

AREP '13

IZO '13



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Annual Report
of Environmental
Protection for 2013

Sarajevo, 2014





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FOREWORD BY GENERAL MANAGER



General MANAGE
dr. Elvedin Grabovica

A handwritten signature in blue ink, appearing to be 'EG', located below the name of the General Manager.

JP Elektroprivreda BiH d.d. – Sarajevo, in accordance with past practice, continuously monitors and analyses the impact of its business processes to the environment as a whole. Annual report on environmental protection provides an overview of the achieved results and most significant investments in environmental protection in 2013.

Projects of development, reconstruction and modernization of existing electric power facilities are based on the application of the relevant legislation in the field of environmental protection, and in accordance with the international obligations of Bosnia and Herzegovina related to the energy sector in the segment of environmental protection. With a view to long-term sustainable development, responsible investment, competitiveness, economic growth and austerity measures aimed at rationalizing of operating costs, our company reaches the leading position in the production of electric power in the country and in the region. JP Elektroprivreda BiH d.d. - Sarajevo will pay particular attention to realization of capital investments, through the construction of new generating capacities from renewable energy sources and new thermal power capacities, which meet the environmental requirements, and distribution capacities, with the objective of increasing the production and sale of electric power, as well as increasing of energy efficiency, i.e. reduction of energy losses in the production and distribution network.

Using renewable energy sources, especially the construction of hydropower plants and wind parks, we will seek to implement the EU legislation on increasing the use of renewable energy, and contribute to the global task of reducing the emissions of greenhouse gasses and pollutants in the atmosphere.

In all segments of environmental protection, our company in a timely, objective and transparent manner, reports to the government structures at all levels, relevant competent institutions, local self-governments communities, media, non-governmental organizations and the interested public.



POWER AND THERMAL ENERGY GENERATION

The Public Enterprise Elektroprivreda of Bosnia and Herzegovina Inc. – Sarajevo (hereinafter: JP Elektroprivreda BiH) performs power and thermal energy generation in three production facilities: Thermal power plant Tuzla (TPP Tuzla), Thermal power plant Kakanj (TPP Kakanj) and Hydro power plants on Neretva (HPP on Neretva), as well as in three distribution subsidiaries that manage the small hydro power plants (sHPP s) (Elektrodistribucija Sarajevo, Elektrodistribucija Tuzla and Elektrodistribucija Bihać).

The total installed generating capacity is 1.682 MW, of which 69% are thermal power plants, 30% are hydro power plants and 1% is small hydro power plants.

TPP Tuzla and TPP Kakanj, in addition to the electric power, also provide thermal power for district heating of the cities Tuzla, Lukavac and Kakanj.

In 2013, JP Elektroprivreda BiH achieved the total electricity generated of 7,473 GWh, out of which thermal power plants generated 5,550 GWh (TPP Tuzla 3,290 GWh and TPP Kakanj 2,260 GWh), and hydro thermal plants 1,923 GWh (HPP on Neretva 1,854 GWh and sHPP 69 GWh) (Diagram 1).



Diagram 1.
Power and thermal energy generated in 2013.

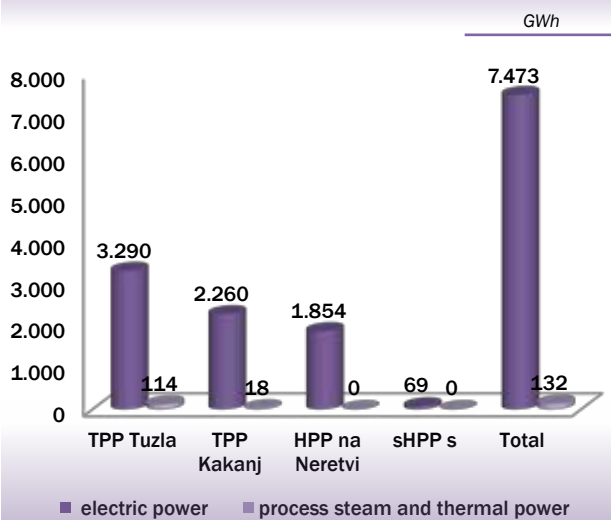


Diagram 2.
Balance of power and thermal energy in TPP Tuzla and TPP Kakanj

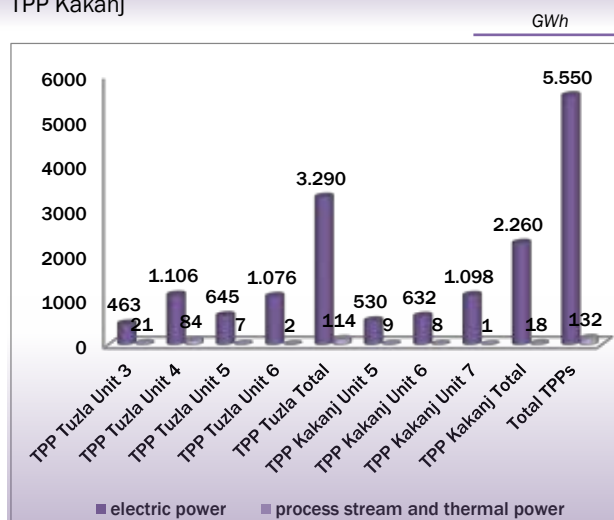


Diagram 3.
Balance of electric power generation in HPP on Neretva

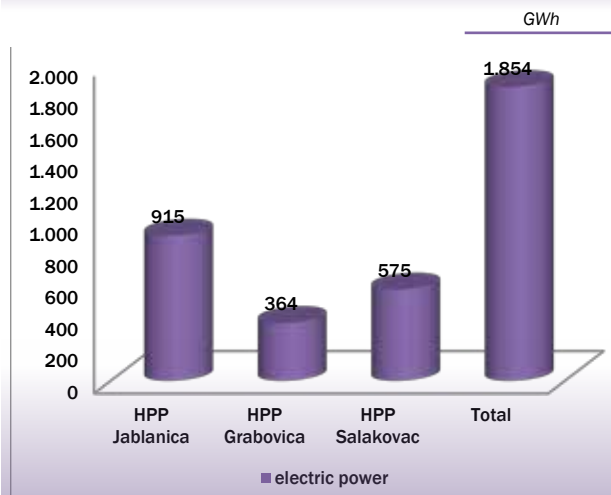
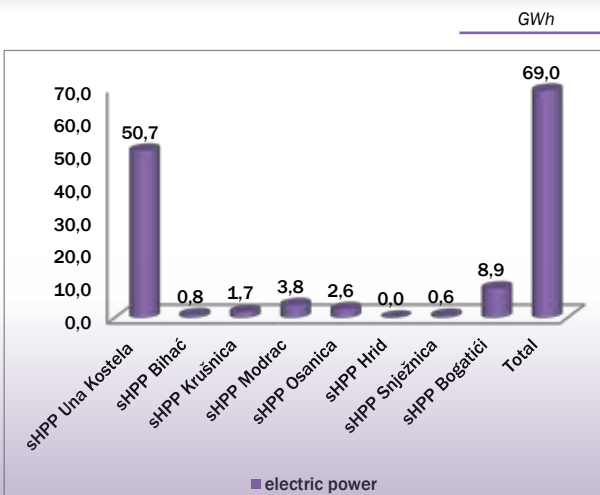


Diagram 4.
Balance of electric power generation in sHPP s



Operation of the electric power system of JP Elektroprivreda BiH in 2013 was characterized by:

- growth of total electric power generation by 15% compared to the previous year,
- more favourable hydrological conditions,
- growth in hydro power plant production by 69%, and in thermal power plants by 3%
- growth in electric power consumption by 1.6% compared to the previous year
- growth total electric power sales by 1.4% compared to the previous year

TPP Tuzla and TPP Kakanj in 2013 achieved the production of 4.7% less than the planned. The less production was caused partly by the transfer of hydropower production due to the more favourable hydrological conditions. Diagram 2 shows the production of electric and thermal power by units, and Diagram 3 shows the production of electric power from HPPs on Neretva (HPP Jablanica, HPP Salakovac and HPP Grabovica). Diagram 4 shows the production of electric power from sHPP s.



In 2013, thermal power plants spent a total of 5,689,313 t of coal, of which 5,410,332 t (95.1%) for electric power generation, 151,063 t (2.7%) for thermal power and process steam generation, while the remaining 127,918 t (2.2%) accounts for ullage and spillage. Of the total quantities, TPP Tuzla spent 3,590,170 t (63.1%), and TPP Kakanj 2,099,143 t (36.9%) - Table 1.

For ignition and fire support in boilers, in thermal power plants, 1,747 t of heavy oil and 1,926 t of fuel oil were spent.

Table 1 Total annual coal consumption

Power plant	Coal consumption				Specific coal consumption
	t				kg/kWh
	for electric power	for thermal power and process steam	ullage and spillage	Total	
TPP Tuzla					
Lignite	2,142,205	103,176	51,643	2,297,024	0.96
brown 1	546,870	30,786	13,287	590,943	0.25
brown 2	685,385	1,027	15,791	702,203	0.64
Total	3,374,460	134,989	80,721	3,590,170	1.02
TPP Kakanj	2,035,872	16,074	47,197	2,099,143	0.90
TOTAL	5,410,332	151,063	127,918	5,689,313	0.97



BASIC INDICATORS OF ENVIRONMENTAL IMPACT AND ENVIRONMENTAL PROTECTION MEASURES

JP Elektroprivreda BiH, as part of its activities, continually monitors and analyses the impact of its business processes on the environment in accordance with the current legislation in the field of environmental protection.

THERMAL POWER PLANTS

Air pollutants emissions

In accordance with the legislation in the field of air protection, JP Elektroprivreda BiH, during 2013, continued monitoring the air pollutant emissions from thermal power facilities

– sulphur dioxide (SO₂), nitrogen oxides (NO_x), solid particles, and carbon dioxide (CO₂) emissions.

Total annual emissions of pollutants into air and emissions of CO₂ from thermal power plants are given in Table 2.

Table 2 Emissions of pollutants into air and emissions of CO₂ from TPP Tuzla and TPP Kakanj

Power plant	NO _x	SO ₂	solid particles	CO ₂
	t/yr	t/yr	t/yr	t/yr
TPP Tuzla	5,813	53,013	1,204	4,016,912
TPP Kakanj	7,948	73,123	747	2,571,768
TOTAL	13,761	126,146	1,951	6,588,680

Water use and emissions into water

Data on the amount of water consumed for generation of electricity, thermal power and process steam in thermal power facilities, as well as data on the total load of pollution of wastewater expresses in population equivalent (PE) are given in Table 3.

Table 3 Balance of water used and discharged for generation of electricity, thermal power and process steam in TPP Tuzla and TPP Kakanj

Power plant	Used water	Discharged water	Population equivalent (PE)
	m ³	m ³	
TPP Tuzla	16,879,728	7,666,141	521,355
TPP Kakanj	10,158,169	5,576,474	14,370
TOTAL	27,037,897	13,242,615	535,725

In TPP Kakanj, wastewater treatment facilities treated 5,649,705 m³ of waste water. The plant for treatment of sanitary sewage treated 19,548 m³ of waste water. The decarbonisation process created 20,243 m³ of waste oil, while the wastewater treatment in wastewater treatment facilities created 5,470 m³ of sludge. From sludge thickener, 3,194 m³ of sludge was discharged to the slag and ash landfill Turbići. Technical chemicals were used for the preparation of process water and for the wastewater treatment in thermal power facilities. The data on the used typed and quantities of technical chemicals are given in Table 4.



Table 4 Balance of technical chemicals used in wastewater treatment process

Power plant	Type of chemical	Quantity t
TPP Tuzla	Hydrated lime	1,494
	Hydrochloric acid	610
	Soda lye	695
	Iron (III) sulphate	250
	NALCO N 72.310	185
	Sodium chloride	87
	Sodium hypochlorite	3
	Levoxine 15	10.4
	Trisodium phosphate	3
	NALCO N-3DT 149	19
	NALCO N-3DT 199	2
	NALCO N-3.434	0.4
	NALCO pHREE 5200	26
	NALCO 1700	0.4
	Potassium hydroxide	0.05
TPP Kakanj	Whitewash	900
	Hydrochloric acid	237
	Sodium hydroxide	55
	NALCO 71221	37
	NALCO N 7359	25
	Sodium hypochlorite	24
	NALCO N-3DT 149	18
	Fericsulphate	13
	Levoxine	6
	NALCO N-3DT 199	3
	NaCl	3
	NALCO 71605	3
	NALCO 3434	2
	NALCO 7348	1
	Ammonium hydroxide	2
	Trisodium phosphate	1

Impacts on land

TPP Kakanj, for the purposes of disposal of slag and ash, expropriated 17,910 m² of land.

Radioactivity monitoring

In accordance with the “Rulebook on maximum limits of radioactive contamination of the environment and performing decontamination” (Official Gazette of SFRY 8/87, Official Gazette of RBiH 2/92) for TPP Tuzla and TPP Kakanj a regular annual monitoring of radioactivity levels in the generation process and the nearby surroundings of the thermal power plants was realized. The measurement was performed by the Veterinary Faculty, Sarajevo.

For TPP Tuzla, radioactivity in the generation process was measured and it was established that the level of natural and artificial radionuclides in the samples does not exceed the established maximum permitted values for which a certificate was issued.

For TPP Kakanj, the measurement included measurement of radioactivity in generation process and in the nearby surroundings of the thermal power plant, as well as radiological surveys of food of vegetable and animal origin on the site Slapna Gora in the local community Slapnica.

The conducted surveys showed that:

- TPP Kakanj has an impact on the environment in terms of increasing the technologically conditioned natural radioactivity. The top speed of exposure dose of gamma radiation was measured at the Turbići landfill site ($14.19 \cdot 10^{-4}$ nC/kgs) and is 46% higher than the average dose rate in Bosnia and Herzegovina ($9.7 \cdot 10^{-4}$ nC/kgs), and is the lowest by the electrostatic precipitator ($5.45 \cdot 10^{-4}$ nC/kgs).
- The obtained values of specific activities in the used types of coal ranges within the average values of world coals, with the exception of coal from Coal Mine Tušnica the values of which exceed those limits. The conclusion of the research is that the current percentage of coal share from Coal Mine Tušnica in the production process of the thermal power plants must not be increased.
- The activities of natural radionuclides Th-232 and K-40 in ash and slag and in the sample of ash and slag from the landfill are about 2, or 3 times higher compared to the average values of all used coals, while the activities of U-238, U-235 and Ra-226 in the same samples are about 2 times lower compared to the average values of these radionuclides of all used coals. This is due to the high content of U-238, U-235 and Ra-226 in coal of the Coal Mine Tušnica.
- Specific activities of natural and artificial radionuclides in soil samples in and around the thermal power plant are within the average values for the region of Bosnia and Herzegovina. Soil at the tested locations is not additionally contaminated with radionuclides, so that there is no additional radiation risk at the aforementioned locations.
- Specific activities of natural and artificial radionuclides in samples of food of vegetable and animal origin are within the average values for the region of Bosnia and Herzegovina. The tested samples of food of vegetable and animal origin are not additionally contaminated with radionuclides, so that there is no additional radiation risk at the aforementioned location.

