

MB KOLUBARA d.o.o.

ENVIRONMENTAL PROTECTION AND
ENHANCEMENT DEPARTMENT

Report on the state of the Environment for the period January-December, 2012



Lazarevac, January, 2013



Contents	Page
1. ENVIRONMENTAL PROTECTION AND ENHANVMENT OF THE BRANCH "PROCESSING PLANT"	3
1.1. Air quality	3
1.2. Measurements of air pollution emission	3
1.3. Measurements of water pollution emission	4
1.4. Noise level measurements	6
1.5. Soil quality testing	7
1.6. Regular activities	8
1.7. Ongoing activities	9
1.8. Contract overview	10
2. ENVIRONMENTAL PROTECTION AND ENHANCEMENT OF THE BRANCH "OPM"	12
2.1 Overview of activities of the impact assessment studies development	12
2.2. Overview of procedures of ongoing service and goods public procurement	13
2.3. Inspection check of the Ministry of Environment, Spatial Planning and Mining	13
2.4. Cooperation with OCS in the surroundings of OPM "Tamnava West Field	14
2.5. Renewable energy sources	15
2.5.1. Realization of international pilot project „In2wood“	16
2.5.2. TEA project presentation	17
2.6. Procurement of waste water flow –meters in OPM "Tamnava West Field"	17
2.7. Realization of the project "Formation of the centre for environment management."	18
2.8. Project "Environmental improvement in MB Kolubara"	18
2.9. Project of the Ministry of education and science	19
2.10. Development of the Project Monitoring Plan of the Environment in MB Kolubara	19
2.11. Development of the Cadastre of flora and fauna for OM " Field C"	19
2.12. Proposals for solving problems observed in previous period	20
2.13. Overview of Contracts and spent funds	21
3. PROTECTION AND ENHANCEMENT OF THE ENVIRONMENT- DEPARTMENT OF WASTE AND HAZARDOUS SUBSTANCES	23
3.1. Waste and hazardous substances management in MB'Kolubara"	23
3.2. Overview of current contracts of the waste disposal	23
3.3. Inspection check	24
3.4. Regular activities of the department	25
4. . PROTECTION AND ENHANCEMENT OF THE ENVIRONMENT - DEPARTMENT OF BIOLOGICAL RECLAMATION	27
4.1 Agricultural production in reclaimed areas	28
4.2. Forest reclamation and their maintenance and horticultural maintenance	32
4.3. Overview and Status of the Contracts for biological reclamation Service	36
4.4. Other activities	36
5. CONCLUSION	38

1. ENVIRONMENTAL PROTECTION AND ENHANCEMENT OF THE BRANCH "PROCESSING PLANT"

1.1 AIR QUALITY

In accordance with the Contract No 2-01-1730/6483 of 19.09.2011 for "Monitoring the air quality, noise level and assessment of the impact of industrial facilities of the Branch "Processing Plant" on the environment" the Mining Institute of Zemun controls the air quality in the impact zone of industrial facilities, Branch "Processing Plant". The measurements are performed at four measuring points as follows: Water supply system Vreoci, Wastewaters, cableway shunting station and water supply system Medoševac.

The following parameters are continuously controlled (24-hour samples): SO₂, NO₂, soot and suspended substances. Monitoring of the ambient air quality has been performed since 1.10.2011. The results from the Report on testing and assessment of the ambient air quality in the impact zone of industrial facilities of MB "Kolubara", Branch "Processing Plant" – Vreoci, are shown in the Table 1.

Table 1. Ambient air quality in the impact zone of the Branch "Processing Plant" for the period January 1st, 2012 - 31st August, 2012

Mesuring point		Shunting station, Cableway	Overstepping LV [%]	Water pipe line Vreoci	Overstepping LV [%]	Water processing Medoševac	Overstepping LV [%]	Industrial circle of waste water facility	Overstepping LV [%]
Parameter [µg/m ³]									
SO ₂	Minimum	<10	0	<10	0	<10	0	<10	0
	Maximum	53.8		51.4		19.7			
	Average value.	<10		<10		<10			
	Limit value.	125		125		125			
NO ₂	Minimum	3.7	0	1.6	0	3.8	0	5.0	0
	Maximum	29.3		31.5		24.9			
	Average value.	9.8		11.9		8.8			
	Limit value	85		85		85			
Soot	Minimum	0.0	08	0.0	0.4	0.0	0.8	0.0	1.2
	Maximum	61.2		50.3		77.4			
	Average value	2.5		3.7		7.2			
	Limit value	50		50		50			
Total suspended particles	Minimum	8.3	45.6	13.6	45.6	14.1	26.2	14.1	52.5
	Maximum	240.8		196.1		94.9			
	Average value	66.5		55.6		40.7			
	Limit value	50		50		50			

1.2. MEASUREMENT OF AIR POLLUTANTS EMISSION

In accordance with the request of the Inspector for Environmental Protection from the Ministry of Environmental Protection, Mining and Spatial Planning of RS, the Mining Institute Zemun (Contract No.2-01-2-1730/6483 of September 19th, 2011) carried out measurements of air pollutant emissions from the industrial facilities of Drying Plant on April 5th, 2012. The measurements of the emission were done at the fireplaces 3 and 4 (three testing series) and the measured values were compared with the emission limit values prescribed by the Regulation on Emission Limit Values for Pollutants Emission in the Air ("Official Gazette of the RS", No. 71/10).

- Based on the analysis of the results from the "Report on Air Emission Measuring", it can be concluded that: pollutants emissions from the fireplaces 3 and 4 **exceed** the limit values for hydrogen sulfide;
- Pollutants emission from the fireplaces 3 and 4 **do not exceed** prescribed limit values for ethyl mercaptan, metil mercaptan, phenol and total powdery substances; this emission complies with the requirements prescribed by Regulation for Stationary Sources.



In 2011, the Mining Institute in accordance with the Contract No. 2-01-2-1730 of September 13, 2011 conducted the first measurement in the Steam Heating Plant. The second measurement is to be performed in 2012, following the regular annual overhauling and they are shown in the table 2.

Table 2. Pollutants emission from OU Heating plant

Emission, mass concentration of pollutants				
Organizational unit	Heating Plant Vreoci		ELV	
	1	2	ELV ¹	ELV ²
	(mg/Nm ³)			
SO ₂	1207,9±106,2	3701,4±163,7	1450	100 - 250
NO _x (NO ₂)	262,8±20,3	303,7±20,7	800	100 - 200
CO	46,2±6,6	111,9±6,9	250	-
Powder matters	48,1±5,2	321,4±13,9	100	5 - 25
Hydrogen chloride, HCl	12,2±1,2	16,9±1,8	200	
Hydrogen fluoride HF	5,5±0,46	3,2±0,26	30	

¹Regulation on emission limit values, method and terms of measuring and keeping records of data (Off. Gazette No. 71/10)

²Directive 2010/75/EU – limitation of hazardous matters emission into the air from large fireboxes

Parameter	Comment
Total powder matters	All measured values at the boiler 2 exceed ELV for the given plant, while at the boiler 1 all measured values are below ELV
Carbon monoxide, CO	All measured values at the boiler 1 and 2 are below ELV for the given plant
Nitrogen oxides, NO _x	All measured values at the boiler 1 and 2 are below ELV for the given plant
Sulphur dioxide, SO ₂	All measured values at the boiler 2 exceed ELV for the given plant, while at the boiler 1 all measured values are below ELV
Hydrogen chloride, HCl	All measured values at the boiler 1 and 2 are below ELV for the given plant
Hydrogen fluoride, HF	All measured values at the boiler 1 exceed ELV for the given plant, while at the boiler 2 values from the first measurement exceed ELV

In OU Heating plant, records on operation and standstills of the electro-filters are regularly maintained. According to the records, boilers have worked in total 11002 hours in 2012. Electro-filter operation downtimes, due to boiler burning fuel oil, made 2,78% and downtimes of the electro-filter operation when burning coal made 1,34% of all downtimes.

1.3 MEASUREMENTS OF WATER POLLUTANTS EMISSION

From the wastewater treatment plant, purified water is discharged through water measuring station into about 7 km long channel leading to the Kolubara River. In 2011, the recipient was fed with 487,297 m³ of treated water (the amount of discharged water is being measured according to the Legal regulation of RS).

In accordance with the Law on Waters, the wastewater and treated water quality control, as well as the water of the Kolubara River, and groundwater quality control is regularly performed four times a year by the authorized and accredited laboratory. The authorized and accredited laboratory of Belgrade Institute of Public Health (Contract No 2-01-



5-1181 of 21st June,2012) performs "Testing the quality of waste, surface and ground waters and soil in the impact zone of the Branch "Processing plant" Vreoci.

In the accredited laboratory for the water testing in the Branch " Processing Plant" , the wastewater quality tests are performed on daily basis , and the surface water quality tests once a week.

In the first quarter, by laboratory result analysis, at the input and output of the Wastewater Treatment Plant, it has been determined that the concentrations of the plant output measured parameters exceed the ELV, but they are considerably reduced comparing with the input concentrations. WWTP Efficiency i.e. concentration reduction level of the measured parameters is:

- suspended solids concentration 89.4 %
- organic matter concentration i.e. chemical consumption oxygen 84,13%
- Phenol concentration 79,86% .

Table 3. Results of physical and chemical analyses of wastewater and surface water (laboratory of the Branch Processing Plant)

Parameters	Measuring Unit	Input in WWTP	Output of WWTP	Upstream Kolubara	Downstream Kolubara	MAC
pH		3.9	7.85	8	8.5	6.5- 9
Suspended matters	mg/l	4910,49	494,27	49	46.5	80
COC	mgO ₂ /l	6508,25	1033,21	34.7	20.3	100
BOC ₅	mgO ₂ /l	2612	559.8	3.6	37.7	
Ammonia	mgNH ₄ ⁺ /l	0.74	0.055	0.58	0.6	
Chlorides	mg/l	-	-	-	-	
Sulphates	mg/l	-	-	-	-	
Iron	mg/l	42.45	1.705	0.452	0.596	
Phenolic substances	mg/l	5,331	1,072	0.0065	0.007	
Arsenic	mg/l	1.83	0.665	<0.02	0.033	

The results of testing the quality of waste, purified and surface waters – recipient – The Kolubara river. Accredited laboratories of the City Institute for public health of Belgrade (four series of testing) are shown in the table 4.

Table 4. Results of physical and chemical analyses of wastewater and surface water

Parameters	Measuring Unit	Input in WWTP	Output of WWTP	Upstream Kolubara	Downstream Kolubara	Purification rate. WWTP (%)
Appearance		Turbid	Turbid	Slightly turbid	Slightly turbid	
Visible waste substance		Present	Present		no	
Turbidness (descriptive)		Turbid	Turbid	Slightly turbid	Slightly turbid	
Water color- descriptive		Brown-black	Brown	Fairly yellow	Fairly yellow	
Soluble oxygen	mg/l	1.0 –6.8	3.4 - 4.4	4,0 - 8.2	3.7 - 8.2	
pH		7,50-8.10	7,7-8,0	7.8- 8,2	7.7 - 9.3	
Suspended matters	mg/l	2640-4539	192 -449	46 – 52	44 - 49	89.4%
Sediment matters	mg/l	-	0.3 - 06	< 0.1-0.1	0.1 - 0.5	
COC	mgO ₂ /l	2046 -4960	201.6-1260	4.4-65	8.8 -31.8	84.13%
BOC ₅	mgO ₂ /l	1374-3850	39.6 –1080	1.7-5.5	2 - 73.4	78.57%
Ammonium	mgNH ₃ -N/l	<0.05-1.43	<0,05–0.06	0,3 -0,87	0.2 - 0.9	
Iron	mg/l	14.9 - 70	1.18 -2.23	0.345-0.56	0.493-0.7	
Manganese	mg/l	-	0.12	0.1	0.175	



Phenolic substances	mg/l	0.03 -5.7	0.004-0,053	0.004-0.009	<0.001-0.013	79.86%
Arsenic	mg/l	1.83	0.665	< 0,02	0.033	63.67%

Ground waters control is regularly conducted by authorized and accredited laboratory of City Institute for public health of Belgrade, four times a year. Control is performed in 8 piezometers (7 of them surrounding the plant and 1 near the Kolubara river).

Estimate of Compliance with legal regulations is done by comparing measured values of concentration of hazardous and harmful matters of ground waters in piezometers with remediation values of hazardous and harmful matters and values that could indicate significant contamination of ground waters.

Table 5. Analysis of result of physical and chemical properties of ground waters quality

Concentration	Allowed values		GROUND WATERS QUALITY IN 2012
	MAC	RV	Branch Processing plant
Sulphates (mg/l)	250		Increased sulphates concentrations, <ul style="list-style-type: none"> ▪ only the piezometer PB 3/06 291.9 mg/l had the value above MAC during August, and ▪ the piezometer PB 7/06 during all 4 measurements as follows: 343.8mg/l; 310.3mg/l; 369.1mg/l, и 318.6mg/l.
Arsenic (µg/l)	10	60	All measured values are below MAC and remediation value
Phenols (µg/l)			All measured values are below remediation value, and under 1µg/l
Manganese (µg/l)	50		All measured values are below MAC and remediation value

MAC – of drinking water; RV – remediation values of concentrations of hazardous and harmful matter and values that could indicate significant contamination of ground waters.

1.4. NOISE LEVEL MEASUREMENT

In accordance with the Contract No. 2-01-2-1730/6483 of September 19th, 2011 for “Quality Monitoring of Air Quality, Noise Level and assessment of the impact of industrial operation units of the Branch “Processing Plant” Vreoci on the environment“ the Mining Institute of Zemun conducted the first measurement of noise level in the environment on March 6th,2012 (Report No. Б-02/12/ В-02/12).

Measured values were analyzed in accordance with the Regulation on noise indicators, limit values and methods for assessment of noise indicators in the environment (“Official Gazette of the RS”, No. 75/10). Since the area occupied by the Branch “Processing Plant“ facilities is not acoustically zoned, limit values of noise indicators in the open space for the zone 5 are tentatively taken .

According to the accepted limit values of the noise indicators (zone 5) in the open space for day-evening and night, we can conclude that measured noise level in the environment for:

- daily operation mode **does not exceed** limit noise level;
- night operation mode **exceeds** limit noise level.

Table 6. Measured noise level in the impact zone of the Branch “Processing Plant“

Ord.No.	Ref. Interv.measurements (h)	LAeq,30min. dB(A)		Applic.level dB(A)	LRAeq,30min.	Limit value dB(A)
		Measuring point 1	Measuring point 2	Measuring point 1	Measuring point 2	
1.	12 h (06 h – 18 h)	58.7	52.9	65	58	
2.		59.9	55.6			
3.		59.5	51.8			
4.		59.7	52.6			



5.		59.1	51.8			65
6.		61.9	51.7			
7.	4 h (18 h - 22 h)	60.2	50.2	61	51	
8.		60.8	50.9			
9.			51.8			
10.	8 h (22 h - 06 h)	57.9	52.3	62	57	55
11.		52.3	50.8			
12.		60.5				

The second measurement was performed on 23rd of August, 2012 (Report, No. 5(B)-06/12).

