plant Vreoci	Decision: Approval is given to the operator for the continuous measurement of emissions from stationary sources of pollution in the Heating Plant, Coal Refinement Plant Vreoci at the emitter Heating Plant Vreoci (No.353-01-01565/2021-03 as of 30.03.2022.)	-	-

1.2. Monitoring and Environmental Impact

1.2.1. Air Quality Measurements

The air quality measurements in the vicinity of the organizational units of the Branch MB Kolubara are carried out as part of the network of the City of Belgrade for automatic monitoring of air quality.

The network of the City of Belgrade for automatic monitoring of air quality, which is under the jurisdiction of the City of Belgrade, includes, inter alia, the measuring points on the territory of the municipality of Lazarevac in the town center, where soot, SO_2, NO_2, O_3 and PM_{10} are measured.

1.2.2. Emission Measurements of Air Pollutants

OU Heating Plant Vreoci is a thermal power facility for generating superheated steam used in technological processes, for heating of industrial area and the town of Lazarevac, with a capacity of 2x60 MW. Flue gases are treated by an electrostatic precipitator and discharged into the air through an 80m high stack.

In 2023, individual measurements of air affecting pollutant emissions were conducted by an accredited laboratory of the "Institute for Occupational Safety" JSC Novi Sad. The inspection program included measurements of flue gas state (temperature, pressure and humidity), volumetric flow rate, oxygen content, as well as mass concentrations and emission factors for sulfur dioxide (SO_2), nitrogen oxides (NO_x - NO_2), carbon monoxide (CO), hydrogen chloride, hydrogen fluoride and particulate matter.

The compliance with legal regulations was evaluated by comparing the measured emissions prescribed by the Regulation on limit values of air pollutant emissions from combustion installations (OG of the RS No. 6/2016) and the Large Combustion Plants Directive 2001/80/EC.

Table 14 provides an overview of the results of individual measurements of air pollutant emissions affecting the air quality for the Heating Plant Vreoci, conducted in 2023.

Table 14

BRANCH MB KOLUBARA - OU PROCESSING PLANT		
Individual measurements of air pollutant emissions affecting the air quality in 2023		
Mass concentrations of air pollutants (mg/Nm^3)		
Heat output MWth 120 (2 x 60MW)		
Organizational unit	**Heating Plant Vreoci**	
Boiler	**1**	**2**
Date	**16.03.2023**	**07.03.2023**
SO_2	1.264,97	1.430,84
NO_x (NO_2)	223,63	255,21
CO	131,59	148,85
Particulate matter	144,93	125,13

Note: Pursuant to the Regulation on limit values of air pollutant emissions from combustion installations (Off. Gazette of RS, No. 6/16 and 67/21), Article 5 stipulates that old large combustion plants do not have to comply with individual ELVs if they are included in the preliminary application for the National plan of Emission Reduction Plan from the stationary large combustion installations from the date of entry into force of the said Regulation. Heating Plant Vreoci is included in the National Emission Reduction Plan.

On April 14, 2022, OU Processing Plant received the Decision from the Ministry of Environmental Protection, by which it obtained the approval for the continuous measurement of emissions from stationary sources of pollution in Heating Plant, Coal Refinement Plant Vreoci at the emitter Heating Plant Vreoci. The results of the continuous measurement of emissions from Heating Plant are shown in Table 15 for the year 2023.

Table 15

BRANCH MB KOLUBARA - OU PROCESSING PLANT				
Air pollutant emissions for the year 2023 (t/year)				
Facility	**Heating Plant Vreoci**			
	Particulate matter	**SO_2**	**NO_x (NO_2)**	**CO_2**
BOILER 1	219,3	3.191,7	181,4	156.295,50
BOILER 2				
TOTAL: BRANCH MB KOLUBARA - OU PROCESSING PLANT	**219,3**	**3.191,7**	**181,4**	**156.295,50**

Table 16 shows the fuel consumption for the OU Processing Plant for the year 2023.

Table 16

BRANCH MB KOLUBARA - OU PROCESSING PLANT		
Fuel consumption in 2023		
Facility	**Heating Plant Vreoci**	
	t/year	
	coal	**fuel oil**
BOILER 1	193.740,00	444,90
BOILER 2		
TOTAL: BRANCH MB KOLUBARA - OU PROCESSING PLANT	**193.740,00**	**444,90**

1.2.3. Emission Measurements of Water Pollutants

Process water is used in technological processes and coal refinement (Wet Separation, Drying Plant, Heating Plant) from the water intake from the Kolubara River reservoir. The largest process water amounts are used in the OU Processing Plant to generate superheated steam, ash and slag transport and wet coal separation. OU Processing Plant also includes the Vreoci Waterworks and Dry Separation Waterworks, supplying potable water to industrial facilities and the Vreoci village.

Wastewater is generated during the technological process of lignite processing and refinement (Wet Separation, Drying Plant, Heating Plant) - chemical treatment of boiler water and sanitary water treated by the wastewater treatment plant.

Wastewater treatment plant comprises a receiving tank, filter sedimentation tank, fast mixing tank, Emscher filters, secondary sedimentation tank, lagoons and purified water collectors. The treated water from the wastewater treatment plant is discharged through the gauging station into a channel and transported to the Kolubara River via a 7km long channel.

The Monitoring Programme includes the following types of water:

- the Kolubara River water upstream of the wastewater discharge;
- wastewater at the entrance to the treatment system;
- wastewater at the exit from the treatment system;
- the Kolubara River water downstream of the wastewater discharge.

Testing includes the determination of physical-chemical and microbiological characteristics of water which are of hygiene, water management and technical-technological importance, as follows: water appearance, visible waste materials, water temperature, air temperature, turbidity, color, pH, sulfates, specific conductivity, ammonia, total nitrogen, chloride, $KMnO_4$ demand, COD, BOD_5, suspended solids, sedimentary matter, phenolic matter, and mineral oil.

In 2023, testing was carried out by the authorized and accredited laboratory of the Center for caol and wastewater testing with the Branch Procesing Plant for all parameters it is accredited for. Reports presenting the quality control of the wastewater and ground water under influence of the Branch Processing Plant are submitted to the Ministry of Environmental Protection, Public Water Management Company Srbijavode, City Administration - Department for Utilities and Housing Services - Water Division, Joint Stock Company Elektroprivreda Srbije, and the Secretariat (Environmental Protection Division - Belgrade).

In 2023, no groundwater tests were done because there was no active contract for these works.

Table 17 shows the analysis of wastewater quality data at the wastewater treatment plant inlet and outlet in 2023.

Wastewater treatment plant discharges do not adversely affect the quality of the recipient, i.e., the Kolubara River; there is no significant change in the water quality of the Kolubara River.

Table 17

BRANCH MB KOLUBARA - OU PROCESSING PLANT		
Wastewater treatment plant operation in 2023		
Parameter	**Concentration (mg/l)**	
Pollutant	**Plant inlet**	**Plant outlet**
Suspended solids	1.426,67-4.466,67	490-2.320,00
Organic substances COD	1.263,45-4.363,01	620,68-2.880,00
Phenols	0,36-5,916	0,009-1,831

1.2.4. Emission Measurements of Soil Pollutants

In 2023, no physical and chemical soil tests were performed at the location of OU Processing Plant, since the previous measurements did not reach the values of pollution that require remediation measures in accordance with the Regulation on systematic monitoring of soil condition and quality (Official Gazette of the RS, No. 88/10). As per the same Regulation, soil quality measurements are done every five years unless otherwise required by the pedological profile.

1.2.5. Environmental Noise Measurements

Measurement of noise levels and the impact assessment of industrial plants of OU Processing Plant on the level of noise in the environment in 2022 was performed by the accredited laboratory MONT-R LLC Belgrade.

In 2023, there were no evnironmental noise measurements. Pursuant to Article 23 of the Law on Environmental Noise Protection (Official Gazette of RS, No. 96/2021), regular periodical environmental noise measurements are done once in three years.

1.2.6. Waste

Waste amounts generated in 2023 for OU Processing Plant are shown in Table 18 according to the legislation of the Republic of Serbia in the field of waste management.

Table 18

BRANCH MB KOLUBARA - OU PROCESSING PLANT					
Generated types of waste in 2023					
Rulebook on categories, testing and classification of waste (Official Gazette of the RS, No. 56/2010, 93/2019 and 39/2021)					
No.	**Name**	**Index number**	**Unit**	**Waste quantity**	**Note**
1.	Waste printing toner other than those mentioned in 08 03 17	08 03 18	t	0,631	Waste printing toners
2.	Other fuels (including mixtures)	13 07 03*	t	0,600	Liquid fuels waste – heavy oil
3.	Other emulsions - waste oils not otherwise specified	13 08 02*	t	0,440	Oily water
4.	Plastic packaging	15 01 02	t	0,460	PET packaging
5.	Packaging containing residues of or contaminated by hazardous substances	15 01 10*	t	1,780	Waste barrels of grease and oil
6.	Waste rubber	16 01 03	t	0,020	Conveyor belts with fabric core
7.	Oil filters	16 01 07*	t	0,182	Oil filters
8.	Antifreeze agents containing hazardous matters	16 01 14*	t	0,150	Antifreeze agents containing hazardous matters
9.	Lead batteries	16 06 01*	t	0,250	Lead-acid batteries
10.	Nickel-cadmium batteries	16 06 02*	t	0,200	Nickel-cadmium batteries
11.	Iron and steel	17 04 05	t	22,080	Iron and steel over 3 mm
				38,246	Iron and steel below 3 mm
				11,140	Iron and steel over 6 mm (rails, structure parts)
12.	Cables other than those mentioned in 17 04 10	17 04 11	t	3,020	Waste copper cables, high-voltage cables
13.	Insulation materials other than those mentioned in 17 06 01 and 17 06 03	17 06 04	t	0,920	Sandwich panels
14.	Plastic and rubber	19 12 04	t	2,000	Waste conveyor belt
15.	Paper and cardboard	20 01 01	t	3,510	Paper and cardboard
16.	Fluorescent tubes and other mercury-containing waste	20 01 21*	t	0,041	Fluorescent tubes
17.	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	20 01 36	t	0,154	Various el. equipment
18.	Plastics	20 01 39	t	1,910	Cotherm boards
19.	Metals	20 01 40	t	0,440	Fluo reinforcement – steel sheet

*hazardous waste

B.2. OU KOLUBARA - METAL

Branch MB Kolubara – OU Kolubara-Metal performs designing, manufacturing, assembly and maintenance of mining, energy and processing equipment.

Kolubara-Metal comprises of the following organizational parts, with short descriptions of technological processes:

- Operations Centre;
- Manufacturing unit: mechanical and thermal treatment of materials and molding, machine parts washing, washing oily and greasy surfaces of parts;
- Overhaul unit: overhaul of mining equipment, machine parts washing, cleaning of oily and greasy surfaces of parts;
- Unit Montaža, relocated from the OU complex, performs electromechanical assembly of mining, processing and thermal power equipment and facilities;
- Unit ELMONT, relocated from the OU complex, manufactures parts and assemblies in workshops, revitalization and regeneration of electrical equipment, maintenance of power and telecommunication facilities on-site, and car and electrical equipment washing;
- Maintenance.

All units were constructed based on valid designs and they possess certificates of occupancy.

1.1. Overview and Status of Permits

In 2023, the Branch Kolubara-Metal did not obtain any new permits. Overview and status of inspection checks and decisions is provided in Table 19.

Table 19

BRANCH MB KOLUBARA - OU KOLUBARA-METAL		
Overview and status of inspection controls and decisions in 2023		
No.	**Reference**	**Name**
1.	501-15/2023-08, 10.03.2023.	The order for office inspection supervision in the ELMONT Unit
2.	501-15/2023-08, 29.03.2023.	Record of inspection supervision in the ELMONT Unit

1.2. Monitoring and Environmental Impact

1.2.1. Emission Measurements of Air Pollutants

In accordance with the Law and Decision of Environmental Protection Inspector of the competent Ministry, OU Kolubara-Metal is obliged to measure air pollutant emissions from the production capacities within the Production Unit, as well as boiler emission measurements within Montaža and ELMONT Units.

In accordance with the Contract no. E-04.04-40289/7-2022 dated 9 March 2022 for the provision of service "Air Quality Analysis", individual measurements of pollutant emissions into the air were performed by the accredited laboratory of the “Institute for Occupational Safety“ JSC Novi Sad. The inspection program included measurement of flue gas conditions (temperature, pressure and humidity), volumetric flow rate, as well as mass concentrations and emission factors for sulfur dioxide (SO_2), nitrogen oxides (NO_x - NO_2), particulate matter and organic compounds expressed as total carbon.

The measured emission values were compared with the emission limit values prescribed by the Regulation on measuring emissions of pollutants in the air from stationary sources of pollution (Official Gazette of RS, No. 5/16). The results of emission measurements are shown in Tables 20 and 21, at measuring points.

Table 20

BRANCH MB KOLUBARA - OU KOLUBARA-METAL			
Emission Measurements of Air Pollutants in 2023 – Montaža Unit			
Emitted pollutant	**Montaža Unit coal-fired boiler (E_M) (mg/Nm^3)**	**ELV (mg/Nm^3)**	**Evaluation of the results**
CO	1.430.42	150	Not compliant with legal regulations*
SO_2	559.27	1.000	Compliant with legal regulations*
Nitrogen oxides expressed as NO_2	112.53	500	Compliant with legal regulations*

E_M- the highest value of the pollutant emission measurement results reduced by the value of the measurement uncertainty.
*Legal regulations: Regulation on measuring emissions of pollutants in the air from stationary sources of pollution (Official Gazette of RS, No. 5/16)

Table 21

BRANCH MB KOLUBARA - OU KOLUBARA-METAL			
Emission Measurements of Air Pollutants in 2023 – ELMONT Unit			
Emitted pollutant	**ELMONT Unit - coal-fired boiler (E_M) (mg/Nm^3)**	**ELV (mg/Nm^3)**	**Evaluation of the results**
CO	1.749	1.000	Not compliant with legal regulations*

E_M- the highest value of the pollutant emission measurement results reduced by the value of the measurement uncertainty.
*Legal regulations: Regulation on measuring emissions of pollutants in the air from stationary sources of pollution ("Official Gazette of RS", No. 5/16)

The results of the analysis confirm that there is an emission exceedance, according to the Regulation on measuring emissions of pollutants in the air from stationary sources of pollution (Official Gazette of RS, No. 5/16) for boiler rooms in Montaža Unit and ELMONT Unit in Lajkovac. The stated exceedance for carbon monoxide (SO), which occurred in the boiler rooms of Montaža and ELMONT Units, occurred partly due to the obsolescence of the boilers and congestion during firing.

The results of measuring the emission of pollutants into the air from production capacities in the area of the Production unit are shown in Table 22 for a series of measurements outside the heating season, at measuring points.

Table 22

BRANCH MB KOLUBARA - OU KOLUBARA-METAL						
Emission Measurements of Air Pollutants in 2023 - Production Unit						
Emitted pollutant	**Production Unit— GOSTOL line (E_M) (mg/Nm^3)**	**Production Unit— Steel Structure Hall (left outlet) (E_M) (mg/Nm^3)**	**Production Unit - Plasma cutter (E_M) (mg/Nm^3)**	**Production unit - Paint workshop Line 2 emitter (right outlet) (E_M) (mg/Nm^3)**	**ELV (mg/Nm^3)**	**Evaluation of the results**
Nitrogen oxides expressed as NO_2	<0,6	-	<0,6	-	350	Compliant with legal regulations*
SO_2	<2,00	-	<2,00	-	350	Compliant with legal regulations*
Organic compounds expressed as total carbon	-	8,28	-	-	75	Compliant with legal regulations*
Particulate matter	10,04	-	3,21	92,08	75	Compliant with legal regulations*

E_M- the highest value of the pollutant emission measurement results reduced by the value of the measurement uncertainty.
*Legal regulations: Regulation on measuring emissions of pollutants in the air from stationary sources of pollution (Official Gazette of RS, No. 5/16); Regulation on limit values of air pollutant emissions from stationary sources of pollution, except from combustion installations (Off. Gazette of RS, No. 111/2015) - Appendix, General emission limit values, Emission limit values for total particulate matter and Emission limit values for inorganic gaseous substances.

Based on the measurement results in the Production Unit, nitrogen oxides expressed as NO2, SO2 and organic compounds expressed as total carbon are in accordance with legal regulations at all measuring points, and as for particulate matters, the measured values are in accordance with legal regulations, except for measuring point – Paint workshop Line 2 Emitter (right outlet), which is not in compliance with legal regulations.

1.2.2. Emission Measurements of Matters Affecting Water Quality

Treated water from the wastewater treatment plant (separator), installed at washing points of mining equipment and car parts, as well as regenerated parts of equipment for excavators, flows into atmospheric wastewaters collectors and is conveyed from the OU Kolubara-Metal via storm drainage into the PUTOKS plant and subsequently over a channel into the Kolubara River.

In accordance with the Law on Water (Official Gazette of the RS, No. 30/10, 93/12, 101/16 and 95/18), in 2023 the tests were carried out by the authorized and accredited laboratory of the Center for Coal and Wastewater Testing. The testing included the determination of the physical and chemical and microbiological properties of water that are of hygienic, water management and technical-technological importance, namely: water appearance, water temperature, electrical conductivity, chlorides, consumption of $KMnO_4$, suspended matter, phenolic matter. Results of physical-chemical tests of wastewater are given in Tables 23, 24, 25 and 26.

Table 23

BRANCH KOLUBARA MB – OU KOLUBARA-METAL					
Wastewater physical-chemical testing for 2023 – Q1 **Sampling done on 29 March 2023**					
Tested parameter	**Measured value**				
	I	**II**	**III**	**IV**	**V**
Water temperature (˚C)	13,0	9,0	13,0	13,0	12,0
Appearance - description	turbid	slightly turbid	slightly turbid	slightly turbid	clear
Electrical conductivity (µS/cm)	582	344	375	375	618
Chlorides (mg/l)	9,59	4,17	9,38	5,49	13,20
Sulphates (mg/l)	45,46	54,87	17,49	16,92	32,40
Consumption of $KMnO_4$ (mg/l)	106,2	105,89	298,38	166,26	74,34
Suspended matters (mg/l)	158,00	131,00	55,00	486,00	20,00
Phenolic index (mg/l)	0,007	0,004	-	0,013	0,006

Table 24

BRANCH KOLUBARA MB – OU KOLUBARA-METAL					
Wastewater physical-chemical testing for 2023 – Q2 **Sampling done on 26 July 2023**					
Tested parameter	**Measured value**				
	I	**II**	**III**	**IV**	**V**
Water temperature (˚C)	22,5	26,0	23,5	21,3	22,0
Appearance - description	slightly turbid	slightly turbid	slightly turbid	slightly turbid	turbid
Electrical conductivity (µS/cm)	-	-	-	-	-
Chlorides (mg/l)	6,95	2,08	1,39	10,42	3,47
Sulphates (mg/l)	41,62	37,14	51,87	33,30	4,60
Consumption of $KMnO_4$ (mg/l)	69,22	91,74	186,49	33,19	228,84
Suspended matters (mg/l)	100,00	17,00	102,00	43,00	95,00
Phenolic index (mg/l)	0,009	0,009	0,023	0,015	0,002

Table 25

BRANCH KOLUBARA MB – OU KOLUBARA-METAL				
Wastewater physical-chemical testing for 2023 – Q3 **Sampling done on 27 September 2023**				
Tested parameter	**Measured value**			
	I	**II**	**IV**	**V**
Water temperature (˚C)	20,0	21,1	19,0	21,0

BRANCH KOLUBARA MB – OU KOLUBARA-METAL				
Wastewater physical-chemical testing for 2023 – Q3 Sampling done on 27 September 2023				
Tested parameter	**Measured value**			
	I	**II**	**IV**	**V**
Appearance - description	slightly turbid	turbid	clear	slightly turbid
Electrical conductivity (µS/cm)	-	-	-	-
Chlorides (mg/l)	21,66	2,23	40,86	4,54
Sulphates (mg/l)	45,20	6,55	39,76	6,36
Consumption of $KMnO_4$ (mg/l)	80,92	177,64	54,52	271,20
Suspended matters (mg/l)	74,00	207,00	50,00	580,00
Phenolic index (mg/l)	-	-	-	-

*Reference value: Regulation stipulating emission limit values for pollutants in water and deadlines for their achievement (OG RS, No. 67/2011, 48/2012 and 1/2016). Emission limit values for wastewater containing mineral oils, Table 4.1. Emission limit values at the point of discharge into surface waters.

In Q3, sampling at measuring point III, the Overhaul Unit was not carried out due to the filling of the separator.

Table 26

BRANCH KOLUBARA MB – OU KOLUBARA-METAL					
Wastewater physical-chemical testing for 2023 – Q4 Sampling done on 21 December 2023					
Tested parameter	**Measured value**				
	I	**II**	**III**	**IV**	**V**
Water temperature (˚C)	18,6	8,1	8,8	12,9	8,8
Appearance - description	slightly turbid	slightly turbid	slightly turbid	clear	slightly turbid
Electrical conductivity (µS/cm)	-	-	-	-	-
Chlorides (mg/l)	17,06	3,18	2,09	13,75	2,09
Sulphates (mg/l)	66,84	12,44	29,01	29,91	29,01
Consumption of $KMnO_4$ (mg/l)	33,38	661,66	71,59	21,74	71,59
Suspended matters (mg/l)	7,00	37,00	41,00	11,00	41,00
Phenolic index (mg/l)	0,003	0,024	0,002	0,003	0,002

In 2023, sampling was not performed at measuring point VI in the Overhaul Unit, due to the non-functionality of the separator.

Measuring points II, III and V are outlets from the separator inside the Production Unit, Overhaul Unit and ELMONT in Lajkovac, while measuring points I and IV are storm drainage outlets from the Production Unit and Overhaul Unit.

During sampling at some measuring points, no samples were taken at the inlets due to separator clogging. Some of the presented results do not provide a realistic image of the separator efficiency due to the clogging and abundant precipitation within the intervals before and after sampling.

For the samples taken, the examined parameters meet the values prescribed by the Regulation on limit values for the emission of polluting substances into water and deadlines for reaching them (Official Gazette of the RS, No. 67/2011, 48/2012 and 1/2016). Emission limit values of wastewater containing mineral oils, table 4.1. Emission limit values at the point of discharge into surface waters.

Based on the presented results, it is concluded that the efficiency of wastewater treatment is satisfactory and that the wastewater exiting the separators is characterized of a satisfactory quality, in terms of reaching the values prescribed by the Regulation and that the separators perform their function. Also, the concentration of suspended matter, organic substances (COD) increases significantly).

1.2.3. Waste

Waste amounts generated in 2023 for OU Kolubara Metal, are shown in the Table 27 according to Serbian Waste Management Legislation.

Table 27

BRANCH MB KOLUBARA - OU KOLUBARA - METAL					
Generated types of waste in 2023					
Rules defining waste categories, its testing and classification (OG RS No. 56/2010, 93/2019 and 39/2021)					
Number	**Name**	**Index number**	**Unit**	**Waste amount**	**Note**
1.	Slag from the furnace	10 10 03	t	0,050	Waste slag from the casting
2.	Scraping and processing of ferrometals	12 01 01	t	410,850	Metal scrapings
3.	Scraping and processing of bronze and brass	12 01 03	t	6,300	Brass and aluminum waste scrapings
4.	Waste mineral non-chlorinated hydraulic oils	13 01 10*	t	3,650	Waste hydraulic oil
5.	Other emulsions	13 08 02*	t	49,000	Sludge from the washing area
6.	Packaging containing residues of hazardous substances or contaminated with hazardous substances	15 01 10*	t	0,156	Metal packaging of paints, varnishes and thinners
7.	Metal packaging containing residues of hazardous porous matrix (e.g., asbestos), including empty pressurized containers	15 01 11*	t	0,003	Waste packaging of welding sprays
8.	Absorbents, filter materials (including oil filters not otherwise specified), wipes, protective clothing, contaminated with hazardous substances	15 02 02*	t	3,070	Oily wiping cloth, wipes, working suits
9.	Non-organic waste other than specified under 16 03 03	16 03 04	t	0,020	Waste grinding plates
10.	Copper, bronze, brass	17 04 01	t	13,130	Copper lacquer wire, brass in a piece
11.	Aluminum	17 04 02	t	0,500	Aluminum ropes with steel core
12.	Iron and steel	17 04 05	t	60,000	Below 3 mm (sheet steel, profiles, cabinets, mixed categories...)
				407,386	Over 3 mm (pieces of various sizes and shapes, unclassified, steel ropes, sheets, steel body idlers, structures, crates....)
				558,615	Over 6mm (rails, structure parts...)
				1,500	Waste iron and steel – pad segments
				97,100	Waste iron and steel with rubber lining
				25,500	Incomplete waste disposed cargo, off-road and passenger vehicles their parts
13.	Metal waste contaminated with hazardous substances	17 04 09*	t	4,350	Greased roller bearings
14.	Waste rubber trimmings	19 12 04	t	85,100	Rubber trimmings from drum rubber linings, waste rubber rings
15.	Discarded electrical and electronic equipment other than those under 20 01 01, 20 01 23 and 20 01 35	20 01 36	t	0,748	Electrical and electronic waste

*hazardous waste

The cumulative quantity of waste for the MB Kolubara MB (Open Cast Mines Baroševac, OU Processing Plant and Kolubara-Metal) generated in 2023 is shown in the Table 28 in accordance with Serbian Waste Management Legislation.

Table 28

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
1.	Expired waste paint and varnishes containing organic thinners or other hazardous matters	08 01 11*	t	0,050	0,000	0,000	0,000	0,000	**0,050**	**0,000**	**0,000**	**0,050**	Expired paints
2.	Waste toner for printing other than that specified in 08 03 17	08 03 18	t	0,069	0,000	0,000	0,000	0,000	**0,069**	**0,631**	**0,000**	**0,700**	Waste toners
3.	Waste glues and seals containing organic solvents or other hazardous substances	08 04 09*	t	0,030	0,000	0,000	0,350	0,000	**0,380**	**0,000**	**0,000**	**0,380**	Waste glue
4.	Furnace slag	10 10 03	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,000**	**0,050**	**0,050**	Waste slag from the foundry
5.	Scraping and processing of ferrometals	12 01 01	t	15,000	13,680	0,000	0,000	0,000	**28,680**	**0,000**	**410,850**	**439,530**	Iron and steel scrapings, metal scrapings, clean waste ferrometal scrapings without impurities, ferrous metal waste scrapings with impurities

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
6.	Scraping and processing of non-ferrous metals	12 01 03	t	0,350	0,000	0,000	0,000	0,000	**0,350**	**0,000**	**6,300**	**6,650**	Waste bronze scrapings, aluminum scrapings
7.	Used wax and grease	12 01 12*	t	0,000	0,000	0,000	0,540	0,000	**0,540**	**0,000**	**0,000**	**0,540**	Waste grease
8.	Mineral non-chlorinated hydraulic oils	13 01 10*	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,000**	**3,650**	**3,650**	Waste hydraulic oils
9.	Mineral non-chlorinated motor oils, transmission oils and lubricants	13 02 05*	t	0,000	0,000	0,000	0,000	62,387	**62,387**	**0,000**	**0,000**	**62,387**	Motor oil, gearbox oils
10.	Other oils for insulation and heat transfer	13 03 10*	t	0,400	0,000	0,000	0,000	0,000	**0,400**	**0,000**	**0,000**	**0,400**	Transformer oil
11.	Oily water from oil/water separators	13 05 07*	t	17,180	0,000	18,680	0,000	19,880	**55,740**	**0,000**	**0,000**	**55,740**	Sludge from separators, liquid waste from the oil pit (emulsion)
12.	Other fuels (including mixtures)	13 07 03*	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,600**	**0,000**	**0,600**	Waste heavy oil
13.	Other emulsions	13 08 02*	t	0,000	1,020	1,040	1,000	16,400	**19,460**	**0,440**	**49,000**	**68,900**	Waste emulsions, mechanical emulsions and solutions without halogenated matters, Waste sludge from

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
													washing points, oily water
14.	Plastic containers	15 01 02	t	0,000	0,440	0,000	0,000	0,000	**0,440**	**0,460**	**0,000**	**0,900**	Waste plastic containers
15.	Packaging containing residues of hazardous substances or contaminated with hazardous substances	15 01 10*	t	0,000	0,000	2,000	0,000	13,280	**15,280**	**1,780**	**0,156**	**17,216**	Waste metal barrels from oil and lubricants, waste barrels from grease and oil, metal packaging of paints, varnishes and thinners
16.	Metal packaging containing hazardous solid porous matrix (e.g., asbestos), including empty pressurized containers	15 01 11*	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,000**	**0,003**	**0,003**	Waste packaging of welding sprays
17.	Absorbents, filter materials (including oil filters not otherwise specified), wipes, protective clothing, contaminated with hazardous substances	15 02 02*	t	0,110	0,000	0,100	0,000	1,500	**1,710**	**0,000**	**3,070**	**4,780**	Oily wiping cotton fibers, working suits, wiping clothes
18.	Absorbent, filter materials, wiping cloths and	15 02 03	t	0,031	1,245	0,050	0,080	5,462	**6,868**	**0,000**	**0,000**	**6,868**	PP equipment, working suits,

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
	protective clothing, different than those specified in 15 02 02												personal protective items, air filters
19.	Waste rubber	16 01 03	t	0,000	0,000	0,000	0,000	25,000	**25,000**	**0,020**	**0,000**	**25,020**	Tyres
20.	Oil filters	16 01 07*	t	0,000	0,000	0,000	0,000	6,952	**6,952**	**0,182**	**0,000**	**7,134**	Waste oil filters
21.	Brake pads containing asbestos	16 01 11*	t	0,100	0,350	0,000	1,200	0,000	**1,650**	**0,000**	**0,000**	**1,650**	Waste asbestos braids and brake linings
22.	Antifreeze agent containing hazardous matters	16 01 14*	t	0,000	0,000	0,000	1,020	0,000	**1,020**	**0,150**	**0,000**	**1,170**	Waste antifreeze agent
23.	Dangerous components other than specified in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14	16 01 21*	t	0,000	0,000	0,000	0,000	0,680	**0,680**	**0,000**	**0,000**	**0,680**	Greased hydraulic hoses
24.	Non-organic waste other than that specified in 16 03 03	16 03 04	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,000**	**0,020**	**0,020**	Waste grinding disks
25.	Laboratory chemicals including or containing hazardous matters, including laboratory mixtures	16 05 06*	t	0,000	0,000	0,002	0,000	0,000	**0,002**	**0,000**	**0,000**	**0,002**	Chemicals – disposed from the warehouse
26.	Lead batteries	16 06 01*	t	0,985	0,000	0,400	0,000	13,921	**15,306**	**0,250**	**0,000**	**15,556**	Lead batteries
27.	Nickel-cadmium batteries	16 06 02*	t	0,000	0,000	0,300	0,000	0,000	**0,300**	**0,200**	**0,000**	**0,500**	Nickel-cadmium batteries
28.	Copper, bronze, brass	17 04 01	t	0,780	0,000	0,098.6	0,000	0,000	**0,878**	**0,000**	**13.130**	**14,008**	Copper, copper strips, copper

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
													lacquer wire, insulated copper coils, scrap tin bronze, scrap aluminum bronze, bushings
29.	Aluminum	17 04 02	t	30,000	0,000	0,000	0,000	0,000	**30,000**	**0,000**	**0,500**	**30,500**	Waster aluminum ropes with steel core
30.	Iron and steel	17 04 05	t	0,000	0,000	0,000	0,000	1.020,000	**1.020,000**	**0,000**	**25,500**	**1.045,500**	Waste mechanization
				102,500	5,240	0,000	0,000	0,000	**107,740**	**0,000**	**1,500**	**109,240**	Alloy steel (platform segments, crusher hammers, excavator teeth)
				18,000	0,000	0,000	0,000	0,000	**18,000**	**0,000**	**97,100**	**115,100**	Iron and steel with rubber coating, padded idlers
				70,150	45,590	0,000	0,000	0,000	**115,740**	**11,140**	**558,615**	**685,495**	Iron over 6mm (rails, construction parts, rolls and axles)

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
				25,500	39,880	0,000	73,500	0,000	**138,880**	**38,246**	**60,000**	**237,126**	Iron and steel over 3 mm (steel sheets, electrical switching cabinets. vulcanization container, sheet metal profiles, mixed category cabinets)
				119,900	0,830	23,715	20,000	0,000	**164,445**	**22,080**	**407,386**	**593,911**	Iron and steel over 3 mm (steel sheets, idlers, shafts, structures, steel ropes, pieces of various sizes and shapes, unclassified, steel ropes, sheets, steel bodies, structures, crates, pontoons, rails)
31.	Metal waste contaminated with	17 04 09*	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,000**	**4,350**	**4,350**	Greased roller bearings

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
	hazardous substances												
32.	Cables other than those indicated under 17 04 10	17 04 11	t	15,000	0,000	105,480	50,000	0,000	**170,480**	**3,020**	**0,000**	**173,500**	High voltage copper cables incl. insulation Low voltage copper cables incl. insulation Telephone cable
33.	Insulation materials other than those indicated under 17 06 01 и 17 06 03	17 06 04	t	13,060	0,000	0,000	0,000	0,000	**13,060**	**0,920**	**0,000**	**13,980**	Waste ceramic insulators, sandwich panels
34.	Construction materials containing asbestos	17 06 05*	t	0,000	0,000	0,650	0,000	0,000	**0,650**	**0,000**	**0,000**	**0,650**	Asbestos pipes – disposed from the warehouse
35.	Plastic and rubber	19 12 04	t	0,300	0,000	31,762	0,000	0,000	**32,062**	**2,000**	**85,100**	**119,162**	Waste tyres, plastic and rubber, waste rubber rings, waste trimmings from the drum rubber lining, waste conveyor belt

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
36.	Other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances	19 12 11*	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,000**	**1,500**	**1,500**	Greased rubber-plastic seals
37.	Wastepaper and cardboard	20 01 01	t	0,000	0,000	0,279	0,000	0,000	**0,279**	**3,510**	**0,000**	**3,789**	Plastic and paper, paper and cardboard
38.	Fluorescent tubes and other waste containing mercury	20 01 21*	t	0,000	0,110	0,000	0,000	0,000	**0,110**	**0,041**	**0,000**	**0,151**	Waste fluorescent tubes
39.	Discarded electrical and electronic equipment other than those indicated under 20 01 21 and 20 01 23 containing hazardous components	20 01 35*	t	0,000	0,207	0,050	0,000	0,000	**0,257**	**0,000**	**0,000**	**0,257**	Electro-hydraulic thrustors, electronic equipment, other
40.	Discarded electrical and electronic equipment other than those indicated under 20 01 21, 20 01 23 and 20 01 35	20 01 36	t	0,000	0,245	0,070	0,500	0,000	**0,815**	**0,154**	**0,748**	**1,717**	El. tools, devices and equipment (used electric machines and electric motors, tools, other)
41.	Plastics	20 01 39	t	0,000	0,260	0,010	0,000	0,000	**0,270**	**1,910**	**0,000**	**2,180**	Plastic rings, deck chairs, PET packaging, cotherm boards

BRANCH MB KOLUBARA - OU OPEN CAST MINES, OU PROCESSING PLANT AND OU KOLUBARA METAL													
No	**The Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Generated types of waste in 2023**									
				Field E	**Field B**	**Tamnava – West Field**	**Tamnava – East Field**	**Auxiliary machinery**	**Total: OCM**	**Total: Processing Plant**	**Total: Kolubara Metal**	**Total: MB Kolubara**	**Note**
	Name	**Index No.**		**Waste quantities**									
42.	Metals	20 01 40	t	0,000	0,000	0,000	0,000	0,000	**0,000**	**0,440**	**0,000**	**0,440**	Fluo reinforcement - steel sheet

*hazardous waste

Table 29 provides the implementation of the sold quantity of waste that Branch MB Kolubara had in the period from 1st January – 31st December 2023.

Table 29

BRANCH MB KOLUBARA				
Sold quantity of waste in 2023				
Item No.	**Waste name**	**Waste index number**	**Unit**	**Sold quantity**
1.	Waster printer cartridges other than those specified under 08 03 17	08 03 18	t	0,700
2.	Scraping and processing of ferrous metals with residues (impurities)	12 01 01	t	51,800
3.	Scraping and processing of ferrous metals – corrosion affected waste scrapings of ferrous metal with impurities			300,940
4.	Scraping and processing of ferrous metals – clean waste scrapping of ferrometal without impurities			121,160
5.	Scraping and processing of non-ferrous metals (waste aluminum scrapings)	12 01 03	t	0,280
6.	Scraping and processing of non-ferrous metals (waste bronze scrapings)	12 03 03	t	33,020
7.	Plastic (PET) packaging	15 01 02	t	0,900
8.	Waste working clothes (working suit, shoes, helmets etc.), waste personal protective equipment	15 02 03	t	3,620
9.	Incomplete disposed construction machines	16 01 99/17 04 05	t	1.411,640
10.	End-of-life tyres	16 01 03	t	34,840
11.	Lead batteries (accumulators)	16 06 01*	t	13,720
12.	Copper, bronze, brass (tin bronze pieces)	17 04 01	t	4,580
13.	Copper, bronze, brass (aluminum bronze (pieces)			5,320
14.	Copper, bronze, brass (waste bronze) (bushings, pieces)			0,500
15.	Copper, bronze, brass (bronze pieces)			1,000
16.	Copper, bronze, brass (copper lacquer wire, copper windings with insulation)			10,980
17.	Copper, bronze, brass (copper)			0,140
18.	Aluminum (aluminum ropes with steel core, steel sheet, joints)	17 04 02	t	5,180
19.	Iron and steel, alloy steel platform segments, crusher hammers, excavator teeth, impact plates	17 04 05	t	202,480
20.	Iron and steel, waste iron and steel with rubber lining (idlers), iron and steel with rubber lining (rollers, drums)			149,420
21.	Iron and steel below 3 mm (ungrouped mixed categories, steel sheet, profiles, cabinets…)			231,540
22.	Iron and steel (over 3 mm ungrouped, steel ropes, rollers, profiles, steel sheets, steel roller bodies, structures, crates)			1.443,300
23.	Iron and steel over 6 mm (steel rollers, rails, structures, miscellaneous)			919,640
24.	Iron and steel – waste railway wagons			36,040
25.	LV, HV cables and with copper insulation	17 04 11	t	84,380
26.	Insulation materials other than those specified under 17 06 01 and 17 06 03 – ceramic insulators with iron residues	17 06 04	t	13,060
27.	Waste rubber rings	19 12 04	t	77,940
28.	Paper and cardboard	20 01 01	t	3,440
TOTAL: BRANCH MB KOLUBARA				**5.161,560**

*hazardous waste

Table 30 shows an overview of the realization of the disposed waste of Branch MB Kolubara in the period from 1st January – 31st December 2023.

Table 30

BRANCH MB KOLUBARA				
Disposed waste in 2023				
No.	**Waste name**	**Waste index number**	**Unit**	**Taken over quantities**
1.	Waste paint and varnish containing organic thinners or other hazardous matters – expired paint, ink, glues and resins containing hazardous matters, paints and protective coatings	08 01 11*	t	3,920
2.	Liquid waste from oil pit (emulsion)	13 05 07*	t	9,380
3.	Cleaning grease and oil separators			56,360
4.	Other emulsions - cleaning of existing washing points and sludge from washing points	13 08 02*	t	44,060
5.	Waste oils that are not otherwise specified – other emulsions			6,120
6.	Other emulsions - machine emulsions and solutions not containing halogens			14,340
7.	Packaging containing residues of hazardous substances or contaminated with hazardous substances, oily empty waste barrels	15 01 10*	t	10,400
8.	Packaging containing residues of hazardous substances or contaminated with hazardous substances – plastic grease pots			0,420
9.	Absorbents, filter material (including oil filter not otherwise specified), wiping clothes, protective suits, contaminated with hazardous matters	15 02 02*	t	4,240
10.	Waste wiping cloth, wipes, clothes			2,980
11.	Oil filters	16 01 07*	t	4,180
12.	Hazardous components other than those specified under 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14	16 01 21*	t	1,280
13.	Laboratory chemicals including or containing hazardous matters including laboratory chemicals mixtures	16 05 06*	t	0,005
14.	Glass, plastic and wood containing hazardous substances or contaminated with hazardous substances, greased rubber-plastic seals	17 02 04*	t	3,040
15.	Other waste (including material mixtures) from mechanical treatment of the waste containing hazardous matters (rubber, hydraulic hoses)	19 12 11*	t	0,480
16.	Fluorescent tubes and other wastes containing mercury	20 01 21*	t	0,120
TOTAL: BRANCH MB KOLUBARA			t	**161,325**

*hazardous waste

1.3. Working Environment Monitoring, Occupational Health and Safety

The 2023 Occupational Safety and Health Reports include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

1.3.1. Working Environment Monitoring

- **Noise Measurement in Working Environment**

Working environment noise levels measurement results are provided in Table 31.

Table 31

BRANCH MB KOLUBARA			
Noise in working environment for 2023			
Organizational Unit	**Plant**	**Registered noise level (dB(A))**	**Permitted noise level (dB(A))**
Open cast mines	-		
Processing Plant	In February 2023, in the Processing Plant, an inspection of the working environment conditions for the winter period was carried out. On that occasion, the following noise was measured at: Coal Refinement Plant - WU Wet separation, 40 measuring points, expert report number 2313040000091-220 dated 20/02/2023. Coal Refinement Plant - WU Maintenance, 59 measuring points, number of expert report 23130400000-216 dated 20/02/2023. Coal Refinement Plant - WU Heating Plant, 41 measuring station, expert report number 2313040000091-221 dated 20/02/2023. Coal Refinement Plant – WU Drier, 34 measuring points, expert report number 23130400000-219 dated 20/02/2023. Dry Separation Plant, 59 measuring points, expert report number 2313040000091-217 dated 20/02/2023. Railway Transportation Unit, 33 measuring points, expert report number 2313040000091-218 dated 20/02/2023. Center for Testing Coal and Wastewater, 8 measuring points, expert report number 2313040000091-222 dated 20/02/2023.		85
Metal	-		
Headquarter	In 2023 noise was measured in 6 points within the range of permitted values		85
Project	-		

1.3.2. Occupational Safety

Analysis of high-risk jobs was carried out and it was established that such jobs are adequately protected in line with legislation.

- **Training of Employees**

Occupational health and safety training is conducted when new employees are employed, when the existing employees are transferred to other positions, and when new technologies and tools are introduced. Training courses are both theoretical and practical.

Theoretical (general) training is performed by the Health and Safety Division introducing normative acts in the field of occupational safety and health to employees. Practical training is conducted at the workplace and implemented by line managers. Theoretical training of newly recruited employees and the ones transferred to new positions is performed regularly.

In 2023, occupational health and safety training was performed for 2,093 persons in MB Kolubara (the number includes those who are newly employed, transferred to other positions, contractors, students employed at MB Kolubara via some other companies). Apart from those persons previously mentioned, the training and knowledge checks through tests is regularly being done by all the employees in MB Kolubara. This accounts for 10,689 employees.

Under the Law on Mining and Geological Exploration, Occupational Health and Safety Law, Law on Fire Fighting, OHS Regulations, and FP Regulations, the employer is under the obligation to perform OHS and FP testing of employees.

The training of employees is conducted in accordance with “Occupational Health and Safety Training Programme”. Training and testing is conducted for employees working at job positions with higher risk, as well as for employees working at job positions that are not of higher risk.

Knowledge checks from the field of OHS and FP are compulsory for every employee of Branch MB Kolubara.

Table 32 shows the overview of the number of employees who have undergone the knowledge checks.

Table 32

BRANCH MB KOLUBARA					
Knowledge test in 2023					
Organizational Unit	**Number of employees**	**Planned to be trained**	**%**	**Trained**	**%**
Open cast mines	6.053	5.956	98,40	4.794	80,49
Processing Plant	1.252	1.345	107,43	1.323	98,36
Metal	1.732	1.750	101,04	1.661	94,91
Headquarter	1.562	1.457	93,28	1.407	96,57
Project	90	89	98,89	81	91,01
TOTAL: BRANCH MB KOLUBARA	**10.689**	**10.597**	**99,14**	**9.266**	**87,44**

Note: Some employees underwent more than one training. for example. due to transfer to other jobs and similar.

- **Injuries at Work**

Table 33 provides the 2023 injuries at work data.

Table 33

BRANCH MB KOLUBARA						
Injuries at work in 2023						
Organizational Unit	**Number of employees**	**Injuries – employees' ratio**				
		Mild	**Severe**	**Fatal**	**Total**	**%**
Open cast mines	6.053	87	24	0	111	1,83
Processing Plant	1.252	13	3	0	16	1,28
Metal	1.732	28	8	0	36	2,08
Headquarter	1.562	6	1	0	7	0,45
Project	90	0	0	0	0	0,00
TOTAL: BRANCH MB KOLUBARA	**10.689**	**134**	**36**	**0**	**170**	**1,59**

1.3.3. Health Protection

Medical examinations are performed by the Occupational Health Department of Dr. Đorđe Kovačević Lazarevac Medical Centre. Periodic medical examinations are performed annually, and employees working in high-risk workplaces and those operating at computer screens are referred to examination.

Table 34 presents periodic examinations data for employees working in high-risk workplaces in 2023.

Table 34

BRANCH MB KOLUBARA											
Employees' work capability in 2023											
Organizational Unit	**Number of employees**	**Previous and periodical examinations**				**Work capability**					
		Referred to examination		**Examined**		**Capable**		**Limited Capability**		**Incapable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Open cast mines	6.053	6.281	103,77	5.550	88,36	2.819	50,79	2.556	46,05	175	3,15
Processing Plant	1.252	1.402	111,98	1.312	93,58	994	75,76	282	21,49	36	2,74
Metal	1.732	1.556	89,84	1.509	96,98	1.212	80,32	236	15,64	61	4,04
Headquarter	1.562	472	30,22	450	95,34	301	66,89	148	32,89	1	0,22
Project	90	7	7,78	7	100,00	1	14,29	6	85,71	0	0,00
TOTAL: BRANCH MB KOLUBARA	**10.689**	**9.718**	**90,92**	**8.828**	**90,84**	**5.327**	**60,34**	**3.228**	**36,57**	**273**	**3,09**

1.4. Stakeholders Submissions

Stakeholders submissions for 2023 are shown in Table 35.

Table 35

BRANCH MB KOLUBARA			
Stakeholders Submissions in 2023			
Organizational Unit	**Submissions (number, date and by whom submitted**	**Complaint subject**	**Measures taken**
Open cast mine Field E with disposal sites in fields A, B, C, D and Turija	Decision of the Ministry of Environmental Protection, Department for Monitoring and Preventive Actions in the Environment, Division for Pollution from Industry, Packaging and Packaging Waste No.: 000296300 2023 14850 007 014 070 001 dated 30/11/2023	Air quality, noise level	Implementation of the defined measures in ongoing

The notification of the upcoming inspection dated 6 November 2023 - in accordance with the Law on Environmental Impact Assessment and the Law on Environmental Protection, it is necessary to carry out extraordinary, field and office inspection supervision at the location of the open cast mine Field E with the disposal sites at fields A, B, C, D and Turija.

The order for inspection supervision dated 6 November 2023 - the subject of inspection supervision is: Control of the actions of the supervised subject according to the provisions of the Law on Environmental Impact Assessment and according to the measures and conditions from the Environmental Impact Assessment Study approved by the Ministry of Environmental Protection, according to the submission of a natural person from the settlement of Zeoke, which referred to the implementation of protection measures and the program for monitoring the impact on the environment - monitoring from the Environmental Impact Assessment Study of Lignite Exploitation on the open cast mine Field E with disposal sites on fields A, B, D and Turija. Field inspection supervision was planned and carried out on 13 November 2023.

The Record of the inspection supervision of the Ministry of Environmental Protection, Department for Environmental Monitoring and Preventive Actions, Division for Pollution from Industry, Packaging and Packaging Waste dated 27 November 2023 referring to the implementation of the Law on Environmental Impact Assessment and its by-laws - Branch Open Cast Mining Baroševac, OCM Field E.

The Decision of the Ministry of Environmental Protection, Department for Environmental Monitoring and Preventive Actions, Department for Pollution from Industry, Packaging and Packaging Waste

dated 30 November 2023 which orders the EPS operator, Branch MB Kolubara, OCM Baroševac, Lazarevac, to meet the conditions and implement the measures defined in the decision on granting consent to the Environmental Impact Assessment Study of the lignite exploitation project on the open cast mine Field E with disposal sites on fields A, B, C, D and Turija on the territory of SM Lazarevac, i.e., to carry out: ambient air quality testing and environmental noise level testing within the area of influence of OCM Field E at the measuring point in the village of Zeoke - settllement Strana by an authorized legal entity.

2. BRANCH THERMAL POWER PLANTS AND OPEN CAST MINES KOSTOLAC - OCM

TPPs & OCM Kostolac branch comprise the following organisational units:

- **TPP Kostolac A**
- **TPP Kostolac B**
- **Open Cast Mine Drmno (OCM Drmno)**
- **Open Cast Mine Cirikovac (OCM Cirikovac)**

2.1. Overview and Status of Permits

In 2023, the status of existing permits, licenses and other required approvals did not change in Branch TPPs & OCM KOSTOLAC – Open cast mines.

2.2. Monitoring and Environmental Impact

2.2.1. Air Quality Measurements

Air quality in the vicinity of open-cut mines and TPP Kostolac A and TPP Kostolac B is carried out within a unique network of measuring points.

2.2.2. Emission Measurements of Matters Affecting Water Quality

- **Dewatering System Waters**

Water from the dewatering system of OCM Drmno are mostly drained into the cooling water sump of TPP Kostolac B and some minor quantites into the Mlava River. Water from the drainage system of OCM Cirikovac is accumulated near the open cast mine. Water quantities for OCM Klenovnik are small and are not being measured.