A certificate is issued on the conducted research attesting that the measured level of natural and artificial radionuclides in the samples of slag and ash does not exceed the established maximum permitted values.





Control of coal quality

Control of the qualitative and quantitative acceptance of coal and development of chemical analysis of weighted coal samples for TPP Tuzla and TPP Kakanj is continuous. Control covers all quantities of coal specified by locations and assortments in purchase contracts concluded between JP Elektroprivreda BiH and suppliers of coal – coal mines. Quantities and average calorific values of coals were determined through annual, monthly and daily dynamics. Control points are the receiving and takeover points in the coal mines and thermal power plants. Determining the quality and quantity of coal, as well as an examination of purity and proper operation of means of transport is carried out continuously on the days of coal supply, including the days of the weekend.

Control of coal is realized in accordance with the standards BAS EN ISO/IEC 17025, BAS EN ISO/IEC 17020, ASTM, and the provisions of purchase contracts between JP Elektroprivreda BiH and suppliers of coal, all in accordance with the Instruction of the quantitative and qualitative control of coal.

In TPP Tuzla the sampling is done at the point of handover, and is performed jointly by representatives of coal mine and TPP Tuzla. Sampling is done according to the current ISO standards and the Instruction of the quantitative and qualitative control of coal, of which a record is made on the sample taken, which is bilaterally signed.

In TPP Kakanj, control of coal quality is carried out regularly. Control of coal quality is performed by the thermal power plant and Inspekt RGH, Ltd. Sarajevo.

Waste management

Quantity of generated and temporarily deposited waste in temporary storages of TPP Tuzla and TPP Kakanj, and waste supplied for recycling or final disposal to an authorized company for waste management are given in the following tables.



Table 5 Generated, temporarily deposited and supplied non-hazardous waste in TPP Tuzla and TPP Kakanj

Key number	Type of waste	Temporary deposited t	Supplied through contracts t
17 04 05	Iron	276.4	1.678.04
17 04 05	Iron flakes	-	15.38
17 04 02	Aluminium scrap	0.35	27.22
17 04 01	Copper cables, insulated	-	18.18
20 01 36	Electric motors	-	180.96
19 08 05	Sludge water from biorotor/treatment of urban waste water – TPP Tuzla	-	33
19 08 09	Mixture of edible fats and oils from kitchen grease – TPP Tuzla	-	8
10 01 25	Liquid waste from wastewater reservoirs and canals around the coal depots – TPP Tuzla	-	130.5
15 01 02	PVC containers 1,000 L	-	2.67
15 01 02	PVC containers 200 L	-	0.2
17 04 05	Waste iron, various dimensions	-	136.36
19 10 01	Waste steel bars	-	2.44
17 04 01	Copper windings of generator stator	-	5.68
12 01 03	Filings and chippings of non-ferrous metal	-	0.68
17 04 05	Hammers	-	15.5
15 01 04	Waste tin barrels	-	4,5
20 01 01	Waste paper	1	-
17 04 01	Waste copper	0.15	-
16 01 03	Waste rubber band	6.2	-
16 02 14	Old electric motors 0.4 kV	0.1	-
20 01 36	Measuring current transformers	0.9	-
TOTAL		285.1	2,259.31



Table 6. Generated, temporarily deposited and supplied hazardous* waste in TPP Tuzla and TPP Kakanj

Key number	Type of waste	Temporary deposited t	Supplied through contracts t
15 02 02*	Absorbents, filter material, absorbing materials	0.02	1.72
20 01 35*	Discarded electrical and electronic equipment	0.5	0.4
16 01 07*	Oil filters	0.25	0.87
20 01 21*	Fluorescent tubes and waste containing mercury	0.3	0.59
17 06 01*	Insulation material containing asbestos	101.5	1.22
08 03 17*	Waste printing toners	0.101	-
13 05 07*	Sludge from oil separator	-	2.85
13 02 05*	Waste oil I category	-	9.62
13 08 99*	Oiled absorption material and glass wool	0.2	-
20 01 21*	Mercury lamps	0.04	-
13 02 08*	Transformer oil I and II category	0.32	-
13 02 05*	Oil for drive devices and greasing	1.97	-
13 01 10*	Hydraulic oil based on mineral oils	1.02	-
13 05 06*	Oil from oil/water separator	2.34	-
13 05 02*	Sludge from oil/water separator	-	2.5
13 05 07*	Oiled water	0.5	-
13 08 99*	Oiled cloth	0.06	-
13 01 10*	Non-chlorinated hydraulic oils	-	2.5
18 01 06*	Chemicals consisting of or containing hazardous substances	-	5.9
TOTAL		109.12	28.17

Note:

TPP Tuzla collected at the landfill Jezero II approx. 3,000 m³ of waste under code 17 06 05* - construction material containing asbestos.

According to the Law on Waste Management, disposal of construction material containing asbestos is not defined, so the Federal Ministry of Environment and Tourism issues an approval for Waste Management Plan of TPP Tuzla, which prescribes an environmentally friendly way of disposal of waste containing asbestos.

The said Plan prescribes all security measures and procedures for disposal of this type of waste. In accordance with the Contract signed with a consortium of companies HIH Ltd. Živinice and JATA Ltd. Srebrenik and KEMOKOP Ltd. Tuzla for the disposal of this waste. The disposal procedure is monitored by the company KEMOKOP Ltd. Tuzla.

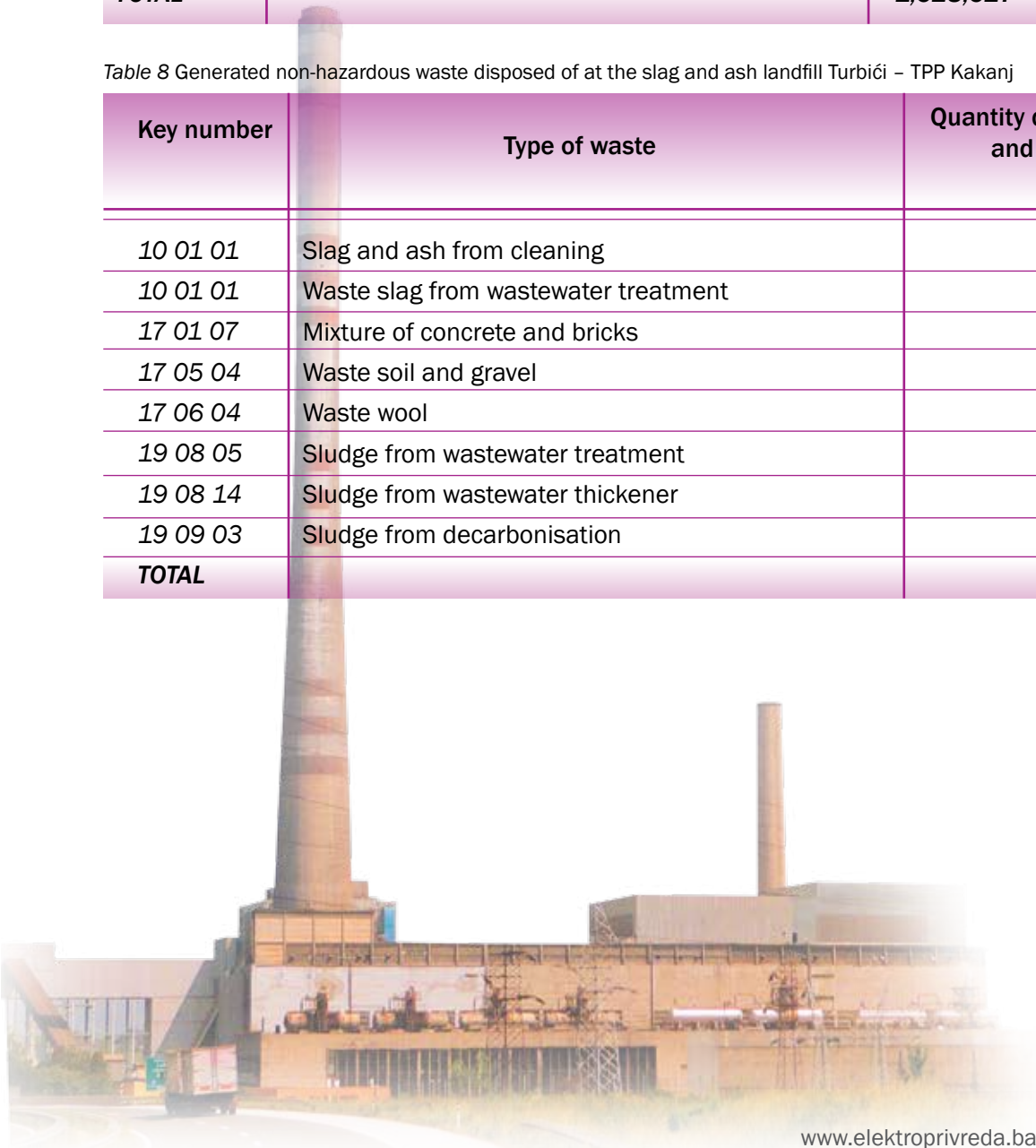
Combustion products disposed of at the slag and ash landfills

Table 7 Slag and ash

Key number	Type of waste	Deposited on slag and ash landfill	Total quantity /supplied
	TPP Tuzla	t	t
10 01 01	Slag from grates in furnaces, slag and dust from boilers (excluding boiler dust under 10 01 04)	568,182	-
10 01 02	Fly ash from coal combustion	478,142	110,258
	TPP Kakanj		
10 01 01	Slag from grates in furnaces, slag and dust from boilers (excluding boiler dust under 10 01 04)	140,109	119,813
10 01 02	Fly ash from coal combustion	342,094	155,147
TOTAL		1,528,527	385,218

Table 8 Generated non-hazardous waste disposed of at the slag and ash landfill Turbići – TPP Kakanj

Key number	Type of waste	Quantity deposited at slag and ash landfill t
10 01 01	Slag and ash from cleaning	1,918.00
10 01 01	Waste slag from wastewater treatment	948.00
17 01 07	Mixture of concrete and bricks	1,259.20
17 05 04	Waste soil and gravel	1,818.00
17 06 04	Waste wool	120.00
19 08 05	Sludge from wastewater treatment	6,920.50
19 08 14	Sludge from wastewater thickener	3,832.80
19 09 03	Sludge from decarbonisation	21,255.00
TOTAL		38.071,50





HYDRO POWER PLANTS ON NERETVA

Water used for electric power generation

Table 9 Water used in Hydro power plants on Neretva

Hydro power plant	Used water m ³
Jablanica	3,655,190,000
Grabovica	4,482,790,000
Salakovac	4,973,740,000
TOTAL	13,111,720,000

Air pollutant emissions

In accordance with an order of the Federal Inspector for the environment, a period measuring of the emission of pollutants into the air from the boiler room of HPP on Neretva was conducted by an authorized company – inspection authority.

Upon the conducted measurement, a Certificate of Inspection was delivered with a conclusion that the emissions of pollutants into the air meet the limit values defined by the Rulebook on limit values for emissions into air from combustion plants (Official Gazette of FBiH, No.: 3/13).

Water pollutant emissions

As part of regular annual monitoring of wastewater from the wastewater treatment plant from HPP Jablanica, HPP Grabovica and HPP Salakovac, chemical, physical and biological properties of waste water were regularly tested.

Testing was conducted by an approved laboratory upon which a Report was obtained on the results of testing the quality of waste water from the plant for purification of sanitary sewage water. The test results showed that from the devices for biological purification from HPP Jablanica, HPP Grabovica and HPP Salakovac all measured indicators are within the permissible limit values for the criterion of waste water discharge into surface water, except for a slightly elevated concentration of suspended solid particles in all samples and concentration of ammonia and total nitrogen in the sample of wastewater from HPP Grabovica – left separator.

In order to solve the problem of waste water in HPP Grabovica the activities were initiated to treat waste water with effective microorganisms to enhance the decomposition of waste substances in purifiers. Also, the activities were initiated to supply oil collector and to install them on the left separator.

Waste management

According to the Plan of waste management, in the temporary storages, the generated waste is selected and temporarily deposited, and supplied for further treatment (Table 10).

Table 10 Generated and temporarily deposited non-hazardous waste

Key number	Type of waste	Temporary deposited t	Supplied through contracts t
16 01 03	Waste tires	-	1.02
17 01 03	Insulators that do not contain oil	-	0.20
17 04 01	Waste copper of various dimensions	-	1.30
17 04 05	Waste iron of various dimensions	10.00	28.73
17 04 05	Scrap steel cable	-	0.34
17 04 05	Iron chips	-	0.32
20 03 01	Waste Al-steel cable	-	0.20
17 04 11	Scrap copper cables with lead insulation	-	0,04
17 04 01	Scrap copper with insulation and other admixtures	-	3.32
19 12 02	Waste aluminium	-	0.06
17 04 11	Waste command and control multi-cord copper cables with insulation	-	0.04
17 04 11	Waste telecommunication cable	-	0.14
17 04 11	AL-Fe cable with screws and clamps	-	0.20
20 01 01	Waste paper and paperboard	-	0.46
20 01 02	Waste glass	-	0,55
20 01 21	Waste switches	-	5.04
03 01 05	Wood chips	0.45	-
TOTAL		10.45	41.96



Table 11 Generated and temporary deposited hazardous waste*

Key number	Type of waste	Temporary deposited t	Supplied through contracts t
08 01 11*	Waste paint and varnish containing organic solvents or other hazardous substances	-	0.21
08 03 17*	Waste printing toner containing dangerous substances	0.01	0.19
11 01 13*	Degreaser	-	0.06
13 03 07*	Non-chlorinated hydraulic oil based on mineral oil (turbine oil)	15.93	-
13 02 05*	Engine oil	0.37	-
13 05 07*	Oily water	-	3.59
14 06 03*	Other solvents and solvent mixtures	-	0.04
15 01 10*	Packaging containing residues of hazardous substances or contaminated by hazardous substances (oily, paint and varnish)	-	0.05
15 02 02*	Absorbents, filter materials (including oil filters not otherwise specified), cloth and wiping and absorbing cloths and protective clothes contaminated by hazardous substances	0.75	2.87
16 06 02*	Nickel – Cadmium batteries (Ni-Cd)	-	0.18
16 06 02*	Lead batteries and accumulators	0.05	0.45
17 04 10*	Cable lines containing oil, tar and other hazardous substances	-	0.28
20 01 21*	Fluorescent tubes and other mercury-containing waste	-	0.22
20 01 27*	Discarded electric and electronic equipment	-	0.59
13 08 99*	Waste not otherwise specified (grease)	-	0.01
16 01 07*	Oil filters	-	0.01
20 01 27*	Paint, ink, glue and resin containing hazardous substances	-	0.39
17 05 03*	Soil and stones containing hazardous substances	2.00	-
16 02 13*	Insulators containing oil	-	3.06
16 02 13*	Waste pumps containing oil	-	3.39
16 02 13*	Waste power transformers containing oil	-	1.64
16 02 13*	Waste current and voltage measuring trafos containing oil	-	4.04
UKUPNO		19.11	21.27

*Hazardous waste is adequately collected by the contracted licensed operator of hazardous waste.