Table 7. Measured noise level in the impact zone of the Branch " Processing Plant"

Ord.No.	Ref.interv. measurements (h)	LAeq,30min. dB(A)		applic. level LRAeq,30min. dB(A)		Limit value dB(A)
		Measuring point 1	Measuring point 2	Measuring point 1	Measuring point 2	
1.	12 h (06 h - 18 h)	55.3	60.7	56	62	65
2.		54.7	55.9			
3.		61.3	56.9			
4.		52.9	54.0			
5.		56.4				
6.						
7.	4 h (18 h - 22 h)	54.9	48.3	63	57	65
8.		61.6	55.7			
9.						
10.	8 h (22 h - 06 h)	62.3	57.2	62	62	55
11.		61.1	57.4			
12.						

In Accordance with the Regulation on Noise Indicators, Limit Values, Methods for Estimating Noise Indicators, Nuisances and Adverse Effects of Noise in the Environment ("Official Gazette of RS", No. 75/10), and according to limit values of noise indicators in the open space for day- evening and night we can conclude the following:

- Noise level in the environment from the of the Branch " Processing Plant" in Vreoci, for daily operation mode at measuring points MP1 and MP2 **does not exceed** limit noise level in the environment
- Noise level in the environment from the of the Branch " Processing Plant" in Vreoci, for night operation mode at measuring points MP1 and MP2 **exceeds** limit noise level in the environment

1.5. SOIL QUALITY TESTING

Physical and chemical tests of soil contamination at the site Branch "Processing plant" were conducted in accordance with the Contract No. 2951/6 of 25.06.2012. Tests of soil contamination were conducted at four locations including: new wastewater treatment plant (PPOV), the area around the ash and slag dumpsite – the existing and new settling basin and the area within the range of Heating Plant – fuel oil station. From each borehole a sample was analysed, taken from the surface and a depth of 1m. A total of 24 samples were analysed.

The results of chemical soil contamination testing of samples were analyzed in accordance with the Regulation on the Program of systematic monitoring of soil quality, indicators to assess the risk of soil degradation and methodology for the development of remediation programs ("Official Gazette RS" No. 88/10). Based on the obtained results of soil analysis the following has been established:

- Cadmium content is in the range of <0.2 to 0.7 mg / kg, which is below the limit values (0.8 mg / kg) and remediation values (12 mg/kg)
- The lead content is in the range of 3.8 to 23.1 mg / kg, which is below the limit values (85 mg / kg) and remediation values (530 mg / kg)



- Mercury content was <math><0.2\text{ mg / kg}</math>, which is below the limit value (0.3 mg / kg) and remediation values (10 mg / kg),
- Arsenic content is in the range of 5.0 to 75.7 mg / kg. Three samples had contents above remediation values (55 mg / kg) and three samples had contents above the limit values (29 mg / kg), and below the remediation values.
- Chromium content in the range of 14.7 to 75.4 mg / kg, which is below the limit value (100 mg / kg) and remediation values (380 mg / kg)
- nickel content is in the range of 25.2 to 95.2 mg / kg, which is below the remediation values (210 mg / kg), 17 samples had content above limit values (35 mg / kg),
- The copper content is in the range of 10.9 to 38.6 mg / kg, which is below the remediation values (190 mg / kg), two samples had contents above the limit values (36 mg / kg)
- The zinc content is in the range of 15.3 to 59.5 mg / kg, which is below the limit value (140 mg / kg) and remediation values (720 mg / kg)
- Phenols content is <math><0.02\text{ mg / kg}</math>, which is below the limit values (0.05 mg / kg) and the value indicating contamination (40 mg / kg)
- TOC content is in the range of 3.00 to 150 mg / g.
- PH value is in the range of 3.51 to 8.48.
- Total hydrocarbons range from <math><5</math> to 615.8 mg / kg.

According to the values of tested parameters in soil samples, it can be concluded that the most polluted site within the Coal Enrichment plant on the area planned for the construction of the new facility for treatment of wastewater from Coal Enrichment plant. At this site, three samples had arsenic content above remediation values (55 mg / kg), and the pH ranged from 3.51 to 5.7, and at other locations, in the soil samples did not have the values that require undertaking remediation measures in accordance with the Regulation.

1.6 REGULAR ACTIVITIES

1. Making the emission quantities report from the Steam heating plant in accordance with the Regulation on pollution types, criteria for calculating of compensation for environmental pollution, bonds, the compensation amount and the compensation payment and calculation mode, as well as data submission to the Ministry of Mining ,Environment and Spatial Planning, and Fund for Environmental and Spatial Protection;
2. Compiling and Submitting of the data for the "National Registry of Pollutants Sources" for 2011 to the Agency for Environmental Protection of the Ministry of Mining ,Environment and Spatial Planning
3. Making the Report for the Republic Institute for statistics. Filling out and delivery of the forms for the year 2011 :
Annual Report on water usage and pollution protection (VOD-1)
Annual Report on hazardous chemicals consumption (HEM-1)
Annual Report on waste (OT-IND).
4. Cooperation with the chosen consultants, with the company WBC from Belgrade and manufacturers „ERICO“d.o.o. Velenje, Slovenia for the preparation of the request and background documentation for issuing IPPC license (Contract No. 2-01-2-2659 of November 21, 2011). In the period from 28th to 29th February,2012, the first workshop was held, and in the period from 15th to 16th May, the second workshop with the members of the Technical Team of the Branch "Processing Plant" was held. Preparing documentation and plans necessary for preparation of the requests for getting integrated license for the Unit Heating Plant Vreoci and realization of the adopted plan.
5. Developed "Plan of measures for environmental protection upon shut down and close of the plant" for the Heating plant and the "PLAN FOR THE WASTE MANAGEMENT" in MB "Kolubara" d.o.o. Branch " Processing Plant" ,OU Heating Plant-Vreoci (2012-2015) by the Branch "Projekt" - the documentation that is delivered together with the request for IPPC license;
6. Activities regarding updating of the documentation of the standard ISO 14001: 2004-cooperation with the IMS Dept and persons in charge for EMS on the Branch "Processing Plants" level;
7. Defining and development of the Action plans for the realization of environmental management goals for the Branch "Processing Plant" for 2012 ;
8. Audit of the procedure PE.4.4.7 "Hazardous matters management". Internal Audit of the standard ISO 14001:2004 in the Branch "Processing Plant". On May 28, 2012 external audit of the standard ISO 14001 was performed by the selected auditor/appraiser "Bureau Veritas" ;



9. Participation in the development of Tender Documentation for the development of the Conceptual Design „ Reconstruction of the electro filter facility for the Heating plant- Vreoci with the system for “de-ashing” (There was a public procurement announced twice, but there were no bids received);
10. Participation in the development of the Tender Documentation for the development of the “Conceptual Design with the feasibility study and EIA study of the adaptation and upgrading of Heating Plant Vreoci chemical water treatment and waste water treatment”. Selected qualified developer;
11. The Terms of reference completed and tender No Y- 1086 /12MB-2BH/U-1086/12MV-2BN opened for the selection of authorized and accredited laboratory for “Analyzing of the quality of waste, surface and underground water, and soil in the impact zone of the Branch “Processing Plant”- Vreoci (September 2012);
12. Participation in realization of the pilot project for “Establishment of the environmental management centre” organized by the Agency for environmental protection of RS. In the period from 22-24 February 2012, training of the representatives of the Department for environmental protection for using software “TEAMS” for the purpose of making records and reporting in the field of the environment;
13. At the Technical Council of EPS, on March 28, 2012, the term of reference for the development of “Feasibility Study with the Conceptual Design for the construction of the facility for waste water treatment Kolubara- Processing Plant (Wet separation, drying plant and sanitary waters from the industrial zone of the Branch Processing Plant)” was adopted;
14. Preparation of the documentation for the purpose of creating flyers, book and film on the Department for environmental protection and improvement of MB “Kolubara”;
15. Development and submission of the Cadastre of the water facilities for the Branch “Processing Plant” to the Company “Beograd vode/ Belgrade waters” i.e:
 - General data
 - Form O-8 Facility for the preparation of drinking water
 - Form O-13 Facility for the waste water treatment
16. Three workshops at the Technology faculty of Belgrade were held, within the Project eco-friendly production in organization of the Centers for eco-friendly production of Belgrade. Project organized by EPS;
17. Consents gained to the EIA Studies:
 - EIA Study of the existing status project for constructed ash and slag deposit in Medoševac, OPM “Field D”;
 - EIA Study of the deposit construction project in the internal open pit mine dump “Field D” for ash and slag disposal from the settling basin in Medoševac“;
18. In accordance with the Contract No. 2-01-2-1730/6483 of 19.09.2011 for "Monitoring air quality, noise levels and Environmental impacts from industrial plants of the branch "Processing plant", the authorized and accredited laboratory of the Mining Institute, Belgrade conducted measurements of emissions at the Drying and Heating plant, measured the noise level twice, and have monitored air quality at 4 measuring points for a year.
19. Participation in data delivery and making suggestions in the preparation of "Accident Prevention Policy" for OU Heating Plant with selected developer, "Dekonta" Belgrade, and it was handed over to the relevant Ministry. The project was organized and conducted by the EPS.
20. Participation in the realization of the Project "Implementation of the concept of cleaner production in the IPPC plant MB "Kolubara", OPD Processing Plant, Operation unit Heating Plant, with the chosen developer, TMF and Cleaner Production Centre of Belgrade. The final report has been prepared. The project was organized and conducted by the EPS.

1.7 ONGOING ACTIVITIES

- Participating in PP for the development of the conceptual design of "Reconstruction of electro-filter plant with deashing system ". PP launched by Investment Dept. Of the Branch "Processing plant";
- Preparation of requirements and documentation and plans required to file an application for obtaining integrated license for the operation unit Heating Plant Vreoci.
- Submitting data and cooperation with the Head office of EPS and TMF on the project "Development of processes for wastewater treatment of energy plants by implementing cleaner production." The project was organized and conducted by the EPS.



- Implementation of the project "Choosing the best available techniques (VAT) expressed through BREF in thermal power plants and heating plants - IPPC installations" with selected developer, the Faculty of Mechanical Engineering. The project was organized and conducted by the EPS.
- Delivering the background documents for the development of the Project "Environmental Monitoring Plan of MB Kolubara" with selected developer, TEKON Belgrade.
- Authorized and Accredited Laboratory of City Institute for Public Health of Belgrade (Contract No. 2-01-5-1181 of 21.06.2012) performs "The testing of quality of wastewater, surface water and groundwater quality and soil quality in the impact zone of the Branch "Processing plant" Vreoci

Table 8. Overview of licenses and consents

Overview and status of licenses the Branch "Processing Plant"			
	Permits, licenses and other required approvals, obtained in 2012. Project name and status	No of the Decision	Note
Facility "Enrichment"	Approval to MB "Kolubara" d.o.o. Lazarevac and the Branch-Processing Plant for the usage of the system for coal re-drying and the system for wet dedusting within the facilities for production, storing and grading of coal in the Operation Unit of "Kolubara Processing Plant"	Decision No. 310-02-674/10 06.04.2012	Decision final
Facility "Enrichment"	Consent to the holder of the project Branch Prerada (Processing plant) – Vreoci on the EIA Study of the project for construction of the dump in the internal dump of the OPM "Field D" for disposal of ash and slag from the settling basin in Medoševac, on the area of the town municipality of Lazarevac, the city of Belgrade.	Decision No. 353-02-1601/2011-02 26.04.2012	Deadline 2 years from the day of receiving the Decision
Facility "Enrichment"	Consent to the holder of the project Branch Prerada – Vreoci on the EIA Study of the project of Exploitation of settled material from the filter settling basin in Vreoci, on cadaster lot No. 1251/2, 1251/3, 1255/2, 1255/3, 1259/1, 1259/2, 1262, 1261/4, 1261/1, 1258/1, 1258/3, 1255/1, 1254/2, 1262/2, 1262/3, 1261/3, 1258/4 и 1261/5, Cadastre Municipality of Vreoci, in the territory of town municipality of Lazarevac, city of Belgrade.	Decision No. 353-02-404/2012-02 26.04.2012	Deadline 2 years from the day of receiving the Decision

Table 9. Overview of inspection checks and decisions

Inspection checks- MINISTRY FOR ENVIRONMENT, MINING AND SPATIAL PLANNING			
Record No. and Date	Subject of the Inspection check	Note	
2.03.2012.	Protection from chemical accident	Obligation of the SEVESO facility	
353-03-02343/2009-04 of 09.05. 2012.	Waste management – inspection of the decision execution		
353-03-937/2012-04 of 09.05. 2012.	Interim review – electro filter control review		
23.05.2012.	Collection of the (documentation) data on the amount of hazardous waste on site		
13.06.2012.	Extraordinary inspection– upon the request of the inhabitants of Medoševac (release of water from the ash and slag deposit)		
Inspection checks– Administration			
21.06.2012.	Regular inspection and inspection upon request		
Inspection Decisions – MINISTRY OF ENVIRONMENT, MINING AND SPATIAL PLANNING			
Decision No. and date	Measure - Request	Deadline	Status
353-03-00403/2012-04 of 14.03.2012.	Submit the Report on safety and Accident Protection Plan	2.07.2012.	Development of the mentioned documents performed by the Directorate of EPS.
353/03/02343/2009/04 of 23.04.2012.	Provisional solution – for the temporary disposal of ashes and slag	From 23.04. to 1.07.2012	Cleaning of the deposit of ash and slag is in progress



	from Heating Plant to the OPM "Field D" is approved		
--	---	--	--

1.6. CONTRACTS OVERVIEW

Table 10. Current contracts overview

No. of contract	Subject of the contract	Developer	Contract Value	Paid	Note
2-01-2-2659 of 21.11.2011	Selection of consultants for making of requests and documentation for obtaining an IPPC permission for Heating Plant	WBC Belgrade ERICO Velenje	2.999.000,00	884.705,00	
2-01-2-1730/6483 of 19.09.2011	„Quality Monitoring of Air Quality, Noise Level and assessment of the impact of industrial operation units of the Branch "Processing Plant" Vreoci	Mining Institute Belgrade	7.292.754,00		
2-01-5-1181 of 21.06.2012	Testing the quality of waste, surface and ground waters and soil in the impact zone of the Branch "Processing plant" Vreoci.	Belgrade Institute of Public Health	1.475.060,00		

Employed in the Service for Environmental Protection of the Branch "Processing Plant":