The control of the quality of drainage water from the dewatering system of OCM Drmno in 2023 was carried out by the authorized legal entity "Institute for Occupational Safety" - Novi Sad. Table 36 shows the results of the drainage water quality from the OCM Drmno for 2023.

Table 36

Kostolac TPPs & OCMs Branch – OPEN CAST MINES			
Drainage water quality in 2023			
OCM Drmno	**Drainage well 3 (inlet into pumping lake TPP B)**	**Drainage well 75 (North part OCM Drmno)** **Drainage well 68 (the eastern contour of OCM Drmno)**	**Overflow station - Mlava OCM Drmno**
Total non-organic nitrogen	0,20-1,98	0,978-14,10	2,12-6,42
Sulphates (mg/l)	6,15-18,60	5,63-12,64	38,71-88,98
Phenols (mg/l)	<0,006	<0,006	<0,006
Electrical conductivity (µS/cm)	392-884	216-710	679-853
Arsenic (mg/l)	<0,01	<0,01	<0,01

Note: the Drainage well 75 has not been exploited since May 2023, due to reconstraction of ECCP system in OCM Drmno. Since June, the water from the Drainage well 68, located in the eastern contour of OCM Drmno, has been sampled.

- **Sanitary Water**

The water that is used for drinking and sanitary needs at OCM Drmno comes from the source of Bradarac. Drinking water quality control is carried out by the authorized legal entity Institute for Health Protection from Požarevac. The control of the quality of sanitary water from the drainage system of OCM Drmno in 2023 was carried out by the authorized laboratory "Institute for Occupational Safety" - Novi Sad.

Table 37 shows data about sanitary waste water treatment plant in 2023.

Table 37

TPPs & OCMs KOSTOLAC Branch –OPEN CAST MINES	
Sanitary wastewater treatment plant operation in 2023	
Pollutants concentration (mg/l)	**BIODISC** **OCM Drmno**
Suspended solids (mg/l)	
Plant inlet	649,4-1.613,6
Plant outlet	50-56
5-day biological oxygen demand (BOD_5)	
Plant inlet	35-180
Plant outlet	3,8-12
Operation efficiency evaluation	Meets guaranteed values for suspended solids and BOD for all measurements

Table 38 shows data on the quantities of water consumed for drinking and sanitary needs, as well as the quantity of drainage water from OCM Drmno in 2023.

Table 38

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES				
Water quantities in 2023 (m^3/year)				
Open cast mine		**Dewatering**	**Sanitary water for the OCM needs**	
		Total water quantity	**Water lines**	**Total quantity (m^3)**
Klenovik			2.564	2.564
Cirikovac			2.447	2.447
Drmno	**Surface dewatering**	6.981.593,9	47.627	42.194.703,38
	Deep dewatering	35.165.482,48		
TOTAL: TPPs & OCM KOSTOLAC – OPEN CAST MINES		**42.147.076,38**	**52.638**	**42.199.714,38**

2.2.3. Emission Measurements of Matters Affecting Soil Quality

Under the Law of Soil Protection (OG RS № 112/2015) and Act on Systematic Monitoring of the Status and Quality of Soil (OG RS No. 88/2020) sampling of the soil at OCM Drmno has been done by the Institute for occupational protection and enivornmental protection – Belgrade LLC.

Sampling has been executed on 27 September 2023 at the following locations:

1. Transformer station Rudnik 3;
2. Temporary storage for hazardous waste;
3. Fuel and lubricant storage;
4. Biodisc;
5. Transformer station Rudnik 1;
6. Heavy duty mechanization workshop;
7. Transformer station Rudnik 2.

Tables 39 and 40 show concentration of substances affecting the soil quality.

Table 39

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES								
Concentration of substances affecting the soil quality in 2023								
Sampling point	Chemical properties							
	pH of the soil		Easily accessible		Total nitrogen content	Humus content	Anion content	
	H_2O	KCl	P_2O_5 mg/100g	K_2O mg/100g	% N	%	NO_2^- mg/kg	NO_3^- mg/kg
Transformer station Rudnik 3 (Z31/1)	8,1	7,7	<1	26,4	0,14	3,1	3,3	10,4
Transformer station Rudnik 3 (Z31/2)	8,1	7,7	<1	25,5	0,13	2,6	<0,5	5,9
Transformer station Rudnik 3 (Z31/3)	8,2	7,7	<1	20,2	0,11	2,2	5,4	14,2
Temporary storage for hazardous waste (Z32/1)	8,2	7,6	<1	18,3	0,12	2,5	<0,5	10,8
Temporary storage for hazardous waste (Z32/2)	8,1	7,6	<1	21,4	0,12	2,4	1,6	10,2
Fuel and lubricant storage (Z33/1)	8,0	7,6	<1	27,3	0,19	4,1	5,7	21,9
Fuel and lubricant storage (Z33/2)	8,0	7,9	5,9	28,5	0,11	2,1	5,9	14,3
Biodisc (Z34)	8,2	7,8	4,0	11,3	0,05	0,7	<0,5	5,4
Transformer station Rudnik 1 (Z35/1)	8,2	7,9	<1	18,6	0,11	2,3	<0,5	13,6
Transformer station Rudnik 1 (Z35/2)	8,2	7,8	<1	22,2	0,15	3,2	5,2	64,0
Transformer station Rudnik 1“ (Z35/3)	8,1	7,9	<1	25,1	0,11	2,3	<0,5	66,6
Heavy duty mechanization workshop (Z36/1)	8,2	8,0	<1	22,8	0,12	2,4	<0,5	6,6
Heavy duty mechanization workshop (Z36/2)	8,2	8,0	<1	42,8	0,14	3,1	<0,5	4,7
Transformer station Rudnik 2 (Z37/1)	8,1	7,8	<1	37,3	0,18	4,0	4,3	12,9
Transformer station Rudnik 2 (Z37/2)	8,1	7,8	41,5	33,1	0,12	2,4	7,2	48,7
Transformer station Rudnik 2 (Z37/3)	8,2	7,8	<1	26,0	0,10	1,9	<0,5	8,7

Table 40

TPPs & OCMs KOSTOLAC Branch – OPEN-CAST MINES																				
Concentration of substances affecting the soil quality in 2023																				
Sampling point	**Heavy metal content**																			
	Accessible form of heavy metals mg/kg										**Total heavy metal content mg/kg**									
	Cr	**Ni**	**Pb**	**Cu**	**Zn**	**Cd**	**Hg**	**B**	**As**	**% Fe**	**Cr**	**Ni**	**Pb**	**Cu**	**Zn**	**Cd**	**Hg**	**B**	**As**	**%Fe**
Transformer station Rudnik 3 (Z31/1)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	2,3	27,0	36,0	23,8	13,6	16,8	<0,4	1,0	<0,1	7,2	1,4
Transformer station Rudnik 3 (Z31/2)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,7	29,9	39,1	24,9	14,2	46,2	<0,4	0,4	<0,1	8,0	1,4
Transformer station Rudnik 3 (Z31/3)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,6	23,2	31,7	21	11,1	38,0	<0,4	0,1	<0,1	7,9	1,1
Temporary storage for hazardous waste (Z32/1)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	3,0	28,9	35,3	23,3	14,2	47,6	<0,4	0,4	<0,1	7,9	1,3
Temporary storage for hazardous waste (Z32/2)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,5	27,6	36,3	21,2	12,9	66,0	0,4	<0,1	<0,1	8,4	1,1
Fuel and lubricant storage (Z33/1)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,2	25,7	36,4	23,3	14,7	92,5	0,4	0,5	<0,1	8,4	1,0
Fuel and lubricant storage (Z33/2)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,5	36,3	19,9	21,7	13,1	43,5	0,9	<0,1	<0,1	7,2	1,3
Biodisc (Z34)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	8,3	38,2	46,6	22,7	8,9	42,5	0,8	<0,1	<0,1	7,7	1,4
Transformer station Rudnik 1 (Z35/1)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,5	34,8	32,7	28,2	25,3	49,9	0,6	<0,1	<0,1	8,3	1,9
Transformer station Rudnik 1 (Z35/2)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	<0,1	33,0	28,2	140,9	16,1	73,0	0,5	<0,1	<0,1	8,8	2,0
Transformer station Rudnik 1“ (Z35/3)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,3	33,0	29,5	469,7	15,7	60,8	<0,4	<0,1	<0,1	8,0	2,0
Heavy duty mechanization workshop (Z36/1)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,8	30,0	31,0	26,7	12,7	36,3	<0,4	<0,1	<0,1	8,1	1,8
Heavy duty mechanization workshop (Z36/2)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,2	32,7	33,5	27,9	14,1	40,0	0,4	<0,1	<0,1	8,8	1,9
Transformer station Rudnik 2 (Z37/1)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,2	40,9	37,6	31,1	21,2	21,2	<0,4	0,9	1,2	9,0	2,2
Transformer station Rudnik 2 (Z37/2)	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,3	42,9	40,4	32,6	20,7	64,6	<0,4	0,1	<0,1	8,8	2,1
Transformer station Rudnik 2 (Z37/3)	<0,25	<0,4	<2,5	<0,1	3,0	<0,4	<0,1	<0,1	<0,1	1,0	34,8	32,9	20,7	19,4	47,2	<0,4	<0,1	<0,1	9,6	2,2

- **Overview of the Expropriated and Reclaimed Area**

An overview of expropriated and reclaimed areas in Branch TPPs and OCMs Kostolac, which includes the periods by the end of 2022, changes in 2023 and total area as of 2023, by location and specified types of reclaimed area is given in Table 41.

The total expropriated area is 4.570,19 ha**.**

The land registered in the real estate cadastre amounts to a total of 582,97 ha.

The area of the land which purpose was changed is increased in 2023 by 4,29 ha and amounts to 458,61 ha.

The areas of land under construction remained unchanged compared to 2023 and amount to a total of 1,41 ha.

The area of land under the landfill remained unchanged in comparison to 2023 and amounts to a total of 859,20.

Reclaimed areas include area under forest, arable land, orchard, and nursery.

In 2023, the reclaimed area under the forest increased by 7,00 ha, and as of 2023, they amount to a total of 186,21ha.

In 2023, the reclaimed area under arable land were increased by 25,00 ha, and as of 2023, they amount to a total of 392,80 ha.

In 2023, the reclaimed area under orchards was increased by 2,00 ha, and as of 2023, they amount to a total of 4,00 ha.

In 2023, the reclaimed area under nursery was increased by 7,50 ha, and as of 2023, they amount to a total of 15,00 ha.

Table 41

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES																			
Overview of expropriated and reclaimed area by the end of 2023																			
OCM	Expropriated area (ha)	Area of land registered in the cadaster (ha)		Area of land with changed purpose (ha)		Area of land under facilities (ha)		Area of land under the disposal site (ha)				Reclaimed area (ha)							
								Internal		External		Forests		Arable land		Orchards		Nursery	
		by 2022	in 2023	by 2022	in 2023	by 2022	in 2023	by 2022	in 2023	by 2022	in 2023	by 2022	in 2023	by 2022	in 2023	by 2022	in 2023	by 2022	in 2023
Klenovnik	472,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Cirikovac	1.047,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Drmno	2.881,64	363,91	100,01	454,32	4,29	1,41	0,00	859,20	0,00	0,00	0,00	53,01	7,00	367,80	25,00	2,00	2,00	7,50	7,50
Klicevac	169,55	119,05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	126,20	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL	**4.570,19**	**582,97**		**458,61**		**1,41**		**859,20**		**0,00**		**186,21**		**392,80**		**4,00**		**15,00**	

2.2.4. Environmental Noise Measurements

The measurement of the noise level in the environment as part of regular monitoring for the winter and summer period was carried out in the vicinity of OCM Drmno. The ultimate goal of the measurement is the determination of the relevant noise level, which is given through the measured equivalent levels and possible additions to the level depending on the type of observed noise.

Noise measurement has been executed in three intervals of 15 minutes for day and evening and two intervals of 15 minutes for night at three measuring points:

1. MMB – 1D – Measuring point in village Drmno on the West side of the mine nearby crushing plant (44o43'13.50"N и 21o13'24.47"E);
2. MMB – 2B – Measuring point nearby village Bradarac on the South side of the mine (44o41'50.55"N и 21o13'54.44"E);
3. MMB – 3K – Measuring point on the North-East side of the mine near village Klicevac (44o44'53.14"N и 21o16'53.43"E).

The measurement was carried out by the Institute for Public Health in Požarevac. The measurements were done on 23 March 2023 and 24 March 2023. The noise measurements were carried out in accordance with the Law on Protection against Noise in the Environment (Official Gazette of the RS No. 96/2021), the Rulebook on Noise Measurement Methods, Content and Scope of Noise Measurement Reports (Official Gazette of the RS No. 139/2022), Regulation on noise indicators, limit values, methods for evaluating noise indicators, disturbance, and harmful effects of noise in the environment (Official Gazette of RS No. 75/10.

Table 42 shows data of the measured noise level in the environment at the measuring point MMB – 1D.

Table 42

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES			
Noise level in 2023 (dB)(A) – Measuring point MMB-1D			
No. of measurement	**Reference time interval of the measuring (h)**	**Reference level $L_{Raeq,15min.}$ (63Hz – 8kHz) dB**	**Limit value dB (A)***
1.	12^h (06^h – 18^h)	45,7	-
2.		54,5	
3.	4^h (18^h – 22^h)	56,5	
4.	8^h (22^h – 06^h)	55,8	-
5.		55,9	
*there are no acoustic zones of the area			

Table 43 shows the data of the measured noise level in the environment at the measuring point MMB - 2B.

Table 43

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES			
Noise level in 2023 – Measuring point MMB- 2B			
No. of measurement	**Reference time interval of the measuring (h)**	**Reference level $L_{Raeq,15min.}$ (63Hz – 8kHz) dB**	**Limit value dB (A)***
1.	12^h (06^h – 18^h)	48,0	-
2.		54,4	
3.	4^h (18^h – 22^h)	44,3	
4.	8^h (22^h – 06^h)	48,7	-
5.		51,9	
*there are no acoustic zones of the area			

Table 44 shows data of the measured environmental noise level at the working location MMB-3K.

Table 44

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES			
Noise level in 2023 – measuring point MMB-3K			
No. of measurement	**Reference time interval of the measuring (h)**	**Reference level $L_{Raeq,15min.}$ (63Hz – 8kHz) dB**	**Limit value dB (A)***
1.	12^h (06^h – 18^h)	39,2	-
2.		42,8	
3.	4^h (18^h – 22^h)	46,6	
4.	8^h (22^h – 06^h)	49,2	-
5.		49,4	
*there are no acoustic zones of the area			

Based on the noise measurements in communal area of the open cast mine Drmno, at three measurement points, the following noise indicators have been obtained and shown in Table 45.

Table 45

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES				
Noise indicators in 2023 (dB) – open cast mine Drmno district				
Name of the measuring point	**Measuring point**	**Reference level $L_{Raeq15min}$ (dB) day 12^h (06^h – 18^h)**	**Reference level $L_{Raeq15min}$ (dB) evening 4^h (18^h – 22^h)**	**Reference level $L_{Raeq15min}$ (dB) Night 8^h (22^h – 06^h)**
MMB – 1D	Measuring point at the west side of the OCM	45,7	56,5	55,8
		54,5		55,9
MMB – 2B	Measuring point at the south side of OCM	48,0	44,3	48,7
		54,4		51,9
MMB – 3K	Measuring point at the north-east side of OCM	39,2	46,6	49,2
		42,8		49,4

At the time of measurement and preparation of the report, there is no data on acoustic zoning next to the open cast mine Drmno, and therefore no comparison with limit values and evaluation of measurement results was made, because the local self-government department did not determine acoustic zones in the settlement.

According to the assumed acoustic zone to which the measurement sites belong and the criteria given in the Regulation on noise indicators, limit values, methods for evaluating noise indicators, disturbance, and harmful effects of noise in the environment (Official Gazette of RS, No. 75/2010), the measurements results do not exceed the maximum permissible values (MPV) which are 65 dB during the day and 55 dB for the night period.

- **Investigation of the Environement Zero Atate in the Area of the Zapadni Kostolac Coal Deposit**

In 2023, the investigation of the environment zero state was started in the area of the new coal deposit Zapadni Kostolac.

Ambient Air Quality Tests

Ambient air quality tests were performed at the following locations:

The village of Batovac - determination of the content of total particulate matters (TPM), the content of sulfur dioxide and soot, the concentration values of suspended particles PM10 and heavy metals (Pb, Cd, As and Ni).

The village of Dubravica - determination of the content of total particulate matters (TPM), the content of sulfur dioxide and soot, the concentration values of suspended particles PM10 and heavy metals (Pb, Cd, As and Ni).

The tests were carried out by the authorized laboratory "Institute for Mining and Metallurgy Bor" from August to December 2023. The assessment of air quality compliance with legal regulations was performed by comparing the measured values with the values prescribed by the Regulation on monitoring conditions and air quality requirements (Official Gazette No. 11/2010, 75/2010, 63/20). Air quality in 2023 is shown in Table 46.

Table 46

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES						
Air quality in 2023 – Zapadni Kostolac coal deposit						
Data compliance with legal requirements (number of data or number of days exceeding prescribed values)						
Air quality indicators		**TSM contents ($mg/m^2/day$)**	**Soot ($\mu g/m^3$)**	**SO_2 concentration**		**($\mu g/m^3$)**
Averaging period		**Maximum permissible value (MPV)**	**Maximum permissible concentration (MPC)**	**LV**	**TV**	**TL**
One hour		-	-	500	350	0
***One day**		-	50	125		-
****One month**		450	-			
*****Calendar year**		200	50	50		-
	Measuring point					
*	**1**	-	No exceedance	No exceedance		
	2	-	2-day exceedance in December	No exceedance		
**	**1**	No exceedance	-	-		
	2	No exceedance	-	-		
***	**1**	No exceedance	No exceedance	No exceedance		
	2	No exceedance	No exceedance	No exceedance		
Air quality indicators		**Particulate matters PM10 (µg/m3)**				
Averaging period		**LV**	**TV**	**TL**		
***One day**		50	75	0		
****Calendar year**		40	48	0		
*	**1**	No exceedance	No exceedance	-		
	2	1-day exceedance (December) of total 35 days	1-day exceedance (December) of total 35 days	-		
***	**1**	No exceedance	No exceedance	-		
	2	No exceedance	No exceedance	-		

Surface Water Quality Test - the Velika Morava River

The surface water quality tests of the Velika Morava River were done at two measuring points (southwest and west of the deposit). The quality control of surface water was carried out by the

authorized legal entity "Institute for Occupational Safety" - Novi Sad in May 2023. The quality of surface water is shown in Table 47.

Table 47

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES		
Surface water quality – Velika Morava – Zapadni Kostolac coal deposit		
Tested parameters	**Velika Morava - 1a – western side of Zapadni Kostolac coal deposit**	**Velika Morava 26 – southwestern side of Zapadni Kostolac coal deposit**
Nitrate nitrogen	0,045	0,080
Sulphates	38,01	40,55
Electrical conductivity	437	443
Arsenic	<0,01	<0,01
Mineral oils	0,10	0,10
Temperature	16,3	16,2
Nickel	<0,008	<0,008
Total phosphorus	<0,008	<0,008

For both samples, the tested physical and chemical parameter nitrite nitrogen meets class III, while the other parameters meet class II according to the values stipulated in the Regulation on limit values of polluting substances in surface and underground waters and sediment and times for reaching them (Official Gazette of SRS, no. 50/2012) and according to the values provided by the Rulebook on Hazardous Substances in Water (Official Gazette of SRS, No. 31/82) for Class I and II.

Environmental Noise Measurement

Environmental noise measurement was done in three 15-minute intervals each for the daytime and night periods and two 15-minute intervals each for the night period at five locations located near the coal deposits (Petka village, Ostrovo village, Zabela village, Živica village and Brežane village). The measurement was done by the Institute for Public Health in Požarevac in June 2023. Noise indicators in 2023 are shown in Table 48.

Table 48

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES				
Noise indicators in 2023 (dB) – Zapadni Kostolac coal deposit surrounding area				
Measuring point designation	**Measuring point**	**Reference level $L_{Raeq,15min}$ (dB) daytime 12h (06h – 18h)**	**Reference level $L_{Raeq,15min}$ (dB) evening 4h (18h – 22h)**	**Reference level $L_{Raeq,15min}$ (dB) night 8h (22h – 06h)**
MMB 1 – Ostrovo	Measuring point on the northern side of the future coal deposit	37,0	36,8	35,3
		40,6		34,9
MMB 2 - Petka	Measuring point on the eastern side of the future coal deposit	43,0	42,1	40,2
		35,0		40,6
MMB 3 - Zabela	Measuring point on the southeastern side of the future coal deposit	37,2	40,6	41,4
		39,0		40,4
MMB 4 - Živica	Measuring point on the southern side of the future coal deposit	45,6	45,4	34,5
		45,0		34,7
MMB 5 - Brežane	Measuring point on the southwestern side of the future coal deposit	44,3	44,2	36,7
		44,2		36,4

At the time of measurement and preparation of the report, there was no data on acoustic zoning in the vicinity of the Zapadni Kostolac coal deposit, and therefore no comparison with the limit values and assessment of the measurement results were made.

According to the assumed acoustic zone to which the measurement sites belong and the criteria given in the Regulation on noise indicators, limit values, methods for evaluating noise indicators, disturbance and harmful effects of noise in the environment (Official Gazette of RS, No. 75/2010), the results measurements do not exceed the maximum permissible values (MPV) which are 65 dB during the day and 55 dB for the night period.

Soil Quality Tests

Soil quality testing was done at 24 measuring points in the vicinity of coal deposits. The tests were carried out by the Institute of Occupational Safety and Environmental Protection - Belgrade LLC in September 2023. The concentration of substances that affect soil quality in 2023 are shown in Tables 49 and 50.

Table 49

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES								
Concentration of substances affecting the soil quality in 2023 – Zapadni Kostolac coal deposit								
Sampling point	Chemical properties							
	pH of the soil		Easily accessible		Total nitrogen content	Humus content	Anion content	
	H2O	KCl	P2O5 mg/100g	K2O mg/100g	% N	%	NO2 – mg/kg	NO3 – mg/kg
Z2	7,8	7,4	381,3	36,2	0,11	2,2	13,4	17,4
Z3	8,1	7,4	6,7	22,9	0,11	2,2	13,7	33,7
Z9	8,2	7,7	186,4	26,3	0,07	1,1	1,8	19,9
Z10	6,7	5,8	<1	23,1	0,10	2,0	<0,5	17,8
Z11	8,2	7,6	<1	23,0	0,12	2,3	7,2	20,8
Z12	7,8	7,4	89,1	39,7	0,11	2,1	<0,5	142,0
Z13	7,0	5,7	3,0	25,0	0,15	3,2	<0,5	136,1
Z14	7,8	7,2	75,8	29,9	0,13	2,8	<0,5	267,1
Z15	6,7	5,4	7,6	25,3	0,11	2,3	<0,5	172,8
Z16	6,6	5,4	6,1	35,6	0,15	3,2	3,3	100,5
Z17	6,4	5,3	2,1	23,7	0,18	4,0	<0,5	98,0
Z18	7,8	7,3	4,6	22,5	0,10	1,8	<0,5	20,4
Z19	6,5	5,3	9,9	22,3	0,10	1,9	<0,5	72,5
Z20	7,5	6,8	4,7	24,6	0,12	2,4	<0,5	61,5
Z21	7,4	6,2	2,4	21,9	0,07	1,1	<0,5	17,6
Z22	8,1	7,5	<1	18,3	0,06	1,0	<0,5	<1
Z23	7,9	7,4	<1	22,4	0,09	1,7	<0,5	39,2
Z24	7,5	6,5	4,0	22,3	0,12	2,5	<0,5	15,6
Z25	7,9	6,3	8,2	20,6	0,12	2,4	<0,5	11,1
Z26	7,6	6,3	27,3	28,6	0,08	1,4	<0,5	18,4
Z27	7,3	5,9	6,8	19,2	0,07	1,1	<0,5	9,1
Z28	8,0	7,2	4,9	26,3	0,11	2,1	10,8	131,6
Z29	8,0	7,4	29,4	31,6	0,10	2,0	23,7	99,4
Z30	7,9	7,5	46,5	48,8	0,13	2,8	8,0	28,0

Table 50

TPPs & OCMs KOSTOLAC Branch – OPEN-CAST MINES																				
Concentration of substances affecting the soil quality in 2023 – Zapadni Kostolac coal deposit																				
Sample	**Metal content**																			
	Accessible form of heavy metals mg/kg										**Total heavy metal content mg/kg**									
	Cr	**Ni**	**Pb**	**Cu**	**Zn**	**Cd**	**Hg**	**B**	**As**	**%Fe**	**Cr**	**Ni**	**Pb**	**Cu**	**Zn**	**Cd**	**Hg**	**B**	**As**	**%Fe**
Z2	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,3	97,9	154,9	59,3	27,4	89,5	<0,4	2,1	<0,3	11,1	2,1
Z3	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	1,3	104,5	183,7	79,3	33,1	114,1	<0,4	2,0	0,4	2,0	2,4
Z9	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,6	30,2	51,4	18,1	16,6	46,0	<0,4	0,5	<0,1	6,9	1,2
Z10	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,3	57,2	80,3	25,0	20,0	59,8	<0,4	0,6	0,7	9,6	1,7
Z11	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,5	40,3	58,6	23,0	16,5	49,3	<0,4	0,6	0,1	8,6	1,5
Z12	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,5	83,0	143,8	50,0	27,5	86,9	<0,4	1,8	<0,1	13,6	1,8
Z13	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	28,8	99,9	167,0	42,1	31,7	88,1	<0,4	1,5	<0,1	14,4	2,4
Z14	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,8	67,1	110,2	35,7	25,0	76,2	<0,4	2,4	<0,1	10,8	2,2
Z15	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	3,2	99,3	50,1	42,1	31,0	83,5	<0,4	0,7	<0,1	14,2	2,2
Z16	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	66,2	86,1	138,8	44,1	28,7	80,7	<0,4	1,6	<0,1	12,8	2,1
Z17	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	70,1	95,0	158,6	39,1	29,4	78,9	<0,4	0,9	<0,1	12,6	2,2
Z18	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,7	50,8	74,9	28,2	19,8	60,8	<0,4	0,9	0,3	9,9	1,8
Z19	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	88,4	55,3	78,2	34,1	24,0	60,4	0,5	0,6	0,1	10,6	1,8
Z20	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,9	60,6	85,5	34,9	15,7	58,3	2,3	0,8	<0,1	10,0	2,0
Z21	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	2,8	68,8	43,4	30,0	23,4	43,4	<0,4	<0,1	<0,1	12,1	2,0
Z22	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	1,5	47,0	97,1	28,3	22,2	36,8	<0,4	0,4	<0,1	11,9	1,5
Z23	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	2,0	48,8	66,4	25,4	16,8	53,3	0,4	<0,1	<0,1	10,6	0,8
Z24	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	5,4	69,3	94,6	33,5	24,7	69,3	<0,4	0,4	0,6	10,6	2,0
Z25	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	1,5	20,2	113,4	33,1	23,5	68,8	0,6	0,7	<0,1	12,6	1,5
Z26	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,8	132,4	173,3	83,0	36,7	130,2	<0,4	<0,1	3,9	13,0	1,6
Z27	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	39,7	83,8	148,5	32,8	20,3	121,8	<0,4	<0,1	0,2	13,6	2,2
Z28	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	1,1	103,0	173,2	84,9	36,8	127,9	0,6	1,8	0,6	18,5	2,6
Z29	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,9	97,8	164,0	82,2,	34,3	127,5	0,7	1,8	0,7	16,2	2,5
Z30	<0,25	<0,4	<2,5	<0,1	<0,1	<0,4	<0,1	<0,1	<0,1	0,4	85,3	134,8	35,9	27,1	75,8	<0,4	1,8	0,2	11,0	1,8

The evaluation of the data was done in accordance with the Rulebook on the list of activities that may be the cause of soil pollution and degradation, the procedure and content of data, times and other requirements for soil monitoring (Official Gazette of the RS No. 102/2020) and the Regulation on limit values of pollutants, harmful and dangerous substances in the soil (Official Gazette of the RS, No. 30/2018, 64/2019), Appendix 1, Limit maximum and remediation values of polluting, harmful and dangerous substances in the soil. Analysis of data on soil quality in 2023 is given in Table 51.

Table 51

TPPs & OCMs KOSTOLAC Branch – OPEN-CAST MINES	
Analysis of agricultural soil quality in 2023 – Zapadni Kostolac coal deposit	
Chromium (Cr)	Of 24 samples – 9 samples exceed LV, and none exceeds RV
Copper (Cu)	Of 24 samples – 9 samples exceed LV, and none exceeds RV
Nickel (Ni)	Of 24 samples – all samples exceed LV, and 5 exceed RV
Zinc (Zn)	Of 24 samples – 6 samples exceed LV, and none exceeds RV
Mercury (Hg)	Of 24 samples – 20 samples exceed LV, and none exceeds RV
Lead (Pb)	Of 24 samples – 4 samples exceed LV, and none exceeds RV
Cadmium (Cd)	Of 24 samples – 2 samples exceed LV, and none exceeds RV

Exceedances were found for Nickel (Ni) at 5 measuring points:
Z2 - 44 42 32 N, 21 03 31 E - (Dubravica)
Z3 - 44 42 34 N, 21 04 9 E - (Dubravica)
Z26 - 44 40 17 N, 21 04 35 E - (between Batovec and Brežan)
Z28 - 44 40 46 N, 21 03 40 E - (Batovac)
Z29 - 44 41 37 N, 21 03 48 E - (Dubravica)

After the spatial analysis, it was concluded that all the exceedances originate from the treatment of agricultural land.

2.2.5. Waste

Table 52 shows the quantity of waste generated in 2023 for the TPPs & OCMs KOSTOLAC Branch (from the OCM Drmno and Ćirikovac as parts of the Branch).

Table 53 shows the amount of waste generated in 2023 for the TPPs & OCMs KOSTOLAC Branch (from the OCM Drmno and Ćirikovac as parts of the Branch).

Table 52

TPPs & OCMs KOSTOLAC Branch – OPEN-CUT MINES							
Waste generated in 2023							
No.	**The official nomenclature of Rulebook on categories, testing and classification of waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**	**Index number**	**Unit**	**Organizational unit**			**Note**
	Name			**OCM Drmno**	**OCM Cirikovac**	**Total**	
1	Waste printer cartridges other than the ones indicated under 08 03 17	08 03 18 08 03 99	t	0,543	0,160	**0,703**	-

2	Waste mineral non-chlorinated hydraulic oil	13 01 10*	t	15,225	0,000	**15,225**	-
3	Waste mineral non-chlorinated motor oils, gearbox oils and lubricating oils	13 02 05*	t	13,200	0,000	**13,200**	-
4	Other oils for insulation and heat transfer (transformer oil)	13 03 10*	t	0,150	0,000	**0,150**	-
5	Other emulsions	13 08 02*	t	0,300	0,000	**0,300**	-
6	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing, contaminated with hazardous substances	15 02 02*	t	1,340	0,000	1,340	Cotton
7	Absorbents, filter materials, wiping cloths, protective clothing different from those specified in 15 02 02	15 02 03	t	0,050	0,000	**0,050**	Air filter
8	Waste tyres	16 01 03	t	11,430	0,000	**11,430**	Car tyres
9	Oil filters	16 01 07*	t	2,200	0,000	**2,200**	-
10	Discarded equipment containing hazardous components other than that specified under 16 02 09 and 16 02 12	16 02 13*	t	0,040	0,000	**0,040**	-
11	Lead batteries	16 06 01*	t	3,363	0,000	**3,363**	Batteries
12	Plastics	17 02 03	t	0,474	0,000	**0,474**	-
13	Copper, brass, bronze	17 04 01	t	0,053	0,000	**0,053**	-
14	Aluminum	17 04 02	t	0,390	0,000	**0,390**	-
15	Iron and steel	17 04 05	t	493,509	0,003	**493,512**	Variouos thickness
16	Cables other than those specified under 17 04 10	17 04 11	t	15,591	1,800	**17,391**	Copper cables
			t	6,000	0,000	**6,000**	Aluminum cables
17	Soil and rock containing hazardous components	17 05 03* 15 02 02*	t	0,450	0,000	**0,450**	Soil and sand soaked with oil
18	Plastic and rubber	19 12 04	t	610,000	0,000	**610,000**	Rubber belts
			t	1,240	0,100	**1,340**	Rubber materials
19	Fluorescent tubes and other waste containing mercury	20 01 21*	t	0,039	0,000	**0,039**	Flue pipes and mercury bulbs
20	Discarded electrical and electronic equipment other than the one indicated under 20 01 21 and 20 01 23 which contains hazardous components	20 01 35*	t	0,460	0,000	**0,460**	-

21	Discarded electrical and electronic equipment other than those specified in 20 01 21, 20 01 23 and 20 01 35	20 01 36	t	0,017	0,000	**0,017**	-

*hazardous waste

Table 53

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES							
Waste delivered in 2023							
No.	**The official nomenclature of Rulebook on categories, testing and classification of waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**	**Index number**	**Unit**	**Organizational unit**			**Note**
	Name			**OCM Drmno**	**OCM Cirikovac**	**Total**	
1.	Waste printer cartridges other than the ones indicated under 08 03 17	08 03 18 08 03 99	t	1,000	0,650	**1,650**	-
2.	Absorbents, filter materials, wiping cloths, protective clothing different from those specified in 15 02 02	15 02 03	t	0,000	0,051	**0,051**	Protective equipment
3.	Iron and steel (iron with various thickness)	17 04 05	t	803,200	206,150	**1.009,350**	-
4.	Cables other than those specified under 17 04 10	17 04 11	t	120,500	6,800	**127,300**	Copper cables
5.	Plastic and rubber	19 12 04	t	0,000	0,050	**0,050**	Rubber materials
			t	285,250	0,000	**285,250**	Conveyor belts

2.3. Working Environment Monitoring, Occupational Health and Safety

Occupational Safety and Health Reports for 2023 include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurements
- **Safety**
  - training of employees
  - injuries at work
- **Health Protection**

2.3.1. Working Environment Monitoring

- **Working Environment Noise Measurements**

In 2023 monitoring of the working environment was carried out at OCM Drmno and OCM Cirikovac, that is, noise measurements were done, namely:

- at OCM Drmno noise measurement was carried out at 22 workplaces. The measured value of the equivalent sound pressure level are within the limits of the maximum permissible equivalent sound pressure level.
- at OCM Ćirikovac, noise measurements were not done in 2023.

2.3.2. Occupational Safety

- **Training of Employees**

Employees are trained according to the Health and Safety Training Programme in the Joint Stock Company Elektroprivreda Srbije and in accordance with the procedures of the Health and safety management system, according to the requirements of ISO 45001 standard. Testing of occupational safety competence and knowledge is carried out minimum once a year in compliance with the Risk Assessment Act of TPP&OCMs Kostolac Branch and Occupational Health and Safety Act, in accordance with the Law on Mining and Geological Surveys and Law on Occupational Safety and Health at work. According to Occupational Health and Safety Act training within Kostolac TPP&OCMs is performed whenever new workers are recruited, deployed to new workplaces, in the process of technological changes and the introduction of new equipment and work tools as well as for all employees working at high risk posts.

Also, at OCM Drmno training course was performed for 105 individuals being employed.

Table 54 shows a number of employees planned for training and number of employees who passed the training course 2023.

Table 54

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES					
Training of employees in 2023					
Organizational unit	**Number of employees**	**Planned to be trained**		**Trained**	
		n	**%**	**n**	**%**
OCM Drmno	1.363	1.120	82,17	1.256	112,14
OCM Cirikovac	75	39	52,00	36	92,31
Headquarters	257	72	28,02	72	100,00
Total: TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES	**1.695**	**1.231**	**72,63**	**1.364**	**110,26**

Note: Some employees went through more than one training, for example due to relocation to other jobs and similar.

- **Injuries at Work**

Table 55 provides data on number of injuires at work in 2023.

Table 55

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – Number of employees' ratio**				
		Mild	**Severe**	**Fatalities**	**Total**	**%**
OCM Drmno	1.363	11	5	0	16	1,17
OCM Cirikovac	75	0	0	0	0	0,00
Headquarters	257	1	0	0	1	0,39
Total: TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES	**1.695**	**12**	**5**	**0**	**17**	**1,00**

2.3.3. Health Protection

All employees at OCMs Kostolac, working at increased risk workplaces, undergo pre-employment and periodic medical examinations. Workers are referred to pre-employment medical examinations before they are hired and when they are deployed to a different workplace that has a higher risk factor. Employees working at high-risk posts are referred to periodic medical examinations once a year. Periodic examinations in 2023 were done at Occupational healthcare center Pozarevac.

Table 56 provides periodic examination data verifying the work capability of employees in 2023.

Table 56

TPPs & OCMs KOSTOLAC Branch – OPEN CAST MINES											
Work capability in 2023											
Organizational unit	**Number of employes**	**Periodical examinations**				**Work capability**					
		Referred to examination		**Examined**		**Capable**		**Limited capability**		**Not capable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
OCM Drmno	1.363	1.120	82,17	1.110	99,11	985	88,74	109	9,82	16	1,44
OCM Cirikovac	75	39	52,00	36	92,31	26	72,22	10	27,78	0	0,00
Headquarters	257	72	28,02	72	100,00	69	95,83	3	4,17	0	0,00
Total: TPPs & OCMs KOSTOLAC Branch – OPEN-CAST MINES	**1.695**	**1.231**	**72,63**	**1.218**	**98,94**	**1.080**	**88,67**	**122**	**10,02**	**16**	**1,31**

2.4. Stakeholders Submissions

There were no stakeholders' submissions regarding environment in 2023.

3. NIKOLA TESLA THERMAL POWER PLANT BRANCH

TPP Nikola Tesla Branch (TENT Branch) includes five organizational units:

- **TPP Nikola Tesla A (TENT A);**
- **TPP Nikola Tesla B (TENT B);**
- **TPP Kolubara A (TEK A);**
- **TPP Morava (TEM);**
- **Railway transport (RT).**

3.1. Overview and Status of Permits

Table 57 shows an overview of obtained permits, as well as submitted applications for new permits or extension of existing ones in 2023.

Table 57

NIKOLA TESLA THERMAL POWER PLANT BRANCH			
Overview and status of permits in 2023			
Organizational unit	**Obtained permits and approvals (number and date)**	**New applications for obtaining or extension of valid permits**	**Note**
TENT A and TENT B	Decision of the Ministry of Environmental Protection No. 353-01-01275/2022-03 dated 22 March 2023 on the Approval for continuous measurement of emissions from stationary sources of pollution in the Nikola Tesla A Thermal Power Plant (for units A1-A6) and TENT B (for units B1 and B2.		Permit for boilers K3, K4 and K5 was obtained on 30 November 2015 and for boiler K6 on 25 Novemeber 2019.
	- Decision on issuing a water permit no. 325-04-457/2022-07 as of 22nd December 2021. A water permit was issued for the abstraction of surface water from the Sava River, abstraction of groundwater from 10 wells, storage of oil derivatives within the complex, as well as for a bank fortification with a wharf and unloading place on the right bank of the Sava, all in TENT B. The validity period of the water permit is until 22nd June 2024.		
	Decision No. 353-02-02974/2021-03 as of 28th March 2022 by the Ministry of Environmental Protection on approval of the Study on Environmental Impact Assessment of the project for flue gas desulphurization at TENT B		
TPP KOLUBARA A	Decision of the Ministry of Environmental Protection No: 353-01-02764/2022-03 dated 22 March 2023, which grants the Approval for measuring the emission of polluting substances into the air using a device for continuous measurement of emissions from stationary sources of pollution in EPS JSC Branch TENT, location of TPP Kolubara, for two emission sources - for the joint plant of boilers K3, K4 and K5 and for the plant unit A5 (boiler K6).		It refers to the prescribed license renewal.

NIKOLA TESLA THERMAL POWER PLANT BRANCH			
Overview and status of permits in 2023			
Organizational unit	**Obtained permits and approvals (number and date)**	**New applications for obtaining or extension of valid permits**	**Note**
TPP MORAVA	Letter from the Ministry of Agriculture, Forestry and Water Management exempting TPP Morava from obtaining a water permit because it is on the list of plants that use the opt-out mechanism and hence is not subject to the obligation to obtain a water permit.		The letter issued in accordance with Rulbook on cases without obligation to obtain water permit, ("Official Gazette of RS"no.73/2023)

3.2. Monitoring and Environmental Impact

3.2.1. Air Quality Monitoring

Air quality monitoring in the vicinity of the TENT Branch organizational units is carried out as part of the monitoring financed and organized by individual organizational units. It should be noted that the air quality monitoring is within the competence of the state and city authorities (relevant Ministry, City of Belgrade, Svilajinac and Pozarevac). Therefore, air quality monitoring is carried out as part of the national automatic air quality monitoring network, including measuring points located in the proximity of the TENT Branch (three automated mesuring stations in Obrenovac, one in Lazarevac and one in Veliki Crljeni). The actual measurments can be monitored on the website of the serbina Agency for environemental protection. Measurment of air quality in Svilajnac is ensured by the local authorities, as per the obligation from the Law on Air Protection.

In 2023, air quality measurements were performed in the proximity of all four organizational units TENT A, TENT B, TPP Kolubara and TPP Morava TPP by the authorized companies. The measurements contractors were Institut Vatrogas doo Novi Sad and Institute of Mining and Metallurgy from Bor. Due to the repeating the public procurement procedure for these measurements, they did not cover the entire 2023, but were performed only in the period September - December. In the vicinity of TENT A and TENT B, some measurements were also done by the laboratory of the TENT Environmental Control and Protection Service, which is not accredited.

TENT A and TENT B

In 2023 in the vicinity of TENT A and TENT B, in the period September – December, the measurements of the total particulate matter content (TPM) were done by the accredited laboratories at 18 measuring points, sulphur dioxide and soot concentration measurements were done at two measuring points, and suspended matter smaller than 10μm (PM_{10}) at one measuring point.

In 2023 there was no significant ash dispersion from ash landfills and no citizens' complaints to air pollution. All existing active cassettes protection systems on TENT A and TENT B ash landfills were in operation, water lens covered an optimal area in accordance with the technical requirements. Moreover, wetting of dry surfaces was also executed.

TPP Kolubara A

Air quality measurements in the TPP Kolubara A surroundings have been performed for over thirty years. In 2023, TPM content was measured at 8 measuring points, and concentration of SO_2, soot and total suspended particles PM_{10} was measured at 1 measuring point. Measurements were performed in the period 4 September 2023 to 31 December 2023 by the authorized legal entity Institute for Mining and Metallurgy from Bor.

TPP Morava

Air quality monitoring in the vicinity of Morava TPP started on 1st September 2023 by measuring the TPM content at 8 measuring points, and concentration of SO_2, soot and total suspended particles PM_{10} at 1 measuring point.

In 2023, ash was dispersed from ash landfills to a much lesser extent because the system for ash wetting was installed at one inactive cassette VII, which was in operation during the summer period, especially when there were strong winds. Water lens at an inactive cassette VII covered an optimal area in accordance with the technical requirements.

Table 58 shows air quality data analysis for 2023 in terms of compliance with the legal requirements for the plants of TENT Branch. The data for air quality in the vicinity of TENT A and TENT B are given collectively and include the data obtained by measurements of the Institute for Mining and Metallurgy Bor and the Institute Vatrogas for period September - December, while for the rest of the year the data obtained by measurements by the laboratory of the TENT Environmental Control and Protection Service, which is not accredited, are shown. Measurements by the laboratory of the TENT Environmental Control and Protection Service refer to measurements of total particulate matters at 18 measurement points, as well as measurements of sulfur dioxide and soot at two measurement points.

Air quality assessment was performed based on the measuring results compared to the limit and tolerable values for SO_2, TPM, total suspended matter PM_{10} and soot, specified by the Regulation stipulating air quality monitoring conditions and requirements (Official Gazette of RS, No. 11/10, 75/10 and 63/13). The regulation is compliant with the European Union Regulation.

Table 58

NIKOLA TESLA THERMAL POWER PLANT BRANCH					
Air quality in 2023					
Legal compliance of data (number of data or number of days exceeding legal limits)					
Air quality indicators		**Total particulate matters levels - TPM ($mg/m^2/day$)**	**Concentration of SO_2 ($\mu g/m^3$)**		
Averaging period		**Maximum permissible value (MPV)**	**LV**	**TV**	**TL**
One hour			**350**	**350**	**0**
***One day**			**125**	**-**	
****One month**		**450**	**-**		
*****Calendar year**		**200**	**50**	**-**	
TENT A and TENT B	*	-	Within total of 667 data (244 Institute Vatrogas and 423 laboratory of Environmental Control and Protection Service) there was no exceedance. Measuremetns were done at two measuring points – Rojkovac and Grabovac.		

	**	Measurements were done at 18 measuring points, as follows: - 2 measuring points, TENT A landfill area; - 3 measuring points, TENT B landfill area; - 4 measuring points in the vicinity of TENT A; - 5 measuring points in the vicinity of TENT B; - 3 measuring points in Obrenovac and its vicinity; - 1 measuring point in Vladimirci. Out of a total of 202 data for average monthly TPM values (71 Institute for Mining and Metallurgy Bor and 131 Environmental Control and Protection Service), there were 4 exceedances of MPV. One was at the measuring point in vicinity of TENT A ash landfill and three in vicinity of TENT B ash landfill.	-
	***	Out of 18 measuring points, MPV exceedances for the mean annual TPM value were at one measuring point in the vicinity of the TENT B ash landfill and one measuring point in the vicinity of the TENT A ash landfill.	No exceedance
TPP KOLUBARA A	*	-	Within the total of 119 daily samples (32.60% of samples for the calendar year) there was no exceedance of daily limit value. Measurement is done at one measuring point
	**	Measurements were performed at 8 measuring points BETWEEN 4 September 2023 and 31 December 2023, therefrom: At MM8 Veliki Crljeni, at crossroads for Sokolovo and Junkovac there were exceedances in October 2023 (623.60 mg/m2/day); at MM7 Veliki Crljeni, Mr. Stojan Krsmanović's household there was the exceedance in December 2023 (505.80 mg/m2/day); there was no MPV exceedance at other measuring points.	There was no exceedance (for the measuring period mean monthly values were: in September 2023 -< 6.7 µg/m^3; in October 2023 -9.90 µg/m^3; in November 2023 - 10.30 µg/m^3 and in December - 12.90 µg/m^3 Measurement is done at one measuring point
	***	For the measured period from 4 September 2023 to 31 December 2023, there were exceedances of the MPV at the measuring point MM4 Veliki Crljeni, at crossroads for Sokolovo and Junkovac (299.85 mg/m^2/day); MM7 Veliki Crljeni, Mr. Stojan Krsmanović's household (281.40 mg/m^2/day); MM8 - 50 meters east from HPV (219.70 mg/m^2/day); there was no MPV exceedance at other measuring points for the calendar year.	. There was on exceedance at the measuring point Veliki Crljeni pool. Mean annual concentration, i.e., for the measuring period September – December 2023 was 11.03 µg/m^3 and it does not exceed annual limit value.
TPP MORAVA	*	-	No exceedance.

	**	Measuringsweredone at 8 measuring points, as follows: - 2 measuring points at TEM ash landfill; -1 measuring point in the vicinity of coal landfill; - 4 measuring points in Svilajnac; - 1 measuring point in the village of Crkvenac; There was no MPV exceedance			No exceedance
	***	There was no MPV exceedance for the measuring period from 1 September 2023 and 13 December 2023			No exceedance
Air quality indicators		**Total suspended matters PM_{10} (µg/m³)**			**Soot (µg/m³)**
Averaging period		**LV**	**TV**	**TL**	**Maximum permissible concentration (MPC)**
***One day**		**50**	**50**	**0**	**50**
****Calendar year**		**40**	**40**	**0**	**50**
TENT A and TENT B	*	Measurements were done at the measuring point in Rojkovac in the period September - December and at the measuring point EMS Mladost in the period 16 - 29 October. Out of a total of 136 inputs, one exceedance was registered in November and nine exceedances in December at the measuring point Rojkovac	-	-	Measurements were done at two measurement sites - Rojkovac and Grabovac. Out of a total of 667 data (244 Institute Vatrogas and 423 laboratories of Environmental Control and Protection Service) there were no exceedances.
	**	-	-	-	-
	***	Due to the insufficient number of data, it is not possible to give an assessment of compliance with LV for any of the two measuring points.	-	-	No exceedance
TPP KOLUBARA A	*	The number of data exceeding the LV is a total of 10 (of which in September 1, in October 5, in November 2 and in December 2, which amounts to 9.71% (based on 103 data). The measurement is done at one measuring point on a daily basis. in the period from 17 December to 31 December 2023 (for 15 days), no samples were taken due to the	-	-	Out of a total of 119 daily samples (32.60% of samples for the calendar year) there was no exceeding of the daily limit value. The measurement was done at one measuring point.

		downtime of the sampling device. Based on 28.22% of the samples for 2023, it is not possible to provide data on exceeded limit values (more than 35 times during one calendar year years).			
	**				There was no exceedance (for the measuring period mean monthly values were in September 2023- 6.70 µg/m^3; in October 2023-8.40 µg/m^3; in November 2023- 9.40 µg/m^3 and in December 7.40 µg/m^3 The measurement was done at one measuring point.
	***	For the measuring period September – December 2023, mean value is: 35.65µg/m^3 (per 103 inputs, that is 28.22 % of inputs for 2023)	-	-	At the measuring point Veliki Crljeni pool, there were no exceedances. Mean annual value of concentrations ie. for the measured period September-December 2023, it was 7.98 µg/m^3 and does not exceed the annual limit value.
TPP MORAVA	*	Number of inputs exceeding LV is total 3	-	-	No exceedance
	**	-			-
	***	No exceedance			No exceedance
Air quality indicators		**Total suspended matters $PM_{2,5}$ (µg/m^3)**			
Averaging period		**LV**	**TV**		**TL**
***** Calendar year**		**25**	**25**		**0**
TENT A and TENT B	***	Due to the insufficient number of data, compliance with the target value for the mean annual concentration cannot be given			

LV – Limit value, TV – Tolerance value, TL – Tolerance limit
Note: hourly values are not measured for sulphur dioxide

As part of air quality monitoring in the vicinity of TENT A and TENT B at the measuring points Rojkovac and EMS Mladost, the concentration of benzo(a)pyrene and heavy metals (Pb, Cd, Ni, As Cr^{6+}) from suspended PM_{10} particles was also measured. Of that, for Pb and Cr^{6+}, the limit value for the mean daily concentration was given and it was not exceeded at both measurement sites for 14 days of measurement. For other parameters, target values for average annual concentrations have been defined, and due to the insufficient number of data, an evaluation of compliance cannot be given for them.