In cooperation with Public Health Institute of FBiH, an action of dismantling and disposal of radioactive smoke detectors was carried out.

For the purposes of accidental spills of oil, a floating dam was purchased to absorb it. Also, absorbents for oil and chemical pollution were supplied.

Table 12 Generated and temporarily disposed of municipal waste, and collected and delivered floating debris accumulated along the dams*

Key number	Name of non-hazardous waste	Supplied through contracts m ³	Currently in storage m ³
20 03 01	Communal waste (floating debris from accumulation)		
	HPP Jablanica	91	-
	HPP Grabovica	251	-
	HPP Salakovac	77	-
20 03 01	Mixed communal waste	208	-
TOTAL		627	-

*Floating debris was successively disposed of from accumulations of HPP Jablanica, HPP Grabovica and HPP Salakovac.

Maintenance of transmission line route

In order to protect and secure access roads in case of faults on 35 kV transmission line Jablanica – dam HPP Jablanica, regular cutting of tree branches and clearing of the route was done. Also, the transmission line route was vectorised for the purpose of land categorization (private or social land) of the 35 kV transmission line route in order to continue in 2014 with activities of cutting of tree branches and clearing of the route.

Fish stocking

Regular annual fish stocking in river Neretva was realized according to the current fish bases and submitted annual restocking programs. Restocking was done in water of the river Neretva in the fishing area – fishing zone Jablanica which is used by association of sport fishermen USR Glavatica, Jablanica and in the fishing area– fishing zone Mostar, which is used by USR Neretva 1933, Mostar with carp fingerlings and fish of weight (250÷1,000) grams. Restocking with fingerlings of sof-mouth trout of growth of (5-8 cm) was done in water of the river Neretva in the fishing area – fishing zone Mostar, which is used by USR Neretva 1933, Mostar. Restocking with brown trout fingerlings and fish of growth of (5-25 cm) was done in water of the river Neretva in the fishing area – fishing zone Jablanica which is used by USR Glavatica, Jablanica and in the fishing area – fishing zone Mostar, which is used by USR Neretva 1933, Mostar.

Also, a repeated tender was published for the procurement of fingerlings and fish for the restocking of water of the river Neretva in the fishing area – fishing zone Konjic, which is used by USR Konjic, Konjic according to the Annual fish stocking program for 2012.





POWER DISTRIBUTION SUBSIDIARIES

Elektrodistribucija Sarajevo

Use of transformer oil

In the framework of the Workshop for transformer repair, during the regular repair and maintenance of substations and transformers, 7,482.57 kg of non-chlorated insulating oil and heat transfer oil based on mineral oil was spent. 13.7% more oil was used compared to the year 2012.

Waste management

In January 2013, a procedure was initiated to select the legal entity licenced for less complex water facilities or activities. The procedure was finalized by the conclusion of a contract for the development of the Main Design for the construction of the storage for temporary waste deposit in the Plant Azići. The Main Design was prepared and the Municipality Ilidža issued the Decision on Urban Planning Permit. In the second half 2013, approvals ordered by the Decision on Urban Planning Permit were collected in order to submit the application for the issuance of Building Permit.

Data on generated, temporarily deposited and supplied non-hazardous waste are given in the summary (all power distribution companies) Table 12, and the data on generated, temporarily deposited and supplied hazardous waste in the summary (all power distribution companies) Table 13.

At sHPP Osanica 1 regular cleaning of the bed of the river Osanica and maintaining of water catchment were performed. Approximately 36 kg of floating waste was collected and disposed of in an appropriate manner. Also, approximately 406 m³ of alluvial deposit was collected and disposed of.

Measures to mitigate negative impacts on the environment

Regular annual fish stocking of the river Osanica (building of sHPP Osanica 1) was conducted on the basis of the Agreement on the improvement of fish stocks in the river Osanica and the Plan for restocking of fishing area of Bosnia-Podrinje Canton Goražde.

Restocking of the river Željeznica has not been conducted yet, because the free water flow was released on the Bogatići dam profile for rehabilitation of the resulting landslide and consequently free migration of fish happens.

Regular ongoing and investment maintenance on sHPP Osanica 1 was conducted. Regular ongoing maintenance included: daily visit to the plant in order to spot defects, daily cleaning and inspection of equipment, lubrication as required, monthly and annual detailed inspection. Investment maintenance included „small“ overhaul (hydraulic drive of units 1 and 2, hydraulic unit of the cleaning machine of the water catchment and testing of protective devices).

Other facilities (substations near water protection areas) were regularly monitored and any technical malfunction was eliminated immediately.

Waste management

According to the Plan for waste management, selective waste collection and temporary disposal of, it was taken over to the contracted operators for its final disposal.

In 2013, there were three annual contracts with waste operators:

- on sale of secondary raw materials containing no hazardous substances,
- on disposal of hazardous waste (toners, oily cloth),
- on disposal of hazardous waste (oily soil, water and absorbent) and intervention in urgent incidental situations.

Besides annual contract, one-time handover of waste was performed.

Data on generated, temporary deposited and supplied non-hazardous waste are given in the summary (all power distribution companies) Table 12, and the data on generated, temporarily deposited and supplied hazardous waste in the summary (all power distribution companies) Table 13.

Measures to mitigate negative impacts on the environment

On the basis of the Agreement with the Association of fishermen, regular annual fish stocking of the Brzava river basin was done. The quantity of fish fingerlings is inserted proportionally to the damage inflicted to the ecosystem and fish stocks by establishing and maintaining of reservoirs and sHPP Snježnica.

Tender for technical surveillance and testing of the dam was published in 2013, and realization of activities is planned in two series by the end of 2014.

In the framework of the objectives of the Environmental management System, an activity was defined to establish better treatment of waste process water. In this sense, a Project of regulation of the part of business circle at the location 5 Mitra Trifunovića Uče Street was made, reviewed and the procedure for procurement of works was initiated. The Project located “dirty surfaces” within the circle, and envisaged the system for discharge of precipitation polluted (oily) water from those surfaces into the separator for purification before discharge into sewage system.

Elektro distribucija Bihać

Use of transformer oil

Elektro distribucija Bihać does not have a workshop for transformer repair. During normal process, or performing of transformer maintenance works within the Department for maintenance of networks and plants, transformer oil was supplemented. 696 l of mineral transformer oil of organic origin was spent. In the activity of electric power generation, within the process of production and maintenance of power facilities in hydro power plants, biodegradable hydraulic oil (HD 68 and SAE 90) and grease (LIS 2) were used. There was spent 413.7 l of hydraulic oil HD 68, 33.55 l of oil for bearings CS 150 and 130.8 kg of grease LIS 2.

Waste management

In accordance with the Plan for waste management and disposal of, the project was initiated to build a storage area at the location Vedro polje. According to the As-built Project, one part of the storage will be intended for temporary disposal of waste until its final disposal. At the moment, waste is disposed of in work circles of business units in improvised areas, depending on the type of waste.



Within sHPP Una Kostela there is a rehabilitated and adapted storage area in which new oil is stored, and the used material and oily cloth are separated in barrels. A report on quantities of waste oil and oil contaminated material is submitted monthly to the Department for Management Systems in order to plan the final disposal in time.

Used oil, lubricants, grease and cleaners are treated as hazardous waste that was collected and temporarily stored in 2012. It was not finally disposed of due to litigation with the company Trgosirovina Ltd. Sarajevo. Final disposal was made in 2013 by the company Valbih Ltd. Konjic.

Data on generated, temporary deposited and supplied non-hazardous waste are given in the summary (all power distribution companies) Table 12, and the data on generated, temporarily deposited and supplied hazardous waste in the summary (all power distribution companies) Table 13.

Measures to mitigate negative impacts on the environment

On the basis of the Plan for fish stocking and the submitted Study on restocking aligned with the Fishing Economic Document, the fish stocking of the river Una was made with brown trout fingerlings (4-10 cm) in quantity of 108,000 pieces and with grayling fingerlings 10-15 cm in quantity of 116,660 pieces.

The restocking of the river Krušnica was made with brown trout fingerlings (12-18 cm) in quantity of 3,200 pieces and (6-10 cm) in quantity of 9,470 pieces.

A Record was made on the performed restocking. Restocking was attended, in addition to the representatives of the associations of sport fishermen and representatives of the Subsidiary of Elektro distribucija Bihać, by veterinary and agricultural inspectors and they confirmed the quality of fingerlings, and that restocking was carried out in accordance with legislation. In November 2013, associations of sport fishermen submitted the Plan of restocking for 2014.

According to the Plan of the Department for maintenance of networks and plants, vegetation and low plants were cut under the distribution network and around power facilities.

Elektrodistribucija Zenica

Waste management

According to the Plan of Business Operations for 2014 – 2016, in the Department for Management Systems for Group of operations for environmental management, regular activities are performed that are related to:

- testing for the presence of polychlorated biphenyls (PCBs) in transformer oils,
- disposal of hazardous waste in an adequate manner (waste oil and waste from liquid fuels, discarded oil filters, discarded batteries, discarded accumulators, discarded fluorescent tubes and other waste containing mercury, discarded electric and electronic equipment...),
- disposal of oily soil and/or watercourses,
- disposal of non-hazardous solid waste,
- wastewater drainage and treatment, and
- project development for Storage of generated waste within the Central storage Zenica.

As part of these activities, the service was realized for takeover, transport and final disposal of electronic waste containing hazardous components by an authorized institution.

Activities were conducted to deliver the data related to electric power equipment filled with PCBs, i.e. the Questionnaire for listing of PCB inventory for Elektro distribucija Zenica was completed and submitted to the consulting company Enova Ltd. Sarajevo. In November 2013 the listing was made and oil samples were taken from electric power equipment from the above Questionnaire by a representative of the consulting company Enova Ltd. Sarajevo.

Data on generated, temporary deposited and supplied non-hazardous waste are given in the summary (all power distribution companies) Table 12, and the data on generated, temporarily deposited and supplied hazardous waste in the summary (all power distribution companies) Table 13.

Measures to mitigate negative impacts on the environment

Regular annual maintenance of the building (performing of construction and craft works on rehabilitation of substations) in Zenica-Doboj Canton and Central Bosnia Canton was conducted to mitigate the negative impact on the environment and increase the reliability of electric power facilities in order to avoid accidents dangerous for the environment.

Rehabilitation of transformer substations was performed in accordance with the technical recommendations that include measures for environmental protection.

In order to increase the reliability of the protection zone and reduce the number of breakdowns on the power plants, and meet the obligation to maintain security of power distribution grid, people, material goods and vegetation, maintenance services were performed, i.e. clearing under the routes of power distribution grid in Zenica-Doboj Canton and Central Bosnia Canton.

Mine clearance service was realized under the routes of power distribution grid in Zenica-Doboj Canton and Central Bosnia Canton, all in order to reduce the burden of UXO and provide safe access to power plants for employees, and to increase the population safety.

Elektro distribucija Mostar

Waste management

Data on generated, temporary deposited and supplied non-hazardous waste are given in the summary (all power distribution companies) Table 12, and the data on generated, temporarily deposited and supplied hazardous waste in the summary (all power distribution companies) Table 13.

Measures to mitigate negative impacts on the environment

In order to increase the reliability of the protection zone and reduce the number of breakdowns on the power plants, and meet the obligation to maintain security of power distribution grid, people, material goods and vegetation, maintenance services were performed, i.e. clearing under the routes of power distribution grid.

Indicators of waste management in power distribution subsidiaries

The total quantities of generated, temporarily deposited and supplied non-hazardous and hazardous waste to authorized operators at branch offices of Elektro distribucija: Sarajevo, Tuzla, Bihać, Zenica and Mostar, are given in the following tables.