Vesna Krstić, graduate chemical engineer – Head of the Service
 Milisav Tomić, MSc, grad.geog. engineer, engineer for water monitoring
 Anđelka Stanarević, graduate biologist, engineer for air, gases and noise
 Slavica Janković, technician



2. PROTECTION AND IMPROVEMENT OF THE ENVIRONMENT – BRANCH »OPEN PIT MINES«

2.1. OVERVIEW OF ACTIVITIES OF THE IMPACT ASSESSMENT STUDIES DEVELOPMENT

Within the Service, the activities of realization of the following Environmental Impact Assessment Studies relating to initiation of public procurement and making tender documentation for measuring the initial state of the environment parameters, participation in public presentations, announcements in the media, and cooperation with the relevant ministry and so on, have been conducted in the previous period:

- Environmental Impact Assessment Study of opening and development of the open pit mine "Field G". The Department for impact assessment in the competent Ministry organized a public presentation and discussion on July 11th, 2012. On 04.12.2012, the final version of the Study was submitted to the competent Ministry that issued the Decision on approval of this document on 11.12.2012. (which was published in the daily newspaper on 15.12.12). After payment of the expenses for the work of the Technical Commission and RAT, this decision, and the study itself will be taken over by the authorized representative of MB Kolubara.
- Environmental Impact Assessment Study of the project of stone exploitation in the deposit "Kruševica". The Activities on obtaining the Decision on specifying the scope and contents have been carried out, submitted by the competent ministry in late 2011. The results of soil quality testing are provided for the needs of "Initial" state, and the provision of other results will be made through open procedure of public procurements.
- Environmental Impact Assessment Study of the Conceptual Design of the Peštan river regulation and the flood waters flow-off control – II phase, including the Feasibility Study. The Study Developer is the Institute Jaroslav Černi of Belgrade. The study has been made and submitted to the Investment department. The location permit is being waited on, in order to proceed with the procedure.
- Environmental Impact Assessment Study of the Conceptual Design of relocation of the state road of II order P-201 Baroševac – Zeoke – Medoševac (I phase L= 6km in the area of open pit mine exploitation). The Study development is in progress. All necessary results of the testing of environmental parameters (initial state) have been forwarded to the Study Developer, Traffic Institute CIP, on June 22nd, 2012, as supporting documents for the commencement of this document development. On 12.11.2012, the announcement was published on MB Kolubara filing the application for making decision on the need for the development of the EIA Study, and the evidence on the being published in daily newspaper and RAT payment receipt were submitted to the competent Ministry on 15.11. 2012;
- Environmental Impact Assessment Study of the conceptual design with feasibility study of the coal exploitation in the Open pit mine Radljevo. On 27.08.2012, a public presentation of the Study was held in the premises of Municipal Council of Ub. Developer of the study was the Faculty of Mining and Geology, Belgrade, and the basis for preparing this document was not submitted by the Department of Environmental Protection of the Branch Open pit mines. This has resulted in complaints lodged by the public concerning the credibility of such studies which has no data on the measurement of noise levels in the environment, and the industrial railroad with a frequency of traffic passing through the entire project area. The Commission of the competent ministry has given assurances that the mistake will be corrected through the remarks delivered; The Commission has not yet submitted the document with remarks for updating this Study.
- Environmental Impact Assessment Study for the Erection yard of the Open pit mine Field E. On 11.09.2012, a public presentation of the study was held (developer Delta engineering Belgrade) in the premises of Town Council of Lazarevac. Representatives of the Department of Environmental protection of the Branch Open pit mines were again bypassed during the preparation of the document which should define the future obligations of MB Kolubara in the environmental field. As regards the study for OPM Radljevo, the developer has not applied adequate results of the "initial" state of environmental parameters, which in the future may cause unnecessary problems in the activities of MB Kolubara. It remains for the technical commission of the



competent ministry to adopt suggestions of those present at the public hearing and to correct the deficiencies. According to the information from the Investment department, the Study has been adopted by the Commission of the competent authority and forwarded to Investments Department in Vreoci

Note: On 17.12.2012, the director of the branch "Open Pit Mines" issued an order according to which the Investment Department and the Department for production and technical affairs of the branch "Open Pit Mines", are in charge of implementation of all activities related to the EIA study, so that from that date, the Environmental Protection and enhancement Department is no longer responsible for the collection and submission of data on the "initial state" of the environment at the subjected location. There is particularly emphasized the fact that Department of Environmental Protection was not involved in the preparation of background documents and implementation of public advertising procedures when it comes to the last two studies on the list (Radljevo and New erection yard Baroševac) and that it was only informed thereof when they were already completed.

2.2. OVERVIEW OF PROCEDURES OF ONGOING SERVICES AND GOODS PUBLIC PROCUREMENTS

- The Development of the Study of the Flora and Fauna Cadaster for the OPM "Field C". Implementation is in progress. Liabilities are defined by ESAP document of EBRD. Developer: Nature protection Institute of Serbia, Belgrade. The Project last for 12 month, from June 2012 – June 2013;
- Installation of the oil and grease separator in Auto garage in Rudovci. The Order for Services Procurement was initiated on June 18th 2012 by EP dept. Branch Open pit mines (operational unit Auxiliary machinery) has developed the General Construction project, but Technical check has not yet been done thereof. Monitoring and contracting is performed by the Investment Dept. OPM in Vreoci, and the financial funds are secured by EP dept. and the order for installation initiated;
- Testing of environmental parameters, "initial state" for the purposes of the Environmental impact assessment Study of the Additional mining project for transportation, milling, disposal, fine-grained coal dump, homogenization, and taking away and delivery of fine coal. Upon bids opening that occurred on 03.12. 2012, there was left only to carry out the selection of the best bidder and the implementation of contracted activities;
- Program for the implementation of environmental impact mitigating for OPM "Tamnava West Field" and OPM "Field C". Liabilities are defined by ESAP document of EBRD and are related to the EBRD loan conditions and implementation has been at a standstill for three months, so it is not possible to have written notice from the Commercial Department, although the Commission for choosing the best bidder has finished its job in mid-October and has chosen the Developer;
- "General Report on the health of the inhabitants of Baroševac - the first stage, risk assessment". The Decision on instituting the open procedure of public procurement was issued 31.12.2012 by the procurement order of 01.10.2012;
- Obligation under the standard ISO 14001:2004. Tender documentation development is in progress;
- The service of annual subscription for using network application of information system WOMBAT (data transfer from flowmeter to OPM "Tamnava West Field" to the data base). Order initiated on 14.12.2012;
- Technical inspection of the General Project with previous feasibility study for solving problems of separation, collection, channeling and evacuation of atmospheric, sanitary and waste waters from the industrial compound of Tamnava field. The tender documentation development is in progress.

2.3. INSPECTION CHECK BY THE MINISTRY OF ENVIRONMENT, MINING AND SPATIAL PLANNING OF THE REPUBLIC OF SERBIA

Pursuant to the Decision No. 353-03-00341/1/2011-04 of September 19th 2011, the Branch Open Pit Mine was obliged to submit the results of measuring emissions of hazardous gases from boiler rooms until December 31st 2012, that were conducted for the second time (in accordance with legal obligations). Taking into account the reasonable delay in



submission of measurements, the postponement of the deadline for the enforcement of this Decision has been requested. In early January, a Report on results of measurements of all boiler rooms in the Branch OPM has been submitted, while the Action plan i.e. the Proposal of technical and technological measures scheduled for realization by 2015 with the aim of reducing the concentration of pollutants under the prescribed limiting values from the boiler room emitters with the stated ELV overstepping was submitted on January 30th 2012. This was the last obligation set forth in the mentioned Decision, so that the Decision was fully enforced.

During 2011 and in the first half of 2012, a special attention has been paid to the improvement of the existing state of the quality of the environment in the built-up areas in which the negative impact of coal exploitation in the open pit mines has been registered, and for that reason a constant pressure was made by the local population, by filing complaints which were forwarded by EA (ecological associations) to the competent Ministry Inspection. In Medoševac, at the disputable service road, the installation of the speed bumps has been done and traffic signs were posted i.e. speed limit warning signs. Also, a good practice of constant washing and watering of service roads used by the machinery and transport vehicles of the Branch "Open Pit Mines" has been introduced.

On June 12th 2012, the Branch Open pit mines, Baroševac received a Decision ordering that drive stations 2-2 in Medoševac should take all necessary technical measures to meet legal requirements and standards for the level of pollutants by setting up the appropriate equipment and facilities to reduce polluting emissions. At OPM "Field D" a 4 meter high protective embankment was immediately built surrounding the drive station, making it a physical obstacle to the flow of air-blown dust from the site to the surrounding residential buildings. According to the director of Branch Open pit mines, there will not be any other measures taken in terms of setting up the equipment for prevention of polluting emissions. Apart from that, at the end of 2011, the Department of Environmental Protection of the Branch Open pit mines prepared the Terms of reference and started the order for the Project of dedusting at the drive station 2-2, but it has been halted by the Assistant Director of Corporate affairs of MB Kolubara stating that the vulnerable households in the zone would soon be compensated and relocated.

2.4. COOPERATION WITH OCS IN THE SURROUNDINGS OF OPEN PIT MINES

In the previous period, the Service for Environmental Protection of the branch "Open Pit Mines" had fewer contacts with organizations of the civil associations due to increased number of activities on other assignments. However, the activities in that area were not neglected and proper communication was kept as in the previous period. All the activities carried out over the calendar year can be divided into the cooperation with OCD formed locally and the cooperation with OCD acting at the republic level. As far as first group is concerned, fair contacts were maintained, as previously, and the existing state has been improved in terms of creating conditions for cooperation with OCD working with children with special needs.

- **Association for environmental protection and private property from Baroševac** – On April 30th 2012, a meeting was held in Baroševac with Ecological Association for environmental protection and private property on their initiative. The representatives of this association have kept their interest in cooperation with the Environmental Department over the whole year and they were notified accordingly that SEP team was formed in late October 2012;
- **EA "Medoševac" from Medoševac** – contacts and activities in terms of this EA were clarified in the chapters dealing with contacts with inspection of the Ministry of environment, mining and spatial planning.
- **Citizen Association (CA) "Stari akcijaši"(old shareholders)** – Their members have launched the initiative for the improvement of the cooperation concerning the forestation in the sites of MB Kolubara envisaged therefor, but no answer has been received from MB Kolubara.
- **Citizen Association (CA) "Naše ognjište" (Our hearthstone)** – This NGO has commenced the realization of the project on possibilities of development of renewable energy sources in our surroundings with the aim of providing the technical presentation to the primary students from the territory of Lazarevac, adapted to their age, about the potential existing in the area, as well as providing them with the new possibilities for their professional orientation. The project was realized in cooperation with CA "Naše ognjište" and the Council for environmental protection of TM of Lazarevac, and thanks to technical support of the engineers from the Department for environmental protection. This project involves over 350 students. The presentations were held in all primary schools from the territory of TM of Lazarevac. All these activities are realized by unemployed



engineers of environmental protection who in that way were given the opportunity to work in the field of their education.

- Association of fishermen – Pursuant to the Consent of the Deputy Director of MB “Kolubara“ dd. 04.10.2012 the request of the Association of fishermen of Belgrade was fulfilled (No.2-01-6205 of 03.10.2012.) and in cooperation with the Municipal Sports Fishing Association, the City fishing contest was organized in which the children with special needs from the Daily Care center DOuR Lazarevac, also took part. At the same time, the request made by fishing association "Peštan" of Veliki Crljeni (No. 2-01-6274 of 05.10.2012.) was fulfilled. The request was addressed through the Council for Environmental protection of TM Lazarevac, which was of similar substances. In cooperation with the management of OPM "Veliki Crljeni" the access roads and the venue were developed, and the entire event that was held in the zone of Run of the river lake, on the new lake bed of the Kolubara river has had a positive media impact in the local community.

As for cooperation with OCD in the wider environment, in this field, the cooperation has been significantly improved and activities were taken that were not planned at the beginning of the year, but it came as a result of the openness and accessibility of the entire Department of Environmental Protection shown in the past, both in their work and through various forms of media promotion as well.

- **European movement in Serbia** – a session of the Working Group "Environment" was held in Lazarevac on 23.11.2012, organized by the EU movement in Serbia and with the support of the Embassy of the Kingdom of Norway, discussing and analyzing the situation and practical problems in the functioning of the energy sector, a new energy policy strategy and the involvement of all stakeholders in its development, as well as the position of civil society organizations, local governments and the business sector in the energy sector. Representatives of the Department actively participated in the work of this session and presented the previous results in their work. Cooperation with this organization has continued even after this meeting. The cooperation continued in December, because the Department of Environmental Protection sent concrete suggestions for improving the capacity of local government units, civil society organizations and businesses, with a view to implement European standards of environmental protection. In this way, the project "Know How 2 Act" received a concrete support, and with the support of the Kingdom of Norway, it is implemented by the European Movement in Serbia and Belgrade Open School, Protecta and UNECOOP. The aim of the project is to carry out comprehensive and detailed researches and analyses of the current situation in the reform process, and/or to collect alternative suggestions for public policy for the efficient and effective reforms in the areas relevant to the process of European integration of Serbia.
- **Preparation of Metaregister for Environmental Information** - in order to implement the Strategy for the implementation of the Aarhus Convention the Government adopted on 31.12.2011, by the Ministry of Energy, Development and Environmental Protection, Agency for Environmental Protection and OCD from the national level, the project of preparation of the first national Metaregister for environmental information has been completed (under the auspices of the OSCE mission in Serbia). After several consultative meetings held during the year, the final presentation of the project was held on 12.12.2012 in Belgrade. This register is a database and a portal to existing databases and documents with information pertaining to the environment, which are available on the Internet, provided that the Environmental Protection Agency site is accessed. The main objective of its creation, was to allow the public an easy and convenient access to information about the environment and to improve the availability of information in this area to the public in general. The realization of this project (also named Ekoregistar) is fully compatible with the realization of the project, Environmental Monitoring in MB Kolubara (expected to be completed in mid-2013), which shows that the Department of Environmental Protection has chosen a good action strategy which is in accordance with the latest European standards in this field.