Based on the long-term air quality monitoring in this area, the following may be concluded:

- SO_2 concentrations are below the prescribed average daily and annual mean limit values and tolerance values;
- Air pollution by ash particles PM_{10} and $PM_{2,5}$ is of local significance, mainly the result of different sources of pollution (traffic, household furnces and the like). Pollution is higher during winter months.

3.2.2. Emission Measurements of Matters Affecting Air Quality

Flue gases containing sulphur dioxide, nitrogen oxides, carbon dioxide and dust, after treatment and dust separation by electrostatic precipitators, are emitted into the air through stacks of the following heights:

- TENT A - 150m (units A1, A2 and A3) and 220m (units A4, A5 and A6)
- TENT B - 280m (units B1 and B2)
- Kolubara A TPP - 105m (boiler K1), 105m (boilers K3, K4 and K5) and 130m (unit A5, K6);
- Morava TPP - 105m.

In line with the legal requirements continuous measurements are carried out regularly, as well as periodic measurement to check the correctness of continuous measurements, and in TPP Kolubara on boiler K1 periodic measurements were performed.

- **Periodic Emission Measurements of Matters Affecting Air Quality**

Continuous measurements of air emissions are performed in accordance with the requirements of the Regulation on Measurements of Air Pollutant Emissions from Stationary Pollution Sources (Official Gazette of RS, No. 5/2016).

Emission measurements of matters affecting air quality were performed by accredited laboratories of the Nuclear Science Institute Vinča and Mining Institute - Belgrade, in line with the Air Pollutants Emission Periodic Measuring Plan.

Table 59 shows the results of periodic emission measurements of air pollutants affecting air quality for the TENT Branch, performed in 2023.

Table 59

NIKOLA TESLA THERMAL POWER PLANT BRANCH								
Periodic emission measurements of matters affecting air quality in 2023								
Mass concentrations of matters affecting air quality (mg/Nm^3)								
Organizational part	**TENT A**						**TENT B**	
Unit	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**B1**	**B2**
Power MWth	**660**	**660**	**932**	**943**	**934**	**934**	**1.809**	**1.826**
SO_2 -unit	–	-	-	-	-	-		
SO_2 -stack	-			-				
NO_x (NO_2) -unit			-		-	-		
NO_x (NO_2) -stack	-			-	-			
CO -unit		-	-	-	-	-		
CO- stack	-			-	-			
Particulate matter - unit					-	-		
Particulate matter - stack	-				-			
Organizational unit	**TPP KOLUBARA A**							**TPP Morava**
Unit, boiler	**K1**			**K3, K4 and K5**			**A5, K6**	
Power MWth	**125,6**			-			-	**380**
SO_2	4.387,1			-			-	8.140,0
	3.027,3							10.834,9
NO_x (NO_2)	295,7			-			-	605,9
	296,0							501,6
CO	55,4			-			-	19,4
	64,1							53,4
Particulate matter	687,7			-			-	25,6
	807,8							35,7

On units A3, A5 and A4 in TENT A and unit B1 in TENT B, burners were reconstructed in order to reduce nitrogen oxide emissions and increase unit capacity.

- **Continuous Emissions Measurements of Matters Affecting Air Quality**

In the period from 2004 until the end of 2014, equipment for continuous emissions measurements of matters affecting air quality was installed on TENT Branch units. In addition to the basic equipment for measuring mass concentration of dust and gases, some additional measuring equipment was installed for oxygen (O_2), carbon dioxide (CO_2) and humidity, as well as temperature (t), pressure (*p*) and flue gases flow rate. Data acquisition and processing equipment was also installed.

The project funded through an IPA donation included design, supply, delivery, installation, commissioning, calibration - QAL2 certification of the continuous measuring system for sulphur dioxide (SO_2), nitrogen oxides (NO_x - NO_2), carbon monoxide (CO), carbon dioxide (CO_2), dust for:

- all units (A1-A6) in Nikola Tesla A TPP (completion of existing equipment),
- units B1 and B2 Nikola Tesla B TPP and
- unit A5 - Kolubara A TPP.

CEMS Reports were established in line with the Large Combustion Plants Directive 2001/80/EC and in accordance with the legislation in the Republic of Serbia. The entire system was reconciled with EN 14181 (QAL1, QAL2 and QAL3) standard and national legislation. Pursuant to the Air Protection Act (Official Gazette of RS No. 36/09, 10/13 and 26/21) and the Rulebook on conditions for giving

approval to operators for air quality measurements and/or emissions from stationary pollution sources (Official Gazette of RS No. 16/12), TENT A, TENT B, MTPP and KTPP boilers K3, K4 and K5 and unit A5 obtained approvals for continuous emission measurements from stationary pollution sources.

Table 60 shows the overview of results for continuous emission measurements of matters affecting air quality (mean annual mass concentration) for TENT Branch in 2023.

Table 60

NIKOLA TESLA THERMAL POWER PLANT BRANCH								
Continuous emission measurements of matters affecting air quality in 2023								
Mass concentrations of matters affecting air quality (mg/Nm^3)								
Organizational unit	**TENT A**						**TENT B**	
Unit	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**B1**	**B2**
Power MWth	**660**	**660**	**932**	**943**	**934**	**934**	**1.809**	**1.826**
SO_2	3.520			3.228			2.863	
NO_x (NO_2)	307			350			361	
CO	74			78			57	
Particulate matter	105			36			24	

Organizational unit	**TPP Kolubara A***			**TPP Morava***
Unit, boiler	**K1**	**K3, K4 and K5**	**A5, K6**	
Power MWth	**125,6**	**376,8**	**333,5**	**380**
SO_2	-	4.832,0	4.509,8*	
NO_x (NO_2)	-	272,8	286,0	
CO	-	116,9	142,0	
Particulate matter	-	975,9	48,0	

Note: *CEMS in TEM was out of order most of 2023

Based on the Regulation on limit values of emission of pollutants into the air from combustion plants ("Official Gazette of the RS", no. 6/16, 67/21), Article 5 it is stipulated that old large combustion plants do not have to comply with individual GVEs if, from the date of entry into force of the said Regulation, they are included in the preliminary application for the National Plan for the reduction of emissions from stationary large combustion plants. TENT A and TENT B are included in the National Plan for the reduction of emissions.

Also in the same Regulation, Article 6 it is stated that old large combustion plants can be exempted by the competent authority from the application of limit values of emissions of polluting substances and obligations established by the National Plan for the Reduction of Emissions from Old Large Combustion Plants, provided that they are included in the exemption mechanism due to limited lifetime of the plant. MTPP and KTPP are covered by the exemption mechanism due to the limited lifetime of the plant.

In accordance with Article 38 paragraph 2 and Appendix 3 paragraph 1.2 of the Regulation prescribing air emission measurements from stationary sources of pollution there is not obligation of continuous emission measurements for plants with heating power of 100 MWth to 300 MWth with remaining plant life cycle less than 10,000 operating hours. Boiler K1 does not have equipment for continuous emission measurement of air pollutants. In December 2020, a condition was met for exclusion from the obligation of continuous emissions measurement of air pollutants from boiler plant of the boiler K1 in Kolubara TPP, since the remaining service life of the plant was less than 10,000 operating hours. Namely, the boiler K1 in Kolubara TPP is an old large combustion plant at the final list of plants and, since 1 January 2018 has been using exemption due to limited life cycle (the so called “opt out“ mechanism – 20,000 operating hours until 31 December 2023).

* Due to the failure of the continuous measurement of SO_2 in January, February, March, April, July, September and October 2023, a correction was made to the average annual mass concentration of SO_2 for 2023, by replacing the monthly values for these months based on the periodic measurement from 2023. In November 2023, the equipment for measuring SO_2 was replaced and soon after the unit is started, the equipment is planned for calibration as per QAL-2 method.

Table 61 shows data on equipment in units for continuous emission measurement of matters affecting air quality in TENT Branch organizational units.

Table 61

<table>
<tr><td colspan="11">NIKOLA TESLA THERMAL POWER PLANT BRANCH</td></tr>
<tr><td colspan="11">Equipment in TPP units for continuous measurement of matters affecting air quality in 2023</td></tr>
<tr><td colspan="3">Emitted matter</td><td colspan="8">Parameters</td></tr>
<tr><td colspan="2" rowspan="2">Organizational unit</td><td rowspan="2">Particulate matter (PM)</td><td colspan="2">Gases</td><td colspan="4">Content</td><td rowspan="2">p</td><td rowspan="2">T</td><td rowspan="2">Flow</td></tr>
<tr><td>SO_2, $NO_x(NO_2)$, CO</td><td>HCl and HF</td><td>Humidity</td><td>CO_2</td><td colspan="2">O_2</td></tr>
<tr><td rowspan="6">TENT</td><td>A1</td><td rowspan="3">Measuring devices installed on stacks of units A1A2A3.</td><td rowspan="3">The device installed on stacks of units A1A2A3.</td><td rowspan="6"></td><td rowspan="3">Humidity measurement installed on stack of units A1, A2, A3
1 measuring device</td><td rowspan="6">Total: 4 measuring devices</td><td colspan="4" rowspan="6">Devices installed on the stacks of the units A1, A2, A3 on flue ducts after the left and right ESP, behind flue gas fan, on units A4, A5 and A6
A total of 6 devices each for pressure, temperature and flow and 4 for oxygen O2</td></tr>
<tr><td>A2</td></tr>
<tr><td>A3</td></tr>
<tr><td>A4</td><td rowspan="3">Measuring devices installed on each unit on flue ducts after the left and right ESP, behind flue gas fan (FGF)
Total:
6 devices.</td><td rowspan="3">Sampling is carried out on flue ducts, continuously, behind the left and right FGF. Flue gas is mixed and led to measuring devices for gases. Total 3 sets of measuring devices.</td><td rowspan="3">Humidity adopted for units A4, A5 and A6.</td></tr>
<tr><td>A5</td></tr>
<tr><td>A6</td></tr>
<tr><td rowspan="3">TENT B</td><td rowspan="2">B1</td><td colspan="2">Measuring device installed on the flue duct, at the elevation 55.1 m in the inner stack lining.</td><td>-</td><td colspan="5">Measuring device installed on the flue duct, at the level 55.1m in the inner stack lining.</td></tr>
<tr><td colspan="9">Platform located at the elevation 54m, inner stack lining Total: 1 set of measuring devices</td></tr>
<tr><td>B2</td><td colspan="2">Measuring device installed on the flue duct, at the elevation 55.1 m in the inner stack lining.</td><td></td><td colspan="5">Measuring device installed on the flue duct, at the level 55.1m in the inner stack lining.</td></tr>
<tr><td colspan="9">Platform located at the elevation 54m, inner stack lining Total: 1 set of measuring devices</td></tr>
<tr><td rowspan="6">TPP KOLUBARA A</td><td>K1</td><td colspan="2">-</td><td>-</td><td colspan="5">-</td></tr>
<tr><td>K3</td><td colspan="9" rowspan="3">Measuring devices (except HC and HF devices) installed at the elevation of 46.25m, outer stack lining. Platform is located at the elevation of 45m, outer stack lining. Control measurements openings at the elevation of 46.75m. Stack height - 105m.</td></tr>
<tr><td>K4</td></tr>
<tr><td>K5</td></tr>
<tr><td rowspan="2">A5-K6</td><td rowspan="2">Installed
• behind ESP
after FGF:
Left ESP
Right ESP
• on the stack</td><td>Installed on the stack</td><td>-</td><td>Installed on the stack</td><td colspan="2">Installed
• behind ESP
after FGF:
Left ESP
Right ESP
•on the stack</td><td>Installed on the stack</td></tr>
<tr><td colspan="7">Measuring devices installed at the elevation of 51m, outer stack lining. Platform is located at the elevation of 50m, outer stack lining. Measuring plane with measuring opening for control measurements located at the elevation of 51.5m. Stack height - 130m.</td></tr>
</table>

NIKOLA TESLA THERMAL POWER PLANT BRANCH									
Equipment in TPP units for continuous measurement of matters affecting air quality in 2023									
Emitted matter				**Parameters**					
Organizational unit	**Particulate matter (PM)**	**Gases**		**Content**			**p**	**T**	**Flow**
		SO_2, NO_x(NO_2), CO	**HCl and HF**	**Humidity**	**CO_2**	**O_2**			
TPP MORAVA	At the measuring section of the stack three measuring planes were located (50.3m 50.7m and 56.7m). In the measuring plane MP1 at the elevation 50.3m there are openings for AMS. Measuring devices for pressure, gases and dust on the outer side of the stack lining. Measuring plane MP2 at 50.7m have openings for CPM. MP3 is located at 56.7m. The inlet part of the plane is at 46.7m and the outer is at 48.3m. Plane is at the elevation 49m. Stack height is 105m.								

Data acquisition and processing equipment (software) is an integral part of the above automatic measuring system (AMS). Under the Decisions issued by the competent ministries, i.e.: 2nd December 2013 Ministry of Energy, Development and Environment, 22nd December 2014, and 16th January 2017 Ministry of Agriculture and Environment, and 25th November 2019 the Ministry of Environmental Protection, TENT was granted Approval for independent continuous stationary pollutant sources measurements for the following pollutants: SO_2, NO_x, CO and total particulate matter for TENT A units A1 to A6, TENT B units B1 to B2 and Kolubara A TPP unit A5, Approval of 1st February 2021 for TENT A on the common stack of units A 123 for units A1, A2 and A3, and Decision as of 22 March 2023 for the Thermal Power Plant Nikola Tesla A (for units A1-A6) and TENT B (for units B1 and B2).

The abovementioned devices for boilers K3, K4, K5 at Kolubara A TPP were installed on joint stack 2 (105m high), at the elevation of 46.25m. The first calibration of devices - QAL2 tests of basic and additional equipment were conducted in November 2014 by the accredited laboratory AEROLAB d.o.o. Beograd. Under Decisions issued by the competent ministries, i.e. on November 30th, 2015 by the Ministry of Agriculture and Environment, on 11th October 2017 and August 21st , 2020 by the Ministry of Environmental Protection, TENT was granted approval for continuous measurement of pollutant emissions from stationary pollution sources for boilers K3, K4, K5 – TPP Kolubara.

At the request of PE EPS Branch TENT TE Kolubara as of 27 July 2022, the Ministry of Environmental Protection, by Decision No. 353-01-02764/2022-03 as of 22 March 2023, gave consent for the continuous measurement of the emission of pollutants into the air using devices for the continuous measurement of emissions from stationary sources of pollution in PE EPS Branch TENT, location of TPP Kolubara, for two emission sources - for the joint boiler plant K3, K4 and K5 and for the plant block A5 (boiler K6).

In 2018, new equipment for the continuous measurement of the emission of polluting substances into the air was installed on the stack of the TPP Morava. The equipment is in operation and calibrated according to the QAL-2 method. In 2019, the consent of the competent ministry was obtained for the continuous measurement of emissions from stationary sources of pollution. The device for measuring particulate matters was replaced in 2022. Measurements on the stack were occasionally interrupted during 2023 due to technical problems, and the competent authorities were duly informed about this. In October, calibration was carried out according to the QAL-2 method. After calibration in November, the dust measuring device showed values over LV, but since there was no a maintenance contract, it remained out of order.

Annual Emissions of Matters Affecting Air Quality

Table 62 provides an overview of air emissions affecting the air quality: dust, SO_2, NO_2 and CO_2 for TENT Branch in 2023. The values of mass concentrations and volume flow of pollutants were obtained by continuous measurements of emissions in the period from 01st January until 31st

December 2023. On the stack D1 (boiler K1) of TPP Kolubara there is no equipment for continuous measurement of emissions of substances that affect air quality. For boiler K1, the quantities of emitted substances that affect the quality are calculated by multiplication, based on the results of occasional measurements of the legal entity, operating hours during normal operation of the plant (h) with output volume flow of substances (Nm^3 / h) and average measured mass concentrations (mg (Nm^3) obtained from occasional measurements of pollutant emissions in 2023.

Table 62

NIKOLA TESLA THERMAL POWER PLANT BRANCH				
Emissions of matters affecting air quality in 2023 (t/year)				
Organizational unit	**Particulate matter**	**SO_2**	**NO_x (NO_2)**	**CO_2**
TPP NIKOLA TESLA A				
A1-A2-A3	1.472,12	49.351,21	4.304,21	3.723.055,79
A4-A5-A6	652,98	58.550,67	6.348,43	5.181.479,69
Total: TENT A	**2.125,10**	**107.901,88**	**10.652,64**	**8.904.535,48**
TPP NIKOLA TESLA B				
Total: TENT B	**773,74 (with auxiliary cot.)**	**92.272,10 (with auxiliary cot.)**	**11.636,14 (with auxiliary cot.)**	**7.524.920,271**
TPP Kolubara A				
K1	431,49	2.151,27	171,01	140.712,78
K3, K4 and K5	834,67	4.132,93	233,33	154.155,29
A5, K6	23,74	2.230,17	141,43	106.948,98
Total: TPP KOLUBARA A	**1.289,90**	**8.514,37**	**545,77**	**401.817,05**
TPP Morava				
Total: TPP MORAVA	**58,55**	**18.127,75**	**1.060,96**	**475.542**
TOTAL: NIKOLA TESLA THERMAL POWER PLANT BRANCH	**4.247,29**	**226.816,10**	**23.895,51**	**17.306.814,80**

Calculation for CO2 was made based on data on fuel consumption, shown in Table 623 and CEF - emission correction factor.

Table 63

NIKOLA TESLA THERMAL POWER PLANT BRANCH								
Fuel consumption in 2023								
Org. unit	**TENT A**		**TENT B**		**TPP KOLUBARA A**		**TPP MORAVA**	**Branch Total**
Raw materia	**Unit**	**(t/year)**	**unit**		**Boiler**	**(t/year)**	**(t/year)**	**(t/year)**
COAL	A1	1.201.731	B1	5.862.102	K1	193.191	531.072	**25.329.096**
	A2	1.439.465	B2	5.337.581	K2	-		
	A3	2.727.142			K3	152		
	A4	3.158.928			K4	45.748		
	A5	1.483.179			K5	166.100		
	A6	3.032.723			K6	149.982		
	TOTAL	**13.043.168**		**11.199.683**		**555.174**	**531.072**	
HEAVY FUEL OIL	A1	18.711	B1	6.806	K1	-	1.089	**76.953**
	A2	14.233	B2	5.305	K2	-		
	A3	10.645			K3	-		
	A4	6.216			K4	-		
	A5	7.119			K5	-		
	A6	6.829			K6	-		
	TOTAL	**63.753**		**12.111**		-	**1.089**	
OIL	A1	-	B1	-	K1	1.605	324	**5.017**
	A2	-	B2	-	K2	-		
	A3	-			K3	13		
	A4	-			K4	331		
	A5	-			K5	1.713		
	A6	-			K6	1.031		
	TOTAL	-		-		**4.693**	**324**	

- **Complying Emissions of Matters Affecting Air Quality with European Union Regulations**

Particulate matter

In 2014, the electrostatic precipitator of unit A3 was reconstructed. This means that the electrostatic precipitators of all units in TPP Nikola Tesla A (A1, A2, A3, A4, A5 and A6) and in TPP Nikola Tesla B (B1 and B2), as well as unit A5 in TPP Kolubara A have been reconstructed. Supplier's guarantee for mass concentrations of particulate matter at the outlet of the electrostatic precipitator is ≤ 50mg/Nm3, which is in accordance with the requirements from the Regulation on limit values of emissions of pollutants into the air from combustion plants (Official Gazette of RS, No. 6 of 28th January 2016, 67 of 2nd July 2021).

The electrostatic precipitator of TPP Morava was reconstructed in order to achieve the output dust concentration of 50 mg/Nm^3, during the 2016 overhaul. Individual measurements of matters affecting air quality carried out in June and October 2023 confirmed an outlet dust mass concentration within the values guaranteed by the equipment supplier (25.6 and 35.7 mg/Nm^3).

Sulphur Dioxide

During the designing and construction of Nikola Tesla A and B TPPs, no sulphur oxides emissions reduction measures were undertaken because at that time there were no prescribed limit values of emissions (GVE). To reduce sulphur oxide emissions below 200mg/Nm3 in line with the Directive on industrial emissions of the European Union, flue gas desulphurization plants should be introduced in the forthcoming period in TPP 'TENT A' units A3-A6 and in TPP TENT B units B1-B2.

In 2011, the Japanese Government approved a loan to introduce the flue gas desulphurisation system at the Nikola Tesla A TPP. After receiving the approval of the Ministry of Environmental Protection for the Environmental Impact Assessment Study of the project for construction a flue gas desulphurization plant of units A3-A6 at the location of the Nikola Tesla A TPP in 2019, construction permits were obtained.

In 2023, works continued on the construction of the flue gas desulphurization plant and at the end of the year, the realization level of completed works was 98.42%.

The construction project of the flue gas desulfurization plant of units B1-B2 at the TPP Nikola Tesla B location is divided into 4 phases. The consent of the Ministry of Environmental Protection (No. 353-02-02974/2021-03 dated 28th March 2022) was obtained for the Environmental Impact Assessment Study of the flue gas desulfurization project in TENT B.

With the construction of a flue gas desulphurization plant, it is expected that the concentration of sulfur dioxide from both units will decrease to the level of 130 milligrams per cubic meter. In the first phase, works are being carried out on the construction of the limestone and gypsum system, the second phase consists of the construction of the absorber and stack system, the third phase includes the construction of flue gas ducts and the installation of booster fans, and in the fourth phase, bridges will be built to carry pipelines and electrical cables.

At the end of 2023, the realization of completed project works was 60.52%.

Nitrogen Oxides

In the previous period, primary measures have been introduced on units A3, A4 and A5 in TENT A and on unit B1 TENT B for reducing the emission of nitrogen oxides below 200 mg/Nm3. The guarantee tests of Low NOx burners on unit B1, the test B on unit B1, were succesfully conducted in July 2023. The plan is to introduce primary nitrogen oxide reduction measures in the coming period on unit A6 in TENT A, as well as on unit B2 in TENT B.

3.2.3. Emission Measurements of Matters Affecting Water Quality

Water used for condenser vapour cooling has the highest share in the total amount of technical water used by EPS JSC Nikola Tesla Branch TPPs. River water is captured, used to cool condensers, and discharged via the return tunnel back into the recipient. TENT A and TENT B use the Sava River water for cooling, while the TPP Morava uses the Velika Morava River water, and those three thermal power plants have an open cooling system. TPP Kolubara A uses the Kolubara River water and it has a closed cooling system with towers.

Approximately 2.5% of captured water is used for ash and slag transport in TENT A, while 0.54% of captured water was used in 2023 in TENT B for ash and slag transport and wetting of the landfill.

Wastewater originating from the ash and slag hydraulic transportation system is discharged directly or indirectly into the recipient in the form of overflow and drainage water, in old technology of hydraulic transport of “thin” ash water ratio (1:10) in TENT A and Kolubara A TPP. Drainage and overflow waters in TPP Morava are collected in overflow basins and then returned by pumps to the system for ash and slag transport.

In the case of the thick slurry transport (ash/water ratio - 1:1) used by TENT B there is no overflow and discharge of drainage water into the recipient, but water is stored and used for disposal site wetting.

Demineralized water (demi water) used in boilers and the water-vapour system is produced by a chemical water treatment plant. In TPP Kolubara A demi water is obtained by treating decarbonised water in ion exchangers - columns. The source of the raw water is the water intake Peštan on theKolubara River. HCl or NaOH solution is used to regenerate ion exchange masses, resulting in acid and alkaline wastewater that are used for ash and slag transport after having been neutralized.

Sanitary wastewater after mechanical-biological treatment under aerobic conditions in purification devices (TENT A and TENT B) is discharged directly or indirectly into the river. The equipment for sanitary wastewater treatment Biodisk, in TENT A has a UV lamp for water desinfection before it is released into the Sava. At the TPP Morava, sanitary water is discharged into the city sewer network.

Water containing oil and/or fuel oil, after oil or fuel oil removal from the water surface by means of adsorption agents indirectly via storm drainage or a return cooling water tunnel, is discharged back into the recipient (TENT B, TEK and TEM).

Wastewater treatment plant was constructed and commissioned at TENT A in 2016, and it consists of several units:

- atmospheric water from the concrete surfaces and roofs of the administrative building, the maintenance building, the main power building and the fleet building as well as other facilities at site, runs through the main collector, and from the concrete surfaces and roofs of the RT buildings, warehouse and the external fleet facility runs through the secondary collector and flow into the return cooling water channel. Atmospheric water and other wastewater from the coal landfill, (water from wagons defrosting, washing of inclined bridges and conveyor belts, from bulldozer depots) after purification at the wastewater treatment plant (G1), are discharged into the old drainage channel of the ash landfill, where atmospheric wastewater from waste landfill after passing the oil separator is also discharged,
- •waste waters from drainage pit of heavy oil station, condensate expander and drainage pits of heavy oil heating stations, after treatment at the plant for pretreatment of heavy oil waste waters (UM1), are taken to the oily wastewater treatment plant (U1),
- except the heavy oil contaminated waste waters which were pretreated on API- separator (UM1), waste waters from machine hall drainage pits are treated at U1 plant as well and then discharged into the old ash landfill drainage channel.

- plant for treatment of waste waters resulting from the flue gas desulphurization process (FGD) will be commissioned in Q1 in 2024, within of scope of completion of works in construction of FGD plant.

Control of wastewater quality in the facilities of TENT Branch and its impact on recipients and groundwater is done 4 times a year, except for the return cooling water at TENT A and TENT B which is analyzed once a month.

The program of control of each organizational part of the TENT Branch includes the physical and chemical, bacteriological, and radiological parameters that are given as necessary for monitoring the compliance with the legal regulations related to certain types of water.

Control program includes the following types of water:

- Waste waters at discharging points into the river;
- river waters – recepients' waters on the profiles upstream and downstream of the wastewafter discharge point;
- Groundwater in the vicinity of ash and slag landfill (piezometers and rural wells).

Within the control program, monitoring of the efficiency of devices for wastewater treatment is also carried out at TENT A - G1, UM1 and Biodisk at TENT A and Putoks at TENT B. Ash and slag landfills groundwater quality impact is monitored by testing water quality in the piezometers and rural wells located in the landfill vicinity. Long-term studies have shown that concentrations of sulphate and arsenic are relevant parameters to monitor the impact of ash and slag landfills on groundwater. Sulphate ion, originating from the landfill is characterised by the fastest migration and is considered to be an excellent tracer for monitoring of the landfill groundwater impact. There is groundwater control in piezometers in storages for temporary waste disposal in TENT A and TENT B.

TENT B recorded the current state, so-called "zero state", of groundwater quality prior to the comencement of ash landfill site exploitation. Groundwater quality data, "zero state", are of great importance for further monitoring and evaluation of the ash landfill impact on the groundwater quality.

Annual surface and groundwater quality reports for each TENT unit are submitted by authorized person to Serbian Environmental Protection Agency, The Ministry of Environmental Protection and the Public Water Management Company, also to the competent inspectors upon their request, as well as to the relevant institutions during the opinion obtaining process for the purpose of issuance of water permits.

Results of water quality measurements are presented in the Environmental Report developed each year for every organisational unit. Additionally, data are presented in the National Pollution Sources Registry delivered by EPS JSC TENT Branch each year to the Environmental Protection Agency in line with the legal regulations. Surface, groundwater, and wastewater quality control for 2023 at all four locations of TENT was executed by authorized legal entities – in Q1 by ANAHEM LLC Belgrade, and by the Institute for Occupational Safety JSC Novi Sad for the rest of the year.

Table 64 shows the analysis of wastewater and recipient quality data for 2023 in terms of their legal compliance.

In case of surface waters, legal compliance was evaluated by comparing the measured values of parameters with the limit values defined by the Regulation stipulating limit values for pollutants in surface and ground waters and sediments, and due dates for their achievement (Official Gazette of RS No. 50/2012), while wastewater values were compared with the limit values defined by the Regulation stipulating limit values of pollutants in water and due dates for their achievement (Official Gazette of RS No. 67/2011, 48/2012 and 1/2016).

Table 64

NIKOLA TESLA TPPs BRANCH				
Water quality in 2023				
Organizational unit	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Water type	**Wastewater and recipients**			
Drainage wastewater from the landfill	▪suspended solids: <1 – 35 mg/l, no exceedance – LV 35 mg/l ▪arsenic: <3 – 43 µg/l, four LV exceedances each 10µg/l in samples of new and old drainage channel ▪sulphates: 223 - 773mg/l, below LV-2.000 mg/l fluorides: <0,5 -4,25 mg/l, two LV exceedance-2mg/l in samples of new drainage channel	▪Water from the perimeter channel around the ash landfill - a mixture of overflow and drainage waters: ▪suspended solids. <1 – 4,2 mg/l, ▪arsenic: 24 - 38 µg/l, ▪sulphates: 570-829 mg/l ▪fluorides: <0,5 - 1,92 mg/l Note: these waters are not discharged into the recipient, so compliance with the limit values is not given	-	Not discharged into recipient.
Overflow wastewater from the landfill	▪suspended solids: <1 – 26 mg/l, without LV exceedance ▪ arsenic: 26 – 124 µg/l. Above LV-10µg/l ▪ sulphates: 530 – 685 mg/l, below LV-2.000mg/l ▪ fluorides: <0,5 -4,36 mg/l, LV exceedance-2mg/l in two samples **Note:** analyzed sample is a mixture of overflow and drainage waters with mostly overflow waters		**Suspended solids:** < 1-32 mg/l, in all four series below reference value, RV: 35 mg/l; **arsenic:** 0.66-0.305 mg/l, in all four sample series above reference value: 0.01 mg/l; **sulphates:** 163.1-1024.1 mg/l, in all four series below reference value 2000 mg/l; **fluorides**: <0.05-<1.94 mg/l, in all four series below reference value, RV: for fluorides 2 mg/l;	Not discharged into recipient.
Recipient	No changes of the Sava River quality upstream - downstream of TENT A for:	There are no changes in the quality of the Sava River upstream -	**<u>Turija River</u>:** -**arsenic**: upstream values are below the LV: 0.010 mg/l (in	**Velika Morava River upstream wastewater discharge:** Below LV:

NIKOLA TESLA TPPs BRANCH				
Water quality in 2023				
Organizational unit	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Water type	**Wastewater and recipients**			
	▪ arsenic: not exceeding LV-10µg/l ▪ sulphates: no exceedance LV-100 mg/l ▪ mineral oil: not identified. In some sampling batches some parameters (iron, ammonia, suspended matters) deviate from LV both upstream and downstream TENT A. In the first sampling batches, phosphorus is increased downstream TENT A. Sava River temperature difference, TENT A upstream and downstream is 1°C on average, 1,7 °C at most.	downstream from TENT B for: ▪ arsenic: not exceeding LV - 10µg/l ▪ sulphates: up to 61 mg/l, below LV-100 mg/l ▪ mineral oil: not identified. In some sampling batches some parameters (iron, ammonia, total nitrogen, dissolved oxygen) deviate from LV both upstream and downstream TENT B. Sava River temperature differences (TENT B upstream and downstream) is less than 3°C (in accordance with legal regulations) and it averages 1.2□C, 2°C at most.	batches I, II and IV, whereas in III batch it was 0.015 mg/l, 0.010 mg/l above LV, downstream are three samples (II – 0.028 mg/l , III – 0.088 mg/l and IV – 0.033 mg/l) above LV: 0.010 mg/l, and in the I batch sampling was not done. ▪ **sulphates**: upstream values are below the LV: 100 mg/l, Three samples downstream (II – 251.1 mg/l and III – 744.8 mg/l and IV batch 187.7 mg/l) are above the reference value of 100 mg/l; in the I batch sampling was not done. **<u>Kolubara River</u>**: -**arsenic**: upstream values are below the LV 0.010 mg/l, in all four samples. - downstream three samples are below LV and one sample (III – 0.033 mg/l) above LV: 0.010 mg/l; -**sulphates:** upstream all four	Dissolved oxygen 5,7 mg/l (I, III quarter) Oxygen saturation 47 and 65,4% (I and III quarter) Above LV: Suspended matters 47-248,6 mg/l (I, II, IV quarter) CPC 18,5 mg/l (III, IV quarter) Total organic carbon (TOC) 6,24 mg/l-10,92 mg/l (II, III, IV quarter) Copper (Cu) 0,170 mg/l (II quarter) Iron 1,19-4,20 mg/l (I, II, IV quarter) Manganese 0,25-0,26 mg/l (I, II quarter) **Velika Morava River downstream wastewater discharge:** Below LV: Dissolved oxygen 5,36-5,5 mg/l (I, III quarter) Oxygen saturation 46 and 61.4% (I, III quarter) Above LV: Suspended matters 50-228,4 mg/l (I, II, IV quarter) CPC 16,2-18,3 mg/l (III, IV quarter) Total organic carbon (TOC) 5,66-7,41 mg/l (II, III, IV quarter) Total N 2,37 mg/l (IV quarter)

NIKOLA TESLA TPPs BRANCH				
Water quality in 2023				
Organizational unit	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Water type	**Wastewater and recipients**			
			samples are below limit value: 100 mg/l, downstream in three batch samples below LV. In the III sampling batch – 148.9 mg/l, above LV 100 mg/l. **Mineral oils**: upstream <0.01mg/l - 0.12 mg/l and downstream <0.01mg/l, -0.14 mg/l, LV are not given. Kolubara River temperature difference upstream and downstream from TEK is less than 3°C in all four batches of sampling.	Copper (Cu) 0,186 mg/l (II quarter) Iron 1,1-4,59 mg/l (I, II, IV quarter) Manganese 0,24-0,26 mg/l (I, II quarter) **Velika Morava River during discharge of wastewater from sand filters washing:** Below LV: Dissolved oxygen 54,9 mg/l (II quarter) Oxygen saturation 41% (I quarter) Above LV: Suspended matters 47,6-252,6 mg/l (I, II, IV quarter) Total organic carbon (TOC) 6,09-6,59 mg/l (II, IV quarter) Nitrites 0,041 mgN/l (III quarter) Arsenic (As) 0,015 mgN/l (II quarter) Copper (Cu) 0,206 mg/l (II quarter) Iron 1,11-4,73 mg/l (I, II, IV quarter) Manganese 0,112 – 0,257 mg/l (I, II, IV quarter) **Return cooling water at discharge of the Velika Morava River:** Over LV: Suspended matters 48,4-278,8 mg/l (II,IV quarter) Arsenic (As) 0,015 mg/l (II quarter) Copper (Cu) 0,235 mg/l (II quarter)

Table 65 shows the analysis of groundwater quality data in the vicinity of ash and slag landfills for 2023 in terms of compliance with legal requirements. The analysis is given for some of the examined parameters that are of greater importance.

In 2023 groundwater quality monitoring in TENT A was conducted in 13 piezometers (they are, in addition to the vicinity of ash landfill, located within TENT A area, near MPB, next to the coal landfill and in the waste storage) and 3 rural wells, TENT B – 9 piezometers (they are, in addition to the vicinity of ash landfill, located in the waste storage) and 4 rural wells, TPP KOLUBARA A - 4 piezometers and 3 rural wells, and TPP Morava 1 piezometer and 2 rural wells and 2 technical water wells.

Legal compliance is evaluated by comparing the aquifer values measured in piezometers with remediation values of pollutant, hazardous and harmful substances in aquifer in line with the Regulation on limit values of pollutant, hazardous and harmful substances in soil (Official Gazette of RS No. 30/2018, 64/19). When soil polution is detected, the check is performed to determine if there is a danger of contaminating groundwater (under the authority of the Ministry of Environement Protection). Compliance with contamination limits of groundwaters (under authority of the Water Directorate) is done in accordance with Rulebook about limits of contamination substances in surface- and groundwaters in sediment and deadlines for its achivement (Official Gazette of RS, No 50/12). Rural wells water data are compared with the maximum permissible concentrations (MPCs) stipulated by the Rulebook on hygienic correctness of drinking water (Official Gazette of FRY No. 42/98 and 44/99 and Official Gazette of RS, No. 28/19).

Table 65

NIKOLA TESLA TPPs BRANCH						
Groundwater quality around ash and slag landfills in 2023						
	Permissible values		**Organizational unit**			
	*	**	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Sulphates (mg/l)	250		Highest in piezometers: Pp1/4, P15/2 and P4/2 (from 137 mg/l – 624 mg/l). Below MPC in all samples of rural wells.	Highest in piezemeters: P2 and P48: 701 mg/l - 1035 mg/l. Below MPC in all samples of rural wells.	**In wells:** ▪N1 below MPC in all batches ▪N2, in III – 287,4 mg/l, over MPC 250 mg/l; ▪N3 in III – 298,6 mg/l and IV-346,2 mg/l above MPC 250 mg/l **In piezometers:** ▪ I-2, 450.7-654mg/l; ▪ VIII-1, 641.4-1130.7 mg/l, ▪ XV-1, 514.1-682 mg/l, ▪ B2, 393.5-720.9 mg/l, no reference value for piezometers (Regulation on limit values of pollutants, hazardous and harmful substances in soil (Official Gazette of RS No. 30/2018 and 64/2019).	**In technical water wells:** -Tubular well within the site 406,7-665,2 mg/l - Topoljar well 299-665,2 mg/l - Hydrant water well 456,1-648,9 mg/l **In drinking water wells:** - Manual pump at the hunting lodge 262,2-412 mg/l -Rural well (Crkvenac) 27,31-68,88 mg/l
Arsenic (µg/l)	10	60	Above MPC in three piezometer samples P15/2 (0,069 – 0,591 mg/l) and one piezometer sample P7/3 (0,071 mg/l). Below MPC in all samples of rural wells.	Below MPC in all piezometers. Below MPC in all samples of rural wells.	**In wells:** ▪ N1, N2 and N3 below MPC 0.010 mg/l, in all sampling batches. **In piezometers:** ▪ I-2, 1.3-2.29 mg/l, in all samples above MPC 0.060 mg/l; ▪VIII-1, 0.267-0.417 mg/l, in all samples above MPC 0.060 mg/l; ▪XV-1, 0.098-0.321 mg/l, , in all samples above MPC 0.060 mg/l; ▪B2, <0.01- 0.029 mg/l, in all samples below MPC 0.060 mg/l;	In technical water wells: - Tubular well within the site <0,01 mg/l - Topoljar well <0,01 mg/l mg/l - Hydrant water well 0,011-0,015 mg/l In drinking water wells: - Manual pump at the hunting lodge <0,01 mg/l -Rural well (Crkvenac) <0,01 mg/l

NIKOLA TESLA TPPs BRANCH						
Groundwater quality around ash and slag landfills in 2023						
	Permissible values		**Organizational unit**			
	*	**	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Lead and cadmium (mg/l)	Pb 0,01	Pb 0,075 Cd 0,006	Lead above MPC in one piezometer sample P1/4 (0,157 mg/l), and two piezometer samples P15/2 (0,127 and 0,479 mg/l). Cadmium above MPC in two piezometer samples P19 (0,0069 and 0,016 and in one piezometer sample P21 (0,0066 mg/l), P1/4 (0,007 mg/l) Lead below MPC in all rural well samples.	Lead and cadminum below MPC in all piezometers. Lead below MPC in all rural wells.	**In wells**: Pb is below MPC 0.01 mg/l, in all samples. **Pb in piezometers:** ▪I-2, in I batch: 0.082 mg/l, above RV. In batches: II- 0.059 mg/l, III- 0.051 mg/l and IV- 0.034 mg/l below reference value 0.075 mg/l; ▪VIII-1, 0.013-0.023 mg/l, in all batches below reference value 0.075 mg/l ▪XV-1, I -0.029 mg/l II- 0.062 mg/l,IV-0.029 mg/l below reference value 0.075 mg/l; while in III- 0.100 mg/l; above RV 0.075 mg/l; ▪B2, 0.0035-0.018 mg/l in all four samples below reference value. **Cd in piezometers** I-2 in I batch: 0.019 mg/l and VIII-1 I batch :0.0069 mg/l in are Cd above remediation value 0.006 mg/l, - in other batches , it was below RV. In piezometers XV-1 and B2 in all samples CD below remediation value 0.006 mg/l;	**In technical water wells:** - Tubular well within the site <0,01 mg/l Pb < 0,001 mg/l Cd - Topoljar well <0,01 mg/l Pb < 0,001 mg/l Cd - Hydrant water well <0,01 mg/l Pb < 0,001 mg/l Cd **In drinking water wells:** - Manual pump at the hunting lodge <0,01 mg/l Pb - Rural well (Crkvenac) <0,01 mg/ l Pb
Zinc (mg/l)	3,0	0,8	Above MPC in most samples of piezometers (up to 517 mg/l). Below MPC in all samples of rural wells.	Above MPC in some samples of piezometers P80, P59, P74, and P32 (1,7 – 13 mg/l) Below MPC in all samples of rural wells.	**In wells:** Zn below reference value 3.0 mg/,l in all samples. **In piezometers:** Zn is below reference value 0.8 mg/l, in all samples of piezometers except in piezometer VIII-1 in I batch -1,10 mg/l, above reference value 0.8 mg/l;	**In technical water wells:** -Tubular well within the site 0,035-0,078 mg/l -Topoljar well 0,0014-0,078 mg/l -Hydrant water well 0,0027-,0097 mg/l **In drinking water wells:** -Manual pump at hunting lodge 0,094-0,13 mg/l -Rural well (Crkvenac) 0,056-2,8 mg/l

NIKOLA TESLA TPPs BRANCH						
Groundwater quality around ash and slag landfills in 2023						
	Permissible values		**Organizational unit**			
	*	**	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Manganese (mg/l)	0,05		Above MPC in two samples of rural wells Krtinska 1: 2,78 and 0,46 mg/l	Above MPC in one sample of well 2 in Grabovac (1,50 mg/l)	**In wells:** **N1** – y III- 0.217 mg/l, above MPC 0.05 (0.1) mg/l. In other batches below MPC **N2** – in batch III – 0.402 mg/l and batch IV -0.615 mg/l above MPC 0.05 (0.1) mg/l. In the first two below MPC **N3** – below MPC 0.05 (0.1) mg/l. In all sampling batches <0.004 mg/l - 0.007 mg/l **In piezometers:** There is no reference value for piezometers (Regulation on limit values for pollutants, harmful and hazardous matters in soil, Official Gazette RS, No.30/2018 and 64/2019).	**In technical water wells:** -Tubular well within the site 0,095-0,392 mg/l -Topoljar well 0,063-0,392 mg/l -Hydrant water well 0,011-0,018 mg/l **In drinking water wells:** -Manual pump at hunting lodge 0,005-0,118 mg/l -Rural well (Crkvenac) <0,004-0,16 mg/l
Ammonia (mg/l)	0,5		Ammonia is below MPC in all samples of rural wells.	Ammonia is below MPC in all samples of rural wells.	**In wells:** Ammonia below MPC 0.5 (1) mg/l in all well samples N1, N2, N3 There is no reference value for piezometers for ammonia (Regulation released in Official Gazette of the Republic of Serbia No. 30/2018 and 64/2019).	**In technical water wells:** -Tubular well within the site 0,04-0,290 mg/l -Topoljar well 0,06-0,290 mg/l -Hydrant water well 0,11-0,84 mg/l **In drinking water wells:** -Manual pump at hunting lodge <0,01 - <0,1 mg/l -Rural well (Crkvenac) <0,01 - <0,1 mg/l
Nitrites (mg/l)	0,1		Nitrites are below MPC in all rural well samples.	Above MPC in one well sample in Dren (4,07 mg/l) and one well sample in Ušće (0,67 mg/l).	Nitrites are below MPC 0.03 mg/l (0,1 mg/l) in all samples of wells N1, N2, N3 and N4, Nitrites were not tested for piezometers.	**In drinking water wells:** -Manual pump at hunting lodge <0,01 - <0,03 mg/l -Rural well (Crkvenac) <0,01 - <0,03 mg/l

NIKOLA TESLA TPPs BRANCH						
Groundwater quality around ash and slag landfills in 2023						
	Permissible values		**Organizational unit**			
	*	**	**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Nitrates (mg/l)	50		Nitrates above MPC registered in three well samples in Urovci (56 – 99 mg/) and three well 1 samples in Krtinska (54 – 166 mg/)	Above MPC in one sample of well 1 in Grabovac (76,53 mg/l) and one sample of well in Dren (82,54 mg/l).	**In wells:** Below MPC 50 mg/l; in all well samples N1, N2, N3. **In piezometers:** ▪ I-2, 0.34-1.70mg/l; ▪ VIII-1, 0.42-2.87 mg/l, ▪ XV-1, <0.5-2.26 mg/l, ▪ B2, <0.5-2.78 mg/l, There is no reference value for piezometers (Regulation on limit values for pollutants, harmful and hazardous matters in soil, Official Gazette RS, No.30/2018 and 64/2019).	**In technical water wells:** -Tubular well within the site 0,18-7,2 mg/l -Topoljar well 0,22-7,2 mg/l -Hydrant water well 0,36-2,35 mg/l **In drinking water wells:** -Manual pump at hunting lodge 0,49-7,01 mg/l -Rural well (Crkvenac) 0,67-46,48 mg/l

* MPC for potable water;
** remediation values of concentration of hazardous and harmful substances and values indicating Severe groundwater contamination.

Of the other exceedances of MPC in piezometers, an elevated concentration of copper was found in one sample batch of piezometers P19, P21, P1/4, P15/2, and P30, respectively, in TENT A and one sample of piezometer P80 in TENT B. Copper concentrations in samples with exceedance were within the range between 0,101 and 0,203 mg/l.

For the rural well samples at the TENT A and TENT B locations, apart from the parameters listed in the table, the other exceedances refer mainly to the parameters of oxygen saturation, potassium permanganate and microbiological incorrectness. In well 1 in Krtinska, manganese was elevated (0,46 – 2,78 mg/l) in two samples)

As the concentration of manganese in the overflow and drainage waters of ash landfill is low, increased manganese concentration in rural wells water is caused by the high level of this element in soil. The elevated concentration of manganese and nitrates in rural well water in the vicinity of TENT B ash landfill, which is a consequance of agricultural activities, was also identified by “zero state” testing.

Annual reports of authorized persons from the previous years state that measured high concentration of zinc in piezometers in TENT A and TENT B is the result of dissolution of metal from galvanized pipes the piezometers are made of.

Microbiological incorrectness of rural wells water is caused by the proximity of septic tanks and stables, which is concluded based on the data on ”zero state“.

Table 66 provides the analysis of sanitary wastewater quality data at the treatment plant inlet and outlet for 2023.

Table 66

NIKOLA TESLA TPPs BRANCH			
Sanitary wastewater treatment plant operation in 2023			
Pollutants concentration (mg/l)	**MPC (mg/l)**	**Biodisk plant TENT A**	**Putoks plant TENT B**
Suspended solids (mg/l)			
Plant inlet	-	7,2 – 65,2	36 – 94,4
Plant outlet	75	4,0 -12	32 – 45,2

Biological oxygen demand for 5 days (BOD5)			
Plant inlet	-	18 - 24	12 - 110
Plant outlet	50	3,2 - 16	5,8 - 48

Both plants exceeded the limit values for microbiological parameters, while in terms of physico-chemical parameters, Biodisk and Putoks worked with satisfactory efficiency.

- **Water Quanities**

Table 67 provides an overview of water quantities captured and discharged by TENT Branch organisational units for 2023. TENT A and TENT B calculation of annual amounts of captured surface waters and discharged return cooling water, as well as discharged overflow and drainage waters in TENT A was prepared based on the data on capacity and operating time of the pumps for capturing i.e., discharging water. In TENT A and TENT B, there are flow meters both for captured underground and discharged sanitary wastewater. In the case of gravitational wastewater discharges, calculations were made based on previous wastewater measurements (overflow and drainage waters from the ash and slag landfill). Veliki Crljeni potable water treatment plant supplies Veliki Crljeni and TPP Kolubara A with potable water. A gauge was installed for the line running towards the TPP Kolubara A, also supplying one part of the settlement Veliki Crljeni and the sports centre.

Table 67

NIKOLA TESLA TPPs BRANCH						
Water quantities in 2023 (m^3 / year x10^3)						
Organizational unit	**Reservoir**		**Discharged wastewater**			
	Used quantities		**Return cooling water**	**Wastewater discharged into Bare Channel**	**Overflow and drainage water – ash disposal site**	**Sanitary wastewater**
	Surface	***groundwater**				
TPP Nikola Tesla A	1.189.967	929,3	1.162.479	-	27.557,6	50,9[1)]
TPP Nikola Tesla B	1.212.637	479,8	1.206.005	-	-	45,7
TPP Kolubara A	4.259	-	-	562	169	385
TPP Morava	31.599	36	30.268	-	-	5,4
TOTAL: TPP NIKOLA TESLA BRANCH	**2.438.462**	**1.445,1**	**2.398.752**	**562**	**27.726,6**	**487,0**

* For technological water preparation

Improvements Aimed at Reducing Wastewater Impacts on Surface and Groundwater

For complying with the Law on Waters (Official Gazette of RS, No. 30/10, 93/12, 101/16, 95/18 and 95/18 – other law) and the Regulation on limit values for the emission of pollutants in waters and deadlines for their achievement (Official Gazette of RS, No. 67/11, 48/12 and 1/2016) measures to reduce emissions into water have been implemented or they are planned until the entry into force of the prescribed deadline of 31 December 2025.