Table 13 Generated, temporarily deposited and supplied non-hazardous waste

Key number	Type of waste	Temporarily deposited t	Supplied by contracts t
04 01 99	Waste leather	0,01	0,02
15 01 01	Packaging paper and cardboard	0,05	7,72
15 01 02	Plastic packaging	0,05	0,02
15 01 03	Wooden packaging (drums for cable)	0,40	9,00
15 01 07	Glass packaging	0,05	0,00
16 01 03	Old tires	0,99	4,36
16 01 19	Plastic	0,10	0,37
16 01	Old vehicles	1,00	0,00
16 01 06	Old motor vehicles, car shells that do not contain hazardous substances	2,00	3,20
16 02 14	Measuring devices (meters)	3,45	68,24
16 02 14	Waste voltage and measuring transformers, oil-free	0,42	0,30
16 02 14	Insulators	3,90	13,06
16 05 05	Waste fire extinguishers	0,03	0,00
17 01 01	Concrete – RC poles	9,00	0,00
17 04 01	Copper	1,09	4,41
17 04 02	Aluminium	0,66	19,32
17 04 05	Iron and steel	15,96	94,20
17 04 07	Mixed metals	0,11	0,1
17 04 11	AL - Fe cable	24,79	49,83
17 04 11	Cables (elkalex, Cu and Al), Waste copper cables with electric insulation	8,94	44,21
19 12 07	Wood (wooden poles)	13,10	61,30
20 01 01	Paper and paperboard	0,5	4,58
20 01 08	Wood – municipal waste	0,69	0,00
20 02 01	Biodegradable waste	1,09	0,00
20 03 07	Bulk waste	0,22	0,00
TOTAL		88,60	384,24

Table 14 Generated, temporarily deposited and supplied hazardous waste

Key number	Type of waste	Temporarily deposited t	Supplied by contracts t
08 03 17*	Old toners	0,25	0,10
13 02 08*	Other motor oils	-	0,50
13 03 07 *	Non-chlorinated – mineral insulation oil	0,37	5,00
13 02 05* 13 03 07* 13 05 07*	Used mineral oil (oil for motors, transformers and turbines)	5,00	0,00
15 02 02*	Material for absorption – oily cloth, cleaning cloth	0,20	0,19
16 01 04*	Old motor vehicles containing hazardous substances	0,00	6,00
16 02 09*	Transformers and capacitors containing PCB	9,50	4,29
16 02 13*	Waste power transformer without oil	5,00	5,00
16 06 01*	Accumulator and lead batteries	0,75	0,02
16 06 02*	Nickel-cadmium batteries	0,01	0,01
17 05 03*	Oily soil and absorbent	-	0,85
20 01 21*	Fluorescent lamps	0,01	0,80
20 01 35*	Discarded electric and electronic equipment	5,32	8,73
UKUPNO		5,33	25,89

During 2013, evacuation of quantities of adequately stored equipment containing PCB (given in the table below) was not realized within the implementation of activities under the contract with the United Nations Environment Programme in Bosnia and Herzegovina:

1.	16 02 09*	Transformers and capacitors containing PCB	8.396 kg (6.878 kg capacitors)	Capacitors (with containers) dismantled from TS (MTK-system) (Azići)
2.	16 02 09*	Capacitors containing PCB	1.101 kg (744 kg capacitors)	KCapacitors (with containers) dismantled from TS Elektroprivreda (0373), Vilsonovo Šetalište 15

It is expected that by the end of 2014, through the Med Partnership Project, in coordination with the BiH Ministry of Foreign Trade and Economic Relations, the listed waste quantities will be permanently disposed of.



TREND OF ENVIRONMENTAL IMPACT INDICATORS 2009 – 2013

Diagram 5 Total electric power generation and consumption of JP Elektroprivreda BiH for the period 2009 – 2013

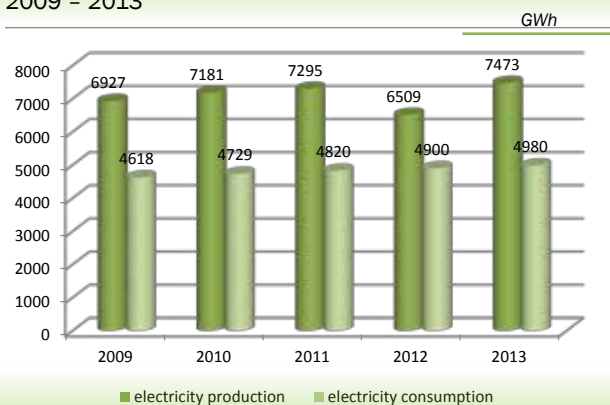


Diagram 6 Electric power generation in thermal power plants for the period 2009 – 2013

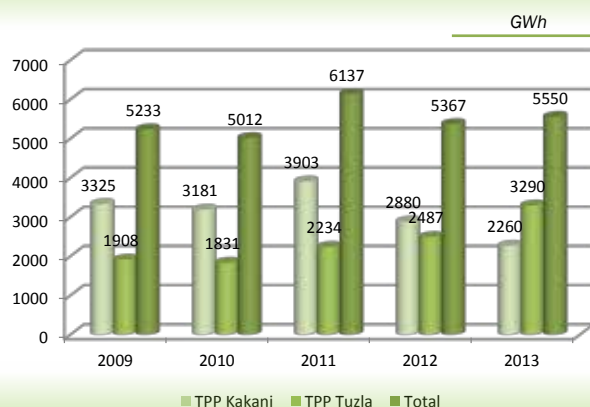


Diagram 7 Coal consumption in thermal power plants Kakanj and Tuzla for the period 2009 – 2013

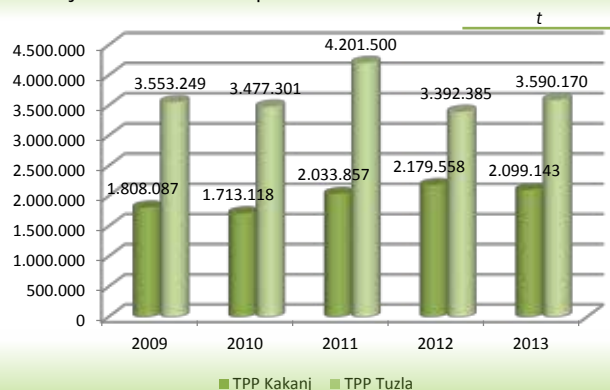


Diagram 8 Emission of SO₂ from thermal power plants Kakanj and Tuzla for the period 2009 – 2013

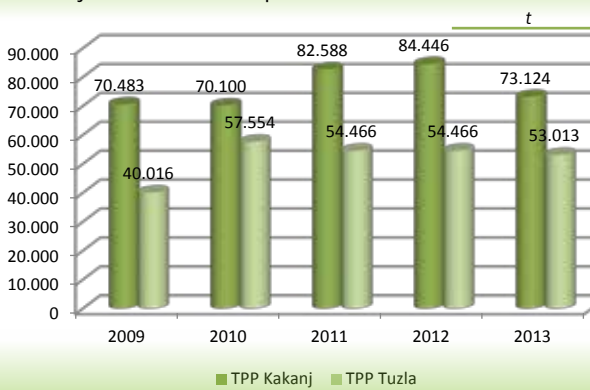


Diagram 9 Emission of NO_x from thermal power plants Kakanj and Tuzla for the period 2009 – 2013

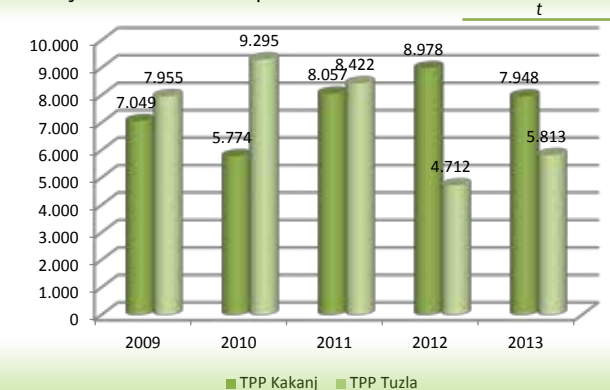


Diagram 10 Emission of solid particles from thermal power plants Kakanj and Tuzla for the period 2009 – 2013



Diagram 11 Emission of CO₂ from thermal power plants Kakanj and Tuzla for the period 2009 – 2013



Diagram 12 Total quantity of non-hazardous waste in TPP Kakanj and TPP Tuzla for the period 2009 – 2013

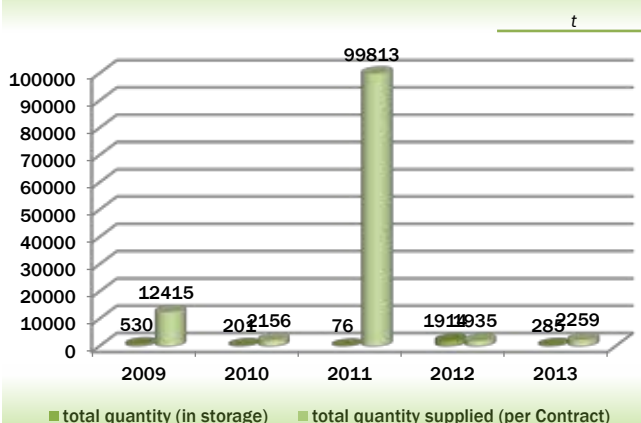


Diagram 13 Total quantities of hazardous waste* in thermal power plants Kakanj and Tuzla for the period 2009-2013

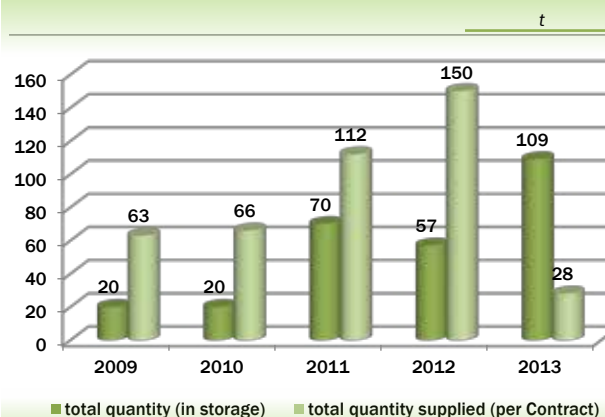


Diagram 14 Total quantities of slag and ash in thermal power plants Kakanj and Tuzla for the period 2009 – 2013



Diagram 15 Electric power generation in HPPs on Neretva for the period 2009 – 2013

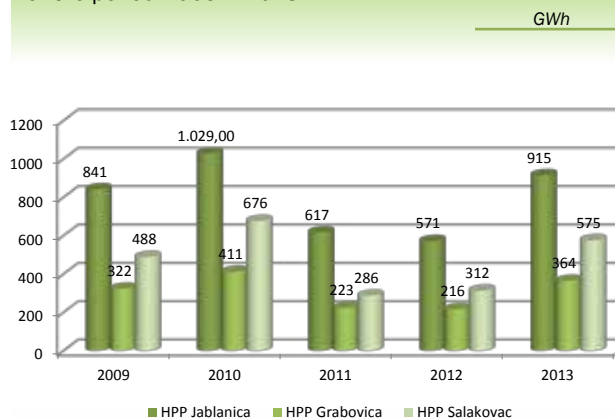


Diagram 16 Quantity of water used for electric power generation in HPPs on Neretva for the period 2009. – 2013





Diagram 17 Total quantity of non-hazardous waste in HPPs on Neretva for the period 2009 – 2013

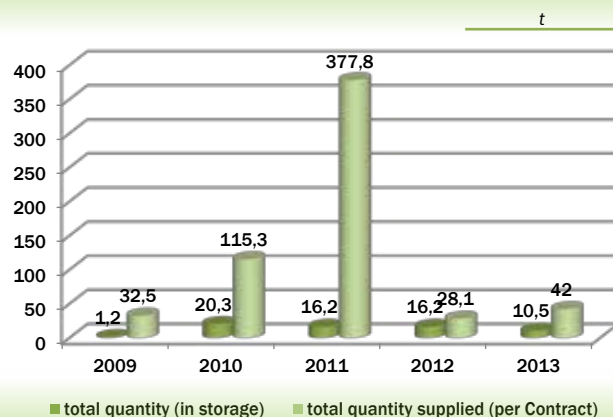


Diagram 18 Total quantity of hazardous waste* in HPPs on Neretva for the period 2009 – 2013

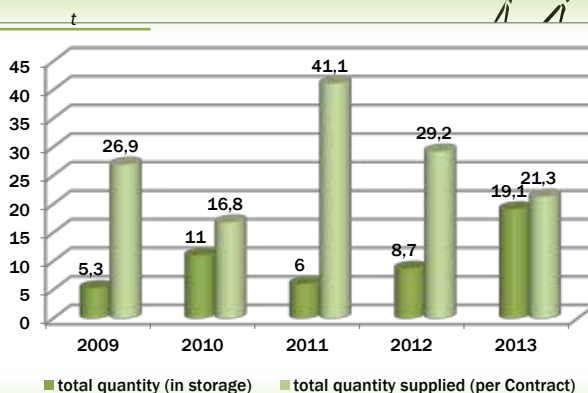
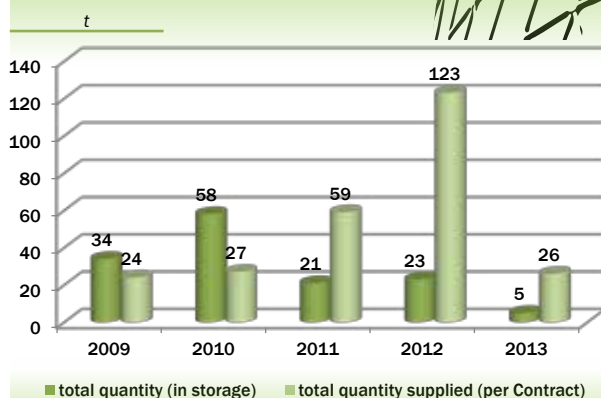
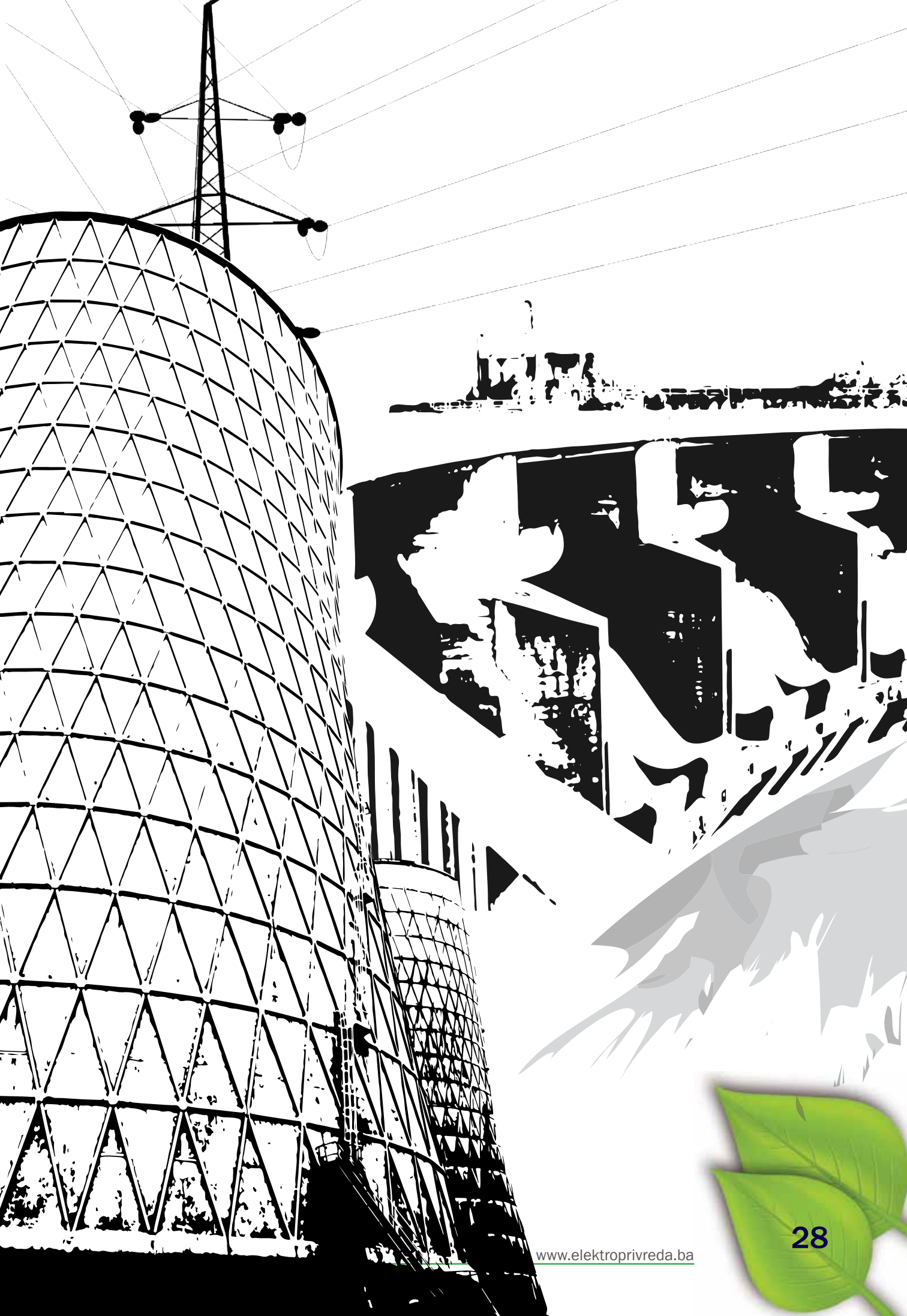