2.5. RENEABLE ENERGY SOURCES

In the field of renewable energy when it comes to Kolubara i.e. the Department of Environmental Protection significant progress has been made, and not only in terms of interest and business contacts, but also in terms of concrete results. Within MB Kolubara concrete results that have been achieved during the year were as follows:

2.5.1. REALIZATION OF INTERNATIONAL PILOT PROJECT "IN2WOOD"

Letter of intentions (Cooperation agreement) was signed at the beginning of April 2012, among 8/eight participants who have agreed to intensify their cooperation in order to strengthen mutual relations in the forestry sector, and by doing so strengthen the cooperation among European forestry sectors. This Letter of intentions sets forth the basic requirements which both interested parties have agreed on. This Pilot project is jointly implemented by:

1. Landesbetrieb Wald und Holz NRW – Responsible person: Andreas Wiebe, director Landesbetrieb, Germany
2. Forestry Institute of Belgrade - Responsible person: Ljubinko Rakonjac, director, Serbia
3. Forestry Faculty of Belgrade - Responsible person: Milan Merdarević, dean, Serbia
4. PE Srbijašume of Belgrade - Responsible person: Igor Braunovic, director, Serbia
5. LIECO GmbH&Co KG - Responsible person: dr. Kurt Ramskogler – director, Austria
6. MB Kolubara of Lazarevac - Responsible person: Nebojsa Ceran – director, Serbia
7. RAG Montain Immobilien GmbH - Responsible person: Klaus Buseman – director, Germany
8. RWE POWER AG - Responsible person: Werner Sihorsch – director, Germany

On the occasion of the beginning of realization of the international pilot project "In2wood" and two years of the existence of the Department for Environmental Protection and Improvement of MB Kolubara, in Lazarevac, on April 20th 2012, in the Head Office of MB Kolubara, the Round table was held on the subject "Possibilities of biomass production in the lignite open pit mines".

In this meeting, it was pointed out that these projects represent an example of openness of MB Kolubara towards new challenges and new technologies with the aim of reducing negative impact on the environment, as well as an example of adaptation of the mining industry to modern trends in this area. In addition, it was emphasized that the replacing a certain amount of coal with biomass as fuel in Serbian thermal power plants should be a national project, because the emission of CO₂ would thus be reduced by 15 to 20 percent with the increase of energy efficiency.

Along with the representatives of the Institutions of Germany and Austria, involved in the project "In2wood", this meeting in Lazarevac was also attended by the representatives of the Missions Organization for European Security and Cooperation (OSCE) and the United Nations for Development (UNDP) in Serbia, and the representatives of the Ministry of environment, mining and spatial planning, infrastructure and energy, agriculture and trade, forestry and water management of Serbia, the Institute of Forestry, the Institute Vinča, Faculty of Forestry and Agriculture, the Secretariat for environment of Belgrade and many other guests.

With the previously planted about 1600 seedlings of fast-growing forest, at the experimental plot in Junkovac, on April 20th 2012., within the Project "In2wood", the formation of new energy crop plantation of 5000 container seedlings has started, which are donated by Austrian company " Lieco und Liechtenstein Energie", and the same species are planted in the area around a previous mine "Hugo" near Gelzenkirhen in Germany. At the end of the project, as a result of mutual exchange of experiences gained, it will be shown under which conditions and which fast-growing species can yield more if mass production is started in the reclaimed areas.

The detailed design of forming energy crops plantation for woody mass production Kolubara MB / Pilot project was done by the Forestry institute of Belgrade and this project includes costs of all participants in the project duration period. Overall costs of the project in Serbia are: 4,884,522.00 RSD and: Forestry institute 1.744.610,00 RSD , Forestry faculty:



84.480,00 RSD , PC Srbijasume: 167.123,00 RSD , MB Kolubara: 2.035.229,00 RSD and LIECO GmbH&Co KG, Austria: 853.080,00 RSD .

Authorized representatives of the Founder, that is Kolubara General Meeting, at its 44th session, adopted a decision approving the funds to finance pilot project "In2wood" in the amount of 2,035,229.00 RSD (about 17,000 Euros according to the current exchange rate) for the duration of the project, i.e. next three years. By the year: 2012 - 1,135,085.00 RSD 2013 - 374,472.00 RSD and 2014 - 525,672.00 RSD. These funds are intended for planting and cultivating trees, work on the cultivation and care of the plants, protecting crops from pests, spatial planning and harvesting biomass after three years, that is at the end of the Pilot Project.

The Agreement on the Implementation of this pilot project was signed by: Institute of Forestry, Faculty of Forestry; PC Srbijašume and MB Kolubara, and it governs the mutual rights and obligations in the course of the project implementation. Also, by the decision of Director of MB Kolubara the person in charge of project implementation coordination was appointed.

As the previous period was very droughty, with no rain since June 2012, there have been many problems with watering the plants, providing water tanks, and supervisors' poor response to the problems etc.

2.5.2. Presentation of the project "TEA possibilities of using woody biomass from the area of exploitation of OPM MB Kolubara for heating purposes"

The aim of the project, which public presentation was held 26.10.2012 in Lazarevac, is the identification of the energy potential of woody biomass that MBK has at disposal, and creating the conditions for its introduction into the system for the production of thermal energy for heating the structures within the company. After a six-month research and analyses, project developers (Faculty of Forestry, Belgrade) have proposed solutions of increasing energy efficiency, reducing unnecessary energy loss and the use of biomass potential for energy purposes. In addition to the management of MBK, presentation was attended by the representatives of the "Electric Power Industry of Serbia", "Serbian Chamber of Commerce, the Chamber of Commerce of Belgrade, the Serbian Academy of Sciences and other innovative scientific institutions, and during the later discussions, the full support to the new business approach of Kolubara was given.

2.6. PROCUREMENT OF WASTE WATER FLOW-METERS IN OPM "TAMNAVA WEST FIELD"

MB Kolubara i.e. Branch "Open pit mines Baroševac" is obliged to perform continuous measuring of waste water flow, all in accordance with Article 99 of Law on Waters ("Official Gazette of RS", no. 30/10). For OPM "Tamnava West Field", a Project of environmental monitoring is made defining the obligations and the way of measuring the amount of waste (pumped out) water from coal benches. At OPM "Tamnava West Field", ultrasonic flowmeters "FloPRO" were installed on three measuring points. Their producer is MACE USA (www.macemeters.com).

On June 19th, 2012 the Minutes of meeting on qualitative acceptance and the Minutes on installation (assembly) of ultrasound flow-meters and functional checks thereof were signed. The Commission stated, in accordance with Article 9 and Article 10 of the subjected contract that the installation and commissioning were completed and that functional checks of measuring devices with accompanying equipment and software are still in progress and that they fulfill requested requirements in accordance with technical specification. Thus, the conditions are created for the measuring devices with accompanying equipment and software to be given to further usage and disposal to the end user i.e. OPM "Tamnava West Field".

Earlier on, on May 17th, 2012, a training has been held in the premises of OPM TWF for the usage of the software for data analysis and eight candidates attended the training. Flow meters are autonomous five to eight days with no Sun, since they use photovoltaic power system as the power source over the solar module. By applying this contemporary technology, the data collection has been provided in the interval of 15 minutes, and they can be analyzed for different time periods and be shown through different types of reports.



In this way, MB Kolubara starts practical fulfilling of its legal obligation in terms of continuous measuring of the waste water quantities discharged in surrounding recipients and this obligation will be fulfilled further on through the procurement of flow meters for other open pit mines.

By the memo No. 5-21-1609 of July 9th 2012, the Department of Agriculture, Trade, Forestry and Water Management was notified that the installation is completed and that the first functional testing of the ultrasonic flow meters of the waste waters is on the OP "Tamnava West Field". By the same memo, the Water Resources Department has been invited to send a representative authorized to conclude that, from July 1st 2012 at OP "Tamnava West Field" continuous measurement of the amount of the water discharged from the mine to the recipient is performed and that, in the process of determining the compensation for the water discharged from the mine, the measurement results from the newly installed control devices can be used.

In order to extend the use of network applications of the installed WOMBAT information system that allows direct GPRS connection of all installed flow meters with the information system and database (as well as monitoring and adjustment of transmission over the Internet), the procedure for the public procurement of services is initiated on the basis of which an annual subscription will be provided. Flow-meters are officially handed over to the employees in OPM "Tamnava West field".

2.7. REALIZATION OF THE PROJECT "FORMATION OF THE CENTRE FOR ENVIRONMENT MANAGEMENT"

MB Kolubara agreed to participate in the implementation of the pilot project "Founding of the Centre for Environmental Management" organized by the Agency for Environmental Protection of Serbia in cooperation with the Regional Environmental Centre (REC), which is funded by the Norwegian Bilateral assistance.

Memorandum of Understanding between the MB Kolubara and Agency for Environmental Protection of Serbia has been signed, registered under No. 2-01-2-1466 of July 26th 2011, where the importance of attracting foreign investments in Serbian energy and mining sectors was highlighted, in order to meet the future requirements for the admission of Serbia to the EU.

Employees of the Department of the Environment together with the Project team from EMS, on the basis of the data obtained from the joint analysis of the current state, find the computer solution that complies with the company Kolubara and which is based on the PRTR Protocol. Drafting of the final solution for the MB Kolubara is in progress, which has a broader scope and fully meets our requirements (National Register of sources of pollution).

In the period from February 22 to 24, 2012, a training of representative of the Department of environment protection has been organized for usage of adjusted software solution "TEAMS" for keeping records and reporting about environment. The training included the display of organization of data and demonstration of used functions and also a practical work of entrants.

In the following period, after the solution based on the National registry had been completed, additional training was organized (April 5th, 2012) for the members of the Expert Team for the implementation of TEAMS by the Agency for environmental protection, referring to the differences of these solutions. The existing system contains in essence the same logic and functions having a new solution. Funding for the training of Kolubara's employees is also secured donations from the Norwegian government.

With the decision of the Director of the MB Kolubara No. 2-01-2227 of April 2nd 2012, the Team Expert was appointed for adjustments of the software "Teams" solutions to the needs of the MB Kolubara. The task of the team expert is to, on the knowledge gained from the previous education and as responsible person who will indirectly deal with the exploitation of the "Teams" software, based on defined roles and authorization, right to information access, that is restriction, provide data input into the system. The team expert is obliged to make adjustments and develop organizational structures and software support with applied models of monitoring the emissions. Also, the obtained software package will define the necessary hardware support, which consists of a satisfactory computer configuration with the necessary equipment. The team expert will also conduct the supervision over the national reporting.



The third promotional event titled "Reporting for Sustainability" was held on 10.12.2012, organized by the National Office of the Regional Environmental Center (REC) and the Agency for Environmental Protection of RS (SEPA). The event was attended by the Ministry of Energy, REC, SEPA and EMC, and also Mrs. Siren Berge, CEO of Norwegian company EMISOFT that created the special software TEAMS. This software will soon allow coverage of European institutions on the environment in accordance with established standards by mid-2013.

2.8. PROJECT "IMPROVING THE ENVIRONMENT IN THE KOLUBARA COAL BASIN"

The team for monitoring the implementation of the project held the first meeting at Rajac on July 17th 2012 and direct cause was a tender for the purchase of mining equipment. It is planned that the project worth 182 million euros to be implemented in the next three and a half years, and he basically needs to guarantee that the coal obtains the standard quality by using the system for homogenization, which will among other things contribute to the reduction of environmental pollution. It is estimated that the SO₂ emissions will be reduced by 3.650 tons, NO₂ by 21.370 tons and CO₂ emissions by 555.350 tons per year, while the amount of ash and slag would be reduced by 885.000 tons per year in TPP Nikola Tesla Obrenovac.

The Environmental Protection and Enhancement Dept of MBK started all projects that are defined by ESAP document. The project "The initial report on the state of the environment for the OPM "Field C" was made, on which EBRD's consultants gave consent to the final version of the document on 25.10. 2012. Also, on 31.10.2012 Technical team for implementation of the document titled SEP, was formed, the Decision No. 2-01-6848 of 31.10.2012 signed by the Acting General Director of EPS.

2.9. PROJECT OF THE MINISTRY OF EDUCATION AND SCIENCE

On May 2nd, 2012 scientific research started related to the project funded by the Ministry of education and science in the area of technological development and in which EPS is one of the participants, a number of project 31080, Project manager is prof. Vera Raičević, PhD from the Faculty of Agriculture of Zemun. Project lasting for 4 years will be realized by the Faculty of Agriculture, and in the area around AWS "Kolubara B" at the Old Erection yard. The aim of placed experiment is to monitor the possibility of growing herbaceous plants (alfalfa, phacelia, white clover, mixture of grass, fodder beet) and ligneous plants (bay, cherry laurel and arborvitae) on the degraded soil enriched with compost, Kek and microbiological fertilizer Biofor and their combinations. An important goal of the project is testing the possibility of using waste material occurring in the process of water treatment, Kek and compost obtained in the process of composting green mass, grass, leaves and branches. Research, in addition to monitoring the growth of plants, includes monitoring microbe diversity in the soil. On the reclaimed areas of former OPM "Field A" within the same project 60 seedlings of Taxodium have been planted with the aim of researching the possibility of this plant species in terms of drying up the swamp areas.

Unfortunately, due to the long period of the drought, this project was "impossible to save", primarily because of the polluted sandy soil on which it was based.

2.10. DEVELOPMENT OF THE PROJECT MONITORING PLAN OF THE ENVIRONMENT IN MB KOLUBARA

On June 20th, 2012 the first meeting was held with representatives of the processors of the Monitoring Plan and basic principles of operating until the completion of this document have been agreed on. It has also been defined who will provide background and there has been an initiative that, given the importance and universality of this project (which is done for the first time in EPS) the Director of MB Kolubara was suggested the formation of the expert team composed of experts from all branches for which is this project essential. With the decision of the Director of the MB Kolubara No.2-



01-4245 of June 25th 2012, the expert team for this project was founded. The team expert consists of 14 (fourteen) employees from all parts of the MB Kolubara.

This project realization came to a halt for reasonable causes, but on 27.12.2012, the final takeover of background documents was executed and thereby all the conditions were created for the commencement of a project, which under the Contract No. 2-01-5-1097 of 12.06.2012 should be completed in the first half of the 2013.

2.11. DEVELOPMENT OF THE CADASTRE OF FLORA AND FAUNA FOR THE OPM " FIELD C"

Development of the Study of flora and fauna cadastre for the OP "Filed C" was entrusted to the Institute for Nature Conservation of Serbia, and the Contractual obligations started from June 7th 2012. The project duration is 12 months and it is done at the request of the EBRD.

The team expert of employees of the institute Conservation of Serbia have been five time at the location (the area covered by the Project, i.e. boundaries of the OP "Field C") since the beginning of the project, i.e. from June-September 2012 (July 13th, July 27th, August 1st, August 10th, September 19th).

The future operating mode was agreed at the meeting in the Management Board of the MB Kolubara held on July 13th 2012. Supervisor, Branislav Pajić introduced the participants to the obligations of the MB Kolubara toward the European Bank (EBRD) regarding the credit lines, and it was agreed how the Action Plan should look like.

The handover of the documentation, i.e. the basis for the development of the Study, all in accordance with the Terms of Reference No. 2-01-5496/1 of August 31st 2011, was performed on July 27th 2012 and a mutually signed minutes of the handover documentation, No. 2-4.12-4912 of July 27th 2012, was made. After that, the Action Plan of the Project was composed, which was sent to MB Kolubara on July 31st 2012, mutually agreed and signed.