TENT A

TENT A wastewater treatment plant consisting of several parts has been operating since 2016 and it includes treatment plants for coal contaminated waste waters (G1), oil contaminated waste waters (U1) including pre-treatment of heavy oil contaminated waste waters (UM1) and FGD wastewaters, which was not operating and its commissioning is expected in the first 2024 quarter, within the scope of completion of flue gas desulphurization plant. In 2023, sampling was done quarterly by accredited laboratories (Anahem LLC in the first and Institute for Occupational Safety Novi Sad in the other three quarters) for monitoring efficiency of equpment.

In 2023, plants UM1 and U1 operated with satisfactory efficiency, the only exceedance was related to the pH value at the outlet of plant U1 in the first quarterly sampling. Plant G1 did not operate with satisfactory efficiency and in all four sampling series at the plant outlet there was an elevated concentration of suspended matters.

TENT B

In TENT B, the construction of a wastewater Treatment Plant started in 2023.

3.2.4. Emission Measurements of Matters Affecting Soil Quality

In 2023 the testing of soil quality and the content of total and available forms of heavy metals and pollutants in soil was continued.

In 2023, one sampling and testing of soil were performed by a legal entity authorized to monitor the soil MIPHEM LLC Belgrade in TENT A, TENT B, TPP Kolubara and TPP Morava. The following analyses of samples were done: mechanical soil composition, soil acidity (active acidity pH in H_2O, substitution acidity pH in 1M KCl), $CaCO_3$ content, capacity of exchangeable cations Na^+, K^+, Ca^{2+}, Mg^{2+}, degree of base saturation, organic matter content , physical properties of soil: dry soil density; solid phase density and total porosity; accessible water; water permeability rate, structure and hardness, chemical properties of soil: hydrolytic acidity of soil, accessible macroelements (N, P, K, Ca, Mg), total nitrogen and sulfur, electrical conductivity of soil extract, nitrate and nitrite content, total and accessible heavy metals (Cr, Ni, Pb, Cu, Zn, Cd, Hg, B, As and Fe), potentially toxic elements, hydrocarbons of petroleum origin (C_6 – C_{40}), polycyclic aromatic hydrocarbons (PAH).

The soil monitoring program includes field and laboratory measurements at representative measuring points entered on the topographic map (places determined by GPS), which will enable monitoring of changes in the examined parameters at the same measuring points in the coming period.

The number and arrangement of measuring points are defined in accordance with Annex 2 of the Rulebook on the list of activities that may be the cause of soil pollution and degradation, procedure, data content, deadlines and other requirements for land monitoring (Official Gazette of RS, No. 68/19). In particular, the following were taken into account: places where soil or groundwater pollution is known to have occurred, places for storage of raw materials, chemicals or waste, places in the immediate vicinity of the plant where the production process takes place, places where loading takes place and unloading of chemicals and / or waste, warehouses for new and worn out equipment that can be a source of soil pollution, space for servicing and maintenance of machines, space for washing equipment, places near underground septic tanks, tanks and pipelines, areas outside the factory may be affected by factory activities.

The content of heavy metals and other toxic elements in the soil was within the range of the usual concentrations and below the remediation values for: chromium (Cr), nickel (Ni), lead (Pb), copper (Cu), zinc (Zn), cadmium (Cd), mercury (Hg), arsenic (As) and boron (B) and iron.

The evaluation of data was performed in accordance with the Rulebook on the list of activities that can cause pollution and degradation of land, the procedure and content of data, deadlines and other requirements for land monitoring (Official Gazette of RS No. 102/2020) and the Regulation on Limit Values of polluting, harmful and dangerous substances in soil (Official Gazette of RS, No. 30/2018, 64/2019), Annex 1, Limit maximum and remediation values of polluting, harmful and dangerous substances in soil.

TENT A and TENT B

The disposal of ash in TENT A is done by evenly discharging the mixture of water and ash into the accumulation space (active cassette), while the remaining space is temporarily still (passive cassette). Even disposal of ash is achieved by changing the outlets on the active cassette, as well as switching from one cassette to another, every 1 to 2 years (transition period). The landfill covers a total area of 400 ha. The entire surface is made in 3 cassettes. The disposal of ash and slag was performed on cassette I and II in 2023.

The total area of the TENT B landfill is 600 ha, of which ash and slag have been disposed of so far on 400 ha. The technology of collecting, transporting and disposing of ash was changed from rare to condensed ash / water mixture (on October 4th, 2009, unit B2 was connected to the new system, while unit B1 was connected on May 30th, 2010). Cassette II is currently active and Cassette I is passive.

At the location of TENT A and TENT B, analyzes of soil samples from 30 measuring points were performed. The surface layer on the profile from 0 to 30 cm was sampled.

TPP Kolubara

At the location of TPP Kolubara, analyzes of 17 soil samples were performed. The surface layer on the profile from 0 to 30 cm was sampled at all 17 measuring points.

TPP Morava

Retention of ash and slag is achieved by building peripheral embankments. There are a total of eight tubs (cassettes), of which I, II, III, IV, V and VI are biologically recultivated (by sowing grass, fruit and other plants), part of cassette VI is a borrowing pit from which ash is exploited for cement, and cassettes VI and VIII are active and serve for the disposal of ash and slag. In 2014, a system of overflow basins was created in which drainage water is collected from the ash and slag landfill, and then the pump system is returned to the excavator station for the re-transport of ash and slag. Analyzes of ash from the landfill and 17 soil samples were performed at the TPP Morava.

In Table 68, the evaluation of measurement results was performed in accordance with the above-mentioned legal regulations.

Table 68

NIKOLA TESLA TPPs BRANCH				
Concentration of substances affecting the soil quality in 2023				
Content (mg/kg)	**TENT A**	**TENT B**	**TPP Kolubara**	**TPP Morava**
Chromium (Cr)	Out of 30 samples 3 samples exceed LV and none exceeds RV .	Out of 30 samples, 1 exceeds LV. None exceeds RV .	Out of 17 samples 5 samples exceed LV and none exceeds RV.	Out of 17 samples 5 samples exceed LV and noneexceeds RV.
Nickel (Ni)	Out of 30 samples 29 samples exceed LV and none exceeds RV .	Out of 30 samples 23 samples exceed LV and none exceeds RV .	Out of 17 samples 14 samples exceed LV and none exceeds RV.	Out of 17 samples all 17 samples exceed LV and none exceeds RV.
Lead (Pb)	Out of 30 samples none exceeds LV nor RV .	Out of 30 samples none exceeds LV nor RV .	Out of 17 samples 3 samples exceed LV and none exceeds RV .	Out of 17 samples 6 samples exceed LV and none exceeds RV.
Copper (Cu)	Out of 30 samples 4 samples exceed LV and none exceeds RV.	Out of 30 samples 1 sample exceeds LV and none exceeds RV.	Out of 17 samples 8 samples exceed LV and none exceeds RV.	Out of 17 samples 7 samples exceed LV and none exceeds RV.
Zinc (Zn)	Out of 30 samples 3 samples exceed LV and none exceeds RV.	Out of 30 samples none exceeds neither LV nor RV.	Out of 17 samples 1 sample exceeds LV and none exceeds RV.	Out of 17 samples 2 samples exceed LV and none exceeds RV.

Cadmium (Cd)	Out of 30 samples none exceeds LV nor RV.	Out of 30 samples 11 samples exceed LV and none exceeds RV .	Out of 17 samples none exceeds LV nor RV .	Out of 17 samples none exceeds LV nor RV.
Mercury (Hg)	Од 30 узорака 2 узорка прелазе ГВ и ниједан не прелази РВ.	Out of 30 samples none exceeds LV nor RV	Out of 17 samples 15 samples exceed LV and none exceeds RV.	Out of 17 samples 3 samples exceed LV and none exceeds RV.
Arsenic (As)	Out of 30 samples none exceeds LV nor RV .	Out of 30 samples none exceeds LV nor RV	Out of 17 samples 2 samples exceed LV and none exceeds RV.	Out of 17 samples none exceeds LV nor RV
Boron (B)	Out of 30 samples none exceeds LV nor RV .	Out of 30 samples none exceeds LV nor RV	Out of 17 samples none exceeds LV nor RV .	Out of 17 samples none exceeds LV nor RV.
Iron (Fe)	Out of 30 samples none exceeds LV nor RV .	Out of 30 samples none exceeds LV nor RV	Out of 17 samples none exceeds LV nor RV.	Out of 17 samples none exceeds LV nor RV.
Mineral oils (fractions C6-C40)	Out of 30 samples none exceeds LV nor RV .	Out of 30 samples none exceeds LV nor RV	Out of 17 samples none exceeds LV nor RV.	Out of 17 samples none exceeds LV nor RV.
Total polycyclic aromatic hydrocarbons	Out of 30 samples none exceeds LV nor RV .	Out of 30 samples none exceeds LV nor RV	Out of 17 samples none exceeds LV nor RV.	Out of 17 samples none exceeds LV nor RV.

3.2.5. Environmental Noise Measurement

In 2023, noise in the environment was measured at the locations of the TENT Branch facilities. At three locations of the TENT Branch, a 15-minute measurement of the noise level was done, with two measurement intervals in the daytime, one in the evening and two in the night mode, by the Belgrade Mining Institute. In TEK, a 24-hour measurement was done by the Institute for Occupational Safety and Security from Novi Sad. Measurements were done at four measuring points in the vicinity of each plant. At the location TENT A, the measuring points were in the vicinity of the plant in the nearest residential zones, while at the locations TENT B, TEK and TEM, the measuring points were chosen so that they are located on the boundaries of the property of the plant. In Table 68, the values for day and night measurements are given as mean values of two fifteen-minute measurements. Measurements were made in accordance with SRPS ISO 1996-1 and SRPS ISO 1996-2 standards. The ultimate goal of the measurement is the determination of the relevant noise level, which is given through the measured equivalent levels.

Noise in the process of electricity production in thermal power plants is caused by the operation of the following plants: mills, turbines, flue gas fans and occasionally in case of disturbance of the operating mode of the unit (boiler) there is noise from the inclusion of safety valves that lasts up to 1 minute.

At the time of measuring and drafting the reports of the Local Self-Government of the Municipalities of Obrenovac, Lazarevac (City of Belgrade) and Svilajnac, they have not yet performed acoustic zoning in accordance with the Law on Environmental Noise Protection, Official Gazette of RS, No. 96/2021). Due to the lack of clearly limited acoustic zones, it is not possible to precisely determine the measuring points, which should be located on the border of zone 5 - City center, craft, trade, administrative zone with apartments, zone along highways, state and city roads and 6 - Industrial, warehouses and service areas and transport terminals without residential buildings.

According to the actual legal regulation, due to undefined acoustic zones, the measured values were compared with the highest permitted noise levels for the day and night period.

At the TENT A and TENT B, there was no exceedance of the permitted noise level at any measuring point.

The measurement of the noise level in the vicinity of the TPP Kolubara was carried out on January 23 and 24, 2023, during the operation of boilers K1 and TA1. The measurement of the noise level at each measuring point was carried out continuously for 24 hours with a reference time of 15 minutes. At all four measurement sites, the noise was identified as variable, wide-band, without impulses and prominent tones. At the time of the measurements and preparation of the report, there was no data on acoustic zoning in the vicinity of the TPP Kolubara. All measured values are below the limit values for the assumed zone 6. Industrial, storage and service areas and transport terminals without residential buildings.
Table 69 shows the data of the measured noise levels for the year 2023 for the facilities of the TENT Branch.

Table 69

NIKOLA TESLA TPPs BRANCH					
Noise levels in 2023 (dB)(A)					
Noise indicators limit values, Regulation stipulating noise indicators, limit values, methods assessing noise indicators, disturbance levels and harmful living environment noise effects (OG RS № 75/10)	*** Closed area**			**Day and evening**	**Night**
				35	**30**
	Open areas	Areas for rest and recreation, hospital zones and rehabilitation centers, cultural and historical sites, large parks		**50**	**40**
		Tourist areas, camps and school zones		**50**	**45**
		Purely residential areas		**55**	**45**
		Commercial-residential areas, trading-residential areas and children's playgrounds		**60**	**50**
		City center, trading, crafts, administrative zones containing flats, zones along motorways, state and city roads		**65**	**55**
		Industrial, storage and service areas and transport terminals without residential buildings		At the border of this zone noise must not exceed the limit value in the zone with which it borders.	
Measuring points		**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
Day 15 min	**1**	51,9	45,5		53,5
	2	56,4	44,1		60,0
	3	54,8	50,0		56,0
	4	53,0	51,8		48,0
Evening 15 min	**1**	56,6	52,4		62,0
	2	52,6	50,7		57,0
	3	51,4	53,4		58,0
	4	51,1	52,6		52,0
	1	54,9	52,9		62,0

	2	48,8	51,1		55,0
	3	50,1	53,0		60,0
Night 15 min	**4**	50,7	49,6		55,0
Measuring points		**TENT A**	**TENT B**	**TPP KOLUBARA A**	**TPP MORAVA**
24-hour measurement (total noise level)	**1**			63.8	
	2			61.7	
	3			63.2	
	4			63.3	

Preparation of Study for noise decrease in the environment for TPP and CHP is planned in the future period.

3.2.6. Waste

Waste generation in 2023 is shown in Table 70, and the quantity of waste delivered to authorized operators in 2023 is in Table 71. The ash produced in the technological process of burning lignite in the boilers of TPP Kolubara and TNT B is stored in a silo and sold to interested customers for use as raw material in the construction industry, based on the contract for the sale of ash, and the rest is disposed of at the ash and slag landfill. Calculated percentage of fly ash sold in relation to the produced for TENT B: 8.27%, for TPP Kolubara A: 3.84%.

Table 70

NIKOLA TESLA TPPs BRANCH									
Generated waste in 2023									
No.	**Rulebook on Waste Categories, Testing and Classification (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Total**	**Note**
				TPP Nikola Tesla A	**TPP Nikola Tesla B**	**TPP Kolubara A**	**TPP Morava**		
	Name	**Index no.**		**Quantities**					
1.	Waste printer cartridges other than those under 08 03 17	08 03 18	t	0,160	0,000	0,029	0,000	**0,189**	Waste printer cartridges
2.	Ash, slag and dust from boiler (except the dust from boiler stated in 10 01 04	10 01 01	t	2.180.719,77	1.727.146,97	119.714,666	132.479,450	**4.160.060,856**	Ash and slag from coal
	Coal fly ash	10 01 02						**0,000**	
3.	Consumed wax and grease	12 01 12*	t	0,000	0,000	0,000	0,060	**0,060**	Waste grease
4.	Other hydraulic oils	13 01 13*	t	17,600	2,108	1,248	0,740	**21,696**	Waste hydraulic oils
			t	25,100	0,000	0,000	1,380	**26,480**	Waste turbine oils
5.	Other motor oils, transmission and lubricating oils	13 02 08*	t	7,460	15,363	0,000	0,000	**22,823**	Waste oil for lubrication and regulation
			t	1,660	8,672	0,320	1,500	**12,152**	Waste engine oil, gear oil and lubrication oil
6.	Other oils for insulation and heat transfer	13 03 10*	t	0,000	0,000	0,000	1,100	**1,100**	Waste insulation oil and heat transfer oil
7.	Other fuels (including mixtures)	13 07 03*	t	0,000	0,000	0,000	0,280	**0,280**	Waste oil additives
			t	0,000	1,658	0,000	0,000	**1,658**	Waste heavy oil
8.	Other emulsions	13 08 02*	t	23,640	3,156	0,000	2,305	**29,101**	Waste emulsion (oil-water mix)
9.	Other solvents and solvent mixtures	14 06 03*	t	0,580	0,039	0,000	0,000	**0,619**	Waste solvents and solvent mixtures
10.	Wooden packaging	15 01 03	t	0,000	0,000	1,760	19,200	**20,960**	Wooden packaging waste
11.	Packaging with residue of hazardous substances or contaminated with hazardous substances	15 01 10*	t	0,000	0,040	0,000	0,000	**0,040**	Waste contaminated glass packaging
			t	1,792	1,442	0,102	0,000	**3,336**	Waste contaminated PVC packaging from chemicals

NIKOLA TESLA TPPs BRANCH									
Generated waste in 2023									
No.	**Rulebook on Waste Categories, Testing and Classification (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Total**	**Note**
				TPP Nikola Tesla A	**TPP Nikola Tesla B**	**TPP Kolubara A**	**TPP Morava**		
	Name	**Index no.**		**Quantities**					
			t	4,930	0,580	0,576	0,000	**6,086**	Waste metal packaging from oil and lubricants a
12.	Absorbent, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by hazardous substances	15 02 02*	t	0,000	2,546	0,113	0,250	**2,909**	Cotton fiber waste with oil and heavy oil
			t	0,520	0,064	0,000	0,220	**0,804**	Waste oily filters
			t	2,780	0,000	1,700	1,080	**5,560**	Waste adsorption means with oil and heavy oil
13.	Absorbent, filter materials, wiping cloths, protective clothing other than those specified in 15 02 02	15 02 03	t	0,000	1,380	0,000	0,000	**1,380**	Waste sand
				0,000	0,000	0,000	0,040	**0,040**	Waste silica gel
			t	0.160	0,120	0,000	0,000	**0,280**	Waste non-hazardous filters
14.	Waste rubber	16 01 03	t	0,980	1,660	0,000	0,840	**3,480**	Waste tyres
			t	54,990	1,760	1,200	6,960	**64.910**	Waste rubber conveyor belts
15.	Discarded equipment containing hazardous components other than those indicated under 16 02 09 and 16 02 12	16 02 13*	t	0,000	0,000	0,000	5,680	**5,680**	Waste transformers
			t	0,000	0,000	0,000	0,900	**0,900**	Waste coal treatment equipment
			t	8,323	2,151	3,249	0,320	**14,043**	Waste from electric and electronic devices
16.	Lead batteries	16 06 01*	t	0,261	0,895	0,5285	0,880	**2,565**	Waste lead batteries
17.	Tile and ceramics	17 01 03	t	0,000	0,000	0,000	0,520	**0,520**	Waste ceramics
18.	Wood	17 02 01	t	0,220	0,120	0,000	31,840	**32,180**	Wooden waste
19.	Glass	17 02 02	t	0,120	0,000	0,000	0,000	**0,120**	Glass waste
20.	Plastics	17 02 03	t	3,580	0,660	0,582	1,020	**5,842**	Waste mixed plastics
21.	Glass, plastic and wood containing hazardous substances or contaminated with hazardous substances	17 02 04*	t	0,000	0,000	0,000	262,780	**262,780**	Waste railway sleepers

NIKOLA TESLA TPPs BRANCH									
Generated waste in 2023									
No.	**Rulebook on Waste Categories, Testing and Classification (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Total**	**Note**
				TPP Nikola Tesla A	**TPP Nikola Tesla B**	**TPP Kolubara A**	**TPP Morava**		
	Name	**Index no.**		**Quantities**					
22.	Cooper, bronze, brass	17 04 01	t	0,000	0,078	0,2235	0,000	**0,301**	Waste and remains of coppers and brass
			t	8,050	6,250	0,013	0,000	**14,313**	Waste copper cables
23.	Aluminum	17 04 02	t	5,360	0,000	0,020	0,000	**5,380**	Waste aluminum cables
			t	2,420	5,800	0,972	0,000	**9,192**	Aluminum miscellaneous
			t	0,000	0,000	1,000	0,540	**1,540**	Aluminum sheet
24.	Iron and steel	17 04 05	t	2,020	20,480	2,047	0,440	**24,987**	Waste galvanized and black sheet metal
			t	0,000	0,000	0,000	1,880	**1,880**	Waste iron with admixtures of other substances
			t	89,740	121,420	30,560	43,960	**285,680**	Waste impact plates
			t	0,000	6,020	0,000	0,000	**6,020**	Steam pipeline waste pipes
			t	1,100	80,500	0,000	2,740	**84,340**	Waste boiler pipelines
			t	46,830	18,970	19,607	22,760	**108,167**	Waste iron up to 5mm thickness
			t	0,220	12,380	43,489	0,000	**56,089**	Waste grey cast
			t	0,000	0,000	21,215	0,000	**21,215**	Waste steel sheet
			t	31,940	26,200	0,000	0,000	**58,140**	Waste and remains from iron and steel
			t	666,360	494,400	55,972	35,620	**1.252,352**	Waste iron over 5mm thickness
			t	0,000	0,000	0,560	0,720	**1,280**	Metal shavings
			t	9,600	2,700	0,000	0,000	**12,300**	Waste rail accessories
			t	4,940	56,000	45,710	0,000	**106,650**	Waste railway rails
			t	0,000	0,000	0,000	7,980	**7,980**	Waste mixed metals from magnetic separator
			t	0,000	0,000	0,109	0,000	**0,109**	Waste electrodes
25.	Mixed metals	17 04 07	t	0,060	13,040	10,304	0,000	**23,404**	Waste mixed metals
			t	0,000	1,360	0,000	0,000	**1,360**	Waste metal shavings

NIKOLA TESLA TPPs BRANCH									
Generated waste in 2023									
No.	**Rulebook on Waste Categories, Testing and Classification (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Total**	**Note**
				TPP Nikola Tesla A	**TPP Nikola Tesla B**	**TPP Kolubara A**	**TPP Morava**		
	Name	**Index no.**		**Quantities**					
			t	0,000	0,000	4,840	0,280	**5,120**	Valves
26.	Insulation material other than specified in 17 06 01 and 17 06 03	17 06 04	t	468,920	0,000	8,653	3,640	**481,213**	Waste mineral stone wool
27.	Construction materials containing asbestos	17 06 05*	t	0,000	20,940	0,000	0,000	**20,940**	Waste salonite plates
28.	Mixed construction and demolition waste other than those indicated under 17 09 01 and 17 09 02 and 17 09 03	17 09 04	t	0,050	0,000	0,000	0,000	**0,050**	Waste graphite
			t	3.992,570	4.476,560	0,000	0,000	**8.469,130**	Mixed construction waste
29.	Sludge from other industrial wastewater treatments other than mentioned in 19 08 13	19 08 14	t	13,200	0,000	0,000	0,000	**13,200**	Sludge from industrial wastewater treatment
30.	Sludge from water decarbonization	19 09 03	t	0,000	0,000	0,000	12,720	**12,720**	Sludge from water decarbonization
31.	Saturated or spent ion-exchanging resins	19 09 05	t	3,220	2,460	0,000	0,320	**6,000**	Waste ionic mass
32.	Minerals (e.g., sand and stone)	19 12 09	t	0,000	0,000	80,500	12,360	**92,860**	Waste white sand
33.	Textile	20 01 11	t	0,000	0,000	0,008	0,000	**0,008**	Fire hoses
34.	Fluorescent tubes and other mercury-containing waste	20 01 21*	t	0,538	0,000	0,026	0,0296	**0,594**	Waste fluorescent tubes
			t	0,370	0,000	0,000	0,056	**0,426**	Waste mercury lightbulbs and thermometers
35.	Discarded electrical and electronic equipment other than those specified under 20 01 21, 20 01 23 and 20 01 35	20 01 36	t	0,000	0,000	0,023	0,000	**0,023**	Sodium bulbs
36.	Waste measuring equipment	20 01 40	t	0,980	0,000	0,000	0,000	**0,980**	Waste measuring equipment

* hazardous waste

Table 71

NIKOLA TESLA TPPs BRANCH									
Disposed waste in 2023									
No.	**Rulebook on Waste Categories, Testing and Classification (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Total**	**Note**
				TPP Nikola Tesla A	**TPP Nikola Tesla B**	**TPP Kolubara A**	**TPP Morava**		
	Name	**Index no.**		**Quantities**					
1.	Waste printer cartridge other than that under 08 03 17	08 03 18	t	0,160	0,000	0,080	**0,030**	**0,270**	Waste printer cartridges
2.	Ash, slag and dust from boiler (except the dust from boiler stated in 10 01 04)	10 01 01	t	0,000	142.949,37	4.652,080	0,000	**147.601,450**	Ash and slag from coal
	Coal fly ash	10 01 02							
3.	Other fuels (including mixtures)	13 07 03*	t	0,000	2,882	0,000	0,000	**2,882**	Waste heavy oil
4.	Other emulsions	13 08 02*	t	4,020	6,228	0,000	2,310	**12,558**	Waste emulsion (oil-water mix)
5.	Wooden packaging	15 01 03	t	0,000	27,780	17,560	19,200	**64,540**	Wooden packaging waste
6.	Packaging with residue of hazardous substances or contaminated with hazardous substances	15 01 10*	t	0,000	0,100	0,000	0,000	**6,380**	Waste contaminated glass packaging
			t	1,320	1,620	0,120	0,000		Waste contaminated PVC packaging from chemicals
			t	2,700	0,000	0,520	0,000		Waste metal packaging from oil and lubricants
7.	Absorbent, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by hazardous substances	15 02 02*	t	0,000	2,860	0,120	0,000	**5,824**	Cotton fiber waste with oil and heavy oil
			t	0,000	0,064	0,000	0,000		Waste oily filters
			t	0,000	2,780	0,000	0,000		Waste adsorption means with oil and heavy oil

8.	Absorbent, filter materials, wiping cloths, protective clothing other specified in 15 02 02	15 02 03	t	0,000	10,380	0,000	0,000	**10,380**	Waste sand
9.	Waste rubber	16 01 03	t	5,000	0,200	0,000	0,840	**124,920**	Waste pneumatic tyres
			t	80,480	34,280	1,780	2,340		Waste rubber conveyor belts
10.	Lead batteries	16 06 01*	t	12,201	2,695	0,640	1,760	**17,296**	Waste lead batteries
11.	Nickle-cadmium batteries	16 06 02*	t	0,240	0,000	0,000	0,000	**0,240**	Ni - Cd batteries
12.	Tile and ceramics	17 01 03	t	0,600	0,000	0,000	0,860	**1,460**	Waste ceramics
13.	Wood	17 02 01	t	0,860	101,420	4,880	31,840	**139,000**	Wood waste
14.	Glass	17 02 02	t	0,960	0,000	0,000	0,000	**0,960**	Glass waste
15.	Plastic	17 02 03	t	1,220	1,060	19,060	1,740	**23,080**	Waste mixed plastics
16.	Glass, plastic and wood containing hazardous substances or contaminated with hazardous substances	17 02 04*	t	0,000	0,000	0,000	262,780	**262,780**	Waste railway sleepers
17.	Cooper, bronze, brass	17 04 01	t	0,020	0,140	0,300	0,000	**10,040**	Waste and remains of coppers and brass
			t	0,000	0,000	1,620	0,000		Waste brass pipes
			t	1,640	4,780	1,500	0,000		Waste copper cables
			t	0,040	0,000	0,000	0,000		Waste bronze
18.	Aluminum	17 04 02	t	1,900	0,000	0,140	0,000	**34,280**	Waste aluminum cables
			t	11,880	18,900	0,860	0,000		Aluminum miscellaneous
			t	0,000	0,000	0,000	0,600		Aluminum sheet
19.	Iron and steel	17 04 05	t	6,000	43,900	3,900	0,780	**5.532,000**	Waste galvanized and black sheet metal
			t	0,000	0,000	0,000	1,880		Waste iron with admixtures of other substances
			t	0,000	298,920	0,000	0,000		Waste Fe combs
			t	142,640	219,960	60,560	80,740		Waste impact plates
			t	0,000	266,020	0,000	0,000		Steam pipeline waste pipe
			t	14,960	1.188,760	0,000	7,400		Waste boiler pipelines
			t	48,840	120,860	22,720	27,940		Waste iron up to 5mm thickness
			t	3,220	0,000	122,040	0,000		Waste grey cast
			t	57,060	45,680	0,000	0,000		Waste and remains from iron and steel

			t	1.427,560	1.099,280	102,820	60,380		Waste iron over 5mm thickness
			t	0,000	0,000	34,780	0,000		Waste cast steel
			t	0,000	0,000	3,040	0,220		Metal shavings
			t	12,580	0,000	0,000	0,000		Waste rail accessories
			t	0,000	0,000	1,100	0,000		Waste railway rails
			t	0,000	0,000	0,000	5,460		Waste mixed metals from magnetic separator
20.	Mixed metals	17 04 07	t	6,220	6,480	6,180	0,000	**30,460**	Waste mixed metals
			t	0,000	2,460	0,000	0,000		Waste metal scraping
			t	0,000	0,000	8,840	0,280		Valves
21.	Soil and stone other than in 17 05 03	17 05 04	t	0,000	1,820	0,000	0,000	**1,820**	Soil and stone other than in 17 05 03
22.	Insulation material other than specified in 17 06 01 and 17 06 03	17 06 04	t	0,000	2,000	0,000	0,000	**835,220**	Insulation braids
			t	468,920	317,020	42,400	4,880		Waste mineral stone wool
23.	Mixed construction and demolition waste other than those indicated under 17 09 01 and 17 09 02 and 17 09 03	17 09 04	t	3.992,570	4.476,560	0,000	0,000	**8.469,130**	Mixed construction waste
24.	Sludge from water decarbonization	19 09 03	t	0,000	0,000	0,000	12,720	**12,720**	Sludge from decarbonization
25.	Sludge from other industrial wastewater treatments other than mentioned in 19 08 13	19 08 14	t	13,200	0,000	0,000	0,000	**13,200**	Sludge from industrial wastewater treatment
26.	Saturated or spent ion-exchanging resins	19 09 05	t	3,220	2,620	0,000	0,000	**5,840**	Waste ionic mass
27.	Minerals (e.g., sand and stone)	19 12 09	t	0,000	0,000	99,740	12,360	**112,100**	Waste white sand
28.	Fluorescent tubes and other mercury-containing waste	20 01 21*	t	0,240	0,000	0,160	0,000	**1,065**	Waste fluorescent tubes
			t	0,320	0,200	0,145	0,000		Waste mercury lightbulbs and thermometers
29.	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	20 01 33*	t	0,010	0,000	0,000	0,000	**0,010**	Waste batteries - alkaline, lithium

* hazardous waste

3.3. Working Environment Monitoring, Occupational Safety and Health

Occupational Safety and Health Reports for 2023 include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurements
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

3.3.1. Working Environment Monitoring

- **Environmental Noise Measurement**

In 2023 at all locations of the TENT Branch, no periodical inspections of the conditions of the working environment were carried out.

3.3.2. Occupational Safety

- **Training of Employees**

Table 72 shows the number of employees planned for training and the number of employees who underwent training in 2023.

Table 72

NIKOLA TESLA TPPs BRANCH					
Training of employees in 2023					
Organisational unit	**Number of employees**	**Planned to be trained**		**Trained**	
		n	**%**	**n**	**%**
Joint services	346	186	53,76	175	94,09
TPP Nikola Tesla A	677	613	90,55	602	98,21
TPP Nikola Tesla B	346	297	85,84	318	107,07
TPP Kolubara	298	256	85,91	281	109,77
TPP Morava	105	88	83,81	99	112,50
Railway transport	486	459	94,44	403	87,80
TOTAL: NIKOLA TESLA TPPs BRANCH	**2.258**	**1.899**	**84,10**	**1.878**	**98,89**

Note: Some employees underwent more than one training, e.g., due to transfer to some other job and similar. In 2023, 1631 employee hired via PROTENT who execute tasts within the TENT organizational unit.

- **Injuries at Work**

Table 73 gives data on a number of injuries at work in 2023.

Table 73

NIKOLA TESLA TPPs BRANCH						
Injuries at work in 2023						
Organisational unit	**Number of employees**	**Injuries – number of employees ratio**				
		mild	**severe**	**fatal**	**total**	**%**
Joint services	346	3	1	0	4	1,16
TPP Nikola Tesla A	677	13	3	0	16	2,36
TPP Nikola Tesla B	346	3	0	0	3	0,87
TPP Kolubara	298	4	2	0	6	2,01
TPP Morava	105	0	0	0	0	0,00
Railway transport	486	11	4	0	15	3,09
TOTAL: NIKOLA TESLA TPPs BRANCH	**2.258**	**34**	**10**	**0**	**44**	**1,95**

3.3.3. Health Protection

Medical examinations of employees working in high-risk workplaces according to the assessed risks are carried out once a year or once in two years. Table 74 provides periodic examinations data verifying the work capability of employees for 2023.

Table 74

NIKOLA TESLA TPPs BRANCH											
Work capability in 2023											
Organisational unit	**Number of employees**	**Periodical examination**				**Work capability**					
		Referred to examination		**Examined**		**Capable**		**Limited capability**		**Incapable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Joint services	346	117	33,82	116	99,15	108	93,10	8	6,90	0	0,00
TPP Nikola Tesla A	677	630	93,06	623	98,89	545	87,48	76	12,20	2	0,32
TPP Nikola Tesla B	346	284	82,08	274	96,48	250	91,24	22	8,03	2	0,73
TPP Kolubara	298	237	79,53	212	89,45	183	86,32	28	13,21	1	0,47
TPP Morava	105	105	100,00	105	100,00	88	83,81	17	16,19	0	0,00
Railway transport	486	483	99,38	480	99,38	452	94,17	24	5,00	4	0,83
TOTAL: NIKOLA TESLA TPPs BRANCH	**2.258**	**1.856**	**82,20**	**1.810**	**97,52**	**1.626**	**89,83**	**175**	**9,67**	**9**	**0,50**

3.4. Stakeholders Submissions

Stakeholders' submissions for 2023 are provided in Table 75.

Table 75

NIKOLA TESLA TPPs BRANCH			
STAKEHOLDERS SUBMISSIONS IN 2023			
Organizational unit	**Complaint (number, date and by whom submitted)**	**Subject**	**Actions**
TPP NIKOLA TESLA A	No public submissions		
TPP NIKOLA TESLA B	No public submissions		
TPP KOLUBARA	The citizens of Veliki Crljeni submitted a complaint to the Secretariat for Inspection of the City Administration of the City of Belgrade	Cleaning the Bare Canal	Environmental Protection Inspector of the City Administration of the City of Belgrade, Dejan Dašić, on 15 May 2023 carried out extraordinary inspection supervision upon citizen's report. The minutes established that the Bare Canal is partially overgrown with vegetation, the channel bed is partially filled with sediment and silt. Based on the established illegality, the inspector issued Decision X-10 number: 325.5-95/2023 dated May 18, 2023. In order to implement the measure from the decision in question, EPS JSC concluded a contract with Hidrosim LLC Belgrade for Employing a crawler excavator with a long arm and a tipper truck with a bucket for the cleaning of canals at the TPP Kolubara. The implementation of the contract with Hidrosim LLC Belgrade on the cleaning of the Bare Canal at the TPP Kolubara started on November 13, 2023. Based on the application for extension of the deadline for execution, the deadline was extended until March 12, 2024. The ordered measure was fully implemented on December 27, 2023, when the cleaning of the relevant section of the Bara Canal was completed. The inspector was informed about the execution of the ordered measure.

	The Regulatory Institute for Renewable Energy and the Environment (RERI) sent an application to the Republic Environmental Protection Inspection	Request for the initiation of extraordinary inspection supervision of TPP Kolubara in connection with air pollution	The Record of Inspection No. 908-480-501-00139/2023-07 as of September 4, 2023, orders 2 measures: 1. By 31 December 2023 and in the following months, the release of particulate matter into the air from plants K3, K4 and K5 is to be reduced to average monthly values, which are less than or equal to the emission limit value of 1010 mg/Nm3, and 2. By 31 December 2023 and in the following months, the release of particulate matter into the air from the K6 boiler plant of unit A5 is to be reduced to average monthly values, which are less than or equal to the emission limit value of 50 mg/Nm3, which is prescribed by Article 55, Paragraph 1 of the Air Protection Act and Article 43 Paragraph 1 Clause 1 of the Regulation on measurements of pollutant emissions into the air from stationary sources of pollution (Off.Gazette RS' 05/2016). On 28 December 2023, an application for extension of the deadline for the execution of the measure was submitted to the Inspector. By the conclusion of the Republic Inspector for Environmental Protection, No. 908-480-501-00071/2021-07 as of January 31, 2024 (received on February 5, 2024, at the TENT archives), the request to extend the deadline for the execution of the ordered measures was rejected.
TPP MORAVA	The Regulatory Institute for Renewable Energy and the Environment (RERI) sent an application to the Republic Environmental Protection Inspection	Request for the initiation of extraordinary inspection supervision of TPP Morava in connection with air pollution	The Record of Inspection No. 480-501-00052/2023-04 as of July 27, 2023 informs that field and office inspection supervision was carried out pursuant to the Law on Environmental Protection, the Law on Air Protection and the Law on Inspection Supervision. The business entity was ordered by the Record of Inspection No. 910-480-501-00052/2023-04 as of July 27, 2023: to provide regular annual testing of the device for continuous emission measurement (AST) or to provide assurance of confidence level 2 (QAL2) depending on the degree of significance of the change and the activities undertaken to establish the operation of the automatic measurement system for continuous emission measurement. By the Decision No. 910-480-501-00052/2023-04 as of October 16, 2023, the deadline for the execution of measurement has been extended. On 15 November 2023, the inspector was notified that TPP Morava had fully implemented the measure ordered by the Record and Decision.

4. TPP-OCM KOSTOLAC BRANCH-TPP

TPP-OCMs Kostolac branch comprises the following organizational units:

- **TPP Kostolac A**
- **TPP Kostolac B**
- **OCM Drmno**
- **OCM Cirikovac**

4.1. Overview and Status of Permits

Table 76 provides an overview of obtained permits and applications for new permits or extension of existing ones in 2023 –TPP-OCMs Kostolac Branch.

Table 76

TPPs-OCMs KOSTOLAC BRANCH			
Overview and permit status for 2023			
Organizational unit	**Acquired permits and approvals (number and date)**	**New applications for permits or extension of valid permits**	**Note**
TPP KOSTOLAC A	-	-	-
TPP KOSTOLAC B	1.Use permit for the flue gas desulfurization plant issued by Min. of construction, transportation and infrastructure ROP-MSGI-39126-IUPH-9/2023 No. 351-04-03515/2022-07 dated 11.01.2023. 2.Environmental Protection building legalized by Decision No. 354-00-00037/2023-9 3.Decision on amending the Decision on legalization for Well 1, No. 354-00-00443/2020-09 dated 08.03.2023. 4.Decision on amending the Decision on legalization for Well 2, No. 354-00-00444/2020-09 dated 09.03.2023. 5.Decision on amending the Decision on legalization for Well 3, No. 354-00-00446/2020-09 dated 01.03. 2023 6.Decision on amending the Decision on legalization for Well 4, No. 354-00-00445/2020-09 dated 06.03.2023.	1.The Report was submitted to the competent Ministry for the technical review of the works executed on the construction of WWTP at the TPP Kostolac B with a proposal for trial operation No. 363-12.04.2023 for obtaining a Use permit	-

4.2. Monitoring and Environmental Impact

4.2.1. Air Quality Measurements

Air quality monitoring in the vicinity of TPP-OCMs Kostolac Branch organizational units is carried out as part of the Monitoring Plan of the Environmental Management Department. It should be noted that the air quality monitoring in the vicinity of the TPP-OCMs Kostolac Branch is financed by EPS JSC which employs an authorized legal entity.

In Kostolac, there is a measuring point with automatic measurement of pollutants (sulfur dioxide, nitrogen oxide, and carbon monoxide), belonging to the national automatic air quality monitoring network, and under the jurisdiction of the Agency for Environmental Protection.

Since 2008 for the services of measuring the quality of environmental air in the vicinity of TPP-OCMs Kostolac Branch, EPS JSC, acting via its TPP-OCMs Kostolac Branch, hires an authorized legal entity.

In 2023, for EPS, air quality measurements in the TPPs-OCM Kostolac Branch area were performed by the authorized laboratory with the Institute for Mining and Metallurgy Bor, Laboratory for Chemical Testing, Zeleni Bulevar 35, Bor (No. of authorization for immission measurements 353-01-02241/2022-03 dated 15 August 2022).

In 2023, the authorized legal entity carried out the measuring of total particulate matter (TPM), sulfur oxides (SO_2), suspended particulate matter (PM_{10}), soot, and heavy metals (Pb, Cd, As, and Ni) by analyzing samples collected within a month for TPM, while SO_2 concentrations were determined by analyzing 24-hour air samples.

SO_2 and soot concentrations, total particulate matters and suspended particulate matter - PM_{10} were tested and measured on 7 measuring points, every day in 2023 in the following measuring points:

1. MP1- village Klenovnik, local office
2. MP2- village Ćirikovac, administrative building
3. MP3- village Petka, elementary school
4. MP4- village Stari Kostolac, local office
5. MP5- village Drmno, infirmary
6. MP6 - village Bradarac, elementary school
7. MP7- village Kličevac, infirmary

Suspended particulate matter - PM_{10}, were measured on each of the measuring point for seven days each month in 2023.

The authorized legal entity provided an interpretation of the results of measurements done for EPS in its Air Quality Annual Report 2023, according to the Regulation on conditions for monitoring and air quality requirements.

Table 77 shows the 2023 quality data analysis done by the authorized legal person, in terms of their compliance with legal requirements, for TPP-OCMs Kostolac Branch organizational units.

Comparison between the results obtained in the defined periods, with limit values from the Regulation on air quality requirements was done by comparing measured values with the values prescribed by the Regulation on conditions for monitoring and air quality requirements (Official Gazette of RS, No. 11/2010, 75/2010 and 63/2013), Law on Air Protection (Official Gazette of RS, No. 36/09, 10/13 and 26/21- other law)

Air quality measuring in the vicinity of TPP-OCMs Kostolac has beeen carried out internally for 30 years by the Environmental Management Department which is not authorized to perform the measurement of total particulate matter (TPM), soot and sulfur oxides (SO_2).

Table 77

TPPs-OCMs KOSTOLAC BRANCH						
Air quality in 2023						
Legal compliance (number of data or days exceeding the defined values)						
Air quality indicators		**TPM contents ($mg/m^2/day$)**	**Soot ($\mu g/m^3$)**	**SO_2 concentration ($\mu g/m^3$)**		
Averaging period		**Maximum permissible value (MPV)**	**Maximum permissible concentration (MPC)**	**LV**	**TV**	**TL**
One hour		**-**	**-**	**350**	**35**	**0**
***One day**		**-**	**50**	**125**	**125**	-
****One month**		**450**	**-**	**-**	**-**	**-**
*****Calendar year**		**200**	**50**	**50**	**50**	**~~0~~**
	Measuring point	n of exceedance	n of exceedance	n of exceedance		
*		-				
**	1.	1 exceedance in September- 465,1	No exceedance at any measuring point			

	2.	-		
	3.	1 exceedance in September -536,1		
	4.	2 exceedances in March-556,2 and July -492,0		
	5.	-		
	6.	-		
	7.	1 exceedance in July -586,4		
***	1.	-	No exceedance at any measuring point	
	2.	-		
	3.	1 exceedance- 207,17		
	4.	1 exceedance-232,1		
	5.	-		
	6.	-		
	7.	-		
Air quality indicators		**Particulate matters PM_{10} ($\mu g/m^3$)**		
Averaging period		**LV**	**TV**	**TL**
*** One day**		**50 (35 times in a calendar year at most)**	**75**	**0**
***** Calendar year**		**40**	**48**	**0**
*	1.	4-day LV exceedance	1-day TV exceedance	-
	2.	1-day LV exceedance	No TV exceedance	-
	3.	2-day LV exceedance	1-day TV exceedance	-
	4.	4-day LV exceedance	2-day TV exceedance	-
	5.	No LV exceedance	No TV exceedance	-
	6.	4-day LV exceedance	1-day TV exceedance	-
	7.	3-day LV exceedance	No TV exceedance	-
***	1.	No exceedance at any measuring point		
	2.			
	3.			
	4.			
	5.			
	6.			
	7.			

LV – Limit value, TV – Tolerance value, LT – Limit tolerance

4.2.2. Emission Measurements of Matters Affecting Air Quality

Flue gases containing sulfur dioxide, nitrogen oxides, carbon dioxide, and particulate matter, after treatment, i.e., particulate matter separation by electrostatic precipitators are emitted into the air through stacks, with the followting heights:

TPP Kostolac A

- 105m - Unit A1 (K1 (1 ESP) and K2 (1 ESP))
- 110m - Unit A2 (1 ESP)

TPP Kostolac B

- 250 m - units B1
- 180 m after construction of FGD plant for units B1 and B2 (each boiler has its flue gas pipe)

In accordance with legal requirements, regular continuous measurements of pollutants emission are done regularly, as well as check/occassional measurements for testing correctness of continuous measurements in TEKO A and TEKO B.

- **Continuous Air Measurements of Air Pollutant Emissions that Affect the Air Quality in TPPs Kostolac A and Kostolac B**

In 2023 continuous measurements of air pollutant emissions were performed on the units of TPP Kostolac A, based on the obtained consent by the Decision of the Ministry of Environmental

Protection for independent measurement of pollutant emissions for TPP Kostolac A - No. 353-01-01913/2019-03 dated 23 October 2019, and TPP Kostolac B based on the obtained consent by the Decision of the Ministry of Environmental Protection for independent measurement of emissions of pollutants for TPP Kostolac B - No. 353-01-01225/2018-03 dated 20 Decebmer 2019.

After desulphurization, waste gases are discharged through a newly built stack on which automatic devices for continuous measurement are installed for which TPP Kostolac B has the approval of the competent Ministry for independent continuous measurement of emissions. When the desulphurization plant is not working, waste gases are discharged via the old system for waste gas treatment with ESP only, without performing continuous measurements.

Continuous measurements include flue gas parameters (temperature, pressure, and humidity), volume flow, oxygen content, and mass concentrations as well as calculations of emission factors for sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO) and particulate matter.

In 2023 a new data processing software was installed for processing data from the continuous measuring of air pollutant emissions after flue gas desulphurization in TPP Kostolac B, with displaying the measurement results of pollutant emissions of common B1 and B2 units that make a single emitter according to the National Plan for Pollutant Emission Reduction for emissions coming from the old combustion plants.

For the period in which the units of TPP Kostolac B operated, and the flue gas desulphurization plant did not work, the calculation was performed based on periodic measurement of pollutant emissions by the authorized laboratory of the Vinca Institute, published in September 2023. During the period when the desulphurization plant did not work, after particulate matters were first removed in ESP, and then waste gases were discharged via the old stack.

During the trial operation, the flue gas desulphurization plant achieved a desulphurization level of 96% - 97%.

Table 78 gives an overview of the results of the mean pollutant emissions and the continuous measurement results for the particulate matter emission, NOx и SO2 in TPP Kostolac B in 2023.

Table 78

TPPs Kostolac B1 and B2	**Continuous measurements**
Particulate matter mg/m^3	18,60
SO2 mg/m^3	234,95
NOx mg/m^3	258,08
COx mg/m^3	207,98

Table 79 gives an overview of the continuous measurements of particulate matter emission, NOx, and SO2 in TPP Kostolac A in 2023.

Table 79

TPPs-OCMs KOSTOLAC BRANCH		
Air pollutant emission measurements in 2023 – TPP-OCM Kostolac A		
Organizational unit	**TPP Kostolac A**	
Boiler	**A1**	**A2**
Heat capacity MWt	**358**	**689**
SO_2 mg/m^3	5.367,82	4.561,1
NO_x (NO_2) mg/m3	428,8	362,9
CO mg/m3	42,7	22,3
Particulate matter mg/m3	48,3	78,7

Control Measurement for Testing the Accuracy of Continuous Measurements of Matters Affecting Air Quality

Between 2006 and 2014, in TPP-OCMs Kostolac Branch, devices for continuous measurement of matters affecting air quality (SO_2, NO_x, CO, and particulate matter) were installed– at Kostolac B TPP units (SO_2, NO_x, and particulate matter) and TPP Kostolac A2 unit, while at TPP Kostolac A1, continuous measurements (SO_2, NO_x, CO and particulate matter) have been performed since 2nd February 2018. In addition to these basic devices, data acquisition and processing equipment additional measurement devices were also installed: oxygen (O_2) content and humidity as well as temperature, pressure, and flue gases flow volume.

TPP Kostolac A

In April 2023, a functionality test was performed on automatic measuring systems for continuous measurements, as an annual control test of automatic measuring systems on stacks of both TPP Kostolac A units.

The annual control test of automatic measuring systems was performed in April 2023 on both units, which resulted in the submission of Test Report No. AST-E-06/23/ PetroprocessTEKO A1 /AS for unit A1, and for unit A2 Test Report No. AST -E-07/23/ PetroprocessTEKO A2/AST.

TPP Kostolac B

TPP Kostolac B consists of two identical units, each of 348.5 MW. Each unit has its electrostatic precipitator with two branches.

New equipment for flue gas and dust emissions measurement has been installed in the newly constructed desulphurization plant in Kostolac B (B1 and B2) TPP units downstream of the stack desulphurization plant. Trial run of the plant was performed in the first quarter of 2019. After the trial run, performance measurements were done. After the performance measurements, QAL 2 and QAL 3 measurements were performed at TPP Kostolac B1 and B2 units. TPP Kostolac B Branch, by the decision of the Ministry of Environmental Protection from December 20th, 2019, received consent for continuous measurement of emissions from a stationary source (after the desulphurization plant) for units B1 and B2.

The flue gas desulphurization plant was granted a Use permit by Decision No. 351-04-03515/2022-07, dated 11th January 2023, made by the Ministry of Construction, Transportation and Infrastructure.