Diagram 19 Total quantity of non-hazardous waste in distribution subsidiaries: Sarajevo, Tuzla, Bihać, Zenica and Mostar for the period 2009 – 2013



Diagram 20 Total quantity of hazardous waste* in distribution subsidiaries: Sarajevo, Tuzla, Bihać, Zenica and Mostar for the period 2009 – 2013







REALIZATION OF CONDITIONS OF ENVIRONMENTAL AND WATER PERMITS

THERMAL POWER PLANTS

THERMAL POWER PLANT TUZLA

On 8 July 2011, the Federal Ministry of Environment and Tourism issued an Environmental permit (Number: UP-I/05-23-25/07 MR) under specific conditions and validity up to 18 July 2016. In order to fulfil the obligations set in the Environmental permit, realization of the projects launched in the previous period was continued.

Building a closed system for circulating water

Goals:

- to meet the legal requirements on the quality of wastewater discharged into natural recipient,
- to reduce the discharge of wastewater and pollution load into the recipient of Jala for up to 80%,
- provide pre-treatment of wastewater (oily wastewater, sanitary sewage waste water, surfaceprecipitation),
- to treat separately the excess wastewater from the hydraulic slag and ash transport system,
- to include into the closed hydraulic slag and ash transport system the most polluted waste water (water returned from slag and ash disposal site, total industrial wastewater, wastewater from desalting of cooler, part of waste water from GPO and groundwater from coal deposits) and
- to avoid investing in the construction of the new retention pool due to use of a collecting ring of the cooling tower No. 2 as retention pool.

In the framework of the project, a reviewed Main Design was done and Urban planning permit was obtained. Main Design was changed in terms of simplification of the system for returned water in the total quantity for all units. A request was submitted to amend the Urban planning permit. Development of project documents required for the demolition of cooling tower was continued. Within the Project, the tender for the selection of the contractor was published.

Construction of a new silo for electrostatic precipitator ash

Goals:

- to increase sales of electric precipitator ash,
- to reduce the quantity of ash for disposal,
- to extend the life of the existing ash and slag landfills,
- to reduce the consumption of raw water for the transport of ash, and
- to introduce environmentally friendly technologies for the transport of ash.

For the Project, the Main Design was developed and revised. Urban planning permit and building permit were obtained. Approximately 95% of construction works was completed. Installation works are ongoing.

Re-cultivation of slag and ash landfill Divkovići I and II

Goal:

- to bring the landfill to environmentally acceptable condition.

A part of technical re-cultivation of the landfill Divkovići was completed. To continue with re-cultivation, the Rehabilitation and Regulation Plan is required, which is prepared by the UO Institute for Urbanism, Municipality Tuzla. An elaborate and three studies are in the preparation and will be the basis for the development of Rehabilitation and Regulation Plan.

Slag and ash landfill Jezero II

On 21 May 2013, Federal Ministry of Environment and Tourism issued the Decision on the renewed Environmental permit for the landfill Jezero II valid for the period of 5 years. The said permit allows the final disposal of asbestos panels dismantled from the cooling tower RT5.

Reforestation of re-cultivated slag dump Jezero I

On 9 ha of re-cultivated slag dump Jezero I afforestation was realized, with 15,100 seedlings planted (locust, wild cherry, chestnut, sessile oak and maple).

Replacement of mazut pipeline for units 4 and 5

Due to pipeline deterioration and failure on installation of mazut station, mazut leaked into the channel, which is into the river Jala. To prevent such incidents in the future, a project was started for replacement of the decrepit pipeline and repair of the malfunction.

Goal:

- to provide adequate operational readiness of units 4 and 5, and
- to prevent new incidents including mazut leaking and pollution of soil and river Jala.

Water permit

On 25 July 2013, the Agency for the Sava river Basin District issued a new Water permit No. UP-I/25-3-40-363-4/13, valid up to 21 January 2017.

The measures and activities ordered by the Water permit are continuously implemented.

THERMAL POWER PLANT KAKANJ

On 11 August 2011, the Federal Ministry of Environment and Tourism issued an Environmental permit (No.: UP-I/05-23-16/07 MR) under specific conditions and with validity period up to 19 August 2016.

In order to implement the obligations set in the Environmental permit the, in 2013, the implementation of the activities was continued.

Construction of storage for chemicals

Goal:

- application of the standard method of storage and management of raw materials and products. Development of the project of the storage for chemicals is ongoing.

Installing the meter for water consumption

Goal:

- balancing the consumption of raw materials and energy sources by individual plants and products, and their analysis.

Installing the device for measuring heat consumption

Goal:

- rationalization of energy consumption in plant units – separately for each unit, reduced per product unit.



Cleaning and use of siphon with cascades

Goal:

- to prevent the intrusion of large waste and improper concentration of fat in waste water.

Installed eight oil separators with sand traps. Performed reconstruction of sewage network.

Study of water consumption optimizing

Goals:

- to consider the possibility of installing the plant equipment for waste water treatment and building a device for treatment of industrial waste water,
- to reconstruct the plant for wastewater treatment,
- to optimize the total balance of consumption, treatment and discharge of water from plants and facilities into watercourses, and
- to ensure that the existing lake of liquid waste (15% sludge) does not overflow or flows into the river Bosna

After finalization of the Study, the activities were initiated to prepare the project documents.

Arrangement of slag and ash landfill – Phase II

Goal:

- to reduce the negative impacts of the landfill on the environment.

Fencing of the landfill on the north, west and east is completed. Activities were initiated to: select the best bidder for realization of technical and biological re-cultivation of the areas at which slag and ash were permanently disposed, procurement and installation of slag and ash conveyors, preparation of surfaces for disposal of slag and ash, rehabilitation of the collector Slapnički Potok, and expansion and revitalization of the existing facility for wetting of ash disposal on the landfill.

Increasing the scale of cogeneration

Based on the completed Study to reduce the specific consumption of primary energy by increasing participation of cogeneration, the activities on preparation of a project to increase the volume of cogeneration were initiated.

Desulphurization and denitrification of flue gases

Goal:

- to reduce emissions of SO₂ and NO_x into the air.

Activities were started on the preparation of the Study of the possibility to purchase and use timber and agricultural biomass in the thermal power plant, as well as activities on the development of investment-technical documentation for reduction of SO₂ and NO_x emissions

Installation of baggy filter on Unit 7

Goal:

- to reduce particle emissions below 50 mg/m³

Activities were initiated for selection of the best bidder for the installation of baggy filter.

In order to protect from the wind in winter, the activities were completed on planting and replacement of damaged conifer seedlings, and planting of thuja and cypress (conifers) on a narrow strip between the coal depot and settlement Čatići.

Water permit

The Agency for Sava River Basin District issued the water permit for TPP Kakanj, No. UPI-25-3-40-402-8/9, from 7 June 2011, valid up to 2 March 2014.

According to the current Water permit, all regular activities are carried out, and the following project was launched:

Reconstructions of the waste water treatment plant

Goal:

- maintenance of the industrial waste water treatment system.

An expert team was formed for the realization of the investment in the development of the terms of reference for the project documentation.

The current Water Permit is valid until 15 March 2014, and the activities were undertaken to request for the new one.

HYDRO POWER PLANTS ON NERETVA

Environmental permit for HPP Jablanica was issued by the Federal Ministry of Environment and Tourism on 18 February 2009, No. UPI /05-23-38-I/07 VI, with a validity period of 5 years.

Environmental permit for HPP Grabovica was issued by the Federal Ministry of Environment and Tourism on 18 February 2009, No. UPI / 05-23-38-2/07 VI, with a validity period of 5 years.

Environmental permit for HPP Salakovac was also issued by the Federal Ministry of Environment and Tourism on 18 February 2009, under the number: UPI / 05-23-38-3/07 VI, with a validity period of 5 years.

According to the applicable environmental permits, the following activities are regularly conducted:

Technical monitoring for dams and soil in the area of the dams of HPP Jablanica, HPP Salakovac and HPP Grabovica

Regular maintenance and repair of damage to torrential barriers in the Neretva river basin

Visual observation of landslides Kukovi, Jezerine and landslides in the villages Ribići and Aleksin Han

Visual observation of erosion processes in the Neretva river basin

Water permits

On 13 May 2010, the Agency of the Adriatic Sea RBD issued a water permit for all three hydropower plants in the Neretva river basin, for a period of five years, as follows:

- Water permit to use the water for operation of HPP Jablanica, No.: UP/40-1/25-4-63-1/09
- Water permit to use the water for operation of HPP Grabovica, No.: UP/40-1/25-4-63-2/09
- Water permit to use the water for operation of HPP Salakovac, No.: UP/40-1/25-4-63-3/09
-

According to valid water permits prescribed project are realised and regular activities are conducted.





POWER DISTRIBUTION

ELEKTRODISTRIBUCIJA SARAJEVO

The branch office Elektrodistribucija Sarajevo manages sHPP Osanica q in Goražde. Environmental Permit for sHPP Osanica 1 was issued by the Ministry of Urban Planning, Spatial Planning and Environmental Protection of Bosnia-Podrinje Canton (on 26 June 2009, No. UP-1: UP-1:09-23-5/0909-23-5/09, for a period of 5 years).

Conditions from the environmental license are respected (environmental flow) and environmental protection measures are implemented, as evidenced by the Records on Inspection (Minutes No. UP-1-12-17-01874/2013-MO21-0001-P of 31 October 2013, issued by the Inspector for Energy).

At the request of the Ministry of Urban Planning, Spatial Planning and Environmental Protection of Bosnia-Podrinje Canton Goražde, Head of activity Generating electricity from hydro power plants, in cooperation with Department for Management Systems, in 2013 allocated the code to the facility/plant sHPP Osanica 1 in the Register of Plants and Pollutants (BH PRTR).

Based on the proposed Activity Plan of the existing plant and facilities of sHPP Osanica 1, the competent Ministry of Urban Planning, Spatial Planning and Environmental Protection of Bosnia-Podrinje Canton Goražde issued on 14 January 2011 the Decision on water permit No. UP-1:04-25-577/10.

ELEKTRODISTRIBUCIJA TUZLA

The branch office Elektrodistribucija Tuzla is responsible for: sHPP Modrac and sHPP Snježnica with reservoir in Teočak. For these objects Branch has appropriate environmental and water permits

Environmental and water permits were issued with special conditions and measures that are continuously implemented.

ELEKTRODISTRIBUCIJA BIHAĆ

sHPP Una Kostela, Bihać

Water permit for the existing facility was issued with the Decision No. UP-I/25-3-40-016-5/08 on 8 September 2008 for a period of five years with the obligation for renewal, until 8 September 2013. On the basis of water permit, environmental permit was issued with the Decision of the Federal Ministry of Environment and Tourism No.: UPI/05-23-254/08 IV of 18 February 2009.

Environmental permit conditions set the conditions for use of quantities of raw materials used, and establish general obligations to protect the environment, as well as measures, technologies and techniques to prevent negative impacts on the ecosystem in general.

Activities were started to extend these acts.

sHPP Krušnica, Bosanska Krupa

Water permit was issued for the existing facility with Decision No. 08/O-25-13418-UP-1/8 from 10 November 2008. Water permit was issued for a period of five years with the legal obligation of renewal. Prior to the expiration, the request was renewed to the Agency for the Sava River Basin for issuance of

a new Water permit. The new Water Permit No. 08-25-4441-UP-1/2013 was obtained from the competent Ministry of Una-Sana Canton for a period of 7 years.

Cantonal Ministry of Construction, Urban Development and Environmental Protection of the Una-Sana Canton issued the Environmental Permit with its Decision No. 11-23-6159-UP-1/11 from 9 August 2011. Environmental permit conditions set the conditions for use of quantities of raw materials used, and establish general obligations to protect the environment, as well as measures, technologies and techniques to prevent negative impacts on the ecosystem in general.

sHPP Bihać

Water permit was issued with Decision No. UP-1/25-3-40-017-4/08 for a period of five years with the legal obligation of renewal.

Cantonal Ministry of Construction, Urban Development and Environment of the Una-Sana Canton issued the Environmental Permit with its Decision No. 11-23-6160-UP-1/11 from 9 August 2011.

In addition to standard measures and conditions, Environmental permit specially treats the impact on constructed facilities, the condition of the bed of supply channel, because during its repair water is diverted to natural riverbed. This launched the activity to extend the acts with the responsible Agency for the Sava River Basin Sarajevo. The water permit No: UP-I/ 25-3-40-329-5/13 of 11 September 2013 was obtained.