In the initial phase of the field research (07/13/2012, 07/27/2012) the reconnaissance of the terrain was carried out and the estimation of the study area "Field C" was identified. Further field studies (August 1st, September 19th 2012) defines the current "zero" condition of the flora, fauna and vegetation at the parts of the "Istočna Kipa" (East Dump Site), where the spontaneous and controlled reclamation was done. In addition, the habitats of the "Field C", which are the priority for the research, are identified: "Istočna Kipa" "meadow near Istočna Kipa", "Field by Baroševac's cemetery and three smaller areas of water ("Small Pond", "Big Pond" and "Pond in the forest").

Botanical field surveys were conducted by collection, listing and preservation of the floristic materials. By the transect method and target selection of the suitable sites, the direct and indirect data on the presence of the different species of insects, bird and mammals were collected, including affirmation of the concrete specimens, collection of the fauna specimens by the entomological net, field observation (tracks, droppings, holes, den, bivouac) and more. On the water surfaces, the ichthyofauna sampling was carried out using electric equipment. Collected faunal materials are housed in the appropriate zoological collections for the further determination. During field research the species and their habitats are photo documented and the GPS device recorded data about their location. All collected field material is deposited in the Herbarium and Entomological collection in the Institute for Nature Conservation of Serbia, where it is stored for further processing and determination.

Since the beginning of the project realization until the end of calendar 2012, in the area covered by the project, the Professional team of associates of the Institute for Nature Conservation of Serbia visited eight times in total. The entire collected field material is deposited in the Entomological and Herbaria collection of the Institute for Nature Conservation of Serbia where it is stored for further processing and determination.

2.12. PROPOSALS FOR SOLVING PROBLEMS OBSERVED IN PREVIOUS PERIOD

- On January 23rd, 2012 sound levels in Baroševac were measured for the purpose of Main Design of technical measures for noise protection development. This is the first time in practice for MB Kolubara to measure the



noise level with its own equipment and it has attracted the attention of the local population and media from our area. In April, training technicians for the noise measurement started, and it will last for a year. Noise mapping software was purchased and all the technical conditions for the start of continuous operation were provided, but working space for technicians and equipment has not been provided yet. This space should be placed in the same building with other members of the Service (who are also without adequate facilities). Lack of adequate office space is present from the very beginning of the operations of the Sector for the environment.

- Customized software solution TEAMS will not be able to function as planned, as a basic condition for its work is relevant data on the results of testing the environmental parameters, which at the moment is not provided by the competent services of the Branch Open Pit Mines, neither quantitative nor qualitative. Since the importance of the Centre for Environmental Management is not understood at all levels, it is necessary to form a mixed committee or coordinator to synchronize the collection of data from sources outside the Department of Environmental Protection. The Revision of the Internal Communication Procedure is required in order to ensure regular submission of all environment related measurements and data to the Department.
- Problems related to Public Procurement are always present, so that procurement of goods and services sometimes take too long with too much unnecessary documentation. In the preceding period the IMS documentation has been revised and procedures for public procurement defined. However, there has been no improvement in the situation when it comes to the Division of Environment Protection. It happens very often that officers and their superiors “do not understand” the flow of neither documentation nor who “introduced that the two orders should be issued in two different ways” for the same procurement. It is necessary to begin with the practical implementation of the Quality Management System; the Department for the Quality should be more involved into the use and control of the public procurement procedures in MB Kolubara.

In terms of execution of the order for procurement and other activities related to cooperation with the Commercial Dept., it is necessary to make some radical changes, with appreciation of the existing organizational chart. There is sensed a lack of a legally qualified professional who would be appointed for the implementation of activities in this area, not only when it comes to the Department of Environmental Protection, but the entire Sector. Given the amendments made in the Law on Public Procurement, the commitment to the jobs in this area is required, with the recording of the problems identified on the semi-monthly basis. Only this way, the current and future public procurement problems can be solved, in particular those that are defined by documents such as ESAP and SEP.

2.13. OVERVIEW OF CONTRACTS AND SPENT FUNDS

Table 11. Overview of spent funds in the period from January 1st to December 31st 2012

	Type of service	Name of institution	The No. of Contract	Price (RSD) excluding VAT	Remark	Contract status
1.	The designer supervision and Tech. Support for the implementation of the Project environment monitoring of the Open Pit Mine "Tamnava West Field"	Tekon Tehnokon Belgrade	Contract No. 2-01-2-308/ April 9 th , 2011	1,490,000.00	Account is not liquidated, not having No. in the Incoming Invoices Book	Executed
2.	Developing the Main project of technical measures for noise protection in Baroševac	Arcway d.o.o. Belgrade	Order No.2-01-4965/August 8 th , 2011	1,125,000.00		Executed
3.	Dismantling, fault diagnosis and transport of suspended solids analyzers	Novolab d.o.o. Belgrade	Order No.2-01-5735 /September 9 th , 2011	105,138.00		Executed
4.	Testing soil quality for the needs of EIA study for the OPM Kruševica	Institute of Soil Belgrade	Order No.2-01-6987/October 27 th 2011	225,200.00		Executed
5.	Preparation of background for detailed design of wastewater of the industrial compound Tamnava	Branch Project	Bid No.2-01-2490/April 10 th , 2012.	1500 Nh	1 Nh = 1730 RSD.	Executed



6.	Making of General Project for industrial compound Tamnava wastewater treatment	Energoprojekt-hydroengineering	Contract No.2-01-5-527 / March 7 th , 2012	3,095,000.00		Executed
7.	Making the initial MB Kolubara environmental state report	Via engineering Novi Sad	Contract No.2-01-5-385 / January 31 st , 2012	3,000,000.00	600,000.00 left to pay	Executed – EBRD agreement
8.	Procurement of Reference laboratory noise measuring services	The Institute for OHS Belgrade	Order No.2-01-7056/October 31 st , 2011	648,000.00	486,000.00 left to pay	Execution in progress
9.	Calibration of the suspended particles analyzer	Novolab d.o.o. Belgrade	Order No.2-01-8455/December 12 th , 2011	344,365.00	Does not have No. in the Incoming Invoices Book	Executed
10.	Procurement of waste water flow meters on the OP "TWF"	AS IMPEKS Valjevo	Contract No.2-01-5-460 /February 17 th , 2012	4,093,299.00		Executed
11.	Development of the MB Kolubara Environmental Monitoring Plan	Tekon-technoconsulting and RI Belgrade	Contract No.2-01-5-1097/June 8 th , 2012	7,250,000.00		Execution in progress
12.	Supply of special software for mapping and prediction of noise Predictor Lima	PMC d.o.o. Belgrade	Contract No.2-01-5-921/June 2012	2,107,950.00		Executed
13.	Procurement of the data radio transmission equipment	Logo d.o.o Belgrade	Contract No.2-01-5-1193 /June 22 nd , 2012	995,000.00		Executed
14.	Procurement of the GIS software as well as software for processing satel. and orthophoto shots	GD and GISDATA d.o.o Belgrade	Contract No. 2-01-5-1461 July 9 th , 2012	995,000.00	Does not have No. in the Incoming Invoices Book	Executed
15.	Techno-economic analysis of the possibilities for using the MB Kolubara woody biomass for the heating	Faculty of Forestry Belgrade	Contract No. 2-01-5-682/April 2 nd , 2012	2,460,000.00	Does not have No. in the Incoming Invoices Book	executed
Summary of the funds spent (excl.VAT) in the period January 1st- December 12th, 2012				33.478.952,00 RSD		

Employed with the service of Environmental Protection, Baroševac:

1. Branislav Pajić, grad.min.eng. – Head of Service
2. Aleksandar Simić, MSc, grad. physicist- eng. for water and noise monitoring
3. Sanja Radanović, grad. hydrogeology eng. – engineer for water monitoring
4. Gordana Jeremić, mining technician – noise measuring
5. Darko Trajković, el. techn. – noise measuring

According to the Decision issued by the Director of the open pit mines, the list of people engaged in environmental protection are as follows:

1. Jasmina Nikolić, grad.min.eng – "Field D"
2. Ivan Pantelić, engineer of environmental and working environment – "Field B"
3. Mirjana Djordjević, grad.min.eng – "Tamnava East Field"
4. Grozdana Bogdanović, mech.eng. – "Tamnava West Field"
5. Momčilo Radovanović, eng. in management – OU Auxiliary Machinery



3. WASTE AND HAZARDOUS SUBSTANCES MANAGEMENT IN MB "KOLUBARA"

In 2012, assignments of the Service for waste and hazardous substances were connected to establishment of the waste management system, report preparation by competent authorities, preparation of requests for waste sale, development of explanation for the General Meeting of the Company, making various notices for the employees relating to management of special flows of waste, participation in the work of various Commissions for PP and so on.

Contract realization overview in the period 01.01. – 31.12.12., is shown in the table 12.

Table 12. Incomes made under the Contract for the period from 01.01. - 31.12.2012

	Contract name and number	Operator	Quantities taken (kg)	Revenue, VAT excluded (RSD)
1	Contract on the mode and procedure of taking over of used up batteries, No. 2-01-17-1282	„Farmakom MB“ Šabac Batteries factory Sombor	15,820.00	632,800.00
2	Contract on the mode and procedure of taking over of worn out and waste rubber and conveyor belts with steel cord No.2-01-17-1604	„Farmakom MB“ Šabac Batteries factory Sombor	88,140.00	112,512.00
3	Contract on taking over and storing waste oil in environment - friendly way, No.2-01-2-2218.	„Ekosekund“ Belgrade	66,808.00	505,806.00
4	Contract on sale of industrial waste (iron, steel) No.2-01-02-1-1506	"MITROVIĆ i DR.PROMET" Osipaonica	144,660.00	4,172,850.00
5	Contract on sale of industrial waste (iron, steel) No.2-01-02-1-1505	„SAF METAL“. Bela Crkva	1,947,760.00	49,887,480.00
6	Sales Contract for industrial waste (Aluminum and non-ferrous metals) No.2-01-2-1508	"MP METALPROM" Valjevo	4,080.00	1,763,560.00
7	Contract on taking over and recycling of empty toner cassettes, ribbons and ink-jet cartridges, No.2-01-5-491	„RIBBON-CMS“, Belgrade,	220	220
TOTAL				57,107,228.00

Table 13. Expenditure incurred for hazardous waste storage in the period 01.01. - 31.12.2012

	Contract name and number	Operator	Quantities taken (kg)	Expenditure/costs VAT excluded (RSD)
1	Contract for cleaning separators (grease and oil), sludge and cleaning the lagoons No.2-01-2-2971. *	„MODEKOLO“ d.o.o. Belgrade	16,500.00	940,500.00
2	Contract on taking over and storing in ecologically friendly way of waste adsorbents, waste oil and air filters, polishing wools and old protective suits No.2-01-2-1418**	„EKOSEKUND“ d.o.o. Belgrade	3,695.00	702,050.00
3	Contract for cleaning separators (grease and oil), sludge and cleaning the lagoons No.2-01-5-1704*	„MODEKOLO“ d.o.o. Belgrade	1,300.00	58,500.00
TOTAL			21,495 kg	1,701,050 RSD.

* PP for cleaning the separator has been initiated and conducted in OPM within regular repair works. Separators have been installed in OPM "Field B" and OPM "Field D"

** PP initiated by Environmental Protection Dept.



3.2. CURRENT CONTRACTS ON WASTE STORAGE OVERVIEW

The table 14 shows the overview of all Contracts for storage of waste generated in MB "Kolubara".

Table 14. Current Contracts overview on waste storage including Contract duration

	Contract name and number	Operator	Contract duration
1	Contract on way and procedure of taking over the used up batteries, No.2-01-17-1282	„Farmakom MB“ Šabac Batteries factory	Contract expired on 22.06.2012
2	Contract on taking over of used up waste rubber and conveyor belts with steel cord , No.2-01-17-1604	„Farmakom MB“ Šabac Batteries factory	Contract expired on 02.08.2012.
3	Contract on taking over and storing waste oil in ecologically friendly way, No.2-01-2-2218.	„Ekosekund“ Belgrade	Contract expired 21.10.2012
4	Contract on sale of industrial waste (iron, steel) No.2-01-02-1-1506	"MITROVIĆ i DR.PROMET"	Contract expired 29.07.2012
5	Contract on sale of industrial waste (iron, steel) No.2-01-02-1-1505	„SAF METAL“. Bela Crkva	Contract expired 31.11.2012
6	Sales Contract for industrial waste (Aluminum and non-ferrous metals) No.2-01-2-1508	"MP METALPROM" Valjevo	Contract expired 03.08.2012
7	Contract on taking over and recycling of empty toner cassettes, ribbons and ink-jet cartridges, No.2-01-5-491	„RIBBON-CMS“, Belgrade,	Contract valid until 16.03.2013
8	Contract on taking over and storing in ecologically friendly way of waste absorbers, waste oil and air filters, polishing wools and old protective suits No.2-01-2-1418	„EKOSEKUND“ d.o.o. Belgrade	Contract expired 27.07.2012
9	Contract on taking over and recycling of electrical and electronic waste, No.2-01-5-717	"EKO-METAL" d.o.o. Vrdnik	Contract valid until 11.04.2013
10	Sales Contract for industrial waste (cables and engines) No.2-01-2-1507	„S.E.Trade"d.o.o Belgrade,	Contract expired 02.08.2012
11	Contract for cleaning separators (grease and oil), sludge and cleaning the lagoons No.2-01-5-1704*	„MODEKOLO“ d.o.o. Belgrade	Contract valid until 24.08.2013
12	Contract on sale of waste paper and cardboard No.2-01-5-1592**	„PAPIR SERVIS FHB“, Umka	Contract valid until 25.09.2013

*PP is within the competence of OPM

** The realization of the Contract has not yet started due to the guarantee problems

In accordance with valid legal regulation of the republic of Serbia and pursuant to the Decision No.2-01-2145/8 of 09.05.2012, rendered by the Authorized representative of the Founder at the 44th session of General meeting of MB "Kolubara" d.o.o. Lazarevac, on 09.05.2012, the proposal has been adopted that the sale of waste material, currently on temporary storage yards of MB "Kolubara", is to be done by public tendering. The order No. 2-01-3671 of 04.06.2012 has been initiated for the sale of industrial waste material. The waste is placed on temporary waste storages of MB "Kolubara", and the quantity are defined by an "arbitrary estimate".

The sale is suspended due to missing valid Procedure in accordance with the standards ISO 14001: 2004, so that immediately after it has been signed the sales procedure will be continued.

3.3. INSPECTION CHECKS

On 09.05.2012, a meeting with the inspectors for environmental protection was held (Olivera Topalov and Vesna Nanuševski). The Inspection was handed over characterization for environmental protection for ash and slag (non-hazardous waste) and other requested documentation. On the basis of submitted documentation it has been agreed at the meeting and approved by the Inspection for environmental protection that the settled material from the settling basin (dump) for ash and slag should be transferred to a new location in the Field D. The reason for transferring ash and slag is the completely full settling basin and due to that fact the further disposal of ash and slag to the subject dump is not possible.