In September 2023, the test of the correctness of the automatic measuring systems for continuous emission measurement according to the requirements of SRPS EN 14181(QAL2) was carried out on both units in TPP Kostolac B, as a calibration and validation of the automatic measuring systems in TPP Kostolac B on unit B1 at the exit from FGD, Test Reports No. E-16/23/ADEPS/TEKO B1 IZLAZ ODG/(QAL2) prepared by Mining Institute LLC Belgrade.

In September 2023, the test of the correctness of the automatic measuring systems for continuous emission measurement according to the requirements of SRPS EN 14181(QAL2) was carried out on both units in TPP Kostolac B, as a calibration and validation of the automatic measuring systems

in TPP Kostolac B on unit B2 at the exit from FGD, Test Reports No. E-18/23/ADEPS/TEKO B2 IZLAZ ODG/(QAL2) prepared by Mining Institute LLC Belgrade.

In August 2023, a functionality test of automatic measuring systems was carried out in accordance with the level 3 (QAL3) confidence assurance for the period from September 2022 to August 2023 no. QAL 3-05/23/ASEPS/TEKO B.

Table 80 provides an overview of data on the equipment of units with equipment for continuous measurement of emissions of substances that affect air quality in organizational units of the TPP-OCMs Kostolac Branch, as of 2023.

Table 80

TPPs-OCMs KOSTOLAC BRANCH									
Level of unit being equipped with devices for continuous emission measurement as of 2023									
Analyzers		**Particulate matters**	**Emitted matters**		**Parameters**				
			Gases		**Content**				
			SO_2, $NO_x(NO_2)$, CO; particulate matters	**HCl and HF**	**Humidity**	**CO_2**	**O_2**	**p and t**	**Flow rate**
TPP KOSTOLAC A	**A1**	Devices installed on the unit A1 stack, 4 parameters monitored Stack height is 105 m. The platform is located at a level of approximately 60 m m.	Devices installed for both boilers on the stack	-	Device installed on the stack	-	Уређаји су уграђени на димњаку		There is measuring
	A2	A2: ESP left and right side (branch), on the stack, at the level of 63 m, external stack lining. The platform is located on the level of around 61m. Stack height – 110m. Total: 3 devices	One device installed	-	-	-	Devices installed on the stack, Total: 1 device In 2015, devices were installed for the measurement of wet O2 and flue gas flow rate on the stack		There is measuring on this unit
TPP KOSTOLAC B	**B1**	Devices are installed after the desulphurization plant (the new stack with a height of 180 m). Each unit has its flue gas duct. Devices for continuous emission measuring are installed on each flue gas duct	Devices installed on each flue gas duct	-	-	-	Devices installed on each flue gas duct (2 sets)		Installed on each flue gas duct
	B2			-	-	-			

Data acquisition and processing equipment is an integral part of this equipment.

Devices for continuous measuring of chloride and fluoride were not installed on any of the TPP Kostolac A and TPP Kostolac B units, because there is no obligation for continuous measuring of chloride and fluoride emission which bear designations HF and HCl.

In May 2023, a periodic control measurement of pollutant emissions from both units was carried out after desulphurization on the FGD chimney. In addition to the control measurement of polluting substances (SO_2, NO_X and particulate matter, SO), mercury, fluoride and chloride emissions (NF and NCl) were also measured on both units. The concentration of mercury was < 1.8 µg/Nm^3, while the concentration of hydrogen chloride was <1 mg/Nm^3 and hydrogen fluoride 0.2 mg/Nm^3.

Softwares performing statistical analysis of continuous measurements data (SO_2, NO_x (NO_2), CO, and particulate matter are in operation on TPP Kostolac A and TPP Kostolac B units. New flue gas and particulate matter emission monitoring equipment has been installed (on the stack) after the FGD plant and a new data processing software package has been installed, as well.

- **Annual Emissions of Matters Affecting Air Quality**

Table 81 provides an overview of particulate matter emission, SO_2, NO_2, and CO and CO_2 for TPP Kostolac for 2023. In units A1 and A2 mean values of mass concentration and volume flow are calculated based on the results from continuous emission measurements in the period between 1st January and 31st December 2023. In units, B1 and B2 mean values of mass concentration and volume flow were calculated based on data from periodic measurements of air pollutant emissions (the inspection report by Vinca) and automatic emission measurement on the stack of the FGD plant.

The table shows the annual emissions of air pollutants in t/year from TPP Kostolac B, which were calculated based on annual pollutant emissions based on continuous measurements done when the desulphurization plant operates and occasional measurements of pollutant emissions via the old system. Data related to TPP Kostolac A and TPP Kostolac B working hours were obtained from the Process Analysis Department.

Table 81

TPPs-OCMs KOSTOLAC BRANCH					
Emissions of matters affecting air quality (t/year) in 2023					
Organizational unit	**Particulate matters**	**SO_2**	**$NO_x(NO_2)$**	**CO**	**CO_2**
TPP Kostolac A					
A1	217,86	18.722,30	1.483,9	137,58	776.728,00
A2	492,54	28.131,60	2.305,2	120,30	1.439.814,19
Total Kostolac A	**710,40**	**46.853,90**	**3.789,10**	**257,88**	**2.216.542,19**
TPP Kostolac B					
B1 and B2	664,0	45.802,68	4.369,0	1.955,45	4.909.196, 81
Total: Kostolac B	**664,0**	**45.802,68**	**4.369,0**	**1.955,45**	4.909.196, 81
TOTAL: TPP-OCMS KOSTOLAC BRANCH	**1.374,4**	**92.656,58**	**8.158,10**	**2.213,33**	**7.125.739,00**

Table 82 gives an overview of fuel consumption in 2023.

Table 82

TPPs-OCMs KOSTOLAC BRANCH		
Fuel Consumption in 2023		
Fuel	**Unit**	**Fuel consumption (t/year)**
TPP KOSTOLAC A		
COAL	A1 - K1	-
	A1 - K2	-
	A1	936 797
	A2	1 751 713
	TOTAL	**2 688 510**
PETROLEUM	A1 - K1	-
	A1 - K2	-
	A1	2 005
	A2	4 865
	TOTAL	**6 870**
TPP KOSTOLAC B		
COAL	B1	2 860 832

	Б2	3 001 746
	TOTAL	**5 862 578**
HEAVY FUEL OIL	Б1	2 954
	Б2	2 224
	TOTAL	**5 178**

- **Complying Emissions of Matters Affecting Air Quality with EU Legislation**

Units B1 and B2 of TPP Kostolac are on the final list of large old plants for combustion in the National Plan for emission reduction according to the letter of the Environmental Protection Ministry No. 353-01-00122/2017-03 dated 29 December 2017 and according to the National Plan for the Reduction of Emissions of Major Pollutants from Old Large Combustion Plants (Official Gazette of RS, No. 10 of February 6th, 2020).

Particulate Matters

To date electrostatic precipitators were reconstructed on all Kostolac TPP units: on units A1 and A2 - TPP Kostolac A, and units B1 and B2 – TPP Kostolac B. The guaranteed mass concentration for dust defined by the equipment supplier at the electrostatic precipitator outlet is ≤50mg/Nm^3 which is in line with legal requirements for the period until 2027, according to the Regulation on limit values for emissions of pollutants into the air from combustion plants (Official Gazette of RS No. 6 dated 28 January 2016, No. 67 dated 2 July 2021). The emissions of particulate matter into the air have been reduced by additional treatment of waste gases that are carried out in the newly built desulphurization plant, so as not to exceed the average annual value that ranges around 20 mg/Nm^3 that was listed in the EU's Industrial Emissions Directive.

Sulfur Dioxide

During the design and construction of TPP Kostolac A and B units, no measures were taken to reduce SO_2 emissions, given that at the time no SO_2 emission limit values (ELVs) were stipulated.

To reduce sulfur oxide emissions below 200mg/Nm^3 in accordance with EU Directive for Industrial Emissions, the desulphurization plant construction was finished at the end of December 2016, as well as a new stack with two pipes (each unit, B1 and B2, has its duct). Performance measurements were executed during the operation of each unit individually and during the simultaneous operation of units.

The operation of the flue gas desulphurization plant has significantly reduced the emitted concentration of sulfur dioxide which amounted to approximately 5000-6000 mg/m^3 at the plant inlet, depending on many factors, so in 2023, the mean annual value of concentration at the outlet after the desulphurization of unit B1 and B2 was 234,95 mg/Nm^3, which is less than 400 mg/m^3 which is the emission limit value listed in the local regulation in question, i.e, it approaches the emission limit value of 200 mg/Nm^3 prescribed by the EU Directive for Industrial Emissions.

Nitrogen Oxides

New burners were installed on TEKO B unit B1 during unit revitalization in 2014 to reduce nitrogen oxide emissions below the level of 200mg/Nm^3. Measurement results indicate considerable nitrogen oxide emission reduction. Emissions before reconstruction ranged from 450 to 600 mg/Nm^3.

In 2019, the system for the reduction of nitrogen oxides on TPP Kostolac B2 was installed. In 2022, performance tests were carried out in relation to the reduction of nitrogen oxides by applying primary measures. In 2023, a tank with ammonia liquor with accessories was constructed, for which in 2022 a building permit was obtained for the controlled adding as a secondary measure for nitrogen oxide reduction, and it will be implemented within the capital overhaul of unit B1 as of May 2024.

Based on the results of continuous measurements, the mean measured value of nitrogen oxides in 2023 for units B1 and B2 was 261,4 mg/Nm^3.

It is planned to implement a measure on secondary reduction of nitrogen oxide emissions by controlled addition of urea in TPP Kostolac B in 2024, which will provide that the emissions remain within the limit value of 200 mg/Nm^3 prescribed by the EU Directive for Industrial Emissions.

4.2.3. Emission Measurements of Matters Affecting Water Quality

Water used to cool condensers' steam has the highest share in process water used by Kostolac TPPs. Water used for this process is captured from the Danube River. To be precise, the captured river water is first used to cool the condensers and subsequently discharged into the recipient (the Danube – TPP Kostolac A or the Mlava – TPP Kostolac B) via the return channel.

A small share, about 2.5% of water is used for hydraulic transport of ash and slag. By transition to,

i.e., connecting the TPP Kostolac B units to the thick slurry transport system (solids: water ratio - 1:1) water consumption is reduced. Under the thick slurry transportation system in place at the Kostolac B TPP there is no overflow water, while the created drainage water is recycled (returned) from the ash landfill to the thermal power plant and reused for hydraulic transport of ash and slag. In 2023, sampling and testing of wastewater were performed, which was drained under the foil on OCM Ćirikovac ash disposal site, then discharged into the Mlava River via the main water reservoir. The quality of the Mlava River is controlled upstream and downstream from the discharge of drainage water from the main water reservoir, and during 2023 the quality of drainage water from the gypsum landfill was examined.

Decarbonized water of TPP Kostolac A is partly used for cooling while the other part is treated with ion exchangers (ion mass) to obtain demineralized water.

Demineralized water (demi water) used by the boiler water-vapor system is produced by chemical water treatment plants. Demi water is produced by chemical purification of groundwater (TPP Kostolac B) or by purification of the Danube River water (TPP Kostolac A) in ion exchangers.

A plant for water preparation to supplement the remote heating system of the cities of Kostolac and Pozarevac was put in operation.

The source of raw water for TPP Kostolac B are tube wells located along the Mlava River bank. HCl or NaOH solution is used to regenerate ion masses in ion-exchange columns, resulting in acid and alkaline wastewater partly used by the ash and slag transportation system of TPP Kostolac B, while in the case of TPP Kostolac A regeneration products are discharged into the return cooling water channel (hot water channel).

Sanitary wastewater is discharged directly or indirectly into the river Mlava after mechanical-biological treatment under aerobic conditions by treatment devices (TPP Kostolac B). The sanitary wastewater of TPP Kostolac A is discharged into the municipal sewage system which is subsequently discharged into the TPP Kostolac A return cooling water channel.

After water containing oil and/or heavy fuel oil and/or petroleum is collected, only water containing petroleum is pumped back into the tank. Wastewater is discharged through storm sewage into the

TPP Kostolac A hot water channel while waters containing heavy fuel oil are transported to the slurry station and subsequently to the OCM Cirikovac ash landfill.

The TPPs Kostolac Branch Wastewater Management Programme includes physical, chemical, and bacteriological measurements of the following parameters: air and water temperature, water turbidity, pH, electrical conductivity, soluble O_2, % of O_2 saturation, COD, BOD5, unfiltered water evaporation residue, filtered water evaporation residue, total suspended particulate matter, particulate matter, total surfactants, mineral oils, phenols, alkalinity, F, Cl, NO_2, NO_3, SO_4, PO_4, NH_4, Ca, Mg, hardness, Al, Fe, Mn, Cd, Cr^{6+}, total Cr, Cu, Ni, Zn, Pb, Hg, As, B, and microbiological analysis of the waters in the recipient.

Monitoring also includes:

- Wastewater quality at the source point and/or at the point of discharge into the river and/or at the point of discharge into the returning cooling water duct;
- Recepient water quality – wastewater recipient quality on profiles upstream and downstream of the wastewater discharge point;
- Quality of groundwater in the area of the SKO ash and slag landfill and OCM Cirikovac, at the coal depot of the TPP Kostolac B, in the area of the oil tanks at TPP-OCM A and the area of the gas station at OCM Drmno; at the gypsum disposal site
- •Quality of sanitary water from the plants in TPP Kostolac B;
- Quality of water coming from the plants for treating water contaminated with oil and fuel oil in TPP Kostolac B.

Long-term studies have shown that concentrations of sulfate and arsenic are essential parameters used to monitor the ash landfill's impact on groundwater. Sulfate ions originating from the landfill migrates fastest and are considered to be an excellent tracer to monitor the groundwater impact of landfills. On the other hand, arsenic reaches groundwater much slower because it is previously adsorbed by the aluminosilicate surface (landfill ash and/or clay making an integral part of the soil). OCM Drmno dewatering water quality is also monitored. OCM Drmno dewatering water is discharged to the Mlava and/or Danube rivers, and partly used as cooling water by TPP Kostolac B.

TPPs Kostolac Branch wastewater quality and its impact on recipients is controlled 12 times a year and 4 times a year for groundwater and sanitary water in line with the Law on Waters (Official Gazette of RS, No. 30/2010, 93/2012, 101/2016, 95/2018) and The Rulebook on Methods and Conditions for Wastewater Quantity Measurement and Quality Testing, and the Content of the Measurement Report (Official Gazette of RS, No. 33/2016), Regulation on pollutants' emission limit values in waters and deadline for their achievement (Official Gazette of RS, No. 67/2011,48/2012,1/2016).

Annual surface and groundwater quality reports for each organizational unit of the TPPs-OCMs Kostolac Branch are made available on request to competent inspectors and relevant institutions when providing opinions required for the issuing of water conditions and water permits.

Discharged water quality measurement results are presented in the Environmental Report prepared every year for each organizational unit. In addition, results are presented in the National Pollution Sources Register of Serbia sent by the TPPs-OCMs Kostolac Branch each year in accordance with the legal obligation to the Environmental Protection Agency.

TPPs-OCMs Kostolac Branch surface and groundwater quality was controlled in 2023 by the accredited legal person for chemical testing, Mining and Metallurgy Institute Bor, and Institute for Occupational Safety Novi Sad.

Table 83 provides the analysis of wastewater and recipient watercourse quality data in 2023 in terms of their legal compliance.

In the case of surface waters, legal compliance is evaluated by comparing the measured values of substances affecting water quality with the limits defined by the Regulation stipulating limit values for pollutants in surface and ground waters and sediments, and deadlines for their achievement (OG RS No. 50/2012) while wastewater values are compared with the limits defined by the Regulation stipulating limit values of pollutants emissions in water and deadlines for their achievement (OG RS

No. 67/2011, 48/2012 and 1/2016). From the thermal power plant TPP Kostolac B and TPP Kostolac A there are no discharges of wastewater with hazardous substances from the REGULATION on the limit values of priority and priority hazardous substances that pollute surface waters and deadlines for their achievement.

Table 83

TPPs-OCMs KOSTOLAC BRANCH		
Wastewater and watercourses-recipients quality in 2023		
Organizational unit / **Water type**	**TPP Kostolac A**	**TPP Kostolac B**
Drainage wastewater from the ash landfill	▪ Electrical conductivity:570,0-738,0 µs/cm ▪ Arsenic:10 - 28µg/l ▪ Sulphates: 96,64-254,70 mg/l	Main water sump at OCM Cirikovac landfill ▪ Electrical conductivity: 833-2260 µs/cm ▪ Arsenic: 10-47 µg/l ▪ Sulphates: 67,90-1170,0 mg/l
Overflow wastewater from the ash landfill	▪ Electrical conductivity: 327,0-806,0 µs/cm ▪ Arsenic: 10-117 µg/l ▪ Sulphates: 82,23-238,80mg/l	
Watercourse (recipient)	There were no significant changes in the Danube River quality upstream-downstream from TPP Kostolac A: ▪ Arsenic: <1 µg/l, bellow MLC-50 µg/l, upstream and downstream from the discharge point ▪ Sulphates: 9,74-45,12 mg/l upstream, 19,44-39,50 mg/l downstream ▪ Mineral oil, at the Danube testing points upstream and downstream <10 µg/l No temperature increase in the Danube River water	There were no significant changes in the Mlava River quality downstream - upstream from TPP Kostolac B: ▪Arsenic: upstream and downstream <1 µg/l from the discharge point ▪ sulphates: 15,67-44,77 mg/l, upstream and 21,0-39,40 mg/l downstream ▪ Mineral oil in the Mlava River upstream and downstream was < 10µg/l No temperature increase in the Danube River water

Table 84 provides the analysis of groundwater quality data in the piezometers at the locations of TPP-OCMs Kostolac Branch. In 2023 groundwater quality was controlled in 18 piezometers.

Table 84

TPPs-OCMs KOSTOLAC BRANCH			
Groundwater quality - piezometers in 2023			
Concentration	**Permitted values**		**Organizational unit**
	MPC	**RV**	**TPP Kostolac A and TPP Kostolac B**
Sulfates (mg/l)	**250**		in piezometers around cassette B:119,60-329,70 in piezometers around cassette C : 113,70-329,70 in piezometers around the Cirikovac ash landfill: 6,80-460,30 piezometers away from the SKO landfill: 58,34-989,60 around the coal yard D5: 29,74-41,50 piezometers around oil tanks TPP A: 21,45-186,10 piezometers at gypsum disposal site: 71,90-200,1
Arsenic (µg/l)	**10**	**60**	in piezometers around cassette B:18-163 in piezometers around cassette C : 10-39 in piezometers around the Cirikovac ash landfill: <10 piezometers away from the SKO landfill: <10 around the coal yard D5: <10 piezometers around oil tanks TPP A: <10 piezometers at gypsum disposal site: <10
Zink (mg/l)	**3.000**	**800**	in piezometers around cassette B:30-381 in piezometers around cassette C :30-39 in piezometers around the Cirikovac ash landfill: 30-211 piezometers away from the SKO landfill: 30-8580 around the coal yard D5: 963-2350 piezometers around oil tanks TPP A:30-34 piezometers at gypsum disposal site:39-525

TPPs-OCMs KOSTOLAC BRANCH			
Groundwater quality - piezometers in 2023			
Concentration	**Permitted values**		**Organizational unit**
	MPC	**RV**	**TPP Kostolac A and TPP Kostolac B**
Manganese (mg/l)	**50**		in piezometers around cassette B : 0,004-0,068 in piezometers around cassette C : 0,011-0,115 in piezometers around the Cirikovac ash landfill:0,009-1,10 piezometers away from the SKO landfill: 0,011-5,18 around the coal yard D5:0,116-0,158 piezometers around oil tanks TPP A:0,047-0,582 piezometers at gypsum disposal site;0,009-0,525
Ammonia (mg/l)	**0.1**		in piezometers around cassette B : 0,078-0,562 in piezometers around cassette C : <0,078 in piezometers around the Cirikovac ash landfill: : 0,078-0,192 piezometers away from the SKO landfill: 0,078-1,23 around the coal yard D5: <0,078 piezometers around oil tanks TPP A: 0,078-0,193 piezometers at gypsum disposal site:0,078-0,446
Nitrites (mg/l)	**0.03**		in piezometers around cassette B : <0,003 in piezometers around cassette C :<0,003 in piezometers around the Cirikovac ash landfill: <0,003 piezometers away from the SKO landfill: <0,003 around the coal yard D5: <0,003 piezometers around oil tanks TPP A: <0,003 piezometers at gypsum disposal site:0,003-0,391
Nitrates (mg/l)	**0.05**		in piezometers around cassette B : 0,113-0,118 in piezometers around cassette C : 0,113-0,293 in piezometers around the Cirikovac ash landfill: 0,113-12,70 piezometers away from the SKO landfill:0,113-2,170 around the coal yard D5: 0,113-0,314 piezometers around oil tanks TPP A:0,113-4,46 piezometers at gypsum disposal site:0,113-10,44
Copper (µg/l)	**2000**	**75**	in piezometers around cassette B :<20 in piezometers around cassette C : <20 in piezometers around the Cirikovac ash landfill: :<20 piezometers away from the SKO landfill: 20-68 around the coal yard D5:< 20 piezometers around oil tanks TPP A: < 20 piezometers at gypsum disposal site: :< 20
Cadmium (µg/l)	**3**	**6**	in piezometers around cassette B :< 0,4 in piezometers around cassette C :0,4-1,1 in piezometers around the Cirikovac ash landfill: <0,4 piezometers away from the SKO landfill:0,4-1,2 around the coal yard D5:0,4-0,1 piezometers around oil tanks TPP A: <0,4 piezometers at gypsum disposal site:1,1-5
Lead (µg/l)	**10**	**75**	in piezometers around cassette B: 10-23 in piezometers around cassette C : 10-33 in piezometers around the Cirikovac ash landfill: 10-54 piezometers away from the SKO landfill: 10-57 around the coal yard D5:10-21 piezometers around oil tanks TPP A: <10 piezometers at gypsum disposal site:10-292
Mercury (µg/l)	**1**	**0,3**	in piezometers around cassette B : <0,3 in piezometers around cassette C : <0,3 in piezometers around the Cirikovac ash landfill: <0,3 piezometers away from the SKO landfill: <0,3 around the coal yard D5: <0,3 piezometers around oil tanks TPP A: <0,3 piezometers at gypsum disposal site: <0,3
Mineral oil (µg/l)		**600**	in piezometers around cassette B : <10 in piezometers around cassette C : <10 in piezometers around the Cirikovac ash landfill: <10 piezometers away from the SKO landfill: <10 around the coal yard D5: <10 piezometers around oil tanks TPP A: <10 piezometers at gypsum disposal site:10-202

MPC for drinking water;
RV - Remediation values of hazardous and harmful substances concentration and values indicating severe groundwater contamination.

Legal compliance is evaluated by comparing the aquifier's measured values of hazardous and harmful substances concentration from piezometers, with remediation values of hazardous and harmful substances concentration, and values indicating severe groundwater contamination in line with the Regulation on Limit Values for Polluting, Harmful and Hazardous Substances in the Soil (OG RS No. 30/2018 and 64/2019) according to the Law on Soil Protection. Compliance with contamination limits of groundwaters is done in accordance with Rulebook about limits of contamination substances in surface- and groundwaters in sediment and deadlines for its achivement (Official Gazette of RS, No 50/12).

Table 85 provides an analysis of data related to sanitary wastewater quality at the inlet and outlet of the newly built plant fort treatment (SBR-Sequencing Batch Reactor), for 2023.

Table 85

TPPs-OCMs KOSTOLAC BRANCH	
Sanitary wastewater treatment plant operation in 2023	
Pollutants concentration (mg/l)	**SBR (Sequencing Batch Reactor) TPP Kostolac B**
Suspended solids (mg/l)	
Plant inlet	192,20
Plant outlet	6,66
5-day biological oxygen demand (BOD_5)	
Plant inlet	25,94
Plant outlet	2,56
Operation efficiency evaluation	Meets guaranteed values for suspended solids for all measurements

Emission values for BOD and suspended solids are within allowable limits, based on the Regulation on Emission Limit Values of Pollutants in Water and deadlines for reaching them.

According to the instructions provided by the manufacturer, the primary sedimentation tanks should be emptied once a year, and all devices should be regularly maintained and overhauled.

- **Water Quantities**

Table 86 provides an overview of water quantities captured and discharged per the organizational units of the TPPs-OCMs Kostolac Branch for 2023.

Table 86

TPPs-OCMs KOSTOLAC BRANCH					
Water quantities in 2023 (m^3 /year $x10^3$)					
Organizational unit	**Water intake**		**Discharged wastewater**		
	Used quantities				
	Surface	**Ground ***	**Return cooling water**	**Overflow and drainage water from the SKO ash landfill**	**Sanitary wastewater**
TPP KOSTOLAC A	336.184	-	326.012	3.623	35
TPP KOSTOLAC B	764.400	871	760. 844	2.293	141**
TOTAL: TPPs-OCMs KOSTOLAC BRANCH	**1.100.584**	**871**	**1.086.856**	**5.916**	**176**

* For technical and potable water preparation
**purified water

For hydro mixture transportation from TPP Kostolac A and TPP Kostolac B to the OCM Cirikovac ash landfill, part of the return cooling water is used and returned by recirculation.

The annual quantity is calculated based on data on the capacity and water capture and discharge pumps operating time. In cases of gravitational wastewater discharge calculations are made based on previously measured wastewater quantities.

- **Improvements Aimed at Reducing Wastewater Impacts on Surface and Groundwater**

A new ash and slag handling system at TPP Kostolac A was put into operation in 2019. Upon system commissioning, new system performances were tested.

Commissioning of the new system (thick slurry transportation) TPP Kostolac A moved to ash and slag disposal to the ash and slag landfill of OCM Cirikovac. The Srednje Kostolacko Ostrvo landfill serves as a backup until the phase of its shutdown.

TPP Kostolac B units have been connected to the new collection, transportation, and disposal system of ash and slurry (thick slurry and ash disposal together with water in a ratio of 1:1, instead of the previous system that used 1 part of ash and slury and 10 parts of water). Ash and slag are disposed to the OCM Cirikovac. A thick slurry transportation system is of recirculation type because water serves to transport ash and slurry and circulates the system.

In 2023, during trial operation of flue-gas desulphurization plant, an inspection of this facility's wastewater was carried out in accordance with the Regulation on Emission Limit Values of Pollutants in Water and deadlines for reaching them, after flue-gas desulphurization, before mixing it with acid-alkaline water from a plant for treatment of these wastewaters. A temporary solution for the discharge of this wastewater is to discharge it into the excavator station system until the construction of the wastewater treatment facility is finalized.

In 2020, the construction of the TPP Kostolac B Wastewater Treatment Facility commenced. Previously the building permit was issued by the Ministry of Construction, Transportation, and Infrastructure No. 351-02-00028/2019 as of 16th April 2019, as well as the Decision of the Ministry of Environmental Protection on the approval of the updated Environmental Impact Assessment Study for the Wastewater Treatment Facility (No.353-02-00252/2019-03 as of 11th July 2019).

At the location of TPP Kostolac B, in 2023 all wastewater treatment plants were put into the trial run.

The decentralized wastewater treatment system consists of three major plants:

1. Sanitary wastewater treatment plant – SBR (Sequencing Batch Reactor) 1500 EC
2. Oily and fuel oily wastewater treatment plant, with a capacity of 2x30 m^3/h;
3. Wastewater treatment plant from flue gas desulphurization and acid-alkaline water from a chemical water treatment plant, with a capacity of 2 x 45m^3/h.

At the end of 2022, the wastewater treatment plant from the desulphurization of flue gases and acid-alkaline water from the chemical water treatment facility was put into trial operation and all phases of verifying the guaranteed parameters. After the performance tests of the operating parameters of all the newly built facilities were carried out on April 12, 2023, the report of the Technical Commission was submitted to the competent Ministry for obtaining a use permit for the facility's operation.

1. The sanitary wastewater treatment plant was built in 2020 and put into trial operation. In 2023, the sanitary wastewater treatment plant in TPP Kostolac B purified 141454 m^3 of sanitary wastewater from the thermal powerplant area and employee's barracks located in front of TPP Kostoac B. The process of sanitary water treatment includes equalizing, mechanical treatment on an automatic strainer, biochemical purification inside the SBR reactors, and the stabilizing of mud. The recepient of purified water is the river Mlava.

2. Oily and fuel-oily wastewater treatment plant was completed and put into trial operation in 2021. The sources of oily wastewater to be purified are the powerhouse of the main power buildingy in B1, B2, and the future B3 and covered coal storage. The sources of fuel oily wastewater to be purified are the external fuel oil plant, bundwall of ground-level fuel oil tank, plateau for decanting fuel oil tank, and unit boiler rooms. In 2023, oily and fuel-oily wastewater treatment plant purified and discharged 362 960 m^3 of water.

3. The plant for treating wastewater resulting from desulphurization of flue gases and acid-alkaline water from the plant for chemical preparation of water was put into trial operation in 2023 and all tests were carried out to ensure its reliable operation. Sources of wastewater are FGD and CPW which are directed to this facility from the wastewater hydro-cyclones overflow from B1, B2, and the future B3 units, water that is used for washing the wet ESPs, water that is used for washing sand

filters from B1, B2, and the future B3 units, water used for regeneration of ion-exchanging resins of FGD and CPW and permeate from the reverse osmosis.

During the operation in 2023, 46 589 m^3 of wastewater was purified.

Within the wastewater treatment plant in TPP Kostolac B, 4 oil separators were installed on the atmospheric sewage.

4.2.4. Emission Measurements of Matters Affecting Soil Quality

In September 2023, testing of soil quality was performed as well as determining the content of total and accessible forms of heavy metals and matters which affect the soil quality as well as the inspection of chemical composition at TPP Kostolac A (with the ash landfill at SKO) and TPP Kostolac B (ash landfil at OCM Ćirikovac and gypsum depot). The TPP-OCMs Kostolac Branch performs the monitoring of the content of matters which affect the soil quality on an annual level.

Sampling and testing of soil was done by a laboratory holding authorization for soil monitoring– Occupational Health and Environmental Protection – Belgrade LLC and Institute for Soil Science, Belgrade, on the territory of the branch - TPP Kostolac A, TPP Kostolac B, and OCM Drmno. The taken samples were put through the following analysis: mechanical composition of the soil, soil acidity (active acidity pH in H_2O, substitutional acidity pH y 1M KCl), the content of $CaCO_3$, the capacity of exchangeable cations Na^+, K^+, Ca^{2+}, Mg^{2+}, degree of base saturation, organic matter content, physical characteristics of soil: dry soil density; solid state density and total porosity; accessible water; the rate of water permeability, structure, and hardness, chemical features of soil: soil hydrolytic acidity, the accessibility to macroelements (N, P, K, Ca, Mg), total nitrogen and sulfur, the electrical conductivity of soil extract, the content of nitrates and nitrites, total and accessible heavy metals (Cr, Ni, Pb, Cu, Zn, Cd, Hg, B, As and Fe), potentially toxic elements, hydrocarbons originating from petroleum (C_6 – C_{40}), polycyclic aromatic hydrocarbons (PAH). The Soil Monitoring Program includes field and lab measurements at representative measuring points that were marked on the topographical maps (points determined by GPS), which will enable tracking changes of the tested parameters at the same measuring points in the following period.

The number and arrangement of measuring points are defined in accordance with Appendix 2 to the Rulebook on the list of activities that may cause soil pollution and degradation, the procedure, data content, deadlines, and other requirements for soil monitoring (Official Gazette of the RS, No 102/2020). Thereby the following was particularly taken into account: the points where it is known that soil or underwaters have been polluted, locations for storing raw materials, chemicals, or waste, sites at immediate proximity to plants where the production process takes place, locations where chemicals and/or waste are being loaded and unloaded, storage places of new and worn equipment which can be a potential source of soil pollution, points where machines are being maintained and serviced, equipment washing locations, points near underground tanks, areas outside the factory parameters which can be affected by factory activities. The content of heavy metals and other toxic elements in the soil exceeded the limit values for the parameters being nickel, mercury, cadmium and copper, but it was below the remediation values for all tested parameters.

Valuation of data was carried out in accordance with the Rulebook on the list of activities that may cause soil pollution and degradation, the procedure, data content, deadlines, and other requirements for soil monitoring (Official Gazette of the RS, No 102/2020) Regulation on limit values of polluting, harmful and dangerous substances in soil (Official Gazette of the RS, No 30/2018, 64/2019), Appendix 1, Limit maximum and remediation values of polluting, harmful and hazardous substances in soil.

On the TPP Kostolac A site the samples were taken from the surface layer at profile between 0 and 30 cm, on 16 points, while 7 samples were taken at the depth of 30-60 cm. On the TPP Kostolac B site, the samples were taken on 15 points, and 6 samples were taken at the depth of 30-60 cm. Table 87 shows the concentration of matter affecting the soil quality.

Table 87

TPPs-OCMs KOSTOLAC BRANCH The concentration of matters affecting the soil quality in 2023		
Content (mg/kg)	**TPP KOSTOLAC A**	**TPP KOSTOLAC B**
Chromium (Cr)	Out of 23 samples – none of them exceeded LV and none of them exceeded RV.	Out of 21 samples - none of them exceeded LV and none of them exceeded RV .
Nickel (Ni)	Out of 23 samples – 19 samples exceed LV and none exceeds RV.	Out of 21 samples - 3 samples exceed LV and none exceeds RV .
Lead (Pb)	Out of 23 samples - 3 samples exceed LV and none exceeds RV.	Out of 21 samples - none of them exceeded LV and none of them exceeded RV .
Copper (Cu)	Out of 23 samples - 7 samples exceed LV and none exceeds RV.	Out of 21 samples - none of them exceeded LV and none of them exceeded RV.
Zinc (Zn)	Out of 23 samples – none of them exceeded LV and none of them exceeded RV .	Out of 21 samples - none of them exceeded LV and none of them exceeded RV .
Cadmium (Cd)	Out of 23 samples – 3 samples exceed LV and none exceeds RV.	Out of 21 samples - 4 samples exceed LV and none exceeds RV .
Mercury (Hg)	Out of 23 samples - 10 samples exceed LV and none exceeds RV .	Out of 21 samples – 6 samples exceed LV and none exceeds RV .
Arsenic (As)	Out of 23 samples – 1 sample exceeds LV and none exceeds RV .	Out of 21 samples - none of them exceeded LV and none of them exceeded RV .
Min.oils (fractions C6-C40)	Out of 23 samples - none of them exceeded LV and none of them exceeded RV.	Out of 21 samples - none of them exceeded LV and none of them exceeded RV .
Total PAH	Out of 23 samples - none of them exceeded LV and none of them exceeded RV .	Out of 21 samples - none of them exceeded LV and none of them exceeded RV .

4.2.5. Environmental Noise Measurements

At the TPP-OCMs Kostolac Branch site, in 2023 noise measurements were performed at six measuring points in accordance with the Noise Protection Act (OG RS No. 96/21), Rules stipulating noise measurement methodology, the content and form of noise measurement reports (OG RS No. 72/2010) and the Rules stipulating noise indicators, limits, methods for evaluating noise indicators, disturbance, and harmful environmental noise effects (OG RS No. 75/2010). Noise measurement at the locations of thermal power plants was carried out by an authorized legal entity, the Institute of Public Health Požarevac, at 6 measurement points:

1. TEKO A - "Prim" Kostolac (the east side of TPP Kostolac A)
2. TEKO A – "Laser- Balkan", which used to be FIO Minel (south side of TPP Kostolac A
3. TEKO A – the port of Kostolac (west side of TPP Kostolac A)
4. TEKO B – the village of Drmno (south side of TPP Kostolac B)
5. TEKO B – the lake of TPP Kostolac B (west side of TPP Kostolac B)
6. TEKO B – Viminacium (north-east side of TPP Kostolac B)

Table 88 shows data related to the measured environmental noise levels in 2023 for the TPPs-OCMs Kostolac Branch (organizational unit Thermal Power Plant Kostolac A and Thermal Power Plant Kostolac B), during the winter. During noise measuring, the units operated at full capacity (TPP A1 – 100MW; A2 - 210 MW; B1 - 348,5 MW; B2 - 348,5 MW).

The local government of the city municipalities of Kostolac and Pozarevac executed acoustic zoning of the town by the Decision on Determining Acoustic Zones on the teritorry of Požarevac and by the plan of Kostolac General Regulation (OG RS No. 02/2023) in accordance with the Noise Protection Act (OG RS No. 96/21).

The noise measuring results do not exceed the maximum permissible emission limit values (ELV) which are 65 dB during the day and 55 dB during the night, bearing in mind that the local government executed the acoustic zoning of Kostolac.

Table 88

TPPs-OCMs KOSTOLAC BRANCH							**ELV**
Noise levels in 2023 (dB) (A)							
	I measurement – the winter						
Measuring point	**TEKO A**			**TEKO B**			
	PRIM	**Laser- Balkan**	**The port**	**The village of Drmno**	**The lake**	**Viminacium**	
day	58,2	44,9	55,0	55,1	52,7	47,2	**65**
day	60,1	42,9	55,4	58,4	51,5	49,8	**65**
evening	51,5	43,8	55,7	51,4	50,2	54,1	**65**
night	52,0	42,7	51,2	46,4	51,3	52,4	**55**
night	52,1	43,3	53,7	44,7	52,2	52,0	**55**

In the upcoming period, the Study of Noise Reduction in the Environment will be prepared for TPP and CHP.

4.2.6. Waste

Table 89 shows waste production in 2023 for TPP-OCMs Kostolac Branch (parts of the Branch: TPPs Kostolac A and Kostolac B).

Table 90 shows quantities of waste that were delivered in 2023 by the TPP-OCMs Kostolac Branch parts of the Branch: TPPs Kostolac A and Kostolac B).

The ash that is produced during the technological process of lignite combustion that takes place in the TPP Kostolac B boilers is stored in a silo and sold dry to the interested buyers who use it as a raw product in the construction industry, based on the contract for the purchasing of ash, whereas the rest of it is disposed at a fly and bottom ash landfill of OCM Cirikovac. In November 2023, taking over the ash from TPP Kostolac silos by interested operators started.

In accordance with Waste Management Law, the Ministry of Environmental Protection has issued a certificate to TPP Kostolac Branch for registering the gypsum in the by-products registry, for the quantities that were concluded by the relevant contract. TPPs-OCMs Kostolac Branch is the first commercial entity in Serbia that has registered gypsum in the by-product registry.

In 2023 TPP-OCMs Kostolac Branch delivered 28,210.24 tons of gypsum as a by-product to the interested buyers. On August 12, 2022, PE registered a substance calcium sulfate, ES No. 231-900-3 at the European Agency for Chemicals, in accordance with the REACH Regulation. For calcium sulfate which is produced as part of the flue gas desulphurization process at TPP Kostolac B, EPS JSC has obtained a REACH registration number: 01-2119444918-26-0341.

In 2023, the branch of TPPs-OCMs Kostolac sold gypsum to interested operators as non-hazardous waste, as a by-product and as a chemical for the needs of cross-border movement. The quantity delivered as a by-product is 59,527.56 tons, while the quantity of 2,076.96 tons was delivered as a chemical to interested customers.

Table 89

TPPs & OCMs KOSTOLAC BRANCH							
Waste generated in 2023							
No.	**Rulebook waste categories, testing and classification (OG RS № 56/2010, 93/2019 and 39/2021)**	**Index No.**	**Unit**	**Organizational unit**			**Note**
	Name			**TEKO A**	**TEKO B**	**TOTAL (t)**	
1.	Waste printer cartridges other than those indicated under 08 03 17	08 03 18	t	0,009	0,000	**0,009**	
2.	Fly ash from coal	10 01 01 / 10 01 02	t	515.465,12	1.150.611,400	**1.666.076,520**	-
3.	Solid waste based on calcium in the process of flue gas desulphurization	10 01 05	t	-	118.241,500	**118.241,500**	Gypsum
4.	Mineral non-chlorinated hydraulic oil	13 01 10*	t	0,690	10,650	**11,340**	-
5.	Other oil for insulation and heat transfer	13 03 10*	t	0,350	0,000	**0,350**	Waste transformer oil
6.	Packaging containing residues of hazardous substances or contaminated by hazardous substances	15 01 10*	t	0,070	0,360	**0,430**	Hydrazine packing
				0,060	1,040	**1,100**	Oil packing
7.	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing, contaminated with hazardous substances	15 02 02*	t	0,140	0,050	**0,190**	Cotton
8.	Lead batteries	16 06 01*	t	0,040	11,320	**11,360**	Batteries
9.	Glass	17 02 02	t	0,420	0,000	**0,420**	
10.	Plastic	17 02 03	t	0,135	0,020	**0,155**	
11.	Copper, bronze, brass	17 04 01	t	1,277	36,680	**36.681,280**	brass
12.	Aluminum	17 04 02	t	0,880	0,000	**0,880**	-
13.	Iron and steel	17 04 05	t	15,845	1.262,68	**1.278,525**	Various thickness
				153,840	548,48	**702,320**	Impact plates and billets
14.	Cables other than those indicated in 17 04 10	17 04 11	t	4,800	0,020	**4,820**	Copper cables

15.	Insulation material other than those in 17 06 01 and 17 06 03	17 06 04	t	42,870	107,580	**150,450**	Mineral wool
				1,540	0,000	**1,540**	Preinsulation pipes
16.	Sludge from other industrial wastewater treatments other than those under 19 08 13	19 08 14	t	0,000	300,000	**300,00**	
17.	Saturated or exhausted ion exchange resins	19 09 05	t	0,000	7,100	**7,100**	
18.	Plastics and rubber	19 12 04	t	2,740	0,000	**2,740**	Rubber stripes
19.	Fluorescent tubes and other waste containing mercury	20 01 21*	t	0,080	0,420	**0,500**	-
20.	Discarded electrical and electronic equipment which contains dangerous components	20 01 35*	t	1,369	1,395	**2,764**	Electric, electronic waste

* hazardous waste

Table 90

TPPs & OCMs KOSTOLAC BRANCH							
Waste delivered in 2023							
No.	**Rulebook waste categories, testing and classification (OG RS № 56/2010, 93/2019 and 39/2021)**	**Index No.**	**Unit**	**Organizational unit**			**Note**
	Name			**TEKO A**	**TEKO B**	**TOTAL**	
1.	Fly ash from coal	10 01 02	t	6.446,34	26.220,320	**32.666,660**	Sale with financial compensation
2.	Solid waste based on calcium in the process of FGD	10 01 05	t	-	132.729,630	**132.729,630**	Sale with financial compensation
3	Packaging containing residues of hazardous substances or contaminated by hazardous substances	15 01 10*	t	0,180	0,680	**0,860**	Hydrazine barrels
		15 01 10*		0,060	1,040	**1,100**	Contract for providing waste delivery service Oil barrels

4	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing, contaminated with hazardous substances	15 02 02*	t	0,340	0,120	**0,460**	Contract for providing waste delivery service
5.	Glass	17 02 02/ 17 01 02	t	0,420	0,000	**0,420**	Sale with financial compensation
6.	Copper, bronze, brass	17 04 01	t	0,000	36,680	**36,680**	Sale with financial compensation
7.	Aluminum	17 04 02	t	0,880	0,000	**0,880**	Sale with financial compensation
8.	Iron and steel	17 04 05	t	51,160	1.262,96	**1.314,120**	Sale with financial compensation
				148,84	548,48	**697,320**	Sale with financial compensation
9.	Cables other than those indicated in 17 04 10	17 04 11	t	0,880	0,00	**0,880**	Sale with financial compensation
10.	Insulation material other than those in 17 06 01 and 17 06 03	17 06 04	t	2,340	0,00	**2,340**	Sale with financial compensation-preinsulation pipes
				43,020	107,580	**150,600**	Contract for providing waste delivery service – mineral wool
11.	Saturated or exhausted ion exchange resins	19 09 05	t	7,580	7,100	**14,680**	Contract for providing waste delivery service
12.	Plastics and rubber	19 12 04	t	2,740	0,000	**2,740**	Sale with financial compensation
13.	Fluorescent tubes and other waste containing mercury	20 01 21*	t	0,260	0,420	**0,680**	Sale with financial compensation
14.	Discarded electrical and electronic equipment other than those under 20 01 21 and 20 01 23 containing hazardous components (electric and electronic equipment)	20 01 35*	t	2,920	3,000	**5,920**	Contract for providing waste delivery service

* hazardous waste

4.3. Working Environment Monitoring, Occupational Health and Safety

Occupational Safety and Health Reports for 2023 include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurements
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

4.3.1. Working Environment Monitoring

- **Working Environment Noise Measurements**

In 2023, in TPP Kostolac A, monitoring of the working environment was carried out, and microclimate parameters were measured in summer at 93 workplaces. Noise measurements were not done.

In 2023, in TPP Kostolac B, monitoring of the working environment was carried out, and microclimate parameters were measured in summer at 127 workplaces. Noise measurements were not done.

4.3.2. Occupational Safety

- **Training of Employees**

Employees are trained according to the Health and Safety Training Programme in the Joint Stock Company Elektroprivreda Srbije and in accordance with the procedures of the Health and Ssafety Management System, according to the requirements of ISO 45001 standard. Occasional training is done at least once a year for employees working on tasks with increased risk, and in line with the Risk Assessment Act for TPPs-OCMs Kostolac Branch and Occupational Health and Safety Act. According to the Occupational Health and Safety Act, training within TPP Kostolac is performed whenever new employees are recruited, deployed to new workplaces, in the process of technological changes and the introduction of new equipment and work tools. Training and testing of skills is planned and implemented for employees working at high risk posts.

Further, in TPP Kostolac A and TPP Kostolac B, training was performed for 141 employees.

Table 91 shows number of employees to be trained and number of employees who underwent training in 2023.

Table 91

TPPs & OCMs KOSTOLAC BRANCH					
Training of employees in 2023					
Organizatonal unit	**Number of employees**	**Planned to be trained**		**Trained**	
		n	**%**	**n**	**%**
TPP Kostolac A	360	360	100,00	678	188,33
TPP Kostolac B	516	343	66,47	401	116,91
Headquarters	251	65	25,90	65	100,00
TOTAL: TPPs & OCMs KOSTOLAC BRANCH	**1127**	**768**	**68,15**	**1.144**	**148,96**

Note: Some employees underwent more than one training, for example due to relocation to other jobs or as a post injury measure and similar

- **Injuries at Work**

Table 92 shows data on number of injuries at work in 2023.

Table 92

TPPs & OCMs KOSTOLAC BRANCH
Injuries at work in 2023

Organizatonal unit	Number of employees	Injuries – Number of employees' ratio				
		Light	Severe	Fatal	Total	%
TPP Kostolac A	360	1	1	0	2	0,56
TPP Kostolac B	516	3	1	0	4	0,78
Headquarters	251	0	0	0	0	0
TOTAL: TPPs & OCMs KOSTOLAC BRANCH	**1.127**	**4**	**2**	**0**	**6**	**0,53**

4.3.3. Health Protection

All employees at TTPs Kostolac undergo pre-employment and/or periodic medical examinations. Employees are referred to pre-employment medical examinations before they are employed and when they are deployed to a different workplace that has a higher risk factor. Employees working at high-risk posts are referred to periodic medical examinations once a year. Periodic examinations in 2023 were done at Occupational Healthcare Center Pozarevac.

Table 93 shows data on periodic examination of working capability of employees 2023.

Table 93

TPPs & OCMs KOSTOLAC BRANCH											
Work capability in 2023											
Organizational unit	**Number of employees**	**Perodic examinations**				**Work capabilty**					
		Referred to examination		**Examined**		**Capable**		**Limited capability**		**Not capable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
TPP Kostolac A	360	410	113,89	406	99,02	396	97,54	10	2,46	0	0,00
TPP Kostolac B	516	510	98,84	510	100,00	490	96,08	20	3,92	0	0,00
Headquarters	251	65	25,90	65	100,00	62	95,38	3	4,62	0	0,00
TOTAL: TPPs & OCMs KOSTOLAC BRANCH	**1.127**	**985**	**87,40**	**981**	**99,60**	**948**	**96,63**	**33**	**3,36**	**0**	**0,00**

Note: Some employees were referred and examined several times due to transfer to other posts and similar.

4.4. Stakeholders Submissions

Stakeholders' submissions in 2023 are provided in Table 94.

Table 94

TPPs & OCMs KOSTOLAC BRANCH		
STAKEHOLDERS SUBMISSIONS IN 2023		
Organizational unit	**Complaint (by whom submitted)**	**Subject of complaint Actions**
TPP Kostolac A TPP Kostolac B	Klenovnik village residents' complaint As per the request of the natural person	Order Decision of the competent the Republic Environmental Protection Inspector No. 910-480-501-00043/2023-04 dated September 8, 2023, that in the zone of influence of OCM Ćirikovac, where ash and slag are transported and deposited from TPP Kostolac A and TPP Kostolac B using the thick slurry hydromixture method, in the residential zone and the individual family house in the household of Jonjić in the village of Klenovnik, through an authorized organization, equipment should be installed and measurements of the air pollutants should be done. It was ordered to measure the concentration of total suspended particles for 51 days, with arsenic, while the measurement of total sediments for 12 months.

5. CHPs PANONSKE BRANCH

Panonske CHPPs Branch comprises the following organizational units:

- **CHP Novi Sad**
- **CHP Zrenjanin, and**
- **CHP Sremska Mitrovica**

5.1. Overview and Status of Permits

Overview and status of permits for 2023 are in Table 95.