ENVIRONMENTAL MANAGEMENT SYSTEMS

THERMAL POWER PLANTS

THERMAL POWER PLANT TUZLA

Certification company TÜV Ltd., Croatia, performed a control audit of the Integrated Business Management System of TPP Tuzla in August 2013.

After the completion of the audit, the certification body assessed that the integrated business management system of TPP Tuzla is fully compliant with international standards: ISO 9001:2008 and ISO 14001:2004.

Thermal power plant Kakanj

An external certification audit of the environmental management system was executed in mid-June 2013. A new certificate of compliance with the requirements of the standard BAS EN ISO 14001:2006 was issued.

Regular internal audit of environmental management system was carried out by the end of 2013, and the assessment of the compatibility of work of Thermal power plant with legal and other environmental requirements was initiated.

Hydro power plants on Neretva

Certification company TÜV Ltd., Croatia, performed a control audit of the Integrated Business Management System of HPPs on Neretva in November 2013.

After the completion of the audit, the certification body assessed that the integrated business management system of HPPs on Neretva is fully compliant with international standards: ISO 9001:2008 and ISO 14001:2004.

POWER DISTRIBUTION

Elektro distribucija Sarajevo

Environmental Policy of Elektro distribucija Sarajevo was adopted in accordance with the Environmental policy of JP Elektroprivreda BiH. It was reviewed and it was concluded that it is in compliance with the same.

Activities were started on introducing and building the Environmental management system in accordance with BAS EN ISO 14001:2006 after an analysis of the situation and the effect of the introduction of the Quality Management System.

Elektro distribucija Tuzla

In early 2013, the Decision was adopted on the introduction of environmental management systems in accordance with Standard BAS EN ISO 14001: 2006 and on its integration with Quality management system. In accordance with the adopted decision, five new procedures in the field of environmental management were issued, which, together with the procedures issued last year makes a total of seven documents which cover all the requirements of the standard BAS EN ISO 1400: 2006. We amended the procedures of the Quality System with provisions relating to environmental protection, adopted

the Programme of objectives of environmental management with defined framework and operational objectives, identified significant environmental aspects and formed Registry of legal and other requirements in terms of environmental protection. Internal audits control the application of new procedures in the field of environmental management, and in early 2014 it is planned to have both systems reviewed by the Management Board.

Full implementation and certification of Environmental management system is planned during 2014, with System certification according to BAS EN ISO 9001:2008, which together will form an Integrated management system – IMS.

Elektrodistribucija Bihać

Upon the analysis of the situation and the effects of implementation of quality systems BAS EN ISO 9001:2008, the Decision was made on introduction and development of the environmental management system according to BAS EN ISO 14001:2006, and the environmental policy was adopted.

Through the implementation of an internal audit, it was proposed to start the development of procedures to control electric power plants where incident situations are possible (control of substations, especially those that are near drinking water sources, watercourses, plants for the production of food, etc.).

Elektrodistribucija Zenica

The branch office Elektrodistribucija Zenica has not established an environmental management system according BAS EN ISO 14001:2006.

In December 2013, a decision was adopted, compatible with the environmental policy of JP Elektroprivreda BiH.

Elektrodistribucija Mostar

Introduction and development of Environmental management system in accordance with BAS EN ISO 14001:2006 is planned in the next period, after the analyse carried out in 2013 in relation to the situation and effects, and effective connectivity of Environmental management system with the existing Quality management system.





ENVIRONMENTAL PROTECTION IN SCOPE OF DEVELOPMENT OF ELECTRIC POWER FACILITIES

RECONSTRUCTION AND MODERNIZATION OF EXISTING ELECTRIC POWER FACILITIES

THERMAL POWER PLANT TUZLA

Revitalization of Unit 6– 215 MW.

The project achieved:

- increase in energy efficiency of the Unit by 4.5 %,
- reduction of dust emissions ($< 30\text{mg/Nm}^3$),
- reduction of NO_x emissions ($< 350\text{mg/Nm}^3$),
- replacement of asbestos-cement filling with PVC filling and installation of drop eliminator at RT 5,
- installation of pneumatic transport for electrostatic precipitator ash to the ash silo.

THERMAL POWER PLANT KAKANJ

In Thermal power plant Kakanj there were no reconstructions of the existing units. Regular maintenance of units 5, 6 and 7 was performed.

HYDRO POWER PLANTS ON NERETVA

U HPP Jablanica a project was finalized of Geophysical studies of sides and stilling basin, and stability testing of the dam and preparation of Project of repair of the crack in the “C” gallery.

U HPP Grabovica activities were initiated on a major overhaul of unit 1 and replacing the management and automation system of unit 1 and unit 2. Realization continues in 2014.

U HPP Salakovac the reconstruction of hydraulic management systems for overflow and drain bodies (making the reconstruction project) and repair of auxiliary and regulatory closure of the base outfall (servomotor overhaul, replacement of corrosion protection, replacement of seals, replacement of hydraulic power pack). Reconstruction of the block transformers number 2 and 3 was started. Implementation is expected in 2014.

POWER DISTRIBUTION

Within the electricity distribution, business there were built and put into operation 107 new transformer stations TS 10(20)/0.4 kV, and four existing transformer stations TS 35/10(20) kV and 82 existing substations TS 10(20)/0.4 kV (tables 15 and 17) were reconstructed.

The newly built substations were built with hermetically sealed oil transformers, and under each transformer in cable substations foundations were designed to allow collection of the entire quantity of oil, i.e. there was built-in the oil pan of volume of minimum 0.6 m³ - oil tight.

Transformer substations located in the area of water protection zone, according to Urban planning approvals, were made with dry transformers.

Regarding the measures taken to protect the environment, in all activities, when it comes to investments or regular maintenance of power facilities, homologated materials are used, that are

installed in accordance with the Technical recommendations of JP Elektroprivreda BiH, so that the environment and the people are protected from power facilities as required by technical guidelines, norms and procedures.

Table 15 Overview of new built power facilities

New facilities			ED Sarajevo	ED Tuzla	ED Bihać	ED Zenica	ED Mostar
110/x kV	TS	pcs	0,00	0	0	0	0,00
35 kV	TS 35/10(20)	pcs	0,00	0	0	0	0,00
		kVA	0,00	0	0	0	0,00
	LINES	km	0,00	0	0	0	0,95
10(20) kV	TS 10(20)/0,4	pcs	17	23	23	42	2
		kVA	7.090	5.810	6.880	8.850	160
0,4 kV	LINES	km	37,7	12,1	12,7	46,10	19.198
	LINES	km	89,34	11,7	160,4	168,97	23.315

Table 16 Connections to the metering points on the basis of energy approval

New facilities		ED Sarajevo	ED Tuzla	ED Bihać	ED Zenica	ED Mostar
Low voltage connections on the basis of energy approval	pcs	2.766	2.349	1.070	1.570	312

Table 17 Reconstruction of power facilities and expansion of the distribution network

Reconstruction			ED Sarajevo	ED Tuzla	ED Bihać	ED Zenica	ED Mostar
35kV	TS 35/10(20)	pcs	0	4	0	0	0
		kVA	0	0	0	0	0
	LINES	km	0	8,4	0	0,21	0,205
10(20) kV	TS 10(20)/0,4	pcs	12	5	13	13	39
		kVA	1270	0	60	1.120	4.930
	LINES	km	10,132	8,8	3,5	28,43	0,63
0,4 kV	LINES	km	156,863	32,8	59,7	105,50	0,233
	OMM	pcs	11.405	1.262	1.700	5.332	1.360



POWER IV

THERMAL POWER PLANT TUZLA

Modernization of the system for coal storage in Tuzla is completed. The project was funded by the World Bank and realized the following objectives:

- increase in the degree of homogenization of all types of coal for Units 3, 4 and 5, and thereby reducing the emission of pollutants into the air,
- improvement of the technological process of storage and transportation of coal at the depot 1,
- collection and disposal of surface water and water leaking from the depots No.1, 2 and 3,
- minimizing of the risk of fire, i.e. of spontaneous combustion of coal at the depot, and
- reduction of coal dust.

Elektrodistribucija Bihać

Project Reconstruction of electric power II - Supply and installation of plant and equipment financed from funds of the European Investment Bank (EIB) was implemented, and the following goals were achieved:

- increase in safety, reliability and quality of electricity supply, as well as increase in efficiency of work of distribution system, and
- providing of distribution capacity for connecting of new end customers/producers and quality distribution of electricity for existing users of the distribution network with provisions of the general conditions for electricity supply.



CAPITAL INVESTMENTS

THERMAL POWER PLANTS

Unit 7 - 450 MW at TPP Tuzla

Unit 7 in TPP Tuzla is being built as a replacement facility for the existing units of total installed capacity of 364 MW, which will gradually come out of the drive. Thermal station for district heating of cities Tuzla, Lukavac and Živinice is also envisaged in order to ensure continuity of supply of heat for the next 40 years.

In order to meet the environmental conditions, the best available technology (BAT) is envisaged, that will bring the emission of pollutants into the air in the limits under the EU directives, as well as less CO2 emissions due to the high degree of efficiency.

Documentation in preparation:

- Detailed design of relocation of transmission lines at the construction site of Unit 7,
- Detailed design of extension of the waste water sewage collector at the site of Unit 7.

Activities in implementation of Project of construction of Unit 7:

- completion of the expropriation of the remaining land for Unit 7,
- Geotechnical investigation and testing, development of geotechnical project - mission G21, Unit 7,
- engaging a consultant for services of financial consultant of JP Elektroprivreda BiH for the preparation of construction of Unit 7 in TPP Tuzla,
- procedure for the selection and contracting of hiring a consultant for the services of a technical and legal consultant of JP Elektroprivreda BiH for the preparation of construction of Unit 7 in TPP Tuzla.

Permits:

- Decision to extend the validity of Urban planning approval number: UPI/03-23-2-79-1/11 ID until 08 December 2013, issued by the Federal Ministry of Physical Planning,
- Water approval No. UP-I/25-2-40-303-2/13 from 24 May 2013, issued by the Agency for Sava River Basin, Sarajevo,
- Preliminary approval for the construction of a complex power structure of Unit 7 No. UP-I/03-23-2-258/13 ID of 26 September 2013, issued by the Federal Ministry of Physical Planning.

Unit 8 - 300 MW at TPP Kakanj

Investment and environmental documentation

All preliminary research was completed in the agreed terms and on that basis the investment and environmental documents relating to unit 8 were done, revised and validated, as follows:

- Preliminary design of Unit 8
- Environmental Impact Study for Unit 8
- Investment program of Unit 8 with the Coal Mine
- Elaborate on the connection of Unit 8 – 300 MW in TPP Kakanj to EES BiH

Project Analysis of technical bases and development of project of amendments to Investment and technical documentation for Unit 8 in TPP Kakanj is completed, in order to meet the requirements of Preliminary Water Approval.



Permits:

Preliminary approval for the construction of complex power structure Unit 8, No. UPI/03-23-2-278/13 ID of 14 October 2013 was issued by the Federal Ministry of Physical Planning.

HYDRO POWER PLANTS

HPP Vranduk – 19.63 MW on the river Bosna in the municipality Zenica

Activities on the Project implementation:

- Study on the determination of environmentally permissible flow and calculation of production for HPP Vranduk according to the Rulebook of 16 January 2013.
- Due diligence conducted by the EBRD,
- Environmental and Social Action Plan (ESAP),
- Land acquisition and compensation framework (LACF),
- Stakeholder Engagement Plan (SEP),
- Presentation hold on the draft Management plan for the maintenance of the monument Old Town Vranduk,
- Conducted public disclosure of documents for the Project of HPP Vranduk in accordance with the requirements of the EBRD, for the public insight. Comments on published documents, made by interested persons, were received within 120 days, from Tuesday 14 May 2013 to Wednesday 11 September 2013 (no comments received), and
- Implemented contract on geodetic Surveys for the purposes of the main project.

Permits:

The decision on preliminary approval for the construction of a complex building No. UPI/03-23-61/13ID of 12 March 2013 issued by the Federal Ministry of Physical Planning.

Ongoing activities:

- Implemented the first phase of resolving property relations (expropriation) and consensual transfer of real estate ownership,
- Implementation of Contract with selected technical consultant for help and advice to JP EPBiH in procurement and contract management for the construction,
- Creating the Management plan for the maintenance of the national monument Old Town Vranduk in accordance with urban-planning and technical conditions,
- Performing of field and laboratory preparatory geological and geotechnical, geophysical and seismological research works for the level of Main Project,
- Preparation of Main Project plan to build a road for Hanovi, and
- Preparation of the Public call for an attempt to negotiate the transfer of title to real property for which is determined public interest for expropriation in order to build HPP Vranduk - Phase II.

HPP Ustikolina - 60,48 MW on the river Drina in the municipalities Foča - Ustikolina and Goražde

Implemented activities:

- Study on the Environmental impact assessment prepared and submitted to the Federal Ministry of Environment and Tourism,
- A request submitted to the Federal Ministry of Physical Planning for urban planning approval for performance of investigative actions, with previously obtained consent of the owners of land,
- Preliminary Design Phase I was prepared and revised - without investigative works, and study on the impact on the environment,
- a request submitted to the Federal Ministry of Environment and Tourism for the issuance of environmental permit,

- a study of environmental flow completed for HPP Ustikolina- according to the Rulebook of 16 January 2013,
- In order to involve the public in the assessment procedure of the Study on Environmental Impact Assessment of HPP Ustikolina, a public hearing was held in the municipality Ustikolina. Environmental Impact Study was amended and corrected based on observations, comments and suggestions submitted by the Federal Ministry of Environment and Tourism,
- automatic stations for the measurement of flow and water quality of the river Drina are installed, and
- A new preliminary water approval is acquired based on new parameters from the Preliminary Design.

HPP Una Kostela and Annex - 9,4 MW and 6,1 MW on the river Una in the municipality Bihać

Implemented activities:

- Completed the Study of Calculation of environmental flow of the river Una in the profile of HPP Una Kostela,
- Completed the Study of Calculation of production after determining the value and time range of environmentally acceptable flow according to the Rulebook of 16 January 2013 of the Water Act.