On 27.11.2012, the inspection of the Documentation on the movement of the hazardous waste and Pollutants National register for 2011 and 2012 MB "Kolubara" was performed. Lazarevac - Branch Open Pit Mines Baroševac. At the same



time, there was also a meeting of the Security Service, inspection and Ministry of Interior. The topic was the Request for intensified inspection control of registered operators for waste, in the municipalities of Lazarevac, Valjevo and Arandjelovac.

3.4. REGULAR ACTIVITIES OF THE SERVICE

1. In HPP Bajina Bašta, from 22.05. – 25.05.2012, a meeting was held, attended by the working group for monitoring the implementation of the study WASTE MANAGEMENT IN PE EPS/ phase VII: STORING THE WASTE IN PE EPS/phase VII B Project IPA 2008 "Support for environmental protection in the power sector" / (Environmental Protection at the Electric Power of Serbia – EPS)/phase VII Bb: SOLVING PROBLEMS OF ELECTRIC DEVICES USING RSV OILS IN EPS. The working group received the Study submitted and developed by ELECTRICAL ENGINEERING INSTITUTE "NIKOLA TESLA", Centre for electrical measurements, Belgrade. Within the mentioned Study in MB "Kolubara" 115 substations have been tested/sampled on RSV. Substations sampling has been done in agreement with the directors of branches and mines, in all open pit mines (Field D, Field B, Tamnava East Field and Tamnava West Field) and in the branch "Prerada". Sampling of mineral oil and testing the presence of pyralene has shown that in MB Kolubara there are 23 substations filled and contaminated with RSV oils. For 8 (eight) substations that are by RSV content classified as contaminated or "clean" RSV equipment (and spotted are the signs of oil leakage), it is required to immediately undertake all preventive measures for remedying the determined oil leakage, with the aim of securing health protection of workers, inhabitants and surroundings, location safety and accidents prevention. The ultimate goal is to solve the issue of RSV oils contaminated substations by decontamination or by putting them out of use in a safe and human and environment friendly way (employees and surrounding population), in a economically and technically most suitable way, and thereby not jeopardizing the scheduled operation of some facilities and plants.
2. There are also two tests / characterization of waste , (free of charge for MB Kolubara) pursuant to Contract on waste oil takeover and storage in environmentally friendly way, No2-01-2-2218, by "Ekosekund" Belgrade, as follows:
 - Waste used up lubricant. Index Number of waste according to the Waste Catalogue: 12 01 12* /13 08 99*. Laboratory is MOL Belgrade, Report on waste testing No. I -1009/12 of 20.01.2012.
 - Waste gearbox oil. Index number of waste according to Waste Catalogue: 13 02 05*. Laboratory is MOL Belgrade, Report on waste testing No. I -1008/12 of 20.01.2012.
3. Operational use of Waste Base has started, for waste management in EPS. The System is functional and information flow has been speeded up after connecting MB Kolubara and EPS by use of optical cables. Currently the system loses connection at several locations (the information systems have been shut down several times to install legal software, so that new compatible softwares installation is required).
4. Annual reports have been prepared and submitted to the Agency for environmental protection, Ministry of the Environmental protection, mining and spatial planning, the Institute for statistics and inspection for environmental protection, as follows:
 - Annual report on waste for 2011 – GIO
 - Annual report on industrial waste for 2011 – OT-IND
 - And the Form No.5 for the National register of pollution sources for 2011
5. Waste management plan has been done for the Open Pit Mine Field C (2012-2015), branch "Open Pit Mine Baroševac" by the Branch "Projekt", on the requirements of ESAP documents (EBRD)
6. In the mechanical workshop for the excavator maintenance in the Field B, on 29.03.2012 the training of 30 employees (from various positions across the mines) was carried out for usage and utilization of procured adsorbents.
7. The waste disposing has been commenced in the Storage for waste material "B/C" of the operation unit of the Field B-Rudovci that is fenced and asphalted. In the storage yard for the waste material, there is a gatekeepeng service round a clock.
8. Condensers with RSV oil content (in Field B) from the location of electrical workshop Ceroviti Potok are moved to the storage for waste material.



9. Construction works on a new, covered storage of oil on the location of "Tamnava East field" have started, since old warehouse did not meet legal requirements.
10. The expansion of the lubricants warehouse is in progress in the open pit mine "Field D" in Medoševac (in order to increase the capacity of the warehouse and to separate waste oils)
11. The data for the annual Investments Plan of MB "Kolubara" for 2013 have been submitted.
12. The equipment for the environmental protection has been deployed, procured by the Service for waste and hazardous matters: mobile tank for receiving oil; oil decantation pump; absorption means (usage manual printed and distributed); plastic buckets and funnels; bundwalls (60 pcs for 2 barrels) and (35pcs for 4 barrels) and channel device (tank) for receiving waste oil, procured in 2011.

Employed with the Service for waste and hazardous substances:

1. Milorad Stojanović, grad.min.eng, MSc – Head of the Service
2. Dragan Stojanović, grad. mech.eng. – Hazardous matters Engineer

In open pit mines, waste management jobs, pursuant to the Director's decision, perform the following persons:

1. Milena Aleksić, grad. mech.eng - "Field D"
2. Ivan Pantelić, Environmental and working environment engineer - "Field B"
3. Mirjana Đorđević, grad.min.eng - "Tamnava East field"
4. Rada Beljić, grad. mech. eng - " Tamnava West field"
5. Momčilo Radovanović, grad.eng. - WU "Auxiliary machinery"
6. Momčilo Momčilović, grad.eng. for Tech.sys. Management. - Branch "Prerada"

4. MANAGING RECLAIMED AREAS IN MB "KOLUBARA"

The problem of degraded land left behind by past mining activities has been solved through implementation of technical and biological reclamation. Technical and biological reclamation started in 1957, since when significant portions of the areas with earlier completed mining activities have been reclaimed. The current course of biological reclamation has been applied in two directions: agricultural production and forestry. Table 12 provides an overview of the crops grown on reclaimed areas of MB "Kolubara".

Table 15. Summary of crops grown in reclaimed areas in the period 1 Jan 2012 – 31 Dec 2012

Ord. No.	Plot No.	Area (ha)	Location	Mode of use		Technical reclamation since /year/	Remark
"TAMNAVA EAST FIELD"							
1.	13*	22.80	Tamnava East	arable land	corn	1987	-
2.	15*	20.00	Tamnava East	arable land	alfalfa	2009	2010 biol. reclam.
3.	Racetrack *	4.00	Tamnava East	arable land	vetch + oats	2009	2010 biol. reclam.
		6.00				2011	2011 biol. reclam.**
Remark : *- Right to use the plot was awarded to Lazarevac town municipality on the basis of Decision of the 18 th Meeting of the MB "Kolubara" doo Lazarevac number 2-01-7396 / 1 of December 11 th , 2009 ** - Technical reclamation is to be performed for another 4.70 ha Total reclaimed areas by the planted crops: 52,80 ha							
"FIELD D"							
4.	3.2	8.00	Zeoke	arable land	soy	1974	Temporary reclamation up to 5 years
5.	7	17.00	Baroševac	arable land	sunflower	1987	
6.	8	18.00	Baroševac	arable land		1987	
7.	9	7.00	Baroševac	orchard	apple	1975	Temporary reclamation up to 10 years and over
8.	10	16.70	Junkovac	arable land	wheat	1987	



9.	11	11.70 2.00	Junkovac	arable land	soy experiment	1987	
10.	12	3.40	Junkovac	arable land	soy	1988	
11.	14	9.20	Junkovac	arable land	wheat	1990	
Total reclaimed areas with agricultural crops:						93.00 ha	
Total reclaimed areas with agricultural crops in MB "Kolubara":						145.80 ha	

Table 16. Summary of forest plantations in reclaimed areas as of 30 Dec 2012

Ord. No.	Plot No.	Area (ha)	Location	Technical reclamation since /year/	Remark
"TAMNAVA EAST FIELD"					
1.	1 – 6	63.57	OP "TEF"	1984	Permanent reclamation
2.	-	2.43	Cvetovac-Sumedj	autumn 2011	Final slope, permanent reclamation
Total reclaimed by forest plantations:				66.00 ha	
"FIELD A" AND "FIELD B"					
3.	60 – 65	63.41	Rudovci/Prkosava	1984	Permanent reclamation
4.	75	13.74	Rudovci	2008	Permanent reclamation
5.	76	16.19	Strmovo	-	*
6.	77	14.57	Strmovo	2009.-2010	Permanent reclamation
7.	(66)**	22.04	Rudovci	1964-1966	assigned land
Total reclaimed areas with forest plantations:				113.76 ha	
Remark: * Technically reclaimed land within Management Unit "REIK Kolubara" which is not included in the sum total of reclaimed areas, and is ready for afforestation					
** The number of classes specified by then applicable Special forestry basis for FMU "REIK Kolubara" in 1988 to1997					
"TAMNAVA WEST FIELD"					
8.	/	7.50	OPM "TWF"	2009	Final slope
9.	/	3.61	OPM "TWF"	2012	Final slope
REMARK: Resumption of afforestation works according to the "Project of reclamation" No.5-21-908 of 20 Jan. 2010 is planned for autumn 2012. Works under the "Project on reclamation of final slope of OPM "Tamnava West Field overburden dump", No. 2-01-1850 of 25 Mar. 2011, shall resume in the autumn of 2012 (an area of 3.61 ha with 1454 seedlings planted).					
Total reclaimed areas with forest plantations:				15.50ha	
"FIELD D"					
10.	12,13	21.29*	OPM "FIELD D"	1957-1961	Temporary reclamation
11.	21-59, 66, 67, 69-74	550.35	OPM "FIELD D"	1985-1997	Permanent reclamation
12.	(12-15)**	43.93	V. CRLJENI	1977	assigned area
Total reclaimed areas with forest plantations:				615.57ha	
Remark: *- Area planned for clean cutting to allow the progress of mining operations.					
** - The number of classes specified by then applicable Special forestry basis FMU for "REIK Kolubara" 1988-1997					
Total reclaimed areas with applied afforestation in MB "Kolubara":				810.83ha	

Table 17. Summary of reclaimed areas with applied afforestation as of 31 Dec 2012

Ord. No.	Operation Unit	Forest and forest land (ha)	Remaining land (ha)*	Area (ha)
1.	Field "A" and "B"	107.11	6,65	113,76
2.	Field "D"	534.44	81,13	615,57
3.	"Tamnava East Field"	61.69	4,31	66,00
4.	"Tamnava West Field"	11.11	-	11,11
In Total		718.35	92.09	810.83

Note: * - The remaining land includes: forest roads, barren land, clearings which are meant for afforestation, and water areas inside the forest.

Table 18 Summary of the areas reclaimed until 31 Dec 2012

AGRICULTURAL RECLAMATION



Available 0-5 years:	43.00 ha
Available 10 or more years:	50.00 ha
Reclaimed and assigned to other users:	52.80 ha
In total permanently reclaimed:	00.00 ha
Reclaimed in total:	145.80 ha
FOREST RECLAMATION	
Reclaimed and assigned to other users:	65.97 ha
Reclaimed and re-degraded (clear cut) due to mining operations	144.66ha
In total permanently reclaimed:	723.57 ha
In total temporary reclaimed:	21.29 ha
Technically reclaimed forest land within FMU "REIK Kolubara":	16.19 ha
Reclaimed in total:	971.68 ha
FOREST AND FOREST LAND	
In total permanently reclaimed:	723.57 ha
In total temporary reclaimed:	21.29 ha
Technically reclaimed forest land within FMU "REIK Kolubara":	16.19 ha
Reclaimed in total :	761.05ha

4.1. AGRICULTURAL PRODUCTION IN RECLAIMED AREAS

In Agricultural Department the following works were carried out in the period 1 Jan. 2012 – 30 Sep. 2012:

1. Regular supervision over the execution of agricultural works by Kolubara Services as pursuant to the Contract No. 2-01-5-516 of 2 Mar 2012 for the two year period.
 - 1.1. Care and maintenance of apple orchards, the plot No. 9 (7.00ha);
 - 1.2. Production of mercantile wheat on a total area of 25.90 ha: the plot No.14 (9,20ha) and No.10 (16.70 ha);
 - 1.3. Production of mercantile maize, the plot No.13 (22,80ha);
 - 1.4. Production of mercantile sunflower on a total area of 35.00 ha, the plot No. 7 (17.00ha) and No.8 (18.00ha);
 - 1.5. Production of soybean for grain on a total area of 23.10ha: plot No. 3.2 (8,00ha), No.11 (11,70ha) and No.12 (3,40ha);
 - 1.6. Production of vetch + oat on a total area of 10.00ha on the plot "Racetrack" for plowing under as green manure – the first year of biological reclamation;
 - 1.7. Production of alfalfa for hay on the plot No.15 (20.00ha);
 - 1.8. In horticulture – regular maintenance of green surfaces around the all open pit mines facilities, according to the agreed technical specifications, the total area of **465,263.70 m²**.
 - 1.9. Regular supervision over the execution of the works for the autumn growing season 2012/2013 as pursuant to the Contract No. 2-01-5-516 of 2 Mar 2012, signed with "Kolubara Services":
 - 1.10. Supervision over the works of basic soil preparation on the lots envisaged for planting the spring crops on the total area of 81.80 ha.
 - 1.11. Supervision over the works on preparation of the soil and mercantile wheat sowing in growing season 2012/2013 on the total area of 35.00 ha on the plots no. 7 (17.00 ha) and no.8 (18.00 ha)

Table 19. Overview of yield in agricultural production until 31 Dec 2012

Ord. No.	Crop and area (ha)	Yield (kg)		Sale price (RSD/ kg)	Income (RSD)
		per 1 ha	Total		
1.	Mercantile wheat 25.90ha	3,764.48	97,500	21.10	2,057,250.00
2.	Mercantile maize (silage) 25.90ha	7,480	178,100	2,00	356,200.00
3.	Mercantile sunflower 35.00ha		45,900	54,50	2,501,550.00
4.	Soybean for grain 23.10ha	400*	6.400	61,43	393,152.00
5.	Alfalfa for hay 20,00ha	3.801	3.200	11,63	37,216.00
			42,440	8,70	369,228.00
			30.380	8,00	243,040.00
			1.000	donation	-
			77,020		649,484.00
6.	Apple orchards	-	10,000	12.00	120,000.00
		-	5,000	20.00	100,000.00
		-	9,300	15.00	139,500.00

		-	24,300	
	Total	-	-	6,317,136.00

Note: Due to extremely high temperatures, soybean pods ruptured, so out of the planned 23.10ha the harvest was completed on 16.00ha

Table 20. Summary of costs of work operations and intermediates in **wheat production**

Ord. No.	Production costs excluding VAT (RSD)		Total (RSD)
	Work operations	Intermediates	
1.	1,619,884.00	932,109.00	2,551,993.00

Table 21. Summary of costs, yield and profit in the production of mercantile wheat on the area of **25.90ha** (Plot No.10; 14)

Expenditures (RSD)	Total yield (kg)	Avg. yield (kg/ha)	Avg. yield in Šumadija region (kg/ha)	Sale price (RSD/kg)	Market price (RSD/kg)	Gross income (RSD)	Profit (RSD)
2,551,993.0	97,500.0	3,764	4,000 – 4,500	21.10	22.00	2,057,250.0	- 494,743.00

Table 22. Summary of costs of work operations and intermediates in **maize production**

Ord. No.	Production costs (RSD)		Total (RSD)
	Work operations	Intermediates	
1.	1,196,870.89	982,603.00	2,179,473.89

Table 23. Summary of costs, yield and profit in the production of **mercantile maize** on an area of 22.8ha (plot No.13)

Expenditures (RSD)	Total yield (kg)	Avg. yield (kg/ha)	Avg. yield in Šumadija region (kg/ha)	Sale price (RSD/kg)	Market price (RSD/kg)	Gross income (RSD)	Profit (RSD)
2,179,473.89	178,100	7,811	-	2.00	-	356,200.00	- 1,823,273.89

Note: Extremely high temperatures in growing season (since the beginning of June) resulted in the decrease of the growth and development of the maize, which is why the mercantile maize is sold for silage.