Table 95

CHPs PANONSKE BRANCH			
Overview and Status of Permits for 2023			
Organizational unit	**Obtained permits and approvals (number and date)**	**New applications for obtaining or extension of valid permits**	**Note**
CHP SREMSKA MITROVICA	Number: 104-325-935/2023-05 from September 5, 2023 issued by the Provincial Secretariat for Agriculture, Water Management and Forestry. Decision on the water permit for the constructed oily water separator and for the reconstructed existing liquid discharge treatment system (oily water) on the cadastral parcel number 5933/8 CM Sremska Mitrovica. The water permit is valid until July 30, 2026.	-	-

5.2. Monitoring and Environmental Impact

5.2.1. Air Quality Measurements

Air quality monitoring in the vicinity of the CHPs Panonske Branch organizational units is carried out as part of the monitoring financed and organized by individual organizational units (as ordered by inspection). It should be noted that the air quality monitoring is within the competence of the competent authorities, public administration and authorized legal entities (36/2009-60, 10/2013-30, 26/2021-3 (other law)); therefore, air quality monitoring is carried out as part of the national automatic air quality monitoring network, comprising measuring points located in the vicinity of CHP within CHPs Panonske Branch.

Monthly and annual air quality reports in the vicinity of the CHPs Panonske organizational units (when there are measurements) are made available to the local government and public administration upon request.

CHP Novi Sad

No air quality measurements were done in 2023.

CHP Zrenjanin

No air quality measurements were done in 2023.

CHP Sremska Mitrovica

No air quality measurements were done in 2023.

5.2.2. Emission Measurements of Matters Affecting Air Quality

Flue gases containing sulphur dioxide, nitrogen oxides and dust are emitted through stacks, with the following heights:

- CHP Novi Sad – 160 m
- CHP Zrenjanin – 160 m
- CHP Sremska Mitrovica:
    1. 105 m, concrete stack,
    2. 77.5 m, brick stack, and

Auxiliary boiler room CHP Sremska Mitrovica (3 boilers, each having its own stack – total 3 small metal stacks)

- 2 metal satcks - 7 m,
- 1 metal stack - 4.7 m.

- In accordance with the legislation, regular occasional measurements of air pollutants are performed, and control measurements as required. Organizational unit CHP Novi Sad performs independent continuous measurement of the emission of polluting substances into the air.

Periodic Measurements of the Polluting Substances Emission into the Air

Emissions of air pollutants for 2023 are given for each CHP individually based on measurements performed by an authorized legal entity the Institute for Occupational Safety, Novi Sad, the Institute Vatrogas, Novi Sad, and Occupational safety and Environmental Protection Belgrade. The programme includes measurement of flue gas condition (temperature, pressure, and humidity), volume flow, oxygen content, as well as mass concentration and calculation of emission factors for sulfur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), and particulate matters provided as total carbon. Since 2019, CHP Novi Sad has not been obliged to do periodic emission measurements when it started to docontinuous measurements of air emissions independently based on the Decision of the Ministry of Environmental Protection no. 353-01-00293/2019-03 dated September 19, 2019.

Table 96 summarizes the results of individual measurements of matters emissions affecting air quality for the CHPs Panonske Branch done in 2023.

Table 96

CHPs PANONSKE BRANCH			
Periodic emission measurements of matters affecting air quality in 2023			
Mass concentrations of substances that affect air quality (mg/Nm^3)			
CHP Novi Sad			
Unit	**A1 (K1 and K2)**	**A2 (K3)**	
Heat output	**2x279 MWth**	**320 MWth**	
Heat output at stack	**878 MWth**		
Fuel	**Gas**		
SO_2	-	-	
NO_x (NO_2)	-	-	
CO	-	-	
Particulate matter	-	-	
CHP Zrenjanin			
Unit	**A1 (K1 and K2)**	**A2 (K2, K3, K5,) – out of function**	
Heat output	**2x250 MWth**		
Fuel	**Gas**	-	
SO_2	0.010	-	
NO_x (NO_2)	3.31	-	
CO	1.45	-	
Particulate matter	0.033	-	
CHP Sremska Mitrovica			
Unit	**A3 (K3 and K4)**	**Auxiliary boiler room S-2400**	**Biomass boiler TE.K - 405**

CHPs PANONSKE BRANCH					
Periodic emission measurements of matters affecting air quality in 2023					
Mass concentrations of substances that affect air quality (mg/Nm^3)					
Heat output	**2x80 MWth**		**2x15 MWth**	**1x14,86 MWth**	**18 MWth**
Fuel	**Gas**	**Heavy oil**	**Gas**	**Gas**	**Sunflower husk**
ELV					
SO_2			< 2,00	< 0,5	1,80
CO			< 1,25	< 1,25	38,40
NO_x (NO_2)			171,52	79,36	530,65
Particulate matter			-		4,12
Organic compounds provided as total carbon					8,80

In 2023, production plant Unit A1 in CHP Zrenjanin operated in January and February. The production plant - Unit A2 operated in 2023 as follows: 12 hours in February, 251 hours in March, 57 hours in April for heating staff and facilities, and 458 hours in May for fuel oil heating.

Periodic measurements of pollutant emissions into the air at CHPZrenjanin, on boilers K1 and K2 in Unit A1, were not carried out in 2023 due to the impossibility of unit operation at full capacity. Emissions were calculated based on emission factors for NOx, CO, SOx and PM taken from EMEP/EEA air pollutant emission inventory guidebook 2019, Table 3-12, Tier 2 emission factor for source category 1.A.1.a, dry bottom boilers using natural gas https://www.eea.europa.eu/publications/emep-eea-guidebook-2019.

For heating the facilities of CHP Zrenjanin, T110 boiler was used, with a heat output of 8.5 MW, on which the emission measurement was performed in December 2023. The results of the measurement of polluting substances in the air did not exceed the emission limit values.

In 2023, the biomass boiler TE.K - 405 (sunflower husk) was operating for 2,317.4 hours at CHP Sremska Mitrovica. In the auxiliary boiler room, boiler S-2400/2 operated on natural gas for 745.6 hours, boiler S-2400/1 operated on natural gas for 221.8 hours. Unit A3 was not activated, while the steam boiler S-2400/3 operated on natural gas, less than 100 hours during 2023.

Continuous Emissions Measurements of Matters Affecting Air Quality

In addition to the basic equipment consisting of analyzers measuring mass concentrations of dust and gases, the additional equipment was also installed on stacks measuring oxygen, carbon dioxide and humidity content as well as temperature, pressure and flue gas flow rate, SO_2, CO, NO_2, NO_x. Data acquisition and processing equipment was also installed.

Table 97 provides an overview of data on equipment for continuous emissions measurement of matters affecting air quality in CHPs Panonske.

Table 97

CHPs PANONSKE BRANCH									
Continuous emission measurement equipment of units in 2023									
Organisational unit	**Particulate matters**	**Pollutants**	**Parameters**						
		Gases	**Content**			**p**	**t**	**flow**
		SO_2, NO_x (NO_2), CO	**humidity**	**CO_2**	**O_2**			
CHP NOVI SAD	1 analyzer	1 analyzer each				1 gauge each		
	Measuring equipment is installed at the elevation of 38.2 m, on the external stack lining. The platform is at the elevation of 37 m, on the external stack lining. Stack height is 160 m							
CHP ZRENJANIN	1 analyzer	1 analyzer each				1 gauge each		
	Measuring equipment is installed at the elevation of 38 m, on the external stack lining. The platform is at the elevation of 37 m, on the external stack lining. Stack height is 160 m.							
CHP SREMSKA MITROVICA	1 analyzer each					1 gauge each		
	The devices are installed in the horizontal rectangular flue duct of the biomass boiler TE.K – 405, connected to the brick stack 77.5 m high.							

Continuous measurements are in accordance with EN 14181 - QAL1. The software for statistical analysis of continuous measurements data assumes preparation of daily, monthly, and annual reports. The creation of a 48-hour report is assumed only for CHP Novi Sad.

Table 98 provides an overview of air emissions continuous measurements results for which ELVs for Novi Sad CHPP are set, in 2023.

Table 98

CHPs PANONSKE BRANCH				
Continuous emissions measurements of matters affecting air quality in 2023 (mg/Nm^3), mean annual values				
Organisational unit	**Particulate matters**	**SO_2**	**CO**	**NO_X(NO_2)**
CHP NOVI SAD	1,327	0,9	63,1	430

- **Annual Emissions of Pollutants Affecting Air Quality**

Table 99 provides an overview of emissions affecting air quality: particulate matters, SO_2, NO_2 and CO_2 for the CHPs Panonske Branch in 2023. Annual particulate matter, SO_2 and NO_2 emissions were calculated based on the measured mass concentrations, flue gas flow rate and operating time of units, while CO_2 emissions were calculated based on the fuel consumption data shown in Table 100 and CEF – correction emission factor.

Table 99

CHPs PANONSKE BRANCH				
Emission of matters affecting air quality in 2023 (t/year)				
Organisational unit	**Particulate matters**	**SO_2**	**NO_x (NO_2)**	**CO_2**
CHP NOVI SAD				
Stack, both units – continuous measurements	3,9206	2,8788	1.250,8406	340.286,96
Total: CHP NOVI SAD	**3,9206**	**2,8788**	**1.250,8406**	**340.286,96**
CHP ZRENJANIN				
UNIT A1	566,22	178,77	56,622	24,812
UNIT A2	0,000	0,000	0,000	0,000
Total: CHP ZRENJANIN	**566,22**	**178,77**	**56,622**	**24,812**
CHP SREMSKA MITROVICA				
Unit A3, K3/K4	0,000	0,000	0,000	0,000
S-2400/1	0,000	0,001	0,232	281,07
S-2400/2	0,000	0,006	0,813	864,86
S-2400/3	0,000	0,000	0,000	19,80
Biomass-fired boiler	0,356	0,155	44,981	232,20*
Total: CHP SREMSKA MITROVICA	**0,356**	**0,162**	**46,026**	**1.397,93**
Total CHPs PANONSKE	**570,497**	**181,811**	**1.353,489**	**341.709,702**

The presented CO_2 emission in biomass-fired boiler is a result of natural gas consumption in the boiler for biomass-fired boiler ignition.
Note: Calculation of pollutant emissions does not match the calculation automatically generated from the NRIZ report of the Environmental Protection Agency.

Table 100

CHPs PANONSKE BRANCH			
Fuel consumption in 2023			
Organisational unit	**Fuel**		
CHP NOVI SAD			
	Gas ($kStm^3$/year)	**Heavy oil (kt/year)**	**Biomass (kt/year)**
Stack, both units – continuous measurements	182.860,466	0,000	0,000
Total: CHP NOVI SAD	**182.860,466**	**0,000**	**0,000**
CHP ZRENJANIN			
UNIT A1	19.083,598	0,000	0,000
UNIT A2	265,089*	0,000	0,000
Total: CHP ZRENJANIN	**19.348,687***	**0,000**	**0,000**
CHP SREMSKA MITROVICA			
Unit A3, K3/K4	0,000	0,000	0,000
S-2400/1	151,041	0,000	0,000
S-2400/2	464,749	0,000	0,000
S-2400/3	10,251	0,000	0,000
Biomass-fired boiler	124,780	0,000	4.754
Total: CHP SREMSKA MITROVICA	**750,821**	**0,000**	**4.754**
Total CHPs PANONSKE	**202.959.974**	**0,000**	**4.754**
* Fuel consumption for heating the personal facilities			

- **Complying Air Emissions with EU Legislation**
  - **Sulphur Dioxide**

To reduce the CHPs Panonske Branch SO_2 emissions, the use of heavy fuel oil with sulphur content of up to 1% was planned together with the combined cycle operation – gas/heavy fuel oil.

CHP Novi Sad

Heat output of boilers is 2x279 MW and 1x320MW, whereby when one boiler fires heavy fuel oil with sulphur content up to 1% ELVs will not be exceeded which is in line with EU legislation.

CHP Zrenjanin

Heat output of the boiler is 2x250MW, whereby when one boiler fires heavy fuel oil with sulphur content up to 1% ELVs will not be exceeded which is in line with EU legislation.

CHP Sremska Mitrovica

Heat output of the boiler and auxiliary boiler are 2x80MW and 2x15MW and 14,86MW respectively. When one boiler fires heavy fuel oil with sulphur content up to 1% ELVs will not be exceeded, which is in line with EU legislation. There is also an 18 MW biomass-fired boiler where an authorized legal entity measured low SO_2 emission during its operation which is below proposed ELV.

- **Nitrogen Oxides**

CHP Novi Sad, CHP Zrenjanin and CHP Sremska Mitrovica

To reduce the content of nitrogen oxides, it is planned to prepare a study titled as “Conceptual solution for reducing the content of nitrogen oxides in the steam boiler TGM-84 / B” and "Feasibility study with the preliminary design for reducing the NOx content in the boiler TGME 464 / C” in CHP Novi Sad.

5.2.3. Emission Measurements of Matters Affecting Water Quality

Measurement of emissions that affected water quality in 2023 are provided for every CHP separately, based on research done by authorized legal entitie the Institute Vatrogas, Novi Sad.

CHP Novi Sad

The greatest consumption of process water in CHP Novi Sad is the water for steam cooling in condensers, there is a circulating cooling system, while water is supplied from the Danube. Return cooling water and all other industrial wastewater (water from the demineralization process and oily water after primary and secondary treatment) is after treatment discharged into the Danube. A small share of water is used to produce demineralized and soft water.

Sanitary-sewage water has been discharged into the city wastewater collector since November 2012. Storm drainage has been discharged into the city wastewater collector since November 2012. The Danube water belongs to Class II.

Wastewater quality and its impact on the Danube is controlled 4 times a year pursuant to the Law on Water. 30/2010-81, 93/2012-27, 101/2016-9, 95/2018-388, 95/2018-267 (other law). CHP Novi Sad wastewater is discharged over three outlets:

- storm drainage;
- sanitary-sewage water system; since 2013, quality of this wastewater has not been subjected to a control, given that the system is connected to the city wastewater collector;
- cooling water channel.

Monitoring programme includes the following physical-chemical parameters: temperature, pH, turbidity, ammonia, inorganic nitrogen, cyanides, suspended substances, dissolved oxygen, COD, BOD_5, total phosphorus, mineral oils, Pb, Cd, Cu. Cr, Ni and Zn.

Wastewater sampling is performed on 7 measuring points, as follows:

1. Storm drainage – last manhole inside the CHP Novi Sad;
2. Return cooling and process water – the Danube discharge point
3. Danube water – 100 m downstream from the cooling water discharge;
4. Danube water – 100 m upstream from the cooling water discharge;
5. Neutralisation basin;
6. Oily water at the oily water treatment plant inlet – primary treatment;
7. Oily water after secondary treatment (carbon filters).

In 2023 wastewater quality was controlled 4 times.

CHP Zrenjanin

Water used for condenser water vapour cooling has the highest share in the total quantity of process water used by the CHP Zrenjanin. CHP Zrenjanin cooling water system is of the recirculation type including a turbine condenser, cooling towers, cooling water pumps, pipes and reinforcement. Decarbonized water is used as an operating fluid by the cooling water system. The Begej River water is used to produce demineralized and decarbonized water.

Wastewater (from boiler chemical cleaning, cleaning and passivation of water channels and oily water) is discharged after treatment into the Aleksandrovac channel and subsequently into the Begej

River. Aleksandrovac channel belongs to Category IV, while the Begej River water belongs to Category II.

Decarbonisation and clarification processes wastewater is fed back to the process while the resulting sludge cakes is transported and disposed at the landfill.

Acid-alkaline water originating from the demineralization process is neutralized and discharged into the Aleksandrovac channel. Acid-alkaline wastewater from regenerative air heater washing is processed (neutralization and sedimentation) and returned to the process as filtrate.

Oily wastewater is also treated (through carbon-anthracite filters) and subsequently discharged into the Aleksandrovac channel.

Sanitary-sewage water is after mechanical-biological treatment by the PUTOX plant discharged over a special channel into the Aleksandrovac channel.

CHP Zrenjanin wastewater quality and its water recipient impact is controlled 4 times a year. Sampling of wastewater and water from Aleksndrovac channel is performed on 5 measuring points, as follows:

- Sanitary-sewage water (PUTOX) – before treatment and after treatment
- Neutralization pit,
- Aleksandrovac channel before discharge,
- Aleksandrovac channel after discharge,
- Oily water – before inlet in the treatment plant and at the outlet of the treatment plant.

After all measurements performed during the year, an authorized legal entity issues a certificate for the efficiency of the wastewater treatment plant operation (PUTOX) and oily and oily water treatment plants operation.

Monitoring programme includes the following physical-chemical parameters: temperature, pH, electrical conductivity, dissolved oxygen, turbidity, suspended substances, sedimentary matter, alkalinity, acidity, COD, BOD5, permanganate demand, chloride demand, total nitrogen, total phosphorus, ammonia, nitrites, nitrates, phosphates, sulphates, phenol index, hardness, grease and oil. Sampling was conducted within the Zrenjanin CHPP grounds, Aleksandrovac channel.

In 2023, wastewater quality was controlled 4 times.

CHP Sremska Mitrovica

Water used for T/G 32 MW turbine condenser cooling has the highest share in the total quantity of process water used by the CHP Sremska Mitrovica. CHP Sremska Mitrovica has a continuous cooling system and is supplied by water from the Sava River. Return cooling water is discharged into the Sava River. The Sava River is classified as a Class II watercourse.

One drilled well is located on the land jointly owned by the ISTEP Company and CHP Sremska Mitrovica. Water from this well acquires quality of drinking water upon deferrization process.

A part of wastewater is not discharged directly into the recipient but after processing in wastewater treatment plant (oily wastewater and heavy fuel oil contaminated wastewater plant and sludgy water treatment plant) and from the neutralization pool in the plant for chemical water treatment is discharged through the pipeline network for waste, process, and purified water, through control-gauging manhole into the city industrial-sewage collector. A use permit has been obtained for the pipeline network for waste, process, and treated water with a connection point to the city sewage network.

After processing in sewage water treatment plant sanitary water is discharged through sewage pipeline network into the city industrial-sewage collector.

CHP Sremska Mitrovica wastewater quality is controlled 4 times a year. Wastewater from CHP Sremska Mitrovica is discharged via three outlets as:

- Cooling water into recipient the Sava River;

- Part of the wastewater from the accelerator is joined with the wastewater from from ISTEP Company and subsequently as one discharged into the recipient ;
- Sanitary wastewater, after the treatment, is discharged through a separate pipeline into the city industrial-sewage collector;
- Wastewater (from HPV plant, from boilers desludging, water from oil-containing water separators, treated sludgy water) is discharged through through a separate pipeline throught control-gauging manhole into the city industrial-sewage collector.

Monitoring programme includes the following physical-chemical parameters: temperature, pH,suspended matters, COD, BOD_5; ammonia, nitrates, nitrites, total inorganic nitrogen, total phosphorus, mineral oils, sediments, electrical conductivity, dissolved oxygen, cyanides, Pb, Cu, Ni, Zn, Cr, Fe, Cd.

Wastewater sampling is carried out four times a year at 9 measuring points:

1. Wastewter coming from control- gauging manhole at the discharging point into the city collector;
2. Wastewater coming from the last manhole before pouring into the Sava River;
3. Wastewater after boiler sludge removal;
4. Wastewater at the inlet and outlet of the plant for oily water treatment;
5. Wastewater at the inlet and outlet of the plant for sludgy water treatment;
6. Wastewater at the inlet and outlet of the plant for sewage water treatment.

Sampling of the recipient, the Sava River, was done at 2 measuring points:

- At the water inlet into the water intake and
- After the wastewater discharge into the recipient.

Wastewater quality in 2023 was controlled 4 times.

Table 101 shows analysis of wastewater, watercourse - recipient water quality data for 2023 in terms of their legal compliance for CHPs Panonske Branch.

In the case of surface waters, legal compliance is evaluated by comparing the measured values of pollutant concentrations with the limits defined by the Regulation on limit values for pollutants in surface and ground waters and sediments, and deadlines for their achievement (OG RS No. 50/2012) while wastewater values are compared with the limits defined by the Regulation on limit values of pollutants in water and deadlines for their achievement (OG RS No. 67/2011, 48/2012 and 1/2016).

Table 101

CHPs PANONSKE BRANCH			
The quality of wastewater and receiving water in 2023			
Type of water	**Organizational unit**		
	CHP Novi Sad	**CHP Zrenjanin**	**CHP Sremska Mitrovica**
Wastewater	No exceedance in 2023	No exceedance in 2023	No exceedance in 2023
Recipient	No exceedance in 2023	No exceedance in 2023	No exceedance in 2023

- **Water Quantities**

Table 102 gives an overview of the quantities of captured and released water in the organizational units of the CHPs Panonske Branch for 2023. The calculation of the annual quantities was made based on the data on the capacity and operating time of the water intake and discharge pumps and flow meters.

Table 102

CHPs PANONSKE BRANCH								
Quantities of captured and released water in 2023 (m^3 /year x10^3)								
Organizational unit	Captured water				Discharged wastewater			
	Quantities used		Quantities permitted		Return cooling water	Oily water	Sanitary wastewater	Other (neutralization pit and lave washing)
	Surface	Ground	Surface	Ground				
CHP Novi Sad	49.432,435	-	63.593,104	-	49.029,069	2,188	7,759	9,000
CHP Zrenjanin	555,089	-	-	-	-	1,470	0,75548	10,984
CHP Sremska Mitrovica	23,674	15,129	-	*44,150	-	-	8,733	11,874
Total: CHPs Panonske	**50.011,198**	**15,129**	**63.593,104**	***44,150**	**49.029,069**	**3,658**	**17,247**	**31,858**

* Data taken from the Book of records on the state of ground water reserves at the source of CHP Sremska Mitrovica

- **Improvements Aimed at Reducing the Impact of Wastewater on Surface and Ground Water**

For controlling the possible contamination of groundwater, which could occur due to the activities of production plants, periodic controls of the quality of groundwater and determination of the level of groundwater were carried out by the CHPs Panonske Branch. Periodic tests of physical and chemical analyzes were carried out in December of 2022.

CHP Novi Sad

For reducing the impact of wastewater, it is planned to create: Conceptual Solution, Feasibility Study with Preliminary Design, Environmental Impact Assessment Study for wastewater treatment plantin CHP Novi Sad. In 2023, no groundwater tests were performed.

CHP Zrenjanin

No groundwater tests were performed in 2023.

CHP Sremska Mitrovica

No groundwater tests were performed in 2023.

5.2.4. Measuring Concentration of Polluting, Harmful and Hazardous Substances in the Soil

So far, soil testing has been carried out as part of the studies: "Monitoring of soil contamination around tanks and liquid fuel transfer stations in EPS JSC" and "Monitoring of the system of oil pans and pits in EPS JSC plants".

Soil testing (monitoring) by authorized laboratories is planned for 2023, 2024 and 2025, then for five years if there is no soil contamination.

CHP Novi Sad

Soil quality testing was done in 2023. Limit values were not exceeded.

CHP Zrenjanin

Soil quality testing was done in 2023. Limit values were not exceeded.

CHP Sremska Mitrovica

Soil quality testing was done in 2023. Limit values were not exceeded.

5.2.5. Environmental Noise Measurement

Enivronmental noise measurement in CHPs Panoncke Branch in 2023 was done by an accredited legal entity, "Institute for Occupational Safety" JSC Novi Sad in accordance with the Environmental Noise Protection (OG of RS, No. 96/21), Rulebook on Noise Measurement Methods, Content and Scope of Noise Measurement Reports (OG of RS" , No. 72/10), the Rulebook on the conditions that must be met by the professional organization for noise measurement, as well as the documentation that is submitted with the request for authorization for noise measurement (OG of RS, No. 72/10) and the Regulation on noise indicators, limit values, methods for evaluating noise indicators, disturbance and harmful effects of noise in the environment (OG of RS, No. 75/2010) and the Decision on determining acoustic zones.

CHP Novi Sad

At CHP Novi Sad, environmental noise measurements were not done in 2023.

By the Decision on determining acoustic zones in the territory of the city of Novi Sad, Official Gazette of Novi Sad, No. 24/2015 and 32/2017, no zoning was done for the area in the vicinity of CHP Novi Sad, so the limit values of the noise level being 65 dB for the day and for evening period from 6 p.m. to 10 p.m. and 55 dB for the night period from 10 p.m. to 6 a.m. are applied.

CHP Zrenjanin

At CHP Zrenjanin, environmental noise measurements were not done in 2023.

On the territory of the city of Zrenjanin, no acoustic zoning of the area was done, pursuant to Article 17 of the Environmental Noise Protection Law (OG of RS, No. 96/21), the maximum prescribed limit values from the Regulation on noise indicators, limit values, methods for evaluating noise indicators, disturbance and harmful effects of noise in the environment (OG of RS, No. 75/2010) are applied, that is, for the limit values of the noise level, 65 dB is applied for the day and evening period from 6 p.m. to 10 p.m. and 55 dB for the night period from 10 p.m. to 6 a.m.

CHP Sremska Mitrovica

In CHPSremska Mitrovica, environmental noise was measured in December 2023.

Noise measurement is planned once a year in the full operating period as per the Environmental Impact Assessment Study of the adaptation, delivery, installation works and commissioning of the biomass hot water boiler plant and the system for connecting to the existing installations CHP Sremska Mitrovica on cadastral plot number 5933 /7 CM Sremska Mitrovica and the Environmental Impact Assessment Study of the treatment of waste silted water generated in the process of preparing industrial and decarbonized water on cadastral plot number 5933/8 CM Sremska Mitrovica. Table 103 shows the noise level in 2023.

Table 103

CHPs PANONSKE BRANCH				
Noise level in 2023 (dB)				
Noise indicators limit values, Regulation stipulating noise indicators, limit values, methods assessing noise indicators, disturbance levels and harmful living environment noise effects (OG RS № 75/10)	**Purpose of the area**		**Day and evening**	**Night**
			35	30
	Areas for rest and recreation, hospital zones and rehabilitation centers, cultural and historical sites, large parks		50	40
	Tourist areas, camps and school zones		50	45
	Purely residential areas		55	45
	Commercial-residential areas, trading- residential areas and children's playgrounds		60	50
	City center, trading, crafts, administrative zones containing flats, zones along motorways, state and city roads		65	55
	Industrial, storage and service areas and transport terminals without residential buildings		At the border of this zone, the noise must not exceed the limit value in the bordering zone	
Organizational unit	**CHP Sremska Mitrovica 2023**			
Measuring Point	MP-1	MP-2	MP-3	MP-4
Day	50,2 – 52,8	46,8 . 47,9	33,0 – 33,9	36,6 – 39,7
Evening	49,6 – 49,9	41,3 – 44,1	31,2 – 32,3	35,6 – 35,9
Night	49,0 – 49,1	41,8 – 41,8	31,0 – 31,1	35,0 – 35,2

5.2.6. Waste

The waste generation in 2023 is shown in Table 104 according to the Legal Regulations of the Republic of Serbia within the scope of waste management.

Table 104

CHPs PANONSKE BRANCH								
Generated types of waste in 2023								
No.	**Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Note**
				CHP Novi Sad	**CHP Zrenjanin**	**CHP Sremska Mitrovica**	**Total CHPs Panonske**	
	Name	**Index No.**		**Quantities of waste**				
1.	Waste printer cartridges other than those in 08 03 17	08 03 18	t	0,000	0,000	0,037	**0,037**	Waste printer cartridges
3.	Co-firing boiler slag and dust other than those in 10 01 14	10 01 15	t	0,000	0,000	175,940	**175,940**	Waste biomass-firing boiler ash
4.	Inflammable material waste other than that under 12 01 06	12 01 17	t	0,000	0,000	1,080	**1,080**	Waste sand with rubber remains, produced during sandblastin of HCl tank
5.	Packaging that contains residues of hazardous substances or is contaminated with hazardous substances	15 01 10*	t	0,46	0,000	0,000	**0,460**	Oil barrels
6.	Absorbents, filter materials (including oil filters not otherwise specified), wiping	15 02 02*	t	3,980	0,000	**0,155**	**4,135**	Waste oily absorbents- sawdust and wiping cloths/oily sand

CHPs PANONSKE BRANCH								
Generated types of waste in 2023								
No.	**Rulebook on categories, testing and classification of waste (Official Gazette of RS No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Organizational unit**				**Note**
				CHP Novi Sad	**CHP Zrenjanin**	**CHP Sremska Mitrovica**	**Total CHPs Panonske**	
	Name	**Index No.**		**Quantities of waste**				
	cloths, protective clothing, which are contaminated with hazardous substances							
7.	Absorbents, filter materials, wiping cloths and protective clothing other than those under 15 02 02	15 02 03	t	0,000	0,000	0,440	**0,440**	Bags from the bag filter of the biomass boiler.
8.	Waste rubber	16 01 03	t	0,540	0,200	0,000	**0,740**	Car tyres
9.	Lead batteries	16 06 01*	t	0,000	2,482	0,000	**2,482**	Lead batteries
10.	Aluminum	17 04 02	t	0,250	0,250	0,000	**0,500**	Aluminum sheet
11.	Zinc	17 04 04	t	1,200	0,000	0,000	**1,200**	Galvanized sheet
12.	Iron and steel	17 04 05	t	12,360	1,342	4,841	**18,543**	Various reinforcement; pipes, sheets and valves
13.	Cables other than those under 17 04 10	17 04 11	t	0,000	0,000	0,041	**0,041**	Copper cables with insulation
14.	Insulation material other than those under 17 06 01 and 17 06 03	17 06 04	t	8,200	0,500	0,000	**8,700**	Waste mineral wool
15.	Sludge from water decarbonization	19 09 03	t	149,760	0,000	0,000	**149,760**	-
16.	Saturated or spent ion exchanging resins	19 09 05	t	15,940	0,000	0,000	**15,940**	Waste ionic resin
17.	Fluorescent tubes and other mercury-containing waste	20 01 21*	t	0,155	0,400	0,036	**0,591**	Waste fluorescent tubes
18.	Discarded electronic and electrical equipment containing hazardous components	20 01 35*	t	0,340	0,130	0,544	**1,014**	-
19.	Discarded electrical and electronic equipment other than that under 20 01 21, 20 01 23 and 20 01 35	20 01 36	t	0,000	0,000	0,162	**0,162**	-
20.	Bulk waste	20 03 07	t	0,600	0,000	0,000	**0,600**	

Note: The stated quantites of waste were determined by free estimation. The actual quantities are determined when handing over the waste to authorized operators by weighing it on a scale verified by authorized organizations

* hazardous waste

Disposed waste quantities in 2023 are provided in Table 105.

Table 105

CHPs PANONSKE BRANCH								
Disposed waste quantities in 2023								
No.	**The official nomenclature of Rulebook on categories, testing and classification of waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Организациони део**				**Note**
				CHP Novi Sad	**CHP Zrenjanin**	**CHP Sremska Mitrovica**	**Total CHPs Panonske**	
	Name	**Index No.**		**Waste quantites**				
1.	Co-firing boiler slag and dust other than those in 10 01 14	10 01 15	t	0,000	0,000	138,78	**138,78**	Waste biomass-firing boiler ash
2.	Packaging that contains residues of hazardous substances or is contaminated with hazardous substances	15 01 10*	t	0,460	0,000	0,000	**0,460**	Oil barrels
3.	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing, which are contaminated with hazardous substances	15 02 02*	t	4,000	0,000	0,000	**4,000**	Waste oily absorbents-sawdust and wiping cloths/oily sand
4.	Sludg from water decarbonization	19 09 03	t	149,760	0,000	0,000	**149,760**	-
5.	Saturated or spent ion exchanging resins	19 09 05	t	17,940	0,000	0,000	**17,940**	Waste ionic resin
6.	Fluorescent tubes and other mercury-containing waste	20 01 21*	t	0,200	0,000	0,000	**0,200**	-
7.	Bulk waste	20 03 07	t	0,600	0,000	0,000	**0,600**	

* hazardous waste

5.3. Working Environment Monitoring, Occupational Health and Safety

Reports on occupational health and safety for 2023 include the following elements:

- **Working Environment Monitoring**
  - Working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

5.3.1. Working Environment Monitoring

- **Working Environment Noise Measurement**

CHP Novi Sad

Working environmental noise measurement was not done in 2023.

CHP Zrenjanin

Working environmental noise measurement in 2023 is shown in Table 106.

CHP Sremska Mitrovica

Working environmental noise measurement was not done in 2023.

Table 106

CHPs PANONSKE BRANCH			
Environmental noise measurements in 2023			
Organizational unit	**Plant**	**Registered noise level (dB(A))**	**Permissible noise level (dB(A))**
CHP Zrenjanin	Mechanical maintenance workshop B1	78	**85**
	Mechanical maintenance workshop B2	82	**85**
	Electriccal maintenanc workshop B2	76	**85**
	Plant laboratory B1	59	**85**
	Thermal control room of MPB B1 general noise	65	**85**
	Control room of CTP	53	**65**
	Plant for lime dosing in CTP	82	**85**
	Raw water pump station	81	**85**

In places where the registered noise level is higher than allowed, employees do not spend a lot of time and protective measures are applied, the use of earplugs and antiphons.

5.3.2. Occupational Safety

- **Training of Employees**

Training for safe and healthy work – internal, general training for OSH in 2023 are provided in Table 107.

Table 107

CHPs PANONSKE BRANCH		
Training of employees in 2023		
Organizational unit	**Number of the trained**	**Note-internal training**
Head Office	3	For changing the post or when employed, not high-risk posts
CHP Novi Sad	150	High-risk posts, changing the post or not high-risk posts
CHP Novi Sad	220	Introducing contractors of works and services with hazards and harms, OSH actions and code of conduct and agencies
CHP Novi Sad	40	Introducing students and apprentices with hazards and harms, OSH actions and code of conduct
CHP Zrenjanin	89	High-risk posts, changing the post or not high-risk posts
CHP Zrenjanin	127	Introducing contractors of works and services with hazards and harms, OSH actions and code of conduct and agencies
CHP Zrenjanin	26	Introducing students and apprentices with hazards and harms, OSH actions and code of conduct, (practice classes, 3 days a week, during a school year)
CHP Sremska Mitrovica	5	High-risk posts, changing the post or not high-risk posts
CHP Sremska Mitrovica	90	Introducing contractors of works and services with hazards and harms, OSH actions and code of conduct and agencies

Other training in 2023 - external trainings are given in Table 108.

Table 108

CHPs PANONSKE BRANCH			
Other training in 2023			
No.	**Type of training**	**No of persons**	**Note**
CHP Novi Sad	Professional exam - special training for fire protection (training on fire trucks, fire pumps and for working with devices for measuring the concentration of explosive mixtures)	14	-
CHP Novi Sad	Professional training of drivers for tha transport of hazardous loads (ADR)	1	-
CHP Novi Sad	Ethics and Integrity (distance learning)	46	-
CHP Novi Sad	Use and maintenance of breathalyzer; brand- Dräger	4	-
CHP Novi Sad	Periodic training at mandatory seminars, knowledge improvement (freight transport (ADR) training seminar	2	-
CHP Novi Sad	Professional exam - special training for fire protection (training on fire trucks, fire pumps and for working with devices for measuring the concentration of explosive mixtures)	14	-
CHP Sremska Mitrovica	Training for vibrodiagnostics, level 2	1	-

- **Injuries at Work**

Table 109 provides data on the number of injuries at work in 2023.

Table 109

CHPs PANONSKE BRANCH						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – employees' ratio**				
		Mild	**Severe**	**Fatal**	**Total**	**%**
Head Office	35	0	0	0	0	0,00
CHP Novi Sad	148	6	0	0	6	4,05
CHP Zrenjanin	103	1	0	0	1	0,97
CHP Sremska Mitrovica	63	0	0	0	0	0,00
TOTAL: CHPs PANONSKE	**349**	**7**	**0**	**0**	**7**	**2,01**

Note: the injury at work in CHP Zrenjanin that was not signed by the doctor who first examined the employee was not included in the table.

5.3.3. Health Protection

Medical examinations of employees who work at workplaces with increased risk and systematic, gynecological examinations, oncological medical examinations and specialist examinations (ultrasound of the heart with an examination by a cardiologist and ultrasound of the thyroid gland with an examination by an endocrinologist and thyroid hormons (TSH, T3, T4), were all done.

Table 110 provides data on periodic examinations of employees working at workplaces with increased risk in 2023 in the CHPs Panonske Branch.

Table 110

CHPs PANONSKE BRANCH											
Радна способност запослених у 2023. години											
Organizational unit	**Number of employees**	**Perodic examinations**				**Work capabilty**					
		Referred to examination		**Examined**		**Capable**		**Limited capability**		**Not capable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head Office	35	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
CHP Novi Sad	148	125	84,46	125	100,00	42	33,60	80	64,00	3	2,40
CHP Zrenjanin	103	90	87,38	90	100,00	54	60,00	35	38,89	1	1,11
CHP Sremska Mitrovica	63	51	80,95	47	92,16	39	82,98	8	17,02	0	0,00
TOTAL: CHPs PANONSKE	**349**	**266**	**76,22**	**262**	**98,50**	**135**	**51,53**	**123**	**46,95**	**4**	**1,53**

5.4. Stakeholders Submissions

There were no stakeholders' submissions regarding environment in 2023.

6. HPPs DJERDAP BRANCH

6.1. Overview and Status of Permits

An overview and status of permits, licenses and other required approvals, as well as new requirements for obtaining or renewing valid licenses and approvals during 2023, is shown in Table 111.

Table 111

HPPs DJERDAP BRANCH			
Overview and status of permits in 2023			
Facility	**Permits and approvals obtained (Number and date)**	**New applications for obtaining or renewing valid permits**	**Note**
HPP DJERDAP 2	In 2023, the HPP Djerdap 2 Branch, Negotin obtained the following Decisions of the competent inspection authorities: - Decision on issuing a water permit number: 325-04-942/2022-07 dated 11/15/2023. Decision on approval to the Environmental Impact Assessment Study for the project of rehabilitation, modernization and increasing the power and efficiency of the generating units of HPP Djerdap 2, number: 353-02-4466/2022-03 dated 09/06/2023. EPS number: 12.01.65946/3-23 dated 15/06/2023	No new applications to competent inspections and competent authorities.	-
HPPs VLASINSKE, SURDULICA	325-04-232/2023-07 dated 07/08/2023.	-	-
PRP LISINA	325-04-230/2023-07 dated 07/08/2023.	-	-
HPP PIROT	In 2023, HPP Pirot obtained approval for the Disaster Risk Assessment. Decision, No. 07 - 217 - 1908/23 dated 04/12/2023.	-	-

6.2. Monitoring and Environmental Impact

Environmental protection in the HPPs Djerdap in 2023 was carried out within the legal framework and according to requirements of the certified standard ISO 14001:2015-environemental management system.

6.2.1. Identified Adverse Impacts on the Flow and Ecological System Downstream from the Reservoir

In 2023, no negative impacts on the flow and ecological system downstream from the reservoir were registered in the the HPPs Djerdap Branch, except for the HPP Djerdap 1 and the HPP Djerdap 2, where the incidents with no impact to the flow were registered and with no significant and proven impact to the ecological system downstream from the reservoir.

HPP Djerdap 1:

- On 7 November 2023, the Dutch ship Alja entered the lower chamber of the ship's lock at the HPP Djerdap 1, which was goingfrom the port of Costanta in Romania to the Elixir factory in Šabac with a load of fertilizers. When passing from the lower chamber of the ship's lock, an audible signal was activated on the middle door, indicating radioactivity above the permitted limits.

HPP Djerdap 2:

It is a case that was recorded in September 2023.

- Decomposition of the oil stain on the Danube in the area downstream from the facility, additional power plant HPP Djerdap 2, carried out on 09/27/2023 (report number 2540400.01.02.-876254/1-2023).

6.2.2. Water

- **Water Quantity**

The water for generation of electricity, process water, and sanitary (waste) water were used within permissible quantities. The quantities of permissible and used water for generation of electricity as well as the quantities of discharged water after the produced electricity for 2023 are given in Table 112.

Table 112

HPPsS DJERDAP BRANCH							
Water quantities in 2023							
Facility		**Number of units**	**Permitted water quantity (installed discharge per unit) m^3/s**	**Discharged water quantites**			
				Water used for electricity generation in 2023 m^3/ year $x10^6$	**Process water m^3/ year $x10^6$**	**Sanitary water m^3/year $x10^3$**	**Total discharged water m^3/ year $x10^6$**
HPP DJERDAP 1		6	800	97.099,000	272,589	197,640	97.569,229
HPP DJERDAP 2		10	422	86.904,1	90,2	126,1	44,8
HPP PIROT		2	22,5	153,26	0,016	3,746	153,276
HPPs VLASINSKE	**Vrla 1**	4	I и II – 8,1 III и IV - 10	171,51	3,986	7,300	175,569
	Vrla 2	2	I – 8,5 II - 10	214,67	2,229	3,700	217,036
	Vrla 3	2	I – 8,4 II - 10	233,94	3,181	10,300	237,224
	Vrla 4	2	I – 8,4 II - 10	258,46	2,357	3,700	260,854
	PRP Lisina – pump plant	2	I – 3,6 II – 3,6	110,68	0,999	3,500	111,614

- **Water Quality**

Based on contractual obligations related to surface and wastewater control, the Institute of Occupational Safety JSC Novi Sad performed sampling of surface waters from all electric power facilities within the EPS JSC, HPPs Djerdap Branch, in 2023.

Three samples were taken from the power facilities of the HPPs Djerdap Branch, as follows:

- wastewater sample at the place of discharge
- surface water sample upstream of the facility
- surface water sample downstream of the faciity

which were both chemically and bacteriologically analyzed, and the interpretation of the results was performed 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), 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), Regulation on limit values of emissions of pollutants into water and deadlines for their achievement (Official Gazette of RS, No. 67/2011 and 48/2012 and 1/16), the Regulation on the Classification of Waters (Official Gazette of SFRY, No. 6/1978), the Regulation on the classification of waters of inter-republican watercourses, interstate waters and coastal waters of Yugoslavia (Official Gazette SFRY, No. 6/78), Decision on maximum permissible concentrations of radionuclides and hazardous substances in inter-republican watercourses, interstate waters and coastal waters of Yugoslavia (Official Gazette of the SFRY, No. 8/78) and the Law on Waters (Official Gazette of RS, No. 30/2010, 93/2012, 101/2016, 95/2018 and

95/2018 -other law). The results obtained by chemical and bacteriological analysis of surface water samples in 2023 are given in Table 113 and of wastewater in Table 114.

Table 113

HPPs DJERDAP BRANCH														
Surface waters in 2023														
Facility	**Test parameters (Unit of measure)**	**2023 Surface water quality test results**												
		Q1			**Q2**			**Q3**			**Q4**			
		From the sewer system-before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system-before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system-before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system-before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**Limit values for surface water (class II)**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
HPP DJERDAP 1	MPN coliform. bacteria. cfu/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	In Q1, Q3 and Q4, based on the results obtained for surface waters upstream and downstream, it can be stated that the tested parameters meet the II and III class of ecological potential according to: Rulebook on parameters of the ecological and chemical status of surface waters and parameters of the chemical and quantitative status of ground waters, Official Gazette of RS, No. 74/2011. Note: the survey was not conducted in Q2
	Dissolved O2 (mg/l)	-	6,2	6,1	-			-	6,0	6,1	-	8,5	8,9	7.0	
	Suspended matter (mg/l)	-	10	12	-			-	22	20	-	32	24	25	
	COD (mg/l)	-	7,0	12	-			-	8,0	12	-	16	19	15	
	BOD5 (mg/l)	-	2,0	3,0	-			-	2,0	4,0	-	7,0	8,0	5.0	
	pH value	-	7,4	7,8	-			-	7,6	7,7	-	7,9	8,0	6.5-8.5	
	Total oils and grease (mg/l)	-	-	-	-			-			-	-	-	-	

HPP DJERDAP 2	MPN coliform. bacteria. cfu/100ml	-	-	-	-	-	-	-	40	90	-	-	-	-
	Dissolved O2 (mg/l)	-	6,3	6,4	-	-	-	-	5,9	6,0	-	8,9	9,5	7.0
	Suspended matter (mg/l)	-	10	14	-	-	-	-	10	12	-	12	10	25
	COD (mg/l)	-	7,0	12	-	-	-	-	9,0	10,0	-	14	15	15
	BOD5 (mg/l)	-	2,0	3,0	-	-	-	-	3.0	3,0	-	4,0	5,0	5.0
	pH value	-	8,0	7,9	-	-	-	-	7,5	7,6	-	7,8	8,1	6,5-8,5
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	***

UPSTREAM
For sample No. 1302070601
surface water upstream of HPP Djerdap, Negotin mainly corresponds to the quality of water of class I, while dissolved oxygen corresponds to class III of surface water. Microbiological analysis of a sample of surface water upstream from HPP Djerdap, Negotin (sample 1302070601) for total coliforms, fecal coliforms and intestinal entherococci, correspond to class I, while aerobic heterotrophs correspond to the requirements for class III surface waters

For sample 1306300101, surface water upstream of HPP Djerdap, Negotin mainly corresponds to class I water quality, except for BOD5 parameters, total phosphorus and orthophosphates, which correspond to class II water quality, while TOC and dissolved oxygen correspond to class III surface water. Microbiological analysis of the surface water sample upstream from HPP Djerdap, Negotin (sample 1306300101) for total coliforms, fecal coliforms and intestinal entherococci, correspond to class I, while aerobic heterotrophs correspond to the requirements for class IV surface waters.

For sample 1312060801, surface water upstream of HPP Djerdap, Negotin mainly corresponds to class I water quality, except for the parameters COD and BOD5, which correspond to class II water quality, while dissolved oxygen corresponds to class IV surface water.
Microbiological analysis of a sample of surface water upstream of HPP Djerdap, Negotin (sample 312060801) for total coliforms, fecal coliforms and intestinal entherococci, correspond to class I, while aerobic

															heterotrophes correspond to the requirements for class III surface waters DOWNSTREAM The surface water downstream from HPP Djerdap, Negotin (sample 1302070601) mainly corresponds to the quality of water of class I, except for the parameters total COD, BOD5 which correspond to the quality of water of class II, while dissolved oxygen corresponds to class III of surface waters . Surface water downstream from HPP Djerdap, Negotin (sample 1306300101) mainly corresponds to class I water quality, except for the parameters total nitrogen, nitrates, BOD5, total phosphorus and orthophosphates, which correspond to class II water quality, while TOC and dissolved oxygen correspond to class III surface waters. Surface water downstream from HPP Djerdap, Negotin (sample 1312060801) mainly corresponds to class I water quality, except for the parameters total COD and BOD5, which correspond to class II water quality. Note: the testing was not done in Q2
HPP PIROT	MPN coliform. bacteria. cfu/100ml	-	-	-	-	-	-	-	930	90-	-	-	-	5 x10^2 -1 x10^4	Comparing the presented test results with the maximum permissible limit values prescribed by the Regulation on limit values of pollutants in surface, underground and sediment and deadlines for their achievement (Official Gazette of RS; No. 50/2012 - Surface water (Q1 sample) of the Nišava River upstream of the inlet mainly corresponds to class I water quality, while dissolved oxygen
	Dissolved O2 (mg/l)	-	5,9	6,4	-	-	-	-	7,00	8,00-	-	9,1	9,0	7.0	
	Suspended matter (mg/l)	-	4,0	6,0	-	-	-	-	1,6	1,2-	-	6	8	25	
	COD (mg/l)	-	5,0	7,0	-	-	-	-	7,0	8,0-	-	7,0	9,0	15	
	BOD5 (mg/l)	-	1,0	2,0	-	-	-	-	2,0	2,0-	-	2,0	3,0	5,0	

	pH value	-	8,0	8,0	-	-	-	-	7,7	7,7	-	7,7	7,7	6,5 - 8,5	corresponds to class III water quality of surface waters. - Surface water (Q1 sample) of the Nišava River downstream of the inlet mainly corresponds to class I water quality, except for the parameters total nitrogen, TOC, nitrates, BOD5, total phosphorus and orthophosphates correspond to class II water quality of surface waters, while dissolved oxygen corresponds to water quality III surface water classes. - Surface water – the River Nišava downstream of the inlet mainly corresponds to class I water quality except for the parameters total nitrogen, TOC, BOD5, total phosphorus and orthophosphates correspond to class I water quality of surface water. - Microbiological analysis of surface water samples downstream from the inlet _HPP Pirot for total coliforms, fecal coliforms and intestinal enterococci corresponds to Class I, while aerobic heterotrophs correspond to the requirements for Class II surface water - Surface water (Q4 sample) of the Nišava River upstream of the inlet mainly corresponds to class I water quality, except for the BPK5 parameter, which corresponds to class II water quality of surface waters. - Surface water (Q4 sample) of the Nišava River downstream of the inlet mainly corresponds to class I water quality, except for the BPK5 parameter, which corresponds to class II water quality of surface waters. Note: the testing was not done in Q2.
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	***	
HPPs VLASINSKE	MPN coliform. bacteria. cfu/100ml	-	‹10	2400	-	-	-	-	‹10	‹10	-	‹10	‹10	$5x10^2$-$1x10^4$	Based on the measured values, the tested samples meet the values defined by the Regulation on water classification (OG of RS,

Intake structure Vlasinsko Jezero HPP VRLA 1	Dissolved O2 (mg/l)	-	7,26	8,1	-	-	-	-	7,7	7,9	-	8,6	8,8	8,5	No. 5/68) for class I and meet the values defined by the Rulebook on hazardous substances in water (OG SRS No. 31/82) for class I and II. The values mainly correspond to the II class of ecological potential. Note: the testing was not done in Q2.
	Suspended matter (mg/l)	-	8	8	-	-	-	-	18	10	-	4,0	10	25	
	COD (mg/l)	-	6	9	-	-	-	-	10	8	-	9,0	9,0	10	
	BOD5 (mg/l)	-	1	2	-	-	-	-	3	2	-	3,0	3,0	1,8	
	pH value	-	7,4	7,5	-	-	-	-	7,5	7,4	-	7,5	7,5	6,5-8,5	
	Total oils and grease (mg/l)	-	40	48	-	-	-	-	44	49	-	38	48	***	
HPPs VLASINSKE HPP VRLA 2	MPN coliform. bacteria. cfu/100ml	-	2400	230	-	-	-	-	‹10	‹10	-	‹10	‹10	$5x10^2$-$1x10^4$	Based on the measured values, the tested samples meet the values defined by the Regulation on water classification (OG RS, No. 5/68) for class I and meet the values defined by the Rulebook on hazardous substances in water (OG SRS, No. 31/82) for class I and II. The values mainly correspond to the II class of ecological potential. Note: the testing was not done in Q2.
	Dissolved O2 (mg/l)	-	8,1	8,1	-	-	-	-	7,9	7,5	-	8,8	8,7	8,5	
	Suspended matter (mg/l)	-	8	10	-	-	-	-	10	20	-	10	14	25	
	COD (mg/l)	-	9	7	-	-	-	-	8	9	-	9,0	8,0	10	
	BOD5 (mg/l)	-	2	2	-	-	-	-	2	3	-	3,0	2,0	1,8	
	pH value	-	7,5	7,5	-	-	-	-	7,4	7,3	-	7,5	7,5	6,5-8,5	
	Total oils and grease (mg/l)	-	48	46	-	-	-	-	49	42	-	48	46	***	
HPPs VLASINSKE HPP VRLA 3	MPN coliform. bacteria. cfu/100ml	-	230	40	-	-	-	-	‹10	‹10	-	‹10	‹10	$5x10^2$-$1x10^4$	Based on the measured values, the tested samples meet the values defined by the Regulation on water classification (OG RS, No. 5/68) for class I and meet the values defined by the Rulebook on hazardous substances in water (OG SRS", No. 31/82) for class I and II. The values mainly correspond to the II class of ecological potential. Note: the testing was not done in Q2.
	Dissolved O2 (mg/l)	-	8,1	7,9	-	-	-	-	7,5	7,6	-	8,7	8,9	8,5	
	Suspended matter (mg/l)	-	10	2	-	-	-	-	20	12	-	10	8,0	25	
	COD (mg/l)	-	7	6	-	-	-	-	9	6	-	9,0	7,0	10	
	BOD5 (mg/l)	-	2	1	-	-	-	-	3	1	-	3,0	2,0	1,8	
	pH value	-	7,5	7,4	-	-	-	-	7,3	7,4	-	7,5	7,5	6,5-8,5	

	Total oils and grease (mg/l)	-	46	42	-	-	-	-	42	48	-	48	42	***	
HPPs VLASINSKE HPP VRLA 4	MPN coliform. bacteria. cfu/100ml	-	40	230	-	-	-	-	‹10	‹10	-	‹10	‹10	$5x10^2$-$1x10^4$	Based on the measured values, the tested samples meet the values defined by the Regulation on water classification (OG RS, no. 5/68) for class I and meet the values defined by the Rulebook on hazardous substances in water (OG SRS, No. 31/82) for class I and II. The values mainly correspond to the II class of ecological potential. Note: the testing was not done in Q2
	Dissolved O2 (mg/l)	-	7,9	8,2	-	-	-	-	7,6	8,0	-	8,9	8,9	8,5	
	Suspended matter (mg/l)	-	2	8	-	-	-	-	12	20	-	8,0	2,0	25	
	COD (mg/l)	-	6	9	-	-	-	-	6	7	-	7,0	8,0	10	
	BOD5 (mg/l)	-	1	3	-	-	-	-	1	2	-	2,0	2,0	1,8	
	pH value	-	7,4	7,4	-	-	-	-	7,4	-	-	7,5	7,6	6,5-8,5	
	Total oils and grease (mg/l)	-	42	36	-	-	-	-	48	40	-	42	42	***	
HPPs VLASINSKE LISINSKO LAKE PRP LISINA	MPN coliform. bacteria. cfu/100ml	-	40	‹10	-	-	-	-	‹10	‹10	-	‹10	‹10	$5x10^2$-$1x10^4$	Based on the measured values, the tested samples meet the values defined by the Regulation on water classification (OG RS, no. 5/68) for class I and meet the values defined by the Rulebook on hazardous substances in water (OG SRS, No. 31/82) for class I and II. The values mainly correspond to the II class of ecological potential. Note: the testing was not done in Q2.
	Dissolved O2 (mg/l)	-	8,2	7,26	-	-	-	-	8,0	7,7	-	8,5	8,6	8,5	
	Suspended matter (mg/l)	-	8	8	-	-	-	-	12	18	-	6,0	4,0	25	
	COD (mg/l)	-	9	6	-	-	-	-	9	10	-	10	9,0	10	
	BOD5 (mg/l)	-	2	1	-	-	-	-	3	3	-	4,0	3,0	1,8	
	pH value	-	7,4	7,4	-	-	-	-	7,5	7,5	-	7,6	7,5	6,5-8,5	
	Total oils and grease (mg/l)	-	40	40	-	-	-	-	58	44	-	60	38	***	

Note: Wastewater testing was not done in HPPs Vlasinske in 2023.