HPP Janjići - 13,2 MW on the river Bosna in the municipality Zenica

Implemented activities:

- Obtained a grant from KfW for the Study of the zero state and Study on Environmental Impact of HPP Janjići

Ongoing activities:

- Preparation of Preliminary design of HPP Janjići, and
- Evaluation of the bids for the Review of the Preliminary Design of HPP Janjići.

HPP Kruševo - 10,69 MW with HPP Zeleni vir - 2,36 MW on the river Bioštica in the municipality Olovo

Implemented activities:

- JP Elektroprivreda BiH and WIBIF prepared the terms of reference for the development of Feasibility study with Environmental impact assessment, which will in our conditions constitute the Preliminary design,
- BH MAC prepared the Project of Mine Action for all buildings and reservoirs planned in HPP Kruševo and HPP Zeleni Vir during 2013,
- In the area of coverage of HPP Zeleni Vir, demining was performed within the project Pridvornica 5 by BH MAC and the certificate was obtained that this area is safe for work in the mine security aspect, and
- Automatic station for measuring the flow and water quality of the river Bioštica was installed.

HPP Kovanići - 13,5 MW on the river Bosna in the municipalities Zenica and Žepče

Implemented activities:

- JP Elektroprivreda BiH and KfW prepared the terms of reference (TOR) for making of Feasibility Study- with exploration works and environmental impact assessment for HPP Kovanići,
- published a Call for Expression of Interest for consultancy services - Feasibility Study for HPP Kovanići. Requests were submitted to municipalities of Zenica and Žepče for approval to perform exploration works, and
- The map with mine situation was obtained from BH-MAC.

HPP Čaplje - 11,62 MW on the river Sana in the municipality Sanski Most

Implemented activities:

- After WBIF chose the consultant for technical documentation (Mott McDonald/



WS Atkins/WYG), which is accompanied by Energoinvest Sarajevo, with the development of technical documentation

- Consent of users/holders/owners of the land were collected for the formation of the requirements for obtaining the urban permit for carrying out research works
- Request for urban-planning permit was submitted to the Federal Ministry of Physical Planning on 16 January 2013. On 11 September 2013, the Federal Ministry of Physical Planning adopted the Decision - refusing the application for issuance of the urban-planning approval for execution of preliminary works of investigating character - Phase I, and pursuant to the Decision of municipality Sanski Most against the construction of HPP Čapljje.

HPP Unac – peak HPP installed capacity of 72 MW on the river Unac in the municipality Bihać

Implemented activities:

- Municipal Council of Bihać, at its meeting held on 21 March 2013, supported expert attitudes and suggestions of JP Elektroprivreda BiH presented during the public hearing of the Plan “Una River Basin” and adopted a Decision on approval for the implementation of Phase II of investigation works for the determination of water-tightness of the reservoir HPP Unac. The Conclusion of the Municipality of Bihać was submitted to the Federal Ministry of Physical Planning for implementation,
- The selected contractor for making of Elaborate to define the area that includes HPP Unac in order to exempt special areas,
- On 29 July 2013, the Geodesy study of the area that includes HPP Unac was completed and delivered to JP Elektroprivreda BiH,
- On 5 April 2013, the Ministry of Construction, Urban Planning and Environment of Una-Sana Canton submitted comments on the Draft Spatial Plan of the Federation of BiH, with a request for investigative works to determine the water permeability of the riverbed of Unac for the reservoir of the future HPP Unac, with installed capacity of 72 MW, and
- On 8 May 2013, the Federal Ministry of Physical Planning submitted the reply challenging the jurisdiction of Cantonal Ministry and rejecting this request, stating the sole jurisdiction of the Federal Ministry.

HPP Vinac and HPP Babino Selo – on the river Vrbas

Implemented activities:

- Integral water-energy studies on the development of the Vrbas River basin, which was financed by the World Bank through the Ministry of Foreign Trade and Economic Relations of BiH (May 2013),
- Based on the application submitted to WBIF on 13 June 2013, funds were approved as grant for the Feasibility study with Environmental impact assessment for HPP Vinac and HPP Babino Selo. The projects were approved under the following conditions:
 1. The funds come from the EBRD and the further development of the project will be coordinated between Elektroprivreda BiH and EBRD,
 2. the consent was obtained from the municipal council of Donji Vakuf to perform investigative works for HPP Babino Selo,
 3. the notices were obtained from BH MAC that the coverage of future HPP Vinac and HE Babino Selo are located outside the suspect area in the security aspect,
 4. a notice was received from the Municipal Council of Jajce that in the part of the Vrbas River which flows through the territory of this municipality they oppose the construction of large hydro power plants and that there is interest in the construction of small hydro power plants up to 5 MW. The decision was received as adopted by the Municipal Council on 2 June 2011 of the position taken on this issue,

5. Because of the impossibility of realization of the project HPP Vinac due to the attitude of Municipality Jajce on the construction of HPP Vinac under the proposed technical solution from the existing documentation, as well as due to the recorded situation in the field, a new acceptable technical solution called HPP Torlakovac was analysed that is favourable for the realization in terms of land acquisition, population displacement and submergence of facilities, and
6. Municipal Council of Donji Vakuf, at the request of JP Elektroprivreda BiH, has approved the execution of investigation works for HPP Torlakovac.

CONSTRUCTION OF POWER FACILITIES FROM RENEWABLE AND ALTERNATIVE SOURCES OF ENERGY

Preparation and construction of Phase I and II of sHPP on the river Neretvica basin

Implemented activities:

- Federal Ministry of Environment and Tourism in January 2013 issued environmental permit for three small hydro power plants: Donji Obalj, Obaščica and Duboki potok 2,
- Federal Ministry of Environment and Tourism in May 2013 issued environmental permit for three small hydro power plants: Podhum 1, Podhum 2, Mala Neretvica - the mouth,
- preliminary and preparatory activities (hydrological and geological substrate, geodetic surveys) were performed in order to optimize the design parameters of the first stage of construction of small hydro power plants,
- steps were taken in the procurement and installation of 5 automatic hydrological stations on the Neretvica River basin,
- Preparatory activities have been carried out in order to begin the expropriation of land for the construction of three sHPPs from the first phase of construction (made Expropriation studies, obtained LR excerpts and title deeds),
- Federal Ministry of Physical Planning in December 2013 issued the preliminary urban planning approvals for three small hydro power plants: Srijanski most, Gorovnik - the mouth and Crna Rijeka,
- In December 2013, the Agency for Watershed of the Adriatic Sea issued a preliminary water permit for four sHPPs from the first phase of construction,
- Initiated activities to conclude an Annex of the Concession Agreement and the Agreement on Resolving property relations with the municipality of Konjic, and
- one part of the activities under the Programme for friendly environment with the municipality of Konjic was implemented.

Preparation and construction of Wind Farm Podveležje, City of Mostar

Implemented activities:

- Tender procedure for the Project of recording zero state of birds and bats on the site of WF Podveležje completed, and Contract signed with the selected bidder,
- the preliminary approval for the construction of complex structure was obtained, HNC - Ministry of Construction and Physical Planning,
- Obtained the environmental permit issued by the Federal Ministry of Environment and Tourism, and
- Obtained a change of use of forest land into the building land in order to build WF Podveležje.



PREPARATION OF PLANNING AND STUDY DOCUMENTS

THERMAL POWER PLANTS

Thermal power plant Tuzla

Drafting of one elaborate and three studies is ongoing, that will be the base for developing of Sanitation and regulation plan that is prepared by UO Department of City Planning, Tuzla Municipality.

Technical support for Wind Farm Vlašić - Travnik

The Steering Committee of WBIF (Western Balkans Investment Framework), in the context of consideration of proposals for funding under the 7th Circuit, approved funds for the financing of technical assistance for the preparation of Project of Wind Farm Vlašić. The project is administered by the European Investment Bank.

The grant will finance the Contract for consulting services, which, among other things, includes:

- Research of zero state of birds and bats at the project site of Wind Farm Vlašić, and
- Assessing the impact of the future wind farm on the environment and society at the plateau Vlašić.



ENERGY EFFICIENCY

In an effort to improve the organizational structure of the energy efficiency management, and to institutionalize the issue of energy efficiency and energy savings in all aspects of operations of JP Elektroprivreda BiH, the Decision on the definition of the structure and functioning of the energy efficiency management system in JP Elektroprivreda BiH, extended the energy efficiency management system to all activities of the company, including subsidiaries and dependent companies.

In this sense, the Policy of energy efficiency - 3rd Edition, was redefined.

The introduction of management structure for energy efficiency meant that JP Elektroprivreda BiH has established a solid foundation for the establishment of an Energy efficiency management system, according to the standards EN 16001 and EN ISO 50001 (Energy Management System), and further increase of energy efficiency and energy savings in the future. Introduction of Energy Efficiency Management System is explicitly stated in the recent Directive on energy efficiency 2012/27/EU, and JP Elektroprivreda BiH aligns its actions with the latest developments, trends and action measures proclaimed by EU directive (2012/27/EU) and the EU Strategies (EU Strategy 2020 - 20/20/20, EU Energy Roadmap 2050, and EU Power perspectives 2030).

THERMAL POWER PLANT KAKANJ

Activities carried out in order to implement Energy efficiency policy:

- In order to increase energy efficiency, as the main document at the level of JP Elektroprivreda BiH, the policy of energy efficiency was adopted. Energy efficiency policy defines the introduction of processes and devices with high energy efficiency.

The procedure of public procurement for the services of first energy examination was launched to determine the initial state in terms of energy efficiency.

- The effects of pre-planned and implemented actions to improve energy efficiency.

Own electricity consumption of Thermal power plant Kakanj amounted to 10.92% which, as compared to 2012, was lower by 0.06%. In Unit 5 own electricity consumption amounted to 10.06% and is less than its own consumption in 2012 by 0.19%. In Unit 6 own electricity consumption amounted to 10.1%, which is less by 0.27% than its own consumption in 2012. In Unit 7 own electricity consumption amounted to 11.79%, an increase of 0.28% from own consumption of this Unit in 2012.

HYDRO POWER PLANTS ON NERETVA

In line with the objectives of energy efficiency for the year 2013 for the activity of production, in HPPs on Neretva a new instruction was prepared on measurement, recording and calculation of own electricity consumption of HPPs on Neretva, which separated its own consumption, which is in function of production, from electric energy in general consumption, which is not in direct function of electricity production, and that is now calculated using a special methodology in accordance with legal requirements of VAT.

POWER DISTRIBUTION

The effects of energy efficiency for electricity distribution activities are represented as the need for the smallest possible electricity losses during transmission of electricity from the point of taking over the power of Elektroprenos – power distribution (transformer substations: TS 110/x kV and TS 35/x kV) to end customers. This positive effect is recognized by customers as a good and stable voltage at their facilities, and by the branches as the lower cost for lost electricity.



ELEKTRODISTRIBUCIJA SARAJEVO

In order to meet the stated goals, and to increase energy efficiency, the following activities were undertaken:

Without investments in power distribution facilities:

- Data on the load of individual drains (SCADA system) on medium voltage network is continuously monitored and, if necessary, switching state is optimized in a given moment. Measuring the load on the low voltage network is carried out on the basis of complaints of end customers or for the connection of new end customers.
- In 2013, the Study of load of transformer substations 10(20)/0.4 kV was made.

With investments in power distribution facilities:

- Replacement of overhead medium-voltage lines executed by bare AlFe conductors with overhead or underground insulated cable lines of larger diameter (the effect of increasing cross section and better contacts) was performed on 53 locations, with a total length of 133,457.00 km.
- Interpolation of new pole transformer stations and other types of transformer substations into the existing distribution network. This achieves the effect of increasing the length of medium-voltage lines, and shortening the length of low-voltage lines, reducing the load of low-voltage lines and reducing losses. Built-in transformers are with equipment for the protection and safety of the environment (oil sump, grounding) at 17 locations, with a total capacity of 7,090 kVA.
- 12 transformer substations 10(20)/0.4 kV were reconstructed.
- One cable distribution was replaced, thus achieving the effect of better contact points in the plant, which administers less losses.

ELEKTRODISTRIBUCIJA TUZLA

Given that the actual losses of electricity of the Subsidiary in 2012 amounted to 8.98% and 9.54%, in 2013, it is evident that the losses remained within the planned.

In order to meet the stated goals, or increase energy efficiency, following activities were undertaken:

Without investments in power distribution facilities:

- Establishment of the optimal switching states on the medium and low voltage cable network (optimization), which is achieved by the method that measures the load on a large number of points in the distribution network, and
- Optimizing power of power transformers.

With investments in power distribution facilities:

- Replacement of overhead medium-voltage lines executed by bare AlFe conductors with overhead or underground insulated cable lines of larger diameter (the effect of increasing cross section and better contacts),
- Retrofits of existing transformer substations TS 35/10 kV,
- Interpolation of new transformer substations into the existing distribution network, thus achieving the effect of increasing the length of medium-voltage lines, and shortening the length of low-voltage lines (this reduces the load of low-voltage lines, and installation of new transformers reduces losses),
- Reconstruction of transformer substations 10(20)/0.4 kV and replacement of cable distribution box achieve the effect of better contact points at the plant, which administers less losses (contact points are controlled using the method of thermal vision and give us information on where we need to intervene replacing certain elements or perform routine maintenance), and
- The reconstruction of metering points.

ELEKTRODISTRIBUCIJA BIHAĆ

Organizational parts of Elektrodistribucija Bihać in pursuing the energy efficiency policy are based on the introduction of modern technology, purchasing and using devices with higher energy efficiency, and rational use of energy in production and operation of devices.

AMMs are implemented in the system and 5,676 meters are read remotely.

Activities undertaken/carried out in order to implement Energy efficiency policy are:

- calibration and verification of meters in accordance with statutory requirements,
- control of metering points,
- detection, control and prevention of unauthorized use of electricity,
- reconstruction of measuring points (especially from inaccessible places),
- reconstruction and rehabilitation of transmission lines and LV networks,

ELEKTRODISTRIBUCIJA ZENICA

Activities undertaken/carried out in order to implement Energy efficiency policy are:

- replacement of meters older than 40 years,
- calibration and verification of meters in accordance with statutory requirements,
- control of metering points,
- full protection of indirect and semi-indirect measuring points,
- detection, control and prevention of unauthorized use of electricity,
- reconstruction of measuring points (especially solving the inaccessible places),
- introduction of the system for remote reading - AMM system,
- reconstruction and rehabilitation of transmission lines and LV networks,
- thermal imaging,
- maximum adherence to optimal switching state of 35 kV and 10 kV networks,
- increasing the number of localities that operate under 20 kV voltage level,
- interpolation of transformer stations 10/0.4 kV,
- balancing the load of low-voltage networks,
- improving efficiency in energy use in own business and power distribution facilities.