Table 24. Summary of costs of work operations and intermediates in **sunflower production**

Ord. No.	Production costs excluding VAT (RSD)		Total (RSD)
	Work operations	Intermediates	
1.	2,512,556.20	1,350,701.50	3,863,257.70

Table 25. Summary of costs, yield and profit in the production of **mercantile sunflower** on an area of **22.8ha** (Plot No.13)

Expenditures (RSD)	Total yield (kg)	Avg. yield (kg/ha)	Avg. yield in Šumadija region (kg/ha)	Sale price (RSD/kg)	Market price (RSD/kg)	Gross income (RSD)	Profit (RSD)
3,863,257.70	45,900	1,300	1,400	54,50	55,00*	2,501,550.00	- 1,361,707.70

Note: * sale price at the time of selling

Table 26. Summary of costs of work operations and intermediates in **soybean in grain**

Ord. No.	Work operations	Intermediates	Total (RSD)
1.	1,525,951.73	614,083.00	2,140,034.73

Table 27. Summary of costs, yield and profit in the production of **soybean for grain** on an area of **23.10ha**

Expenditures (RSD)	Total yield (kg)	Avg. yield (kg/ha)	Avg. yield in Šumadija region (kg/ha)	Sale price (RSD/kg)	Market price (RSD/kg)	Gross income (RSD)	Profit (RSD)
2,140,034.73	6,400	400	700 – 1,000	61.43	71.00*	393,152.00	- 1,746,882.73

Note: * sale price at the time of selling

Table 28. Summary of costs of work operations and intermediates in **the production of apples**

Ord. No.	Work operations	Intermediates	Total (RSD)
----------	-----------------	---------------	-------------



1.	1.995.080,00	699.233,00	2.694.313,00
----	---------------------	-------------------	---------------------

Table 29. Summary of costs, yield and profit in the **production of apple** on an area of 7ha

Expenditures (RSD)	Gross Income (kg)	Estimated yield (kg)	Avg. yield in Šumadija region (kg/ha)	Sale price (RSD/kg)	Market price (RSD/kg)	Gross income (RSD)	Profit (RSD)
2,694,313.00	24,300*	90,000	20-30	15.00*	20-30	359,500.00	-2,334,813.00

Note: *- It was sold 10,000kg of fallen apples at the price of 12 RSD and 6,500kg of picked apples at the price of 20.00 RSD

Table 31. Summary of costs of work operations and intermediates in the **production of alfalfa for hay**

Ord. No.	Work operations	Intermediates	Total (RSD)
1.	1,188,000.00	-	1,188,000.00

Table 32. Summary of costs, yield and profit in the **production of alfalfa for hay** on an area of 20.00ha (Plot No.15)

Expenditures (RSD)	Gross Income (kg)	Estimated yield (kg)	Avg. yield in Šumadija region (kg/ha)	Sale price (RSD/kg)	Market price (RSD/kg)	Gross income (RSD)	Profit (RSD)
1,188,000.00	77,020	3,801	-	*	10	649,484.00	-538,516.00

Note: *- It was sold, from the first swath, 3,200kg at the price of 11.63 RSD/kg, 42,440kg at the price of 8.70 RSD/kg and 1000kg of the scattered hay was given as a donation. Second and third swath were sold at the price of 8 RSD/kg

Table 33. Overview of maintaining costs in agriculture production for growing season 2011/12

	Agricultural Crop	Expenditures (RSD) without VAT		Total (RSD)
		Mechanical Services	Intermediates	
1.	Production of mercantile wheat- 25.90ha	1,619,884.00	932,109.00	2,551,993.00
2.	Production of mercantile maize- 22.80ha	1,196,870.89	982,603.00	2,179,473.89
3.	Production of mercantile sunflower- 35ha	2,512,556.20	1,350,701.50	3,863,257.70
4.	Production of soybean for grain- 25.10ha	1,525,951.73	614,083.00	2,140,034.73
5.	Production of alfalfa for hay- 20.00ha	1,188,000.00	-	1,188,000.00
6.	Apple orchard- 7.00ha	1,995,080.00	699,233.00	2,694,313.00
	Total	10,038,342.82	4,578,729.50	14,617,072.32

During October and November 2012, the autumn works for growing season 2012/13 were done. Table 32 shows the overview of the costs for autumn works.

Table 34. Overview of maintaining costs in agriculture production for autumn works in growing season 2012/13

	Agricultural Crop	Expenditures (RSD) without VAT		Total (RSD)
		Mechanical Services	Intermediates	
1.	Production of mercantile wheat- 35.00ha	1,137,500.00	1,058,600.00	2,196,100.00
2.	Production of mercantile maize- 25.90ha	464,104.69	444,000.00	908,104.69
3.	Production of mercantile sunflower-23.10ha	413,931.21	390,720.00	804,651.21
4.	Production of soybean for grain- 25.10ha	408,555.48	304,140.00	712,695.48
5.	Apple orchard- 7.00ha	55,044.90	176,400.00	231,444.90
	Total	2,479,136.28	2,373,860.00	4,852,996.28

Table 35. Summary of maintaining costs in agricultural production for autumn works in growing season 2012/13

	Growing season 2011/12	Autumn works in 2012	Total (RSD)
1.	14,617,072.32	4,852,996.28	19,470,068.60

Tables from 36 to 39 provide the overview of the investment costs for agricultural production until 31 Dec. 2012

Table 36. Overview of the investment cost for agricultural production in season 2011/12

	Agricultural Crop	Expenditures (RSD) without VAT		Total (RSD)
		Work operations	Intermediates	
1.	Production of vetch+oats on the plot "Racetrack" (10.00ha)	469,873.20	325,800.00	795,673.20
	Total	469,873.20	325,800.00	795,673.20

Table 37. Overview of the investment in agricultural production for autumn works in growing season 2012/13

	Agricultural Crop	Expenditures (RSD) without VAT		Total (RSD)
		Work operations	Intermediates	
1.	Production of alfalfa on 10.00ha	179,191.00	133,200.00	312,391.00
	Total	179,191.00	133,200.00	312,391.00

Table 38. Overview of investments in agriculture for made **Projects** up to 31 Dec 2012

	Project Name	Expenditures (RSD)	Note
1.	Preliminary design for the Development of general thematic maps of agricultural land usage in GIS environment in MB "Kolubara" (Contract No. 2-01-5-384 of 31 Jan. 2012, The Institute of Soil Science)	2,999,800.00	Project taken
2.	The report "Analysis of physical and chemical properties of soil for the needs of planting fast-growing tree species" (Contract No. 2-01-5-1547 of 25 July 2012, Institute of Soil Science, Belgrade)	80,000.00	Report accepted
	Total	3,079,800.00	

Table 39. Summary of investment costs up to 31 Dec 2012

	Investment costs in agriculture	Costs of the Project made	Total (RSD)
1.	1,108,064.20	3,079,800.00	4,187,864.20

Table 40. Summary of total expenditures in agricultural production in period from 01 Jan 2012 to 31 Dec 2012

	Investment costs in agriculture	Maintaining Costs	Total (RSD)
1.	4,187,864.20	19,470,068.60	23,657,932.80

Table 41. Overall cost of agricultural production in the growing season **2011/12** as of **30 Dec 2012**

Ord. No.	Area size (ha) Plot No.	Crop	Spent (RSD)	Cost price (RSD/ha)	Gross income (kg; bale)	Income (RSD)	Loss/profit (RSD)
1.	25.90	Mercantile wheat	2,551,993.00	98,532.55	97,500	2,057,250.00	- 494,743.00
2.	22.80	Mercantile maize	2,179,473.89	95,590.96	178,100	356,200.00	-1,823,273.89
3.	35.00	Mercantile sunflower	3,863,257.70	110,378.79	45,900	2,501,550.00	- 1,361,707.70
4.	23.10	Soybean for grain	2,140,034.73	92,642.20	6,400	393,152.00	-1,746,882.73
5.	20.00	Alfalfa for hay	1,188,000.00	59,400.00	77,020	649,484.00	- 538,516.00
6.	10.00	Vetch + oat	795,673.20	79,567.32	Plowed under as green manure		- 795,673.20
7.	7.00	Apple orchard	2,694,313.00	384,901.86	-	-	- 2,334,813.00
	Total: 143.80		15,412,745.52			6,317,136.00	- 9,095,609.52

4.2. RECLAMATION AND MAINTENANCE OF FORESTS AND HORTICULTURAL MAINTENANCE

In the period 01 Jan 2012 – 30 Sep 2012, the Department of Forestry carried out the following works:

1. Regular shipping of timber assortments accompanied with the supporting documents as pursuant to the Law on Forests ("Official Gazette", No. 30/10). Overview of the shipment is given in Table 23.
2. Regular supervision over the works envisaged by the Contracts:
 - Setting up safety zones according to the Project, in length of 840m in Baroševac, No. 2-01-2-1770 of 20 Sep 2012;
 - Forestation of the final slope of dump site OPM "Tamnava- West Field" on the area of 7,60 ha, No. 2-01-2-1772 of 20 Sep 2011;
 - Greening and maintenance of the New Medoševac settlement center area landscape around the football pitch Cvetovac and buildings for the shift staff at Kalenić, No. 2-01-2-2858 of 09 Dec 2011;
3. Afforestation of the final slope based on the final slope reclamation Project on the landfill Tamnava- East Field toward the "racetrack" Cvetovac-Sumeđ, No. 2-01-17-2701 of 22 Dec. 2010;
4. Monitoring of the free area greening at the site of the new cemetery and chapel Baroševac, No. 2-01-2-2928 of 27 Dec.2011

Table 42. Shipping timber with supporting documents in the period 01 Jan 2012 - 31 Dec 2012

Item	Place of shipment	Wood quantity (m ³)		
		Firewood	Technical and cellulose	Total
I quarter				
1.1.	Timber dispatched from temporary warehouses	124.00	0.00	124.00
2.1.	Timber dispatched from the place of cutting	470.55	143.35	613.90
II quarter				
2.1.	Timber dispatched from temporary warehouses	75.53	21.94	97.47
2.2.	Timber dispatched from the place of cutting	1870.16	100.91	1971.07
III quarter				
3.1.	Timber dispatched from temporary warehouses	156.70	44.68	201.38
3.2.	Timber dispatched from the place of cutting	312.64	43.25	355.89
IV quarter				
4.1.	Timber dispatched from temporary warehouses	20.00	0.00	20.00
4.2.	Timber dispatched from the place of cutting	542.56	94.98	673.54
Total:				
Timber dispatched from temporary warehouses		376.23	66.62	442.85
Timber dispatched from the place of cutting		3,195.91	382.49	3,578.40

Table 43. Shipping timber from the temporary warehouses by location/purpose in m³

Warehouse Name	Purpose			Location	
	Timber sold by bidding	Donation	For OP needs	Warehouse "Staro severno krilo"	Sawmill OP "Field D"
Temporary warehouse "Nova Montaža"	14.00	2.00	19.18	11.30	22.27
Warehouse OP "Tamnava West Field"	0.00	178.50	107.90	0.00	0.00
Warehouse OP "Veliki Crljeni"	0.00	28.00	0.00	0.00	39.70
Warehouse "Staro severno krilo"	0.00	20.00	0.00	0.00	0.00
Total:	14.00	228.50	127.08	11.30	61.97
Total:					442.85

Table 44. Shipping timber from the place of cutting toward the location/aim in m³

Aim					Location						
For MB "Kolubara" needs			Timber sold by bidding	Donation	Warehouse "Ceroviti Potok"	Sawmill OP "Field D" in Junkovcu	Warehouse "Staro severno krilo"	Gater OP "Tamnava-West Field"	Warehouse "Nova Montaza"	Warehouse OP "Tamnava-West Field"	Warehouse OP "Veliki Crljeni"
For OP needs	Department for agriculture	Sector for environment protection and									
206.34	9.54	0.80	74.00	32.80	148.97	76.60	742.57	147.62	14.70	143.73	1,980.73
TOTAL:					3,578.40m³						

Table 45. The costs of maintenance incurred under the Contract No. 2-01-17-825 of 28 Apr 2010.

Ord. No.	Activity description	Value (RSD)	Note
1.	Clearing undergrowth trees and shrub species*	1.380.154,00	At the location "Vreoci - Separation unit" an area of 80,900 m ² was cleared
2.	Trees cutting at the location "Istocna kipa" (East dump)**	5.473.780,74	1.026,76m ³ of wood varieties was produced
Total:		6,853,934.74	

Note: * Although the works were completed in 2010, they were not invoiced until 16 Apr 2012 because Kolubara Services had no geodetic basis for their calculation.