Table 114

HPPs DJERDAP BRANCH															
Wastewater in 2023															
Facility	**Test parameters (Unit of measure)**	**2023 Wastewater quality test results**													
		Q1			**Q2**			**Q3**			**Q4**				
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**Reference value for wastewater**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
HPP DJERDAP 1	MPN coliform. bacteria. cfu/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	For the municipal wastewater sample in Q1, the tested parameters meet the prescribed values. For the sample of municipal wastewater Q2, the tested parameters meet the values prescribed by the Regulation on limit values of emission of polluting substances into water and deadlines for reaching them "Official Gazette of the RS", No. 67/11, 48/12 and 1/16 Note: In Q3 and Q4, wastewater testing was not done due to the expiration of the Contract.
	Dissolved O2 (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Suspended matter (mg/l)	26,20	-	-	2,80	-	-	-	-	-	-	-	-	35-60	
	COD (mg/l)	15,2	-	-	20,5	-	-	-	-	-	-	-	-	125	
	BOD5 (mg/l)	2,0	-	-	3,61	-	-	-	-	-	-	-	-	25-40	
	pH value	7,20	-	-	7,99	-	-	-	-	-	-	-	-	-	
	Total oils and grease (mg/l)	<0,01	-	-	<0,01	-	-	-	-	-	-	-	-	-	
HPP DJERDAP 2	MPN coliform. bacteria. cfu/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	Wastewater for samples V0207/1 and V 0006/1 tested parameters COD and BOD5 do not meet the values prescribed by the Regulation on limit values of emission of polluting substances in water and deadlines for their achievement (Official Gazette of the RS No. 67/11,48/12, 1/16) of water.
	Dissolved O2 (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Suspended matter (mg/l)	163,3	-	-	172,3	-	-	-	-	-	-	-	-	35-60	
	COD (mg/l)	345	-	-	335	-	-	-	-	-	-	-	-	125	
	BOD5 (mg/l)	130	-	-	120	-	-	-	-	-	-	-	-	25-40	

	pH value	7,57	-	-	7,73	-	-	-	-	-	-	-	-	-	Note: In Q3 and Q4, wastewater testing was not done due to the expiration of the Contract.
	Total oils and grease (mg/l)	0,745	-	-	0,463	-	-	-	-	-	-	-	-	-	
HPP PIROT	MPN coliform. bacteria. cfu/100ml	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Dissolved O2 (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Suspended matter (mg/l)	4,60	-	-	-	-	-	-	-	-	-	-	-	-	
	COD (mg/l)	<0,4	-	-	-	-	-	-	-	-	-	-	-	-	
	BOD5 (mg/l)	0,95	-	-	-	-	-	-	-	-	-	-	-	-	
	pH value	7,76	-	-	-	-	-	-	-	-	-	-	-	-	
	Total oils and grease (mg/l)	<0,01	-	-	-	-	-	-	-	-	-	-	-	-	

6.2.3. Waste

Waste management was performed according to defined procedures. The quantities of waste generated during 2023 are shown in Table 115.

Table 115

HPPs DJERDAP BRANCH										
Waste generated in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Facility**					**Total**	**Note**
				HPP Djerdap 1	**HPP Djerdap 2**	**HPP Pirot**	**HPPs Vlasinske**	**SOP Požarevac**		
	Name	**Index No.**		**Quantities**						
1.	Water-based sludge containing organic solvent-based paint or varnish or other hazardous matters	08 01 15*	t	0,156	0,000	0,000	0,000	0,000	**0,156**	Paints and varnish waste material
2.	Waste printer cartridge other than that under in 08 03 17	08 03 18	t	0,05	0,000	0,000	0,050	0,000	**0,100**	Printer casettes and cartridges
3.	Waste adhesives and sealers containing organic solvents or other hazardous matters	08 04 09	t	0,224	0,000	0,000	0,000	0,000	**0,224**	Waste glues
4.	Non-chlorinated mineral hydraulic oils	13 01 10*	t	0,000	0,362	0,000	0,000	0,000	**0,362**	Waste hydraulic oil
5.	Non-chlorinated mineral hydraulic oils; waste not otherwise specified	13 01 10* 13 08 99*	t	0,000	0,519	0,400	0,375	0,000	**1,294**	Waste turbine oil
6.	Non-chlorinated mineral oils for insulation and heat transfer	13 03 07*	t	0,000	0,000	0,000	0,375	0,000	**0,375**	Waste transformer oil
7.	Plastic packaging	15 01 02	t	0,000	0,033	0,009	0,0035	0,015	**0,061**	Waste plastic
	Plastic	16 01 19								
8.	Packaging containing remains of hazardous matters or contaminated with hazardous matters	15 01 10	t	3.960	0,000	0,000	0,000	0,000	**3.960**	Metal barrels
9.	Absorbents, filter materials (including oil filters not otherwise specified), wipes,	15 02 02*	t	1,010	0,000	0,305	0,167	0,005	**1,487**	Cloths, adsorbents and contaminated with hydrocarbons

	protective clothing, contaminated with hazardous substances									
10.	Waste rubber	16 01 03	t	0,700	0,785	0,011	0,108	0,000	**1,604**	Waste tyres
11.	Discarded equipment containing dangerous components other than those specified in 16 02 09 to 16 02 12	16 02 13*	t	0,215	4,027	0,069	0,1245	0,170	**4,606**	Discarded electrical and electronic equipment and parts
	Discarded electrical and electronic equipment containing hazardous components	20 01 35*								
12.	Lead batteries	16 06 01*	t	0,644	8,160	0,065	0,000	0,000	**8,869**	Waste lead-acid batteries
	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	20 01 33*								
13.	Fluids used as catalysts	16 08 06*	t	0,168	0,000	0,000	0,000	0,000	**0,168**	Catalyst waste material
14.	Copper, bronze, brass	17 04 01	t	1,690	0,074	0,000	0,000	0,000	**1,764**	Copper
				0,103	0,00	0,000	0,000	0,000	**0,103**	Brass
				0,500	0,601	0,000	0,000	0,000	**1,101**	Bronze
15.	Copper	17 04 01	t	70,000	0,000	0,000	0,000	0,000	**70,000**	Waste transformers
	Waste iron	17 04 05		430,000					**430,000**	
15.	Aluminium	17 04 02	t	0,178	0,000	0,000	0,000	0,000	**0,178**	Aluminium
	Non-ferrous metals	19 12 03								
16.	Iron and steel	17 04 05	t	7,000	0,000	0,000	0,000	0,000	**7,000**	Steel sheet
				0,300	0,000	0,000	0,035	0,000	**0,335**	Prochrome
				101,037	2,568	0,148	0,148	0,000	**103,901**	Waste iron
				0,700	0,000	0,037	0,000	0,000	**0,737**	Metal scraping
17.	Cables other than those specified in 17 04 10	17 04 11	t	4,400	0,131	0,000	0,000	0,000	**4,531**	Copper cable
18.	Paper and cardboard	20 01 01	t	0,000	0,000	0,000	0,112	0,000	**0,112**	Paper waste material
19.	Fluorescent tubes and other wastes containing mercury	20 01 21*	t	0,000	0,000	0,003	0,003	0,000	**0,006**	Waste fluo lights
20.	Wood other than that specified in 20 01 37	20 01 38	t	8,780	0,000	0,000	0,370	0,000	**9,150**	Waste wood and plywood

				5.746,761	94,200	0,000	0,000	0,000	**5.840,961**	Waste wood taken from the Danube

*hazardous waste

HPP Djerdap Bracnh temporarily stores and sells the waste generated during the year within the hydroelectric power plant to authorized operators, in accordance with the Rulebook on storage, packaging and labeling of hazardous waste (Official Gazette of RS, No. 92/10 as of 5 December 2010), Rulebook on categories, testing and classification of waste (Official Gazette of RS, No. 56/10 as of 10 August 2010), Rulebook on conditions and manner of collection, mode of transport, storage and treatment of waste used as a secondary raw material or for energy production (Official Gazette of RS, No. 98/10 as of 24 December 2010), Rulebook on conditions, manner and procedure of waste oil management (Official Gazette of RS, No. 71/10 as of 4 October 2010) and the Rulebook on the manner and procedures of asbestos-containing waste management (Official Gazette of the RS, No. 74/10 as of 15 October 2010). Waste quantities handed over to authorized operators in 2023 are shown in Table 116.

Table 116

HPPs DJERDAP BRANCH										
Disposed waste in 2023										
No.	**Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)**		**Unit**	**Објекат**					**Total**	**Note**
				HPP Djerdap 1	**HPP Djerdap 2**	**HPP Pirot**	**HPPs Vlasinske**	**SOP Požarevac**		
	Name	**Index No.**		**Quantities**						
1.	Wood other than that specified in 20 01 37	20 01 38	t	3.081,650	-	-	-	-	**3.081,650**	Waste wood taken from the Danube

6.2.4. Environmental Noise Measurements

Noise in the environment (in the vicinity of electric power facilities that are part of HPP Djerdap) has not been measured, due to the fact that the facilities are dislocated from the settlement and as such do not jeopardize the environment.

6.2.5. Air Emissions Measurement

Based on the legal regulation within the scope of air protection (Air Protection Law, Official Gazette of RS No. 36/2009, 10/2013 and 26/2021-other law), the emission of polluting substances in the air from a stationary source of pollution (heating plant) inteded for heating the HPP Djerdap 1, was measured. The measurements were carried out by the company Ossupational Safety and Environmental Protection "Beograd" LLC under Contract No. 01.05.-138997-26-2022 dated 15 July 2022. Measurement results are shown in Tables 117 and 118.

Table 117

HPPs DJERDAP BRANCH					
Measurement of emission of air pollutants from a stationary source of pollution - Working boiler 1					
Tested parameter	**Unit**	**Result**			**ELV**
		I	**II**	**III**	
Waste gas flow rate	m/s	8,20 ± 0,08	7,70 ± 0,08	7,90 ± 0,08	**-**
Volumetric flow rate	Nm^3/h	2.546,4 ± 25,5	2.363,9 ± 23,6	2.380,3 ± 23,8	**-**
Waste gas temperature	^oC	114,6 ± 1,3	115,2 ± 1,3	114,8 ± 1,3	**-**
Oxygen	%	11,07 ± 0,09	10,92 ± 0,09	10,86 ± 0,09	**-**
Carbon monoxide	Mg/Nm^3	27,5 ± 0,8	20,0 ± 0,6	5,2 ± 0,1	**170**
Mass flow rate of carbon monoxide	g/h	70,0	47,3	12,4	**-**
Nitrogen oxides expressed as nitrogen dioxide	mg/Nm^3	312,1 ± 12,2	299,8 ± 11,7	306,0 ± 11,9	**350**

HPPs DJERDAP BRANCH					
Measurement of emission of air pollutants from a stationary source of pollution - Working boiler 1					
Tested parameter	**Unit**	**Result**			**ELV**
		I	**II**	**III**	
Mass flow rate of nitrogen oxides expressed as nitrogen dioxide	g/h	794,8	708,7	728,3	**-**
Sulfur oxides expressed as sulfur dioxide	mg/Nm^3	1.694,3 ± 83,0	1.640,0 ± 80,4	1.660,0 ± 81,3	**1.700**
Sulfur oxide mass flow rate expressed as sulfur dioxide	g/h	4.314,2	3.876,8	3.951,3	**-**

Table 118

HPPs DJERDAP BRANCH					
Measurement of emission of air pollutants from a stationary source of pollution - Working boiler 2					
Tested parameter	**Unit**	**Result**			**ELV**
		I	**II**	**III**	
Waste gas flow rate	m/s	7,80 ± 0,08	7,50 ± 0,08	7,90 ± 0,08	**-**
Volumetric flow rate	Nm^3/h	2.881,7 ± 28,8	2.789,9 ± 27,9	2.902,7 ± 29,0	**-**
Waste gas temperature	^{o}C	115,6 ± 1,3	117,2 ± 1,3	116,8 ± 1,3	**-**
Oxygen	%	8,91 ± 0,07	8,83 ± 0,07	9,14 ± 0,07	**-**
Carbon monoxide	Mg/Nm^3	22,5 ± 0,6	21,3 ± 0,6	23,8 ± 0,7	**170**
Mass flow rate of carbon monoxide	g/h	64,9	59,3	69,0	**-**
Nitrogen oxides expressed as nitrogen dioxide	mg/Nm^3	299,8 ± 11,7	269,0 ± 10,5	306,0 ± 11,9	**350**
Mass flow rate of nitrogen oxides expressed as nitrogen dioxide	g/h	864,0	750,5	888,2	**-**
Sulfur oxides expressed as sulfur dioxide	mg/Nm^3	1.568,6 ± 76,9	1.520,0 ± 74,5	1.565,7 ± 76,7	**1.700**
Sulfur oxide mass flow rate expressed as sulfur dioxide	g/h	4.520,1	4.240,7	4.544,8	**-**

Based on the results of measurements of stationary sources of pollution, Working Boiler 1 and Working Boiler 2 are in compliance with the requirements prescribed by the Regulation on limit values for pollutants in surface and groundwater and sediment and deadlines for reaching them (Official Gazette RS, No. 6/2016, 67/2021).

6.3. Working Environment Monitoring, Occupational Health and Safety

The 2023 Occupational Safety and Health Reports include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

6.3.1. Working Environment Monitoring

- **Working Environment Noise Measurement**

In the organizational units of HPP Djerdap 1, HPP Djerdap 2, HPP Pirot, HPPs Vlasinske, SOP Požarevac, DMR Beograd in 2023, no measurement of physical harms in the working environment was carried out.

6.3.2. Occupational Safety

- **Training of Employees**

Training of employees for safe and healthy work is done according to the Training Program, theoretically and practically. The types of trainings conducted in 2023 are provided in Table 119.

Table 119

HPPs DJERDAP BRANCH	
Trainings in 2023	
Training	**Trained**
Training of employees for safety and health at work	678
Training of visitors	470
Fire fighting training	40
Training of employees at contractor's (procedure O.0.IMS.0.8.5.1.0.2)	1.543
Training of students and apprentices	111
Tranining for safe work with working equipment	29
IMS training	394

Introducing the hazards and harms, i.e., risk factors in the HPP Djerdap Branch is done in accordance with the Rulebook on occupational safety and health and the Act on risk assessment. A special agreement is concluded with the contractors regarding the application of prescribed safety and health measures at work during execution of works in the common work space, in accordance with the law.

The number of employees for whom training within the scope of safety and health at work was provided is given in Table 120.

Table 120

HPPs DJERDAP BRANCH					
Trainings in 2023					
Organizational unit	**Number of employees**	**Planned to be trained**		**Trained**	
		n	**%**	**n**	**%**
HPP Djerdap 1 with Head Offices in Kladovo	324	176	54,32	174	98,86
HPP Djerdap 2	189	0	0,00	0	0,00
HPP Pirot	35	16	45,71	16	100,00
HPPs Vlasinske	91	55	60,44	55	100,00
SOP Požarevac and DMR Belgrade	40	34	85	34	100,00
TOTAL: HPPs DJERDAP BRANCH	**679**	**281**	**41,51**	**279**	**99,29**

- **Injuries at Work**

Number of injuries at work in 2023 is provided in Table 121.

Table 121

HPPs DJERDAP BRANCH						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – Number of employees' ratio**				
		mild	**severe**	**fatal**	**total**	**%**
HPP Djerdap 1	324	1	1	0	2	0,62
HPP Djerdap 2	189	0	0	0	0	0,00
HPP Pirot	35	0	0	0	0	0,00
HPPs Vlasinske	91	1	0	0	1	1,10
SOP Požarevac and DMR Belgrade	40	0	0	0	0	0,00
TOTAL: HPPs DJERDAP BRANCH	**679**	**2**	**1**	**0**	**3**	**0,44**

6.3.3. Health Protection

In 2023, periodic medical examinations were performed for employees in the HPP Djerdap Branch. The data are shown in Table 122.

Table 122

HPPs DJERDAP BRANCH											
Employees' work capability in 2023											
Organizational Unit	**Number of employees**	**Periodical examinations**				**Work capability**					
		Referred to examination		**Examined**		**Capable**		**Limited Capability**		**Incapable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
HPP Djerdap 1	324	169	52,16	169	100,00	141	83,43	28	16,57	0	0,00
HPP Djerdap 2	189	106	56,08	102	96,23	96	94,12	6	5,88	0	0,00
HPP Pirot	35	14	40,00	14	100,00	13	92,86	1	7,14	0	0,00
HPPs Vlasinske	91	62	68,13	62	100,00	59	95,16	3	4,84	0	0,00
SOP Požarevac and DMR Belgrade	40	5	12,50	5	100,00	5	100,00	0	0,00	0	0,00
TOTAL: HPPs DJERDAP BRANCH	**679**	**356**	**52,43**	**352**	**98,88**	**314**	**89,20**	**38**	**10,80**	**0**	**0,00**

6.4. Stakeholders Submissions

There were no stakeholders' submisions regarding environment in 2023.

7. HPPs DRINSKO-LIMSKE BRANCH

The HPPs Drinsko-Limske Branch comprises the following hydropower plants:

HPPs BAJINA BAŠTA:

- **HPP Bajina Bašta**
- **PSHPP Bajina Bašta**
- **SHPP Vrelo**

HPP ZVORNIK:

- **HPP Zvornik**
- **SHPP Radaljska Banja**

HPPs ELEKTROMORAVA:

- **HPP Medjuvršje**
- **HPP Ovčar Banja**

HPPs LIMSKE:

- **HPP Uvac**
- **HPP Kokin Brod**
- **HPP Bistrica**
- **HPP Potpeć**

7.1. Overview and Status of Permits

Overview and status of permits, licences, and other required approvals as well as applications for obtaining new ones or extending the valid permits and approvals in 2023 are shown in Table 123.

Table 123

HPPs DRINSKO-LIMSKE BRANCH			
Overview and status of permits in 2023			
Facility	**Obtained permits and approvals (number and date)**	**Applications for obtaining new ones or extending the valid permits**	**Note**
HPPs BAJINA BAŠTA			
HPP Bajina Bašta	1. Location conditions/Decision on the approval of works for the construction of a water supply network at the location of Nova Vežanja, on cad. plots No. 1249/1, 6596 and 6564 CM Zaovine, Municipality of Bajina Bašta, class G, classification number 221210, number ROP-BBA-40759-ISAW-2/2023 dated 04/24/2023 **2**. Location conditions/Decision on the approval of works for the construction of the water supply network at the dam Lazići on cad. plots No. 2428/3, 2428/4 and 6596 CM Zaovine, municipality of Bajina Bašta, class G, classification number 221210, number ROP-BBA-111-ISAW-2/2023 dated 08/05/2023		-

HPPs DRINSKO-LIMSKE BRANCH			
Overview and status of permits in 2023			
Facility	**Obtained permits and approvals (number and date)**	**Applications for obtaining new ones or extending the valid permits**	**Note**
	3. Location conditions for the construction of a water supply network in the locality Kaluđerske bare, on cad.plot No. 4140/156, 4140/154, 4140/153 and 4140/152 CM Solutuša, municipality of Bajina Bašta, class G, classification number 221210, number ROP-BBA-1385-LOC-1/2023 dated 15/03/2023 4. Location conditions/Decision on the approval of works on the construction of the water supply network at the location Sekulić on cad.plot No. 906/2, 909/20, 909/21, 909/22, 910, 912/2 and 912/7 CM Konjska Reka, Municipality of Bajina Bašta, class G, classification number 221210, number ROP-BBA-2411-ISAW-2/2023 dated 16/06/2023 5. Location conditions/ Decision on the approval of the execution of works on the construction of the water supply network at the location Popovići in Zaovine on cad.plots No. 2311,6559/1,2226,2203/1, 2142/1, 2147, 2148, 6585, 2075, 2082, 2085/1, 2084, 2083, 2089, 2097, 2092, 2099, 2093, 2209, 221 0, 2211 , 2212, 2179, 2205, 2194, 2193, 2191/1, 2239 and 2242/1 CM Zaovine, municipality of Bajina Bašta, class G, classification number 222210, number ROP-BBA-4547-ISAW-2/2024 dated 23/01/2024 6. Location conditions for the construction of a water supply network in the location Sekulić-Nagramak on cat. plots number 1580/45, 1580/60, 1580/67, 1580/73, 1580/95, 1580/102, 1580/106, 1580/114, 1580/143, 1580/145 and 1580/147 CM Beserovina, municipality of Bajina Bašta, class G, classification number 221210, number ROP-BBA-4854-LOC-1/2023 dated 10/05/2023 7. Location conditions/Decision on the approval of works on the reconstruction of the existing sewage system and plant for the collection and purification of sanitary, atmospheric and drainage wastewater generated in HPP B. Bašta and PSHPP B. Bašta, on cat. plots number 1378, 1385, 1396/2 , 1351, 4453/1, 4453/2, 4420/4 and	Submitted application for a decision under Art. 145 of the Law on Planning and Construction	

HPPs DRINSKO-LIMSKE BRANCH			
Overview and status of permits in 2023			
Facility	**Obtained permits and approvals (number and date)**	**Applications for obtaining new ones or extending the valid permits**	**Note**
	1186/1 CM Rastište, municipality of Bajina Bašta, class G, classification number 222330, number ROP-BBA-11311-ISAW-2/2023 dated 20/04/2023 8. Location conditions for the construction of a water supply network at the location of Sokolina on cat. plots No. 1217 and 956/1 CM Zaugline, municipality of B. Bašta, class G, classification number 221210, number ROP-BBA-6085-LOC-1/2023 dated 22/05/2023. 9. Location conditions for the construction of a system for monitoring, early warning, notification and alerting in the area threatened by the collapse or overflow of the Lazići dam-alarm stations UE-AS16-Kotroman, at cad.plots No. 9486 CM Mokra Gora, town of Užice, class G, classification number 222431, No. ROP-UZI-11036-LOC-1/2023 dated 03/07/2023. 10. Location conditions for the construction of a system for monitoring, early warning, notification and alerting in the area threatened by the collapse or overflow of the Lazići dam-alarm station UE-AS15-Podstolac, cad. plot No. 7319 CM Mokra Gora, town of Užice, class G, classification number 222431, No. ROP-UZI-18823-LOC-2/2023 dated 30/06/2023. 11. Location conditions/Decision on the approval of works on the construction of the water supply network at the location of Bjeluša at cad.plots No. 6550, 6548/4, 6596 and 426/13 CM Zaovine, B. Bašta municipality, class G, classification number 222210, no. ROP-BBA-14451-ISAW-2/2023 dated 12/12/2023. 12. Location conditions for the construction of a water supply network in the locality of Mitrovac on Tara via cad. plot No. 1009/23, 1015/8 and 1015/1 CM Peruđac, class G, classification number 222210, no. ROP-BBA-14901-LOC-1/2023 dated 14/08/2023. 13. Decision on the approval of the works on the rehabilitation of the working couplings on the slats 15,	Submitted application for a decision under Art. 145 of the Law on Planning and Construction	

HPPs DRINSKO-LIMSKE BRANCH			
Overview and status of permits in 2023			
Facility	**Obtained permits and approvals (number and date)**	**Applications for obtaining new ones or extending the valid permits**	**Note**
	16, 19 and 21 of the HPP B. Bašta, on cad. plot No. 1378 CM Rastište, municipality of Bajina Bašta, class G, classification number 215201, No. ROP-MSGI-17973-ISAW-1/2023 dated 11/07/2023. 14. Location conditions for the construction of a water supply network in the location of Osluša-Katunište on cad. plots No. 1324, 1327/2, 1327/1, 1326/1, 1328/3, 1329/2 CM Beserovina, B. Bašta municipality, class G, classification number 221210, No. ROP-BBA-23965-LOC-1/2023 dated 14/09/2023 15. Location conditions for the construction of a water supply network in the locality of Krnja Jela, at cad.plots 1139/1 and 10/9 CM Konjska Reka, municipality of Bajina Bašta, class G, classification number 221210, No. ROP-BBA-24466-LOC-1/2023 dated 16/10/2023. 16. Location conditions for the construction of a water supply network on the site of Peruđac-Sumbulica brdo at cad.plot No. 1045, 950/10, 950/5, 998/3 and 998/2 CM Peruđac, category G, classification number 221210, No. ROP-BBA-24467-LOC-1/2023 dated 14/09/2023 17. Location conditions for the construction of a water supply network at the location Sekulić at cad.plots 1144/1, 796/20, 796/21 CM Konjska Reka, B. Bašta municipality, class G, classification number 221210, No. ROP-BBA-25165-LOC-1/2023 dated 16/10/2023. 18. Decision on the approval of works on investment maintenance-rehabilitation of the roof covering on the existing facility-administrative building of HPP Bajina Bašta at cad.plot 1414/1 CM Bajina Bašta, class V, classification number 122012, No. ROP-BBA-37992-ISAW-1/2023 dated 19/12/2023. 21. Location conditions for the preparation of the Preliminary Design Rehabilitation of the left side of the HPP Bajina Bašta dam, on the cad. Plot No. 1378 CM Rastište, municipality of Bajina Bašta, class G, Classification number 215201,		

HPPs DRINSKO-LIMSKE BRANCH			
Overview and status of permits in 2023			
Facility	**Obtained permits and approvals (number and date)**	**Applications for obtaining new ones or extending the valid permits**	**Note**
	number ROP-MSGI-2514-LOC-1/2022 dated 30/05/2022. 22. Location conditions for the preparation of technical documentation for the laying of optical cable from HPP Bajina Bašta - alarm station in Perućac to the post office building in Perućac, on cadastral parcels No. 1439, 1424, 1421, 1470/2 and 1492 all CM Rastište and cadastral parcels No. 1056, 1048/1, 9, 1048/4, 39 and 13/1 all CM Perućac, municipality of Bajina Bašta, category G, classification code 222431, number ROP-BBA-3573-LOC-3/2022 dated 13/09/2023.	Submitted application for a decision under Art. 145 of the Law on Planning and Construction The decision on the building permit was amended/received on 15/05/2023	
PSHPP Bajina Bašta	1. Decision on the approval of the execution of works on the investment maintenance of the facility of the drainage and supply system of the PSHPP Bajina Bašta, on cad. plot No. 961/11 CM Rastište, municipality of Bajina Bašta, category G, classification number 230201, number ROP-MSGI-37288-ISAWHA-2/2023 dated 26/01/2023. 2. Decision on the approval of works on the construction of a brick fence on cad. plots No. 2428/1, 2428/2, 2428/5, 2407 and 6559/1 CM Zaovine, Municipality B. Bašta, class A, No. ROP-BBA-15904-ISAW-3/2023 dated 19/12/2023.	No new applications.	-
SHPP Vrelo	No new permits in 2023.	No new applications.	-
HPPs ELEKTROMORAVA			
HPP Ovčar Banja	No new permits in 2023.	No new applications.	-
HPP Medjuvršje	No new permits in 2023.	No new applications.	-
HPP ZVORNIK			
HPP Zvornik	No new permits in 2023.	No new applications.	-
SHPP Radaljska Banja	No new permits in 2023.	No new applications.	-
HPPs LIMSKE			
HPP Kokin Brod	No new permits in 2023.	No new applications.	-
HPP Uvac	No new permits in 2023.	No new applications.	-
HPP Bistrica	No new permits in 2023.	No new applications.	-
HPP Potpeć	No new permits in 2023.	No new applications.	-

HPPs DRINSKO-LIMSKE BRANCH			
Overview and status of permits in 2023			
Facility	**Obtained permits and approvals (number and date)**	**Applications for obtaining new ones or extending the valid permits**	**Note**
Other	No new permits in 2023.	No new applications.	-

7.2. Monitoring and Environmental Impact

In 2023, HPPs Drinsko – Limske Branch had the second level audit according to the requirements of the ISO standard 14001: 2015. The audit was performed between 11 and 12 December 2023. The results have shown that HPPs Drinsko – Limske Branch continuously maintain and improve their integrated management system in accordance with the ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 standards' requirements.

The successful audit was performed by Bureau Veritas France.

In the period 11 – 12 December 2023, the first supervising audit of EnMS – Energy management system ISO 50001:2018 (Energy efficiency) was performed).

The successful audit was performed by Bureau Vetritas France.

7.2.1. Identified Negative Impact on the Flow and Ecological System Downstream from the Reservoir

As decribed in point 7.2

7.2.2. Water

- **Water Quantities**

The water for generation of electricity, process water, and sanitary water, were used within permissible quantities. The quantities of permissible and used water for generation of electricity as well as the quantities of discharged water after the produced electricity for 2023 are given in Table 124.

Table 124

HPPS DRINSKO-LIMSKE BRANCH							
Water quantities in 2023							
Facility		**Number of units**	**Permitted water quantity (installed discharge per unit) m^3/s**	**Discharged water quantites**			
				Water used for electricity generation in 2023 m^3/ year $x10^6$	**Process water m^3/ year $x10^6$**	**Sanitary water m^3/year $x10^3$**	**Total discharged water m^3/ year $x10^6$**
HPP BAJINA BAŠTA		4	175	11.968	-	16,020	12.438
PSHPP BAJINA BAŠTA		2	55	470	-	-	-
SHPP VRELO		1	0,74	-	-	-	-
HPP ZVORNIK		4	170	13.984	0,241	1,5	13.985,5
SHPP RADALJSKA BANJA		1	0,400	0,000	0,000	0,000	0,000
HPP ELEKTROMORAVA	**HPP Medjuvršje**	3	I-19,5 II-30 III-3,75	898,532	0,0125	0,000	898,5445
	HPP Ovčar Banja	2	I-19,5 II-30	839,447	0,0071	0,000	839,4541
HPPs LIMSKE	**HPP Uvac**	1	43	375,363	0,375	0,2	375, 738
	HPP Kokin Brod	2	18,7	398,746	1,566	0,2	400,312

	HPP Bistrica	2	18	450,089	2,791	0,3	452,880
	HPP Potpeć	3	55	2.717,486	5,261	0,3	2 722,747

- **Water Quality**

Pursuant to the contractual obligations regarding the control management of wastewater and surface water from the riverflows and reservoirs, the Occupational Safety Institute JSC in 2023 conducted the sampling of waste and surface waters from all power plants operating within the HPPs Drinsko – Limske Branch.

The sampling was done for two quarters in 2023. The following number of samples was taken from the power facilities: HPP Bajina Bašta - 11 samples, HPPs Limske - 12 samples, HPP Elektromorava - 6 samples, HPP Zvornik - 2 samples and SHPP Radaljska Banja – 2 samples, as follows:

- wastewater sample;
- surface water sample upstream from the facility;
- surface water sample downstream from the facility
- drainage water at drainage pump pressure side

The water samples were chemically and biologically analysed, while the results were interpreted in accordance with Regulation on stipulating pollutants limit values in surface and ground waters and sediments, and the deadlines for their achievement (OG RS No. 50/2012), Regulation on stipulating hazardous substances in water (OG SRS No. 31/1982), Regulation on water classification regulation and watercourse categorisation (OG SRS No. 5/1968). The wastewater and surface water quality test results are presented in Table 125.

Table 125

HPPs DRINSKO-LIMSKE BRANCH														
Water quality in 2023														
Facility	**Test parameters (unit)**	**2023 Waste and surface water quality test results**											**Ref.values**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
		Q1			**Q2**			**Q3**			**Q4**			
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	
HPP BAJINA BAŠTA	MPN coliform. bacteria. (E.coli/100ml	-	$2,0x10^3$	$1,7x10^3$	-	$9,1x10^2$	$4,0x10^2$	-	$1,8x10^2$	$1,2x10^2$	-	$6,9x10^2$	$3,4x10^3$	-	
	Dissolved O2 (mg/l)	8,40	11,15	11,04	4,86	10,95	10,75	3,05	7,74	7,95	2,33	9,25	9,43	min. 7,0	
	Suspended matter (mg/l)	<1	<1	<1	1,20	<1	<1	<1	<1	<1	4,0	<1	<1	25	
	COD (mg/l)	6,00	<4,0	<4,0	7,20	<4,0	<4,0	8,50	<4,0	<4,0	28,4	<4,0	<4,0	15	
	BOD5 (mg/l)	1,42	0,85	<0,5	1,55	0,80	<0,5	1,80	0,80	0,70	5,1	0,75	0,79	5	
	pH value	7,83	8,22	8,20	7,79	8,32	8,43	8,46	8,45	8,17	7,27	8,58	8,13	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-		-	-	-	
HPP ZVORNIK	MPN coliform. bacteria. (E. coli/100ml	-	$1,4x10^4$	$1,3x10^4$	-	$3,1x10^3$	$3,9x10^3$	-	$8,2x10^3$	$8,2x10^3$	-	$2,4x10^3$	$2,1x10^3$	-	

HPPs DRINSKO-LIMSKE BRANCH														
Water quality in 2023														
Facility	**Test parameters (unit)**	**2023 Waste and surface water quality test results**												
		Q1			**Q2**			**Q3**			**Q4**			**Ref.values**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**		
	Dissolved O2 (mg/l)	-	10,96	11,01	-	10,37	10,48	-	7,11	7,85	-	9,42	9,14	min. 7,0	
	Suspended matter (mg/l)	-	1,60	2,00	-	<1	<1	-	<1	<1	-	<1	<1	25	
	COD (mg/l)	-	<4	<4	-	<4	<4	-	<4	<4	-	<4	<4	15	
	BOD5 (mg/l)	-	0,80	0,75	-	0,82	0,80	-	0,90	0,92	-	0,88	0,89	5	
	pH value	-	8,30	8,21	-	8,21	8,11	-	8,42	8,34	-	8,21	8,20	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
HPP OVČAR BANJA	MPN coliform. bacteria. (E.coli/100ml	-	$1,3x10^4$	$1,0x10^4$	-	$2,9x10^4$	$2,9x10^4$	-	$7,6x10^3$	$5,5x10^3$	-	$2x10^4$	$2,2x10^4$	-	
	Dissolved O2 (mg/l)	-	10,91	11,10	-	11,07	10,72	-	7,76	7,59	-	9,53	9,59	min. 7,0	
	Suspended matter (mg/l)	-	2,40	2,00	-	<1	3,20	-	4,40	2,80	-	<1	<1	25	

HPPs DRINSKO-LIMSKE BRANCH														
Water quality in 2023														
Facility	**Test parameters (unit)**	**2023 Waste and surface water quality test results**												
		Q1			**Q2**			**Q3**			**Q4**			**Ref.values**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**		
	COD (mg/l)	-	5,00	6,80	-	4,50	6,00	-	4,60	4,80	-	4,5	4,9	15	
	BOD5 (mg/l)	-	0,86	1,00	-	0,82	1,10	-	0,99	1,00	-	0,89	1,2	5	
	pH value	-	8,35	8,34	-	8,37	8,25	-	8,11	7,90	-	8,12	8,14	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
HPP MEDJUVRŠJE	MPN coliform. bacteria. (E.coli/100ml	-	1,7 x10^4	4,5 x10^3	-	1,2 x10^4	2,9 x10^4	-	2,2 x10^3	3,3 x10^3		1,1 x10^4	7,3 x10^3	-	
	Dissolved O2 (mg/l)	-	8,52	8,39	-	10,49	10,53	-	7,71	7,20	-	9,75	9,62	min. 7,0	
	Suspended matter (mg/l)	-	1,20	4,00	-	<1	3,20	-	0,40	1,20	-	<1	<1	25	
	COD (mg/l)	-	4,20	4,50	-	4,20	4,40	-	4,50	4,00	-	4,3	4,1	15	
	BOD5 (mg/l)	-	0,68	0,75	-	0,70	0,80	-	0,95	0,98	-	0,92	0,99	5	
	pH value	-	8,16	8,18	-	8,14	8,93	-	8,35	8,50	-	8,30	8,24	6,8-8,5	

HPPs DRINSKO-LIMSKE BRANCH														
Water quality in 2023														
Facility	**Test parameters (unit)**	**2023 Waste and surface water quality test results**												
		Q1			**Q2**			**Q3**			**Q4**			**Ref.values**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**		
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
HPP UVAC	MPN coliform. bacteria. (E.coli/100ml	-	1,0x10²	5,90x10²	-	7,2x10²	2,0x10²	-	2,8x10²	3,0x10²	-	45	3,9x10²	-	.
	Dissolved O2 (mg/l)	-	10,13	9,99	-	11,10	10,83	-	7,84	10,33	-	7,80	7,35	min. 7,0	
	Suspended matter (mg/l)	-	<1	6,80	-	<1	4,80	-	<1	2,00	-	<1	<1	25	
	COD (mg/l)	-	<4,0	<4,0	-	<4,0	11,90	-	<4,0	<4,0	-	<4,0	<4,0	15	
	BOD5 (mg/l)	-	0,80	0,82	-	0,88	2,01	-	0,96	0,99	-	0,95	0,98	5	
	pH value	-	8,21	8,44	-	8,32	8,25	-	8,34	8,41	-	8,13	8,32	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	

HPPs DRINSKO-LIMSKE BRANCH															
Water quality in 2023															
Facility	**Test parameters (unit)**	**2023 Waste and surface water quality test results**													
		Q1			**Q2**			**Q3**			**Q4**			**Ref.values**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**		
HPP KOKIN BROD	MPN coliform. bacteria. (E.coli/100ml	-	$1,1x10^4$	$2,6x10^3$	-	$1,2x10^3$	$2,0x10^2$	-	91,00	$3,6x10^2$	-	43	98	-	
	Dissolved O2 (mg/l)	-	10,98	10,38	-	11,22	10,41	-	7,62	7,59	-	7,16	7,50	min. 7,0	
	Suspended matter (mg/l)	-	1,20	<1	-	1,20	<1	-	0,40	0,40	-	<1	<1	25	
	COD (mg/l)	-	<4,0	<4,0	-	4,20	4,40	-	4,00	4,50	-	4,0	4,4	15	
	BOD5 (mg/l)	-	0,80	0,86	-	0,85	0,88	-	0,85	1,00	-	0,82	0,98	5	
	pH value	-	8,66	8,35	-	8,66	8,35	-	8,71	8,41	-	8,09	8,35	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
HPP BISTRICA	MPN coliform. bacteria. (E.coli/100ml	-	<1	$4,0x10^2$	-	$4,0x10^2$	$2,9x10^4$	-	$1,0x10^2$	$2,1x10^3$	-	$2,0x10^2$	$1,4x10^3$	-	

HPPs DRINSKO-LIMSKE BRANCH															
Water quality in 2023															
Facility	**Test parameters (unit)**	**2023 Waste and surface water quality test results**													
		Q1			**Q2**			**Q3**			**Q4**			**Ref.values**	**Comment for test results and conclusion (Comment for the chemical and bacteriological analysis of samples from the sewage system and surface water upstream and downstream of the facility and their impact on the water class according to the Regulation on Water Classification)**
		From the sewer system- before discharge	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**	**From the sewer system- before discharge**	**Surface water upstream from the facility**	**Surface water downstream from the facility**		
	Dissolved O2 (mg/l)	-	8,67	10,81	-	10,75	10,41	-	7,45	7,57	-	7,77	8,16	min. 7,0	
	Suspended matter (mg/l)	-	<1	58,40	-	<1	1,6	-	<1	<1	-	<1	<1	25	
	COD (mg/l)	-	4,5	4,0	-	4,0	4,2	-	<4,0	<4,0	-	<4	<4	15	
	BOD5 (mg/l)	-	0,82	1,00	-	0,85	1,02	-	0,90	0,95	-	0,85	0,89	5	
	pH value	-	8,23	8,35	-	8,31	8,22	-	8,50	8,43	-	8,05	8,16	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	
HPP POTPEĆ	MPN coliform. bacteria. (E.coli/100ml	**-**	$2,4x10^4$	$9,1x10^3$	**-**	$8,3x10^3$	$2,4x10^4$	**-**	$1,0x10^3$	$1,1x10^3$		$8,3x10^3$	$9,1x10^3$	-	
	Dissolved O2 (mg/l)	-	10,99	11,02	-	10,63	10,57	-	7,33	7,41		9,44	9,37	min. 7,0	

	Suspended matter (mg/l)	-	40,60	40,80	-	6,00	5,60	-	0,80	7,20	-	<1	<1	25	
	COD (mg/l)	-	4,10	4,50	-	4,00	4,60	-	4,00	5,60	-	4,2	5,8	15	
	BOD5 (mg/l)	-	0,90	0,95	-	0,92	1,10	-	1,00	1,20	-	1,1	1,3	5	
	pH value	-	8,54	8,46	-	8,29	8,21	-	8,49	8,29	-	8,41	8,19	6,8-8,5	
	Total oils and grease (mg/l)	-	-	-	-			-	-	-	-	-	-	-	

In HPPs Drinsko-Limske Branch, water quality tests for SHPP Vrelo were not done since for its size and structure, it does not produce wastewater.

Wastewater was tested ub SHPP Radaljska Banja. The tested parameters meet the values defined by the Regulation.

7.2.3. Waste

Waste at the HPPs Drinsko – Limske Branch is mostly generated during hydro power plants maintenance activities. The generated waste in 2023 is shown in the Table 126.

Table 126

HPPs DRINSKO-LIMSKE BRANCH									
Generated waste in 2023									
No.	Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)		Unit	Facility				Total	Note
				HPP and PSHPP B.Bašta	HPPs LImske	HPP Elektromorava	HPP Zvornik		
	Name	Index No.		Quantities					
1.	Waste rubber	16 01 03	t	1,460	0,000	0,000	0,000	**1,460**	Waste tyres
2.	Waste iron	17 04 05	t	7,700	0,000	0,000	0,000	**7,700**	Waste iron
3.	Waste iron	17 04 05	t	0,660	0,000	0,000	0,000	**0,660**	Waste scraping
4.	Cables other than those under 17 04 10	17 04 11	t	9,680	0,000	0,000	0,000	**9,680**	Waste cables
5.	Waste wood	20 01 38	t	7,040	0,000	0,000	0,000	**7,040**	Waste wood

Waste management was done per the waste management procedures and according to the following waste handling legislation: Rulebook on method of storage, packaging and labeling hazardous waste Official Gazette of RS, No. 92/10 dated 5 December 2010; Rulebook on categories, testing and classification of waste (Official Gazette of the Republic of Serbia, No. 56/10 dated 10 August 2010); Rulebook on the conditions and methods of collection, transport, storage and treatment of waste used as secondary raw material or for energy generation (Official Gazette of the Republic of Serbia, No. 98/10 dated 24 December 2010); Regulation on waste oils management methods (Official Gazette of the Republic of Serbia, No. 71/10 dated 4 October 2010) and Regulation on manner and procedures for waste management containing asbestos (Official Gazette of the Republic of Serbia No. 74/10 dated 15 October 2010).

During the year, the collected waste is stored within the plants facilities area and delivered to the authorized companies registered for such activity. The delivered waste in 2023 is shown in the Table 127.

Table 127

HPPs DRINSKO-LIMSKE BRANCH									
Delivered waste in 2023									
No.	Rulebook on Categories, Testing and Classification of Waste (Official Gazette of RS, No. 56/2010, 93/2019 and 39/2021)		Unit	Facility				Total	Note
				HPP and PSHPP B.Bašta	HPPs LImske	HPP Elektromorava	HPP Zvornik		
	Name	Index No.		Quantities					
1.	Waste rubber	16 01 03	t	1,460	0,000	0,000	0,000	**1,460**	Waste tyres
2.	Waste iron	17 04 05	t	7,700	0,000	0,000	0,000	**7,700**	Waste iron
3.	Waste iron	17 04 05	t	0,660	0,000	0,000	0,000	**0,660**	Waste scraping
4.	Cables other than those under 17 04 10	17 04 11	t	9,680	0,000	0,000	0,000	**9,680**	Waste cables
5.	Waste wood	20 01 38	t	7,040	0,000	0,000	0,000	**7,040**	Waste wood

7.2.4. Working Environment Monitoring, Occupational Health and Safety

The 2023 Occupational Safety and Health Reports include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

7.3.1. Working Environment Monitoring

- **Working Environment Noise Measurement**

Within working environment tests, physical and microlimate parameters, noise measurements in the working environement were executed in all HPPs Drinsko-Limske facilities, during regular periodic inspections for winter 2023.

HPP Bajina Bašta, Perućac: Of total 76 locations where noise measurements were done, the measured values on 10 locations exceeded limit values defined by the Rulebook on preventive measures for safe and healthy work during exposure (Official Gazette RS, No. 96/2011, 78/2015 and 93/2019).

HPP Zvornik, Mali Zvornik: Of total 25 locations where noise measurements were done, the measured values on 2 locations exceeded limit values defined by the Rulebook on preventive measures for safe and healthy work during exposure (Official Gazette RS, No. 96/2011, 78/2015 and 93/2019).

HPP Elektromorava, Čačak (HPP Ovčar Banja and HPP Medjuvršje): Of total 20 locations where noise measurements were done, the measured values on 2 locations exceeded limit values defined for exposure (Official Gazette RS, No. 96/2011, 78/2015 and 93/2019).

HPPs LIMSKE, Nova Varoš (HPP Kokin Brod, HPP Uvac, HPP Bistrica and HPP Potpeć): Of total 35 locations where noise measurements were done, the measured values on 12 locations exceeded limit values defined for exposure (Official Gazette RS, No. 96/2011, 78/2015 and 93/2019).

Measuring locations where the measured values exceeded the limit values are provided in Table 128.