ELEKTRODISTRIBUCIJA MOSTAR

Activities undertaken/carried out in order to implement Energy efficiency policy are:

- maximum adherence to tasks according to the Regulations for the maintenance in order to maintain a positive switching condition of power facilities and network, and to reduce electricity losses,
- Reduction of energy losses by maintaining accuracy of measuring points.



EDUCATION

Program of staff training at the level of JP Elektroprivreda BiH for 2013 did not provide for the organization of “in house” training in the field of environmental protection.

Educational activities in the field of environmental management in 2013 were primarily focused on the renewal of licenses/certificates in the field of environmental management.

Implemented training programs were as follows:

- Seminar for Professional Development “Building works in terms of environmental obligations “
- Refresher Seminar for EOQ environmental managers “Leadership skills, public speaking and thinking development of managers and auditors “
- Extension of certificate for EOQ Environmental Auditor (QSM)
- Revalidation of certification obtained for EOQ Quality Manager

In the field of energy efficiency following training programs were implemented:

- „The introduction of Energy Management System in accordance with EN ISO 50001”- In-house training,
- Energy efficiency in the building - a new source of competitive advantage,
- Seminar in the field of energy efficiency EN ISO 50001:2011,
- Training programs for energy audits and energy certification of buildings - MODULE 1, and
- Training program for energy audits and energy certification of buildings - MODULE II.

THERMAL POWER PLANT TUZLA

Expert Associate for Environmental Management attended the seminar “Handling of chemicals and hazardous materials, prevention and response to incidents “.

The aim of the seminar was to familiarize participants with the REACH regulation, which defines the manner of registration in the European Union (EU).

The seminar addressed classification, labelling and packaging of chemicals in the EU, which is significantly different from the old system of marking.

THERMAL POWER PLANT KAKANJ

Education Programme for 2013 - the segment of environmental management was implemented in its entirety. Education was attended by three employees. The goals of education are achieved.

HYDRO POWER PLANTS ON NERETVA

Expert Associate for Environmental Management attended the Seminar on management, legal frameworks and risks related to hazardous waste, and the manner and procedures for the collection, transportation and export of hazardous waste.

ELEKTRODISTRIBUCIJA SARAJEVO

In 2013, completed the following training programs were implemented:

- Staff from the Department for management systems and Service for the maintenance of networks and plants attended the training program in handling of polychlorinated biphenyls (PCBs) organized by the Ministry of Foreign Trade and Economic Relations of BiH with the support of CPRAC and MEDPOL in the framework of UNEP MAP Strategic partnerships for large marine ecosystems of the Mediterranean (MedPartnership).

ELEKTRODISTRIBUCIJA TUZLA

During 2013, employees of the Department of Management Systems attended the following training programs:

- Expert Associate for Environmental Management attended the seminar on Handling of polychlorinated biphenyls (PCBs).

ELEKTRODISTRIBUCIJA ZENICA

Expert Associate attended the seminar on Handling of polychlorinated biphenyls (PCBs) organized by the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina. Expert Associate attended the seminar on “Management of packaging, electrical and electronic waste” - Legal framework and practical application.





FINANCIAL INVESTMENTS

For now, JP Elektroprivreda BiH does not keep separate records on investments and investment costs for the implementation of plans and programs in the field of protection of environment and natural resources. The funds are planned and implemented in the framework of investment and regular maintenance of plants and facilities. There is no harmonized procedure of presenting objective indicators of total financial investment in realized activities, which includes fees for the use of natural resources. Therefore, it is difficult to provide a secure and comprehensive data on total funds spent by JP Elektroprivreda BiH in this context. According to the data available for the preparation of this document, the total amount is 58,813,877.62 KM. This indicator is a confirmation that environmental protection is an important part of the total business also in financial aspect.

Adequate waste management and supply of generated waste to recycling and reuse, is a significant fact in the financial context. The total revenue from the sale of waste materials in 2013 was 3,549,191.49 KM.

The following table, according to available data, provides financial indicators by subsidiaries at the level of the Company Headquarters and the total for JP Elektroprivreda BiH d.d. – Sarajevo.

Table 18. Financial indicators of activity in the domain of environmental management

Organization	Financial resources
Subsidiaries	KM
TPP Tuzla	17.903.814,00
TPP Kakanj	1.454.202,42
HPPs on Neretva	3.390.290,56
ED Sarajevo	11.744,80
ED Tuzla	318.822,53
ED Mostar	215.073,39
ED Bihać	289.497,13
ED Zenica	1.615.768,90
Fee for air pollution of TPP Tuzla	2.357.690,52
Fee for air pollution of TPP Kakanj	3.212.065,48
Company Headquarters	
POWER IV	1.114.806,00
Capital investments	1.340.262,33
Water charges and communal utilities	25.589.839,56
TOTAL	58.813.877,62

Table 19 Income generated from sales of waste - recyclables

Organization	Financial resources
	KM
Slag and ash from Thermal power plants Kakanj and Tuzla	1.769.694,43
Waste material from JP Elektroprivreda BiH	1.696.627,88
TOTAL	3.549.191,49





INSPECTION AND ORDERS

THERMAL POWER PLANT TUZLA

On 2 January 2013, the Cantonal inspector for water at the Cantonal Administration for Inspection Affairs ordered to immediately prevent leakage of mazut into the industrial collector of process media (water, mazut, steam) and further into the river Jala, and to implement measures to mitigate the consequences of leaking of mazut.

On 26 June 2013, the Federal Inspector for Environmental Protection in Urban Planning and Environmental Inspection, performing a regular inspection, found that the inspection finding is neat and that the Operator fulfils the measures imposed by the environmental permit.

THERMAL POWER PLANT KAKANJ

During 2013, two inspections were carried out in the field of environmental protection on the basis of which the Inspector made two records. One inspection was regular and was done on 5 June 2013. The second inspection was upon the report of locals of Čatići local community and was conducted on 12 May 2013. In both cases, the object of inspection was the coal depot Hrasno. There was no further order by the inspector who conducted these inspections.

HYDRO POWER PLANTS ON NERETVA

By the Decision No. UP11-10-23-7-01594/2013-1007-2-P, the Federal Inspector for Environmental Protection, on 22 March 2013, defines the following measures:

1. To submit the report on emissions of pollutants
2. To organize in an environmentally friendly way temporary storage of scrap metal that occurs in the area of industrial plants and facilities or resulting directly from their activities.
3. To transfer the responsibilities of management of hazardous waste, secondary raw materials and waste materials through agreements or contracts to the operator of the system for management of the listed categories/types of waste.

The Operational Programme of the Branch was adopted (24 April 2013) for elimination of deficiencies from the Decision, the deficiencies were eliminated as follows:

1. Contractor "Toplane-Sarajevo" on 17 April 2013 conducted measurement of emission of pollutants from the boiler room under Order No: 4500019948.
2. Based on the Operating Program for remedying defects No.: 22-221-1623 of 27 March 2013, the plant HPP Jablanica temporarily relocated the resulting scrap metal from green areas to the concrete base near the eaves at the facility in an environmentally friendly manner.
3. The contract was signed with the operator of hazardous waste "Kemis BH" Lukavac No. HEN-023/13 of 22 April 2013.

On 30 May 2013, No. 22-2211-2792/13, a report on the results of measurements of emissions of pollutants for the Register of Pollutants was submitted to the Federal Ministry of Environment and Tourism.

ELEKTRODISTRIBUCIJA SARAJEVO

During 2013, the Cantonal Administration for Inspection Affairs (Inspector for Power, Inspector for Water and Inspector for Environment) conducted five inspections of the production facility of sHPPs „Osanica 1“:

- The first inspection was conducted on 28 May 2013 by the Water Inspector. Inspection included an overview of environmental flow measurement and control methods. The Record No. UP-1-12-

25-01075/2013-7ES-0006 was made, ordering the installation of measuring station for measurement and control of environmental flow. Branch "Elektrodistribucija", Sarajevo immediately took action to fix the imposed remarks. The Contract for installation of automatic hydrological station on the catchment of sHPP Osanica is being signed

1. It is planned that all actions on the realization of this contract should be completed by the end of February 2014..

- The second inspection was done on 9 October 2013 by the water inspector. The record No. UP-1-12 25-00081/2013-7ES-P-7ES-0001-P was made, which notes the timeliness of accounting and payments of water protection tax for the use of water to generate electricity, or it is stated that the inspected entity fully meets its obligations. No objections were given.
- The third inspection was performed on 10 October 2013 by the Environmental Inspector. The inspection included fulfilment of all of the measures from the environmental permit. The record No. UP-1-12-23-00138/2013-2DŽ-P-2DŽ-0001-P was made, which states that the inspected entity has met all the measures from the environmental permit, and that it regularly submits reports on the monitoring and security status of the building. Also, the Record states that the operator does not manage waste without surveillance. No objection was determined.
- The fourth inspection was completed on 31 October 2013 by the Water Inspector. The inspection included the examination of all facilities of sHPP "Osanica 1" and all documents necessary for work. The record No. UP-1-12-25-00085/2013-7ES-P-7ES-P-7ES-0001-P was made which finds that the inspected entity has water acts and acts in accordance with those water acts. No objection was determined.
- Fifth inspection was conducted on 31 October 2013 by the Electric Power inspector. The inspection included examination of all facilities of sHPP "Osanica 1" and all the necessary documentation for work and maintenance of the facility. The record No. UP-1-12-17 01874/2013-MO21-0001-P was made, which stated that the inspected entity possesses all the necessary documentation for the operation of the production facility and properly performs all activities in terms of maintenance of the facility. No objection was determined.

ELEKTRODISTRIBUCIJA TUZLA

During 2013, one inspection was conducted in the premises of the Branch "Elektrodistribucija" Tuzla, workshop for the repair of transformers. It was ordered to carry out a measurement of emission of the pollutant PCBs, and to give on the basis of the measured values the environmental impact assessment.

The performed analyses (soil, air and mineral oil) found that the content of PCBs is below the maximum allowable concentration.

ELEKTRODISTRIBUCIJA BIHAĆ

During 2013 in the Branch „Elektrodistribucija“ Bihać, inspections were carried out by the Municipal communal inspection:

- Cutting vegetation, mowing and landscaping of scarps and the bank of the feed channel to sHPP "Una" Bihać,
- On two occasions an inspection was conducted by the Federal Energy Inspector,
- At the end of 2013 as part of a tax administration operation the inspection was conducted by the Federal inspectors for environmental management.

ELEKTRODISTRIBUCIJA ZENICA

During 2013 in the Branch „Elektrodistribucija“, Zenica there was no inspections in the field of environmental protection.

ELEKTRODISTRIBUCIJA MOSTAR

During 2013, there was no inspection over the facilities and premises of the Branch Elektrodistribucija Mostar by environmental inspectors of the City of Mostar, HNC or the Federation.



RISK ASSESSMENT AND INCIDENT SITUATIONS

THERMAL POWER PLANT TUZLA

On 2 January 2013, the presence of fluid was observed, which reminds of mazut in the course of the river Jala.

The representatives of the Police Station West, Police Administration Tuzla, TPP "Tuzla" and Cantonal Water Inspector came on spot.

Cantonal Water Inspector invited the representatives of the Institute of Chemical Engineering Tuzla to take water samples in the sewer and in the river Jala and to analyse the results.

It was found that mazut is present in the water and that it comes from the covered industrial collector of process media (water, mazut, steam). Examination of installations found that there was a failure on the installation of mazut station (on the flange at the moment of inspection mazut was leaking into the channel), which caused leaking of mazut into the channel, and from the channel mazut further poured into the river Jala.

After locating the point of failure all necessary measures were taken to prevent further contamination of the field and watercourses, by placing of mechanical dam in the channel.

Also, the malfunction was urgently repaired, and measures were taken to collect and secure disposal of bulk mazut from the concrete channel.

We informed the Federal Ministry of Environment and Tourism and Federal Administration for Inspection Affairs about the incident event in the plant.

HYDRO POWER PLANTS ON NERETVA

On 17 June 2013, at the site of the bridge Begića-Begovićā - major road M17 (car accident), a truck tank rolled over from which undetermined amount of oil was poured into the pool of HPP Grabovica. As this event has the characteristics of an eco-accident measures of mobilization with special equipment for this type of repair were undertaken by intervention teams of Department for maintenance and facilities of HPP Grabovica.

Agency for Watershed of the Adriatic Sea Mostar hired the company "Delta-petrol" Kakanj to extract the oil slick from the surface of the lake and oily waste (floating waste) by the dam crown of HPP Grabovica.

On that occasion, the following was taken out and away:

- a mixture of oil + water in an amount of 72,000 litres and 64 m³ of floating waste. All the generated waste (floating waste, barriers, wipes, absorbent, oil-water mixture), was transported by the company "Delta-petrol" Kakanj.

ELEKTRODISTRIBUCIJA TUZLA

On 25 April 2013 an accident happened in the business circle on the location Mitra Trifunovićā Uće No. 5 in Tuzla, and pouring of mineral oil from the transformer damaged during handling by the crane. On that occasion, about 90 litres of oil spilled on the surrounding area, but the employees intervened by spreading absorbent and so prevented that the oil gets into the environment. Oily absorbent with a layer of oily soil was delivered to the contracted operator for disposal as hazardous waste, and a subsequent analysis found that the space is not contaminated with PCBs.

ELEKTRODISTRIBUCIJA ZENICA

During 2013 in the Branch „Elektrodistribucija“, Zenica, the Plan to prevent accidents/incidents threatening environment was updated.

DISPUTES IN THE DOMAIN OF ENVIRONMENTAL PROTECTION

HYDRO POWER PLANTS ON NERETVA

In 2013, the judgment was brought by the Cantonal Court in Mostar number 58 0 Ps 093973 12 Pž of 28 January 2013 became final, in the case of the lawsuits filed by the fish farm „Zeriko“ against the respondent JP Elektroprivreda BiH for damages.

The Company Directorate appealed against the judgment with the Supreme Court of the Federation of BiH.

On 11 July 2013, a complaint was received from “Laks Export-Import” Ltd Mostar and others against the respondent JP Elektroprivreda BiH, for damages. The proceeding is ongoing and is conducted at the level of the Company Directorate.





Sarajevo, 2014