** works completed in 2010/11, but the protocols refused at first, were signed on 16 May 2012

Table 46. Maintenance costs under the contract No. 2-01-5-516 of 02 Mar 2012 for the period (01 Jan – 30 Sep 2012)

Ord. No.	Activity description	Costs (RSD)			Comment
		Invoiced	Not invoiced	Total	
1.	"Sanitary trees cutting " in the period from March 21 to April 11, 2012	254,974.48	0.00	254,974.48	It was made 34 m ³ of wood varieties
2.	"Clean cutting" for the period 23 Apr-30 Sep 2012	3,640,439.20	485,645.31	4,126,084.51	It was made 417,47m ³ of wood varieties
3.	Clearing undergrowth trees and shrub species in the period 21 Mar – 30 Sep 2012	3,717,313.96	61,732.00	3,779,045.96	Clearing undergrowth trees on 132.604,00m ²
4.	Forests growing – on reclaimed area of 2.43ha	23,375.12	32,554.76	55,929.88	adding mineral fertilizer and cultivating seedlings - dusting (776 pcs.)
5.	Forests growing-on reclaimed area of 15.29ha	0.00	47,783.40	47,783.40	Plowing and watering plants (776 pieces)
6.	Exploitation of forests- thinning (Allocation and development of Implementation Project)	0.00	5,620,986.68	5,620,986.68	Allocation and backing implementation projects made for 12 departments
Total		7,636,102.76	6,248,702.15	13,884,804.91	

Note: *- the works are completed in 2012, but the minutes are not delivered yet

Table 47. Overview of the investment costs in forestry as of 12 Dec 2012

TYPE OF SERVICE	NAME OF INSTITUTION	CONTRACT NUMBER	COSTS (RSD) without VAT	NOTE	CONTRACT STATUS
Afforestation of Tamnava East Field dumpsite final slopes in the direction towards "Racetracks" Cvetovac Sumedj*	Company for asset protection and maintenance of the facility Kolubara Service	Contract No. 2-01-17-2701 of 22 Nov 2010	2,881,740.02	Left for payment 2,343,457.62	Realization in progress



Raising 840m long safety zone in Baroševac according to the Project*	Company for asset protection and maintenance of the facility Kolubara Service	Contract No. 2-01-2-1770 of 20 Sep 2011	2,823,582.36	Left for payment 506,703.52	Realization in progress
Afforestation of the final slope at OPM "Tamnava West Field"**	Company for asset protection and maintenance of the facility Kolubara Service	Contract No. 2-01-2-1770 of 20 Sep 2011	1,618,738.56	Left for payment 1,199,023.91	Realization in progress
Purchase of the official uniform for rangers-game warden		Order No. 2-01-1041 of 21 Feb 2012	88,920.00		Realized
SUMMARY OF THE SPENT COSTS (without VAT) FOR PERIOD OF 01/01-31/12/2012 :					7,324,060.94

Note: *Area reduction had an impact on the cost reduction

**Not-invoiced works are approximate and amount 494,928.40 RSD, that is, regarding that the Contractor was not able to procure the seedling of required age and height, so the price of these seedlings can be accepted as the Contract states, but has to be lower. Smaller seedlings require fewer intermediates

Contractor is required to perform the replacement of the inappropriate seedling of oak and Douglas fir, as well as to chemically treat the seedlings of sessile due to occurrence of powdery mildew. Also, Contractor did not conduct the initial watering of the 1119 seedlings which obliges him to perform the replacement of the same at the spring in case of the occurrence of the dry air pockets due to not compacting soil around the roots.

Table 48. Summary of forestry costs in the period 01 Jan 2012 – 31 Dec 2012

Investment costs*	Maintenance costs	Total (RSD)
7,324,060.94	13,884,804.91	21,208,865.85

Note: *Invoiced only 3,363,795.89

Table 49. Overview of horticulture maintenance costs incurred under the contract No. 2-01-17- 825 of 28 Apr. 2010 and Annex to the Contract No. 2-01-2-2215 of 20 Oct 2011 (negotiation procedure)

Ord. No.	Type of service	Value (RSD)		
		Services	Intermediates	Total
"Field D" and "Field B"				
1.	Maintenance of green surfaces - 160,912 m ²	6.851.380,70	689.213,28	7.540.593,98
Tamnava West Field				
2.	Maintenance of green surfaces - 54.865 m ²	2.247.093,01	35.489,60	2.282.582,61
Tamnava East Field				
3.	Maintenance of green surfaces - 17.095 m ²	448.754,33	126.980,44	575.734,77
All the OPMs				
4.	Mechanical destruction of ragweed - 494.654,70 m ²	2.450.211,36	12.000,00	2.462.211,36
	Total	11,997,439.40	863,683.32	12,861,122.72

Note: Works are realized during 2010 and 2011, but the minutes are delivered in the first quarter of 2012

Table 50. Overview of horticulture maintenance costs incurred under the contract No. 2-01-5-516 in the period from 02 Mar 2012 to 31 Dec 2012

Ord. No.	Type of service	Value (RSD) without VAT			
		Mechanical services	Intermediates	Total*	Not paid**
"Field D" and "Field B"					
1.	Maintenance of green surfaces - 200,050.7m ²	6,403,472.14	226,583.43	6,630,055.57	2,920,000.00
Tamnava West Field"					
2.	Maintenance of green surfaces - 68,535m ²	3,448,919.01	63,601.98	3,512,520.99	1,230,000.00
"Tamnava East Field"					
3.	Maintenance of green surfaces- 25,138 m ²	1,262,018.72	60,647.10	1,322,665.82	1,250,000.00

All OPM					
	Mechanical destruction of ragweed-86,667 m ²	1,064,299.69	0.00	1,064,299.69	600,000.00
	Total	12,178,709.56	350,832.51	12,529,542.07	6,000,000.00

Note: *Costs of performed works pursuant to signed minutes.

**Works performed in the last trimester of 2012 are not paid because the Minutes are not delivered for validation, so that, in the column "Not paid", the approximate costs are stated.

Table 51. Summary of costs in horticulture under the Contract No. 2-01-5-516 in the period 02 Mar 2012 – 31 Dec 2012

Paid (RSD)	Not paid (RSD)	Total (RSD)
12,529,542.07	6,000,000.00	18,529,542.07

Table 52. Overview of investment costs in horticulture in the period 01 Jan 2012 – 31 Dec 2012

Ord. No.	Activity	Costs (RSD)		
		Mechanical services	Intermediates	Total
1.	Raising lawns in the safety zone in Baroševac - 6,860.40 m ²	150,494.30	137,472.00	287,966.30
	Total	150,494.30	137,472.00	287,966.30

Table 53. Summary of costs in horticulture in the period 01 Jan 2012 – 31 Dec 2012

Investment costs	Maintenance costs	Total (RSD)
287,966.30	31,390,664.79	31,678,631.09

In the table 54, the total costs of maintenance and investments in biological reclamation of the Branch Open Pit Mines Baroševac are shown in the period from 01 Jan 2012 to 31 Dec 2012.

Table 54. Summary of biological reclamation costs incurred in the period 01.01- 31.12.2012.

Section	Investment costs	Maintenance costs	Total (RSD)
Agriculture	4,187,864.20	19,470,068.60	23,657,932.80
Forestry	7,324,060.94	13,884,804.91	21,208,865.85
Horticulture	287,966.30	31,390,664.79	31,678,631.09
Total	11,799,891.44	64,745,538.30	76,545,429.74

During 2012 there has been a lot of objective and subjective reasons for poor seedling reception in forested sites. In autumn season 2012, replacement of the seedlings was performed, and the end of the replacement is going to be in the spring 2013.

4.3. OVERVIEW OF THE CONTRACTS STATUS IN THE SERVICE FOR BIOLOGICAL RECLAMATION

The table 55. shows the overview of the launched Public procurements by Biological reclamation Service and the status thereof as of 31 Dec 2012.

Table 55. Launched Public procurements Overview

Ord. No.	Subject of Public procurement	Order	Estimated value of PP	Status of PP	Note
1.	Performing "Main construction project for tree-nursery with internal roads"	Bids invitation 20.10.11.	11.000 Nh*	the Branch "Project"	Project in making
2.	Performing the works of raising plantation and its maintenance in the first year in accordance with the executive design of forming energy crops plantation for biomass production in MB Kolubara	1291085 (150)	1.000.000,00	Procurement under way**	Position from the plan 26.11/2
3.	Procurement of the Growth drill	182 of 16 Nov 2012	40,000.00	PP under way	Position from the plan 25/20
4.	Procurement of the marking chalk	183 of 16 Nov 2012	36,000.00	PP under way	Position from the plan 25/20



5.	Procurement of the Forest altimeter	184 of 16 Nov 2012	22,000.00	PP under way	Position from the plan 25/20
6.	Procurement of the GPS device	185 of 16 Nov 2012	170,000.00	PP under way	Position from the plan 25/20
7.	Plan for the protection of forests against fire**	158 of 27 Jun 2012	2.000.000,00	PP under way**	Position from the plan 26.11/4
8.	Project for raising energy plantations of short rotations in OPM "Field B")	159 of 13 Jul 2012	1.500.000,00	PP under way**	Position from the plan 26.11/1
9.	Continued work on the development of forest roads (gravel base preparation, installation of culverts and construction of drainage ditches)	155 of 18 Jun 2012	9.000.000,00	PP under way**	Position from the plan 22.7/1
10.	The project for plantation honey trees	160 of 20 Jul 2012	1.000.000,00	PP under way**	Position from the plan 22.7/5

Remark: *According to the selected bid of Kolubara Project No. 6913 of 25 Oct 2011 the price for developing technical documentation was expressed in norm hours

** These orders were signed by the Director of the Branch OPM Barosevac and forwarded into the Investment Sector and did not further realized.

4.4. OTHER ACTIVITIES

1. Participation in the work of Commission for conducting PP of services, No. U-103/11-3 OG, for biological reclamation in two year period by the company "Kolubara Services";
2. Participation in the work of Commission for conducting PP No. U-1257/11MV-4NT for making a techno-economic analysis on the use of woody biomass from the exploited mining areas of MB Kolubara OPMs in heating purposes, and also in the Commission work on PP procedure No. U-1144/12MB-4N for making Analysis of physical and chemical properties of soil for the needs of the Project for plantations of fast-growing tree species;
3. Participation in the development of Instructions for the sale of agricultural products (UK 7.2.1.2) and Instructions for the sale of timber (UK 7.2.1.3);
4. Participation in the work of Commission for extraordinary inventory of forests and perennial plants;
5. Regular tour of the MU "Reik Kolubara" and inspection of the status of timber relating documents;
6. Inspection of works at the Junkovac experimental area, which was built on the basis of the Pilot project;
7. Preparation on Assessment reports on the damage caused by illegal cutting and forest fires;
8. Marking of expropriated forest areas affected by the mining activities and recorded receiving of expropriated forests that are either planned for investments or expropriated under the "expansion" pertaining to the Deforestation Procedure Order in MB "Kolubara" and supporting records on woody biomass, No. 2-01-3479 of 30 May 2012;
9. Filling out the form No. FK 4.2.2.0.1 – The track list of IMS
10. Preparation of the Manual for safe work in agriculture
11. Preparation of the Manual for safe work in forestry
12. Preparation of the Extraordinary inventory of the forest and growing crops
13. Preparation of the Regular inventory of the forest and growing crops

Employees in the Department of Biological reclamation:

1. Novica Živković, grad. agric. eng, Head of Department of Agriculture
2. Verica Živković, M.Sc in Agric. Eng., engineer for orcharding
3. Jelena Đurić, Grad, agric. eng, engineer for crop farming
4. Ivana Popović, Grad. agric.eng, engineer for plants protection
5. Dargo Morača, Grad. agric. eng, engineer for agricultural machinery
6. Vladimir Milutinović, agric. techn., supervisor in crop farming
7. Jelena Danilović, agric. techn., technician for pedology analysis
8. Aleksandar Birčević, grad. forest eng, Head of Department for Forestry
9. Julijana Pažinović, grad. forest eng, engineer for forestry
10. Zoran Škara, forest techn., ranger-game warden
11. Andrew Prichet, agric. techn., supervisor in forestry
12. Nikola Ranković, grad. forest. eng., employee in the Company Kolubara Services"
13. Tikomir Krsmanović, forest techn. - employee in the Company „Kolubara Services“ – ranger-game warden
14. Željko Veselinović- forest techn. - employee in the Company „Kolubara Services“ – ranger-game warden.



5. CONCLUSION

Thanks to the participation in the international project "IN2WOOD" and preparation of the Study "TEA possibilities of the woody biomass usage from the exploitation site in OPM Kolubara for heating purposes", it appeared an opportunity for the new usage of the existing resources within OPM Kolubara, as well as the employment of the local population. This Study clearly defines the potential possibilities of using the forest residues at the level that provides a guarantee income for MB "Kolubara" without new financial investments, but only with the reorganization of the existing stuff and infrastructure. Potential of the 145ha of the existing sites where agricultural crops are produced, is possible to replace with the biomass production, because at this site, it is recorded the net loss of 100,000.00 EUR in 2012 (without the personal income of the employees). Based on all the above, the proposal was sent to the Director MB "Kolubara" for reorganization of the Service for biological remediation and introduction of the renewable energy sources into the business policy of the MB "Kolubara".

To exploit biomass and woody residue generated during coal mining, it is necessary to organize the warehouses of the wood stockyard at all OPM. Also, problems related to the preservation and care of forests, as well as the lack of qualified staff from this area of expertise, is transferred to 2013. Significant improvement is related to the regular monthly reporting and costs control, but the main problems are not solved.

Managing of the industrial waste was at the satisfactory level in the first half of 2012. Procedures for sale of the industrial (hazardous and non-hazardous) waste are initiated; Assembly of MB "Kolubara" made a decision on the sale of the waste through public bidding, at the beginning of May. Unfortunately, in the second half of 2012, the waste sale was completely suspended, the existing Contracts expired, and the new ones were not made in the meantime. Management of the certain types of hazardous waste was seriously threatened; particularly waste batteries and waste oils management, due to the lack of storage, as well as the inability of keeping. One of the reasons for this effect may be insufficient engagement of those responsible for the waste management in MB "Kolubara" and undefined relation with the Commercial Sector, i.e. the lack of respect for the deadlines for the implementation of certain procurements. At the moment, in the Commercial Sector we have the deadlock over the Project Program of Measures for OP "Field C" and OP "Tamnava West Field", which is directly connected with the ESAP document of the project "Environment improvement in MB Kolubara", which is financed by EBRD.

All the projects, defined by the ESAP document (EBRD), have been launched, the Study on the initial state of the environment for the OPM "Field C" was successfully completed and we have the consent from the EBRD environmental consultant, Mr. Martin McKee. The Study "Cadaster of flora and fauna for OP "Field C" is under preparation and this is certainly the first project of the kind in EPS.

Preparation of the Study "Preliminary feasibility Study with the general design of the (energy) use of all waste materials generated in the processing of the coal, coal of low calorific value, biomass and combustible industrial waste in MB "Kolubara", which is financed by the Serbian Environmental Protection Fund in amount of 15,000,000.00 RSD pursuant to Contract No. 2-07-17-2370 of 29 Nov 2010 (paid 6,256,800.00 up to now), developer: Entel-Energoprojekt, is in the final phase and will be finished and delivered to the Technical Council of EPS for adoption, by the end of February 2013.

Cooperation with the local communities is also satisfactory, but, in the future we expect the significant improvement and expansion of cooperation.

Head of Environmental Protection and Enhancement Department

Vukica Popadić Njunjić, civ.eng.grad.,MSc