Table 128

HPPs DRINSKO-LIMSKE BRANCH					
Working environment noise in 2023					
Branch / Facility			Section	Registered noise level (dB(A))	Permitted noise level (dB(A))
HPPs Drina	HPP Bajina Bašta		Powerhouse	86	85
			Turbine area Turbine No.1	94	85
			Mechanical workshop	91	85
	PSHPP Bajina Bašta		FP TARA Filters	87	85
			PP DJURIĆI – Pump Drive	97	85
			Powerhouse	88	85
			Turbine Area Turbine No.2	98	85
			Generator area between Unit 1 and Unit 2	89	85
			Carpenter workshop	91	85
			Fleet	86	85
	HPP Zvornik		Turbine Area - Unit A2	106	86
			Turbine Area – cooling system	105	84
	EMHPPs	HPP Ovčar Banja	Control room	64	55
		HPP Medjuvršje	Control room	64	55
HPPs Lim	HPP Kokin Brod		Turbine Area	95	85
	HPP Uvac		Turbine Area	96	85
			Generator pit	92	85
			Powerhouse	86	85
	HPP Bistrica		Powerhouse	87	85
			Busbar distribution	92	85
			Turbine Area	93	85
			Compressor station	89	85
			Locksmith-welding workshop	95	85
	HPP Potpeć		Turbine Area	95	85
			Busbar distribution	89	85
			Technician’s office	66	60

At locations where the noise level was higher than the admissible, the employees do not spend much time and protective measures are applied, using earmuffs and antiphons there.

7.3.2. Occupational Safety

- **Training of Employees**

Employee training has been conducted under the Program for training and improving the knowledge of employees within the scope of occupational safety and it is performed periodically depending on the workplace, which is in compliance with the applicable legal regulations. The number of employees scheduled for training and the number of employees who have been trained is shown in Table 129.

Table 129

HPPs DRINSKO-LIMSKE BRANCH					
Training of employees in 2023					
Facility	**Number of employees**	**Planned to be trained**		**Trained**	
		n	**%**	**n**	**%**
HPP Bajina Bašta	241	129	53,53	129	100,00
PSHPP Bajina Bašta					
HPP Elektromorava	44	6	13,64	6	100,00
HPP Zvornik	62	24	38,71	24	100,00
HPPs Limske	120	47	39,17	47	100,00
TOTAL: HPPs DRINSKO-LIMSKE	**467**	**206**	**44,11**	**206**	100,00

Table 130 provides numbers of individuals sent for other trainings.

Table 130

HPPs DRINSKO-LIMSKE BRANCH			
Other trainings in 2023			
No.	**Type of training**	**Number of persons**	**Note**
1.	Introducing the contractors + visitors with the hazards and harms, OSH measures and rules of conduct	BBHPP/208+138 LHPP/81 ZVHPP/38 EMHPP/102 TOTAL: 567	
2.	Internal training and verification of OSH knowledge for employees at workplaces with increased risk	BBHPP/69 LHPP/42 ZVHPP/11 EMHPP/6 TOTAL DLHPP: 128	
3.	Интерна обука и провера знања из БЗР-а за запослене на осталим радним местима	BBHPP/60 LHPP/5 ZVHPP/3 TOTAL DLHPP: 95	
4.	External training for operators of work equipment - crane operators	BBHPP/6 LHPP/8 ZVHPP/3 EMHPP/3 TOTAL DLHPP: 20	
5.	External training for safe work during the execution and maintenance of devices and installations in zones with explosive atmospheres	BBHPP/4 EMHPP/4 TOTAL DLHPP: 8	
6.	OSH training for "PRO TENT" employees engaged in auxiliary repair works	BBHPP/17 LHPP/21 ZVHPP/27 EMHPP/8 TOTAL DLHPP: 73	
7.	Instroducing students and pupils at practical classes with OSH measures and rules of conduct	BBHPP/13 LHPP/2 EMHPP/75 TOTAL DLHPP: 90	
8.	Training of employed operators of electric-power plants and equipment and others in case of post change	ZVHPP/5 EMHPP/2 TOTAL DLHPP: 7	

9.	Fire fighting trainings	BBHPP/109 LHPP/13 ZVHPP/32 EMHPP/2 TOTAL DLHPP: 156	

- **Injuries at Work**

Table 131 provides number of injuries at work in 2023.

Table 131

HPPs DRINSKO-LIMSKE BRANCH						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – Number of employees' ratio**				
		mild	**severe**	**fatal**	**total**	**%**
HPP Bajina Bašta **PSHPP Bajina Bašta**	241	1	0	0	1	0,41
HPP Elektromorava	44	0	0	0	0	0
HPP Zvornik	62	0	0	0	0	0
HPPs Limske	120	0	0	0	0	0
TOTAL: HPPs DRINSKO-LIMSKE	**467**	**1**	**0**	**0**	**1**	**0,21**

7.3.3. Health Protection

Medical examinations findings are provided in Table 132.

Table 132

HPPs DRINSKO-LIMSKE BRANCH											
Employees' work capability in 2023											
Organizational Unit	**Number of employees**	**Periodical examinations**				**Work capability**					
		Referred to examination		**Examined**		**Capable**		**Limited Capability**		**Incapable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
HPP Bajina Bašta **PSHPP Bajina Bašta**	241	73	30,29	73	100,00	56	76,71	17	23,29	0	0,00
HPP Elektromorava	44	6	13,64	6	100,00	6	100,00	0	0,00	0	0,00
HPP Zvornik	62	11	17,74	11	100,00	11	100,00	0	0,00	0	0,00
HPPs Limske	120	42	35,00	42	100,00	36	85,71	5	11,90	1	2,38
TOTAL: HPPs DRINSKO-LIMSKE	**467**	**132**	**28,27**	**132**	**100,00**	**109**	**82,58**	**22**	**16,67**	**1**	**0,76**

7.4. Stakeholders Submissions

Stakeholders' submissions for 2023 are providd in Table 133.

Table 133

HPPs DRINSKO-LIMSKE BRANCH		
STAKEHOLDERS' SUBMISSIONS IN 2023		
Organizational Unit	**Complaint (submitted by)**	**Complaint subject Actions**
HPP and PSHPP Bajina Bašta	Complaint submitted by residents from Zaovine	Claim for damages due to landslides on parcels surrounding Zaovine Lake. Complaint resolving procedure is ongoing.
HPP and PSHPP Bajina Bašta	Complaint submitted by residents from Perućac and Beserovina	Claim for damages due to vegetation removal for 35kV OHTL between Perućac and Beserovina

8. RENEWABLE ENERGY SOURCES BRANCH

The Renewable Energy Sources (RES) Branch comprises the following small hydropower plants, some are in operation, whilst the most of them are under reconstruction.

Small hydropower plants in operation in 2023:

- HPP Sicevo
- HPP Sokolovica
- HPP Gamzigrad
- HPP Prvonek
- HPP Raška
- HPP Turica

Small hydropower plants out of operation in 2023:

- HPP Seljašnica
- HPP Sveta Petka
- HPP Moravica
- HPP Pod Gradom
- HPP Kratovska Reka
- HPP Temac
- HPP Vučje
- HPP Jelašnica

According to the plans of EPS JSC, SHPP Gamzigrad is exempt from reconstruction (restitution proceedings initiated), small hydropower plants that are out of service, are at different stages of reconstruction or rehabilitation.

Small HPPs under construction:

- HPP Rovni, construction has begun, works in progress.
- HPP Ćelije, works have not begun, Building Permit obtained and Notice on Commencement of Works placed, Execution Design prepared, coordination with the contracto.

8.1. Overview and Status of Permits

HPP Prvonek has a Use Permit No. 351-398/2012-07, issued on June 13, 2013, by the competent Secretariat of the City of Vranje.

HPP Turica has a Use Permit No. 351-597/20-02, issued on November 13, 2020, by the Department for implementation of plans and construction of Užice.

HPP Seljašnica has a Use Permit No. 353-172/20, issued on October 20, 2020, by Municipal Administration of Prijepolje.

8.2. Monitoring and Environmental Impact

8.2.1. Identified Negative Impacts on the Flow and Ecological System downstream from the Reservoir

The identified negative impacts in streams downstream from the dams are mainly double: with very low water level (low disharge), caused by considerably changed, annual climate and meteorological conditions and otherwise, when there are very large inflows, there is a tendency to realize transfer of hydro power with as higher as possible efficiency through the planning of electricity generation.

8.2.2. Water

- **Water Quantity**

Water for electricity generation, process water and sanitary water were used in accordance with requirements and technical specifications of the units. Quantities of used water are calculated on an approximative basis according to the energy generation, per power plants, for 2023, and are provided in Table 134.

The data which are not indicated in the table are unavailable due to non-existence of relevant diagrams for calculation, of each unit individually, as well as due to impossibility of measurement or lack of measuring equipment in the listed power plants.

Table 134

RENEWABLE ENERGY SOURCES BRANCH						
Water quantities in 2023						
Organizational unit	**Installed output kW**	**Permitted water amount (installed flow per unit) m^3/ s**	**Discharged water quantities**			
			Water used for electricity generation in 2023 m^3/ year $x10^6$	**Process water m^3/ year $x10^6$**	**Sanitary water m^3/ year $x10^3$**	**Total discharged water m^3/ year $x10^6$**
HPP Raška	4.600	4,50	-			
HPP Seljašnica	1.040	0,80	Under reconstruction			
HPP Moravica	750	2,50	Under reconstruction			
HPP Turica	376	3,20	-			
HPP Pod Gradom	364	2,30	Under reconstruction			
HPP Kratovska Reka	760	1,16	Under reconstruction			
HPP Sveta Petka	744	-	Under reconstruction			
HPP Sićevo	1.348	20,60	174.432	-	-	-
HPP Temac	904	6,10	Under reconstruction			
HPP Sokolovica	3.724	40,00	420.864	-	-	-
HPP Gamzigrad	224	4,20	49.858	-	-	-
HPP Vučje	1.986	1,25	Under reconstruction			
HPP Jelašnica	540	0,42	Under reconstruction			
HPP Prvonek	932	1,45	-			

- **Water Quality**

In 2023, water quality was not checked in the Renewable Energy Sources Branch. Small hydropower plants in the RES Branch for their size and structure are not able to produce wastewater. Testing of technical and sanitary waters is not performed at our HPPs.

8.2.3. Waste

In 2023, the works on the reconstruction and revitalization of some power plants that were previously mentioned, continued. Generated waste, as a result of rehabilitation works, is listed and properly sorted (hazardous / non-hazardous) and stored at available locations. After the procedure, part of the stored waste will be handed over to the competent services of EPS JSC, for further use by institutions interested in using this equipment for teaching or museum purposes, while the rest of the waste will be disposed of according to the legislation.

8.2.4. Environmental Noise Measurement

Noise level in the environment in vicinity of the hydropower facilities operated by the RES Branch was not measured in 2023, because the facilities are dislocated from the settlement.

Environmental Impact Assessment Studies

In the Renewable Energy Sources Branch, within the scope of revitalization and modernization projects of the SHPP, Environmental Impact Assessment Sstudies were prepared, according to the requirements of the competent Ministry of Environmental Protection, for the following facilities:
- SHPP Ćelije
- SHPP Moravica
- SHPP Raška
- SHPP Rovni
- SHPP Seljašnica
- SHPP Sićevo
- SHPP Sokolovica
- SHPP Temac
- SHPP Turica
- SHPP Vučje

All studies obtained approval from Ministry of Environmental Protection.

For the other facilities that are not listed, the decision were passed that it is not necessary to prepare Environmental Impact Assessment Studies.

8.3. Working Environment Monitoring, Occupational Health and Safety

The 2023 Occupational Safety and Health Reports include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

8.3.1. Working Environment Monitoring

- **Working Environment Noise Measurement**

In 2023, working environment noise measurement was done in SHPP Gamzigrad and the measured values exceed the permitted values. The employees were provided with ear protections as a protective measure.

8.3.2. Occupational Safety

- **Training of Employees**

The implemented training of employees, is the training of employees for safe and healthy work, and is done according to the Training Program, both theoretically and practically.

  - Training of employees for safe and healthy work – 35 employees.

- **Injuries at Work**

Table 135 provides data on number of injuries at work in 2023.

Table 135

RENEWABLE ENERGY SOURCES BRANCH						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – Number of employees' ratio**				
		mild	**severe**	**fatal**	**total**	**%**
Renewabel Energy Sources	52	0	0	0	0	0,00
TOTAL: RENEWABLE ENERGY SOURCES BRANCH	**52**	**0**	**0**	**0**	**0**	**0,00**

8.3.3. Health Protection

Medical examination findings are provided in Table 136.

Табела 136

RENEWABLE ENERGY SOURCES BRANCH											
Employees' work capability in 2023											
Branch	**Number of employees**	**Periodical examinations**				**Work capability**					
		Referred to examination		**Examined**		**Capable**		**Limited Capability**		**Incapable**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Branch Head Office	14	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
SHPP Istok	26	26	100,00	26	100,00	25	96,15	1	3,85	0	0,00
SHPP Zapad	12	12	100,00	12	100,00	11	91,67	0	0,00	1	8,33
TOTAL: RENEWABLE ENERGY SOURCES BRANCH	**52**	**38**	**73,08**	**38**	**100,00**	**36**	**94,74**	**1**	**2,63**	**1**	**2,63**

8.4. Stakeholders Submissions

There were no stakeholders' submissions related to environment in 2023.

9. EPS JSC HEAD OFFICE

9.1. Working Environment Monitoring, Occupational Health and Safety

The 2023 Occupational Safety and Health Reports include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

9.1.1. Working Environment Monitoring

- **Working Environment Noise Measurements**

There were no noise measurements in 2023.

9.1.2. Occupational Safety

- **Training of Employees**

The implemented training of employees, is the training of employees for safe and healthy work, and is done according to the Training Program, both theoretically and practically.

  - Training of employees for safe and healthy work – 55 employees.

- **Injuries at Work**

The number of injuries at work in 2023 is provided in Table 137.

Table 137

EPS JSC HEAD OFFICE						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – Number of employees' ratio**				
		mild	**severe**	**fatal**	**total**	**%**
EPS JSC Head Office	802	6	3	0	9	1,12
TOTAL: EPS JSC HEAD OFFICE	**802**	**6**	**3**	**0**	**9**	**1,12**

9.1.3. Health Protection

There are no employees in EPS JSC Head Office working in high-risk workplaces.

Systematic examinations of employees and mandatory eyes examinations were carried out in 2023.

Health care includes implementation of measures and activities to preserve and improve the health of employees, prevention, suppression and early detection of diseases, injuries and other health disorders and timely, effective and efficient treatment, health care and rehabilitation.
Activities to preserve and improve the health of employees in 2023 are shown in Table 138.

Table 138

EPS JSC HEAD OFFICE				
Activities to preserve and improve the health of employees in 2023				
Activities	**Number of employees**	**Examined**	**Not examined**	**%**
Basic systematic check-ups	802	567	235	70,70%
Additional systematic examinations as per the opinion of a specialist	802	78	724	9,73%
Mandatory eye examinations of employees who use a screen for more than 4 hours at work	802	0	802	0,00
Referring to rehabilitation and prevention of work disability of employees, according to the opinion of a specialist	802	136	666	16,96%

9.2.Stakeholders Submissions

There were no stakeholders' submissions related to environment in 2023.

10. EPS SNABDEVANJE BRANCH

10.1. Working Environment Monitoring, Occupational Health and Safety

The 2023 Occupational Safety and Health Reports include the following elements:

- **Working Environment Monitoring**
  - working environment noise measurement
- **Occupational Safety**
  - training of employees
  - injuries at work
- **Health Protection**

10.1.1. Working Environment Monitoring

- **Working Environment Noise Measurements**

There were no noise measurements in 2023.

The contract for testing the working environment conditions was signed, and it will be implemented in 2024.

10.1.2. Occupational Safety

- **Training of Employees**

Specific Occupational Health and Safety training of employees is carried out according to the Training Program, both theoretically and practically. The following trainings were carried out in 2023:

- In the EPS Snabdevanje Branch, 1,131 employees were trained for safe and healthy work out of a total of 1,303 employees (in accordance with the adopted Plan and training program for EPS JSC employees). The other employees were not trained, given that they are on long-term sick leave or have received annexes to their employment contracts in the meantime. Their training will be carried out in the coming period.
- In the EPS Snabdevanje Branch, 1,131 employees were trained for fire fighting out of a total of 1,303 employees (in accordance with the adopted Plan and training program approved by the Ministry of Internal Affairs). The other employees were not trained, given that they are on long-term sick leave or have received annexes to their employment contracts in the meantime. Their training will be carried out in the coming period.
- -Informing the employees about risks, dangers and hazards and measures of safety and health at work, in accordance with Rulebook on Occupational Health and Safety and Risk Assessment Act: 1,003 employees.

- **Injuries at Work**

The number of injuries at work in 2023 is provided in Table 139.

Table 139

EPS SNABDEVANJE BRANCH						
Injuries at work in 2023						
Organizational unit	**Number of employees**	**Injuries – Number of employees' ratio**				
		mild	**severe**	**fatal**	**total**	**%**
TOTAL: EPS SNABDEVANJE BRANCH	**1.303**	**13**	**2**	**0**	**15**	**1,15**

10.1.3. Health Protection

There are no employees in EPS Snabdevanje working in high-risk workplaces.

Health care includes implementation of measures and activities to preserve and improve the health of employees, prevention, suppression and early detection of diseases, injuries and other health disorders and timely, effective and efficient treatment, health care and rehabilitation.

Activities to preserve and improve the health of employees in 2023 are shown in Table 140.

Table 140

EPS SNABDEVANJE BRANCH				
Activities to preserve and improve the health of employees in 2023				
Activities	**Number of employees**	**Examined**	**Not examined**	**%**
Basic systematic check-ups	1.303	934	369	71,68
Additional systematic examinations as per the opinion of a specialist	1.303	305	998	23,41
Mandatory eye examinations of employees who use a screen for more than 4 hours at work	1.303	780	523	59,86
Referring to rehabilitation and prevention of work disability of employees, according to the opinion of a specialist	1.303	294	1.009	22,56

10.2. Stakeholders Submissions

There were no stakeholders' submissions related to environment in 2023.

APPENDIX 1. MODEL REPORT ON ENVIRONMENTAL PROTECTION OF THE EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT

Coal Production, Processing, and Transport Plants.

For each mining company:

- Summarize the status of permits, licenses, and other necessary approvals for each capital plant (such as coal mines). Indicate each case of non-compliance with applicable national environmental, health and safety requirements.
- Identify any new permit required during the reported year or a permit that will expire in less than a year and request a renewal accordingly.

Provide data for the following parameters for each plant.

- Emissions (key emissions, MPC, current emissions)
- Solid waste (type and quantity of waste)
- Water use (quantity of water used, permitted values)
- Wastewater (key wastewater, MPC, current wastewater quantities)
- Noise
- Summarize the health and safety report, including the accident rate and each initiative implemented and planned during the period, including the training program report
- Summarize public complaints, if any, related to the project and take steps to respond to them.

Electricity Generation Plant

To be provided for each power plant:

- Summarize the status of permits, licenses and other necessary approvals for each power plant. Indicate each case of non-compliance with applicable national environmental, health and safety requirements.
- Identify any new permit that will expire in less than a year and request a renewal accordingly.

Please provide data for the following parameters for each power plant:

Emissions

	Current emission	Limit values
Particle content		
CO_2		
NO_x (NO_2)		

Identified negative impacts to the flow and ecological system downstram from the reservoir

- Solid waste (type and quantity of waste)
- Water use (quantity of water used, permitted values)
- Wastewater (key wastewater, MPC, current wastewater quantities)
- Noise
- Summarize the health and safety report, including the accident rate and each initiative implemented and planned during the period, including the training program report
- Summarize public complaints, if any, related to the project and take steps to respond to them.

APPENDIX2. LEGISLATION OF THE REPUBLIC OF SERBIA ON ENVIRONMENTAL PROTECTION

Constitution of the Republic of Serbia ("Official Gazette of RS", No. 98/2006 and 115/2021)

LAWS

1. Law on Environmental Protection "Official Gazette of RS", No. 135/2004, 36/2009, 36/2009-other law, 72/2009 - other law, 43/2011 - US decision, 14/2016, 76/2018, 95/2018 - other law and 95/2018 - other law)
2. Law on Nature Protection ("Official Gazette of RS", No. 36/2009, 88/2010, 91/2010 - amended, 14/2016 and 95/2018 - other law and 71 / 2021)
3. Law on Energy ("Official Gazette of RS", No. 145/2014, 95/2018 – other law and 40/2021, 62/2023)
4. Law on Environmental Impact Assessment ("Official Gazette of RS", No. 135/04 and 36/2009)
5. Law on Strategic Environmental Assessment ("Official Gazette of RS", No. 135/2004 and 88/2010)
6. Law on Integrated Prevention and Control of Environmental Pollution ("Official Gazette of RS", No. 135/2004 and 25/2015 and 109/2021)
7. Law on Air Protection ("Official Gazette of RS", No. 36/2009 and 10/2013 and 26/2021 and other law)
8. Law on Environmental Noise Protection ("Official Gazette of RS", No. 96/2021)
9. Law on Protection against Non-Ionizing Radiation ("Official Gazette of RS", No. 36/2009)
10. Law on Land Protection ("Official Gazette of RS", No. 112/2015)
11. Law on Packaging and Packaging Waste ("Official Gazette of RS", No. 36/2009 and 95/2018 - other law)
12. Law on Climate Changes ("Official Gazette of RS", No 26/2021)
13. Law on Biocidal Products ("Official Gazette of RS", No. 109/2021)
14. Law on Chemicals ("Official Gazette of RS", No. 36/2009, 88/2010, 92/2011 and 93/2012 and 25/2015)
15. Law on Waste Management ("Official Gazette of RS", No. 36/2009, 88/2010, 14/2016 and 95/2018 - other law, 35/2023)
16. Law on Waters ("Official Gazette of RS", No. 30/2010, 93/2012, 101/2016, 95/2018 and 95/2018 - other law)
17. Law on Metrology ("Official Gazette of RS", No. 15/2016)
18. Law on Meteorological and Hydrological Activities ("Official Gazette of RS", No. 88/2010)
19. Law on Protection and Sustainable Use of Fish Stock ("Official Gazette of RS", No. 128/2014 and 95/2018 - other law)
20. Закон о рударству и геолошким истраживањима („Службени гласник РС“, број 101/2015 и 95/2018 – др.закон. 40/2021)
21. Law on Planning and Construction ("Official Gazette of RS", No. 72/2009, 81/2009 - corrigendum, 64/2010 - US decision, 24/2011, 121/2012, 42/2013 - US decision, 50 / 2013 - CC decision, 98/2013 - CC decision, 132/2014, 145/2014, 83/2018, 31/2019, 37/2019 - other law and 9/2020, 52/2021, 62/2023)
22. Law on Agricultural Land ("Official Gazette of RS", No. 62/2006, 65/2008 - other law, 41/2009, 112/2015, 80/2017 and 95/2018 - other law)
23. Law on Forests ("Official Gazette of RS", No. 30/2010, 93/2012, 89/2015 and 95/2018 - other law)
24. Law on Fees for the Use of Public Goods ("Official Gazette of RS", No. 95/2018, 49/2019, 86/2019 - aligned din. Amounts, 156/2020 – aligned din. Amounts 15/2021 – Amendment of aligned din. Amounts, 15/2023 – aligned dinar amounts 92/2023 and 120/2023 – aligned dinar amounts)
25. Law on Standardization ("Official Gazette of RS", No. 36/2009 and 46/2015)
26. Law on Accreditation ("Official Gazette of RS", No. 73/2010 and 47/2021)

REGULATIONS

1. Regulation on determining the List of projects for which an impact assessment is required and the List of projects for which an environmental impact assessment may be required ("Official Gazette of RS", No. 114/2008)
2. Regulation on determining activities which have impact to environment (("Official Gazette of RS", No. 109/2009 and 8/2010)
3. Regulation on determining criteria for assessment of jeopardized environment status and priorities for repair and remedy ("Official Gazette of RS", No. 22/2010)
4. Regulation on putting under control use and trading of wild flora and fauna (("Official Gazette of RS", No. 31/2005, 45/2005. – correction, 22/2007, 38/2008, 9/2010, 69/2011, 95/2018 – other regulation)
5. Regulation on contents and recording of environmental information system, methodology, structure, mutual basis, categories and levels of data collecting, as well as contents of information which shall be regularly and mandatory presented to public ("Official Gazette of RS", No. 112/2009)
6. Regulation on terms which shall be fulfilled by users of funds, terms and manner of funds allocation, manner of funds use supervision and contract rights and obligations, as well as other issues which are important for awarding and use of Green fund ("Official Gazette of RS", No. 25/2018)
7. Regulation on conditions for monitoring and air quality requirements ("Official Gazette of RS", No. 11/2010, 75/2010 and 63/2013)
8. Regulation on limit values of emissions of pollutants into the air from combustion plants ("Official Gazette of RS, No. 6/2016 and 67/2021)
9. Regulation on limit values of emissions of pollutants into the air from stationary sources of pollution, except for combustion plants ("Official Gazette of RS", No. 111/2015 and 83/2021)
10. Regulation on measurements of emissions of pollutants into the air from stationary sources of pollution ("Official Gazette of RS", No. 5/2016)
11. Regulation on the methodology for the preparation of the inventory of emissions and projections of air pollutants ("Official Gazette of RS", No. 3/2016)
12. Regulation on the methodology of data collection for the National Inventory of Unintentionally Released Long-Term Organic Pollutants (Official Gazette of RS, No. 76/2010)
13. Regulation on Determining the Air Quality Control Program in the State Network ("Official Gazette of RS", No. 58/2011)
14. Regulation on types of activities and plants for which integrated permit is issued ("Official Gazette of RS", No. 84/2005)
15. Regulation on contents of Program of measures for adjusting existing plant operation or activities to stipulated terms ("Official Gazette of RS", No. 84/2005)
16. Regulation on Criteria for Determining the Best Available Techniques, for Applying Quality Standards, as well as for Determining Emission Limits in the Integrated Permit ("Official Gazette of RS", No. 84/2005)
17. Regulation on Determining the Program of Dynamics of Submission of Applications for Issuance of Integrated Permit ("Official Gazette of RS", No. 108/2008)
18. Regulation on the list of industrial plants and activities in which the emission of volatile organic compounds is controlled, on the values of emission of volatile organic compounds at a certain solvent consumption and total allowable emissions, as well as emission reduction schemes ("Official Gazette of RS", No. 100/2011)
19. Regulation on conditions for monitoring and air quality requirements ("Official Gazette of RS", No. 11/2010, 75/2010 and 63/2013)
20. Regulation on the methodology for the preparation of the inventory of emissions and projections of air pollutants ("Official Gazette of RS", No. 3/2016)
21. Regulation on determining zones and agglomeration ("Official Gazette of RS", No. 58/2011 and 98/2012)
22. Regulation on determining Programme of Air Quality Control in state network ("Official Gazette of RS", No. 58/2011).
23. Regulation on types of activities with green house effect (Official Gazette of RS", No. 13/2022)

24. Regulation on the treatment of ozone-depleting substances, as well as on the conditions for issuing permits for import and export of these substances ("Official Gazette of RS", No. 114/2013, 23/2018, 44/2018 - other law, 95 / 2018 - other law)
25. Regulation on Criteria and Manner of Approval of Programs and Projects Implemented under the Clean Development Mechanism ("Official Gazette of RS", No. 44/2010)
26. Regulation on the treatment of fluorinated gases with a greenhouse effect as well as the conditions for issuing permits for import and export of these gases ("Official Gazette of RS", No. 120/2013, 44/2018 - other regulation)
27. Regulation on limit values of priority and priority hazardous substances polluting surface waters and deadlines for their achievement ("Official Gazette of RS", No. 24/2014)
28. Regulation on Water Classification ("Official Gazette of SRS", No. 5/1968)
29. Regulation on the categorization of watercourses ("Official Gazette of the SRS", No. 5/1968)
30. Regulation on limit values for emissions of pollutants into water and deadlines for their achievement ("Official Gazette of RS", No. 67/2011, 48/2012 and 1/2016)
31. Regulation on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement ("Official Gazette of RS", No. 50/2012)
32. Regulation on systematic monitoring of the condition and quality of land ("Official Gazette of RS", No. 88/2020)
33. Regulation on Limit Values of Pollutants, Harmful and Dangerous Substances in Soil ("Official Gazette of RS", No. 30/2018 and 64/2019)
34. Regulation on terms and procedure of permit issuing for waste management, as well as criteria, categorization, classification and reporting on mining waste ("Official Gazette of RS", No. 53/2017)
35. Regulation on Lists of Waste for transportation over border, contents and layout of documents which follow waste transportation over border with instruction for their filling in ("Official Gazette of RS", No. 34/2022)
36. Regulation on waste disposal in landfills ("Official Gazette of RS", No. 92/2010)
37. Regulation on Lists of waste for transportation over border, contents and layout of documents which follow waste transportation over border with instruction for their filling in ("Official Gazette of RS", No. 34/2022)
38. 40.Regulation on products that after use become special waste streams, form of daily records on the quantity and type of produced and imported products and annual report, manner and deadlines for submission of annual report, payers, criteria for calculation, amount and manner of calculation and payment of fees ("Official Gazette of RS", No. 54/2010, 86/2011, 15/2012, 3/2014, 31/2015 - other regulations, 44/2016 - other regulations, 43/2017 - other regulations, 45 / 2018 - other regulations, 67/2018 - other regulations, 95/2018 - other regulations and 77/2021)
39. Regulation of types of Plan for reduction of package waste for period from 2020 to 2024 ("Official Gazette of RS" No. 81/2020)
40. Regulation on noise indicators, limit values, methods for assessment of noise indicators, disturbance and harmful effects of noise in the environment ("Official Gazette of RS", No. 75/2010)
41. Regulation on terms and manner of performing subsidized purchase of new vehicles which have only electrical drive, as well as vehicles which are driven by motor with internal combustion and electrical drive (hybrid drive) ("Official Gazette of RS", No. 18/2023)

RULEBOOKS

1. Rulebook on emission limit values, manner and deadlines for measurement and recording of data ("Official Gazette of RS", No. 30/1997 and 35/1997 - correction)
2. Rulebook on the content, appearance and manner of keeping the public book on implemented procedures and adopted decisions on environmental impact assessment ("Official Gazette of RS", No. 69/2005)

3. Rulebook on the procedure of public insight, presentation and public debate on the study on environmental impact assessment ("Official Gazette of RS", No. 69/2005)
4. Rulebook on the work of the technical commission for the evaluation of the study on environmental impact assessment ("Official Gazette of RS", No. 69/2005)
5. Rulebook on the content of the request on the need for impact assessment and the content of the request for determining the scope and content of the study on environmental impact assessment ("Official Gazette of RS", No. 69/2005)
6. Rulebook on the content of the study on environmental impact assessment ("Official Gazette of RS", No. 69/2005)
7. Rulebook on the content of the project of protection and rehabilitation of the environment during and after the use of natural resources, procedure and conditions of giving consent to the project ("Official Gazette of RS", 35/2019)
8. Rulebook on the methodology for the preparation of the national and local register of pollution sources, as well as the methodology for the types, methods and deadlines of data collection ("Official Gazette of RS", No. 91/2010, 10/2013, 98/2016, 72/2023)
9. Rulebook on the content and manner of keeping the register of issued integrated permits ("Official Gazette of RS", No. 69/2005)
10. Rulebook on the content, appearance and manner of filling in the application for the issuance of an integrated permit ("Official Gazette of RS", No. 30/2006, 32/2016 and 44/2018 - other regulations)
11. Rulebook on the manner of exchange of information on metering points in the state and local network, measurement techniques, as well as the manner of exchange of data obtained by monitoring air quality in state and local networks ("Official Gazette of RS", No. 84/2010)
12. Rulebook on the content of air quality plans ("Official Gazette of RS", No. 21/2010)
13. Rulebook on the content of short-term action plans ("Official Gazette of RS", No. 65/2010)
14. Rulebook on content and layout of Integrated Permit ("Official Gazette of RS", No. 30/2006)
15. Rulebook on parameters of ecological and chemical status of surface water and parameters of chemical and quantitative status of ground water ("Official Gazette of RS", No. 74/2011)
16. Rulebook on manner and terms for measuring amount and testing of wastewater quality and content of Report on performed measurements ("Official Gazette of RS", No. 33/2016)
17. Rulebook on the content and form of requests for issuing water acts and the content of opinions in the procedure of issuing water conditions and the content of reports in the procedure of issuing water permits ("Official Gazette of RS", No. 72/2017, 44/2018 - other regulations and 12 / 2022)
18. Rulebook on the content and manner of keeping the cadaster of water information system, methodology, structure, categories and levels of data collection, as well as on the content of data communicated to the public ("Official Gazette of RS", No. 54/2011)
19. Rulebook on the content and manner of keeping the cadaster of water bodies ("Official Gazette of RS", No. 34/2011)
20. Rulebook on methodology for preparation of Projects of repair and remedy ("Official Gazette of RS", No. 74/2015)
21. Rulebook on content of the Projects of remedy and rehabilitation ("Official Gazette of RS", No. 35/2019)
22. Rulebook on content and form of Reports on land monitoring ("Official Gazette of RS", No. 126/2021)
23. Rulebook on content and manner of keeping cadaster of contaminated locations, type, content, forms, manner and deadlines for data submission ("Official Gazette of RS", No. 58/2019)
24. Rulebook on terms which shall be fulfilled by legal entity for performing land monitoring, as well as documentation which shall be submitted together with application for obtaining authorization for land monitoring ("Official Gazette of RS", No. 58/2019)
25. Rulebook on categories, testing and classification of waste ("Official Gazette of RS", No. 56/2010, 93/2019 and 39/2021)
26. Rulebook on form of request for issuing permit for treatment, i.e. storage, repeated use and disposal of waste ("Official Gazette of RS", No. 38/18)

27. Rulebook on content, manner of keeping and appearance of Register of issued permits for waste management ("Official Gazette of RS", No. 95/2010)
28. Rulebook on the content of the certificate on exemption from the obligation to obtain a permit for storage of inert non-hazardous waste ("Official Gazette of RS", No. 73/2010)
29. Rulebook on the form of daily records and annual report on waste with instructions for its completion ("Official Gazette of RS", No. 7/2020 and 79/2021)
30. Rulebook on the manner of storage, packaging and marking of hazardous waste ("Official Gazette of RS", No. 92/2010 and 77/2021)
31. Rulebook on conditions, manner and procedure of waste oil management ("Official Gazette of RS", No. 71/2010)
32. Rulebook on the manner and procedure of managing spent batteries and accumulators ("Official Gazette of RS", No. 86/2010)
33. Rulebook on the manner and procedure of waste tire management ("Official Gazette of RS", No. 104/2009 and 81/2010)
34. Rulebook on the manner and procedure of waste vehicle management ("Official Gazette of RS", No. 98/2010)
35. Rulebook on the manner and procedure for the management of waste fluorescent tubes containing mercury ("Official Gazette of RS", No. 97/2010)
36. Rulebook on the treatment of waste containing asbestos ("Official Gazette of RS", No. 75/2010)
37. Rulebook on conditions and manner of collection, transport, storage and treatment of waste used as a secondary raw material or for energy production ("Official Gazette of RS", No. 98/2010)
38. Rulebook on treatment of devices and waste containing PCBs ("Official Gazette of RS", No. 37/2011)
39. Rulebook on the content of the safety data sheet ("Official Gazette of RS", No. 100/2011)
40. Rulebook on the Register of Chemicals ("Official Gazette of RS", No. 16/2016, 6/2017, 117/2017, 44/2018 - other law, 7/2019, 93/2019, 6/2021, 126/2021 and 10/2023)
41. Rulebook on Restrictions and Prohibitions on Production, Marketing and Use of Chemicals ("Official Gazette of RS", No. 90/2013, 25/2015, 2/2016 and 44/2017, 36/2018, 9/2020 and 57/2022)
42. Rulebook on criteria for identification of a substance as PBT or VPVB ("Official Gazette of RS", No. 23/2010)
43. Rulebook on licenses for trade activities, ie licenses for the use of particularly dangerous chemicals ("Official Gazette of RS", No. 6/2017, 29/2018, 88/2023)
44. Rulebook on the manner of keeping records on chemicals ("Official Gazette of RS", No. 31/2011)
45. Rulebook on exposure limits to non-ionizing radiation and measurements to assess the level of exposure to ionizing radiation ("Official Gazette of RS", No. 86/2011, 50/2018)
46. Rulebook on sources of non-ionizing radiation of special interest, types of sources, manner and period of their examination ("Official Gazette of RS", No. 104/2009)
47. Rulebook on the content of records on sources of non-ionizing radiation of special interest ("Official Gazette of RS", No. 104/2009)
48. Rulebook on the content and layout of the form of the report on systematic inspection of the level of non-ionizing radiation in the environment ("Official Gazette of RS", No. 104/2009)
49. Rulebook on the conditions that must be met by legal entities that perform activities of testing the radiation levels of non-ionizing radiation sources of special interest in the environment ("Official Gazette of RS", No. 104/2009)
50. Rulebook on conditions that must be met by legal entities that perform systematic testing of non-ionizing radiation levels, as well as the manner and methods of systematic testing in the environment ("Official Gazette of RS", No. 104/2009)
51. Rulebook on methodology for determining acoustic zones ("Official Gazette of RS", No. 72/2010)
52. Rulebook on expenses of rights award for use of ecological sign ("Official Gazette of RS", No. 81/2010)

STRATEGIES

1. National Strategy for Approximation in the Field of Environmental Protection for the Republic of Serbia ("Official Gazette of RS", No. 80/2011)
2. Strategy for the introduction of cleaner production in the Republic of Serbia ("Official Gazette of RS", No. 17/2009)
3. Strategy for the implementation of the Convention on Access to Information, Public Participation in Decision-Making and the Right to Legal Protection in Environmental Matters
4. - Aarhus Convention ("Official Gazette of RS", No. 103/2011)
5. National Strategy for Sustainable Development ("Official Gazette of RS", No. 57/2008)
6. Strategy of Mineral Resources Management of the Republic of Serbia until 2030 ("Official Gazette of RS", No. 09/2010)
7. Energy Development Strategy of the Republic of Serbia until 2025 with a projection until 2030 ("Official Gazette of RS", No. 101/2015)

DECISIONS AND PROGRAMS

1. Decision on the preparation of the Strategic Environmental Assessment of the Spatial Plan of the Special Purpose Area of the Regional Kolubara Water Supply System on the Environment ("Official Gazette of RS", No. 7/2020 and 65/2020)
2. Decision on non-accession to the preparation of the Strategic Environmental Assessment for the Nature Protection Program of the Republic of Serbia for the period from 2020 to 2022 ("Official Gazette of RS", No. 93/2019)
3. Decision on the preparation of the Strategic Environmental Assessment of the Regional Waste Management Plan for 11 cities and municipalities of the Kolubara region for the period from 2019 to 2029 ("Official Gazette of RS", No. 81/2019)
4. Decision on the preparation of the Strategic Impact Assessment Amendments to the Spatial Plan of the Kolubara Lignite Basin Exploitation Area ("Official Gazette of RS", No. 48/2019)
5. Decision on preparation of the Strategic Impact Assessment of the Spatial Plan of the Special Purpose Area for the construction of the Thermal Power Plant "Kolubara B" ("Official Gazette of RS", No. 46/2019)
6. Decision on the preparation of the Strategic Assessment of the Environmental Impact of the Spatial Plan of the Republic of Serbia from 2021 to 2035 ("Official Gazette of the RS", No. 41/2019)
7. Decision on the preparation of the Strategic Impact Assessment of the Waste Management Program ("Official Gazette of RS", No. 30/2019)
8. Decision on the preparation of the Strategic Environmental Assessment of the Low Carbon Development Strategy with an action plan ("Official Gazette of RS", No. 62/2018, 26/2019)
9. Decision on the preparation of the Strategic Impact Assessment of the National Emission Reduction Plan (NERP) ("Official Gazette of RS", No. 57/2018)
10. Decision on the preparation of the Strategic Assessment of the Environmental Impact of the Action Plan for the Implementation of the Water Management Strategy on the Territory of the Republic of Serbia until 2034 ("Official Gazette of RS", No. 56/2018)
11. Decision on preparation of the Strategic Assessment of the Environmental Impact of the Revised Regional Waste Management Plan for 11 cities and municipalities of the Kolubara region ("Official Gazette of RS", No. 46/2017)
12. Decision on the preparation of the Strategic Environmental Assessment of the Plan for the Protection of Waters from Pollution on the Environment ("Official Gazette of RS", No. 48/2016)
13. Decision on the preparation of the Strategic Assessment of the Impact of Amendments to the Spatial Plan of the Special Purpose Area of the Kostolac Coal Basin on the Environment ("Official Gazette of RS", No. 108/2015)
14. Decision on the preparation of the Strategic Assessment of the Impact and Amendments to the Spatial Plan of the Exploitation Area of the Kostolac Coal Basin on the Environment ("Official Gazette of RS", No. 48/2019)

15. Decision on the preparation of the Strategic Assessment of the Impact of the Energy Development Strategy of the Republic of Serbia until 2025 with projections until 2030 on the environment ("Official Gazette of RS", No. 56/2016)
16. Decision on the preparation of the Strategic Environmental Assessment (Water Management Strategy on the territory of the Republic of Serbia) ("Official Gazette of RS", No. 30/2013)
17. Decision on preparation of the Strategic Environmental Assessment of the Regional Spatial Plan for the area of the Danube and Braničevo administrative districts on the environment ("Official Gazette of RS", No. 34/2010)
18. Program of Circular Economy Development in the Republic of Serbia for time period from year 2022 to 2024 ("Official Gazette of RS", No. 137/2022)

REGULATIONS FROM OTHER AREAS APPLICABLE IN THE AREA OF ENVIRONMENTAL PROTECTION

Ratified international agreements of importance for the Republic of Serbia

1. Law on Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change ("Official Gazette of RS - International Agreements", No. 88/2007)
2. Law on Ratification of the Amendment to Annex B of the Kyoto Protocol to the United Nations Framework Convention on Climate Change ("Official Gazette of RS - International Agreements", No. 38/2009)
3. Law on Ratification of the Doha Amendment to the Kyoto Protocol to the United Nations Framework Convention on Climate Change ("Official Gazette of RS - International Agreements", No. 2/2017)
4. Law on Ratification of the Convention on Environmental Impact Assessment in a Transboundary Context ("Official Gazette of RS", No. 102/2007)
5. Law on Ratification of Amendments to the Convention on Environmental Impact Assessment in a Transboundary Context ("Official Gazette of RS - International Agreements", No. 4/2016)
6. Law on Ratification of the Stockholm Convention on Persistent Organic Pollutants ("Official Gazette of RS", No. 42/2009)
7. Law on Ratification of the Convention on Biological Diversity ("Official Gazette of the FRY - International Agreements", No. 11/2001)
8. Law on Ratification of the Convention on International Trade in Endangered Species of Wild Fauna and Flora ("Official Gazette of the FRY - International Agreements", No. 11/2001)
9. Law on Ratification of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal ("Official Gazette of the FRY - International Agreements", No. 2/1999)
10. Law on Ratification of the United Nations Framework Convention on Climate Change, with annexes ("Official Gazette of the FRY - International Agreements", No. 2/1997)
11. Law on Ratification of the Vienna Convention for the Protection of the Ozone Layer, with Annexes I and II ("Official Gazette of the SFRY - International Agreements", No. 1/1990)
12. Law on Ratification of the International Convention for the Protection of Birds ("Official Gazette of the SFRY", No. 6/73)
13. Regulation on Ratification of the Convention on Wetlands of International Importance, Especially as a Residence for Wetland Birds ("Official Gazette of the SFRY - International Agreements", No. 9/77)
14. Law on Ratification of the European Convention for the Protection of Animals in International Transport and the Protocol as an Addendum to the Convention for the Protection of Animals in International Transport ("Official Gazette of the FRY - International Agreements", No. 1/92)
15. Law on Ratification of the Convention on Cooperation for the Protection and Sustainable Use of the Danube River ("Official Gazette of the FRY - International Agreements", No. 2/2003)
16. Law on Ratification of the Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer ("Official Gazette of Serbia and Montenegro - International Agreements", No. 24/2004)

17. Law on Ratification of the Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer ("Official Gazette of RS - International Agreements", No. 17/2021)
18. Regulation on the Agreement on Fisheries on the Danube Waters between the Government of the FPRY, the People's Republic of Bulgaria, the Romanian People's Republic and the Union of Soviet Republics ("Official Gazette of the FPRY", No. 8/58)
19. Law on Ratification of the Convention Concerning the Protection of the World Cultural and Natural Heritage ("Official Gazette of the SFRY - International Agreements", No. 56/74)
20. Law on Ratification of the Convention for the Protection of Cultural Property in the Event of Armed Conflict ("Official Gazette of the FPRY - International Agreements", No. 4/56, "Official Gazette of FRY – International Agreements, NO. 7/02 – other regulations)
21. Law on Ratification of the Convention on Measures to Prohibit and Prevent Illicit Imports. export and transfer of ownership of cultural property ("Official Gazette of the SFRY-International Agreements", No. 50/73)
22. Law on Ratification of the Vienna Convention on Civil Liability for Nuclear Damage ("Official Gazette of the SFRY-International Agreements", No. 5/77)
23. Regulation on Ratification of the Convention Establishing the European Plant Protection Organization ("Official Gazette of the FPRY - International Agreements", No. 12/57)
24. Regulation on Ratification of the International Plant Protection Convention ("Official Gazette of the FPRY - International Agreements", No. 7/55)
25. Law on Ratification of the Agreement on Protection of Waters of the Tisa River and its Tributaries from Pollution ("Official Gazette of the SFRY - International Agreements", No. 1/90)
26. Law on Ratification of the Convention on Long-range Transboundary Air Pollution ("Official Gazette of the SFRY - International Agreements", No. 11/86)
27. Law Ratifying the Protocol with the Convention on Long-range Trans-boundary Air Pollution from 1979, on Long-term Financing of the Cooperative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) ("Official Journal of SFRY" - International Treaties, No. 2/87)
28. Law Ratifying the Montreal Protocol on Substances that Deplete the Ozone Layer ("Official Gazette of the SFRY - International Agreements", No. 16/90, "Official Gazette of S&M – International Agreements, No. 24/2004 – other law)
29. Law on Ratification of Amendments to the Convention on the Physical Protection of Nuclear Material ("Official Gazette of RS - International Agreements", No. 04/2016)
30. Regulation on Ratification of the Convention for the Protection against the Dangers of Benzene Poisoning ("Official Gazette of the SFRY - International Agreements", No. 16/76)
31. Law on Ratification of the Convention on the Prevention and Control of Occupational Risks Caused by Carcinogenic Substances and Agents ("Official Gazette of the SFRY - International Agreements", No. 3/77)
32. Law on prohibition of experiments with nuclear weapons into the atmosphere, cosmos and under water ("Official Journal of SFRY" - International Treaties, No. 11/63)
33. Law Ratifying the Convention for prohibition of development, production and stockpiling of bacteriological (biological and toxic) weapons and their destruction ("Official Journal of SFRY" - International Treaties, No. 43/74)
34. Law Ratifying the Convention for protection of workers from professional risks in working environment caused by air pollution, noise and vibration ("Official Journal of SFRY" - International Treaties, No. 14/82)
35. Law Ratifying the Convention for occupational health, medical protection and working environment ("Official Journal of SFRY" - International Treaties, No. 7/87)
36. Law Ratifying the Convention International Labor Organization No. 162 on Safety in the Use of Asbestos "Official Journal SFRY" - International Treaties, No. 4/89)
37. Law Ratifying the European Convention for the Protection of the Archaeological Heritage (revised) ("Official Gazette od RS" - International Agreements, No. 42/2009)
38. Law Ratifying the Agreement between the Federal Government of the Federal Republic of Yugoslavia and the Government of the Russian Federation on cooperation in the field of environment protection and improvement "Official Gazette SRJ" - International Treaties, No. 6/96)

39. Law on confirming Protocols of registers on discharge and transport of pollutants with Convention on availability of information, public participation in decision making and right to legal protection regarding environmental issues (''Official Gazette of RS – International Contracts'', No. 8/2011)
40. Law on confirming Convention on availability of information, public participation in decision making and right to legal protection regarding environmental issues (''Official Gazette of RS – International Contracts'', No. 38/2009)
41. Law on confirming Protocol of heavy metals with Convention on Long-range Transboundary Air Pollution from 1979 (''Official Gazette of RS – International Contracts'', No. 22/2012)
42. Law on confirming Protocol of long-term organic pollutant substances with Convention on Long-range Transboundary Air Pollution from 1979 (''Official Gazette of RS – International Contracts'', No. 21/2012)
43. Law on confirming Convention on Transboundary effects of industrial accidents (''Official Gazette of RS – International Contracts'', N. 42/2009)

APPENDIX 3. ABBREVIATIONS

BOD	Biological Oxygen Demand
ELV	Emission Limit Value
MPC	Maximum Permissible Concentration
MP	Measuring Point
FGD	Flue Gas Desulphurization
OCM	Open Cast Mine
MB	Mining Basin
PSHPP	Pumped Storage Hydro Power Plant
TPP	Thermal Power Plant
TPPs- OCMs	Thermal Power Plants – Open Cast Mines
CHP	Thermal Power Plant – Heating Plant
TS	Transformer Substation
TPM	Total Particulate Matters
HPP	Hydro Power Plant
COD	Chemical Oxygen Demand
BC	Business Company
OU	Organization Unit
CP	Cadastral Plot
MME	Ministry of Mining and Energy
PS	Powder Substances
RV	Referential Value
IPH	Institute for Public Health
PPE	Personal Protective Equipment
MCTI	Ministry of Construction, Transport and Infrastructure
SKO	Srednje Kostolačko Ostrvo
SMP	Supplement to the Mining Project
LV	Limit Value
ELV	Emission Limit Value