



GIZO/AREP '14

Godišnji izvještaj o zaštiti okoline za 2014. godinu
Annual Report of Environmental Protection for 2014

Javno preduzeće Elektroprivreda Bosne i Hercegovine d.d. - Sarajevo
Public Enterprise Elektroprivreda of Bosnia and Herzegovina d.d. - Sarajevo

IMPRESUM

PUBLISHER:

Public Enterprise Elektroprivreda of Bosnia and Herzegovina d.d. – Sarajevo
Environmental Management Department

PREPARED BY:

Public Enterprise Elektroprivreda of Bosnia and Herzegovina d.d. – Sarajevo

CIRCULATION:

50 copies, year 2015

PRINTING HOUSE:

ADDITIONAL INFORMATION:

Environmental Management Department
Vilsonovo šetalište 15, 71000 Sarajevo
Tel: ++ 387 33 751 708
Fax: ++ 387 33 751 896

Report on Environmental Protection is available at web site www.elektroprivreda.ba

TABLE OF CONTENTS

01. FOREWORD BY GENERAL MANAGER.....	4
02. POWER AND THERMAL ENERGY GENERATION.....	6
03. BASIC INDICATORS OF THE ENVIRONMENTAL IMPACT AND ENVIRONMENTAL PROTECTION MEASURES.....	10
04. TREND OF ENVIRONMENTAL IMPACT INDICATORS 2009 – 2014.....	30
05. REALIZATION OF CONDITIONS OF ENVIRONMENTAL AND WATER PERIT.....	38
06. ENVIRONMENTAL MANAGEMENT SYSTEMS.....	44
07. ENVIRONMENTAL PROTECTION IN SCOPE OF DEVELOPMENT OF ELECTRIC POWER FACILITIES.....	48
08. CAPITAL INVESTMENTS.....	54
09. PREPARATION OF PLANNING AND STUDY DOCUMENTS.....	60
10. ENERGY EFFICIENCY.....	62
11. EDUCATION.....	64
12. FINANCIAL INVESTMENTS.....	66
13. INSPECTION AND ORDERS.....	68
14. RISK ASSESSMENT AND INCIDENT SITUATIONS.....	70
15. DISPUTES ARISING FROM THE ENVIRONMENTAL PROTECTION.....	72

FOREWORD BY GENERAL MANAGER

In accordance with past practice, Annual report on environmental protection JP Elektroprivreda BiH d.d. – Sarajevo provides an overview of the achieved results and most significant investments in environmental protection in 2014. This report continues to monitor and analyse the impact of the Company's business processes to the environment as a whole.

The strategy of our Company for future work, as before, remains unchanged, and it is primarily reflected in the quality supply of electricity to all customers, building new production capacities, especially the construction of the hydroelectric facilities and wind parks, the successful management of the electric power system, and increasing the customer satisfaction. We still have our priorities in the rational use of all available resources, investment in distribution network, application of modern European standards in business and compliance with the provisions of the Treaty establishing the Energy Community, especially when it comes to preparing for the open electricity market.

of sustainable development which includes responsible management, positive business operations, the satisfaction of all stakeholders and dynamic development in the spirit of sustainable development. The Company strives constantly to achieve better environmental performance, and will continue to take all available measures to improve environmental protection in all of its organizational units and activities. We will continuously monitor the effects of activities on the environment and revise the procedures to minimize the harmful effects of this action.

Involving the local community in the projects, through the financial participation and planning, we will achieve greater acceptance of projects in renewable energy sources.

In all segments of environmental protection, JP Elektroprivreda BiH d.d. - Sarajevo reports to the competent institutions, relevant local self-governments communities, media, non-governmental organizations and the interested public, in a timely, objective and transparent manner.

DR.SCI.ELVEDIN GRABOVICA

02 POWER AND THERMAL ENERGY GENERATION

In 2014, JP Elektroprivreda BiH in its production facilities has achieved the total electricity generation in the amount of 7,404 GWh, of which thermal power plants produced 5,787 GWh (TPP Tuzla 3,668 GWh and TPP Kakanj 2,119 GWh) and hydro power plants 1,617 GWh (HPP on Neretva 1,543 GWh and sHPPs 74 GWh) (Diagram 1).

DIAGRAM 1. Production of electricity and thermal energy in r 2014 (GWh)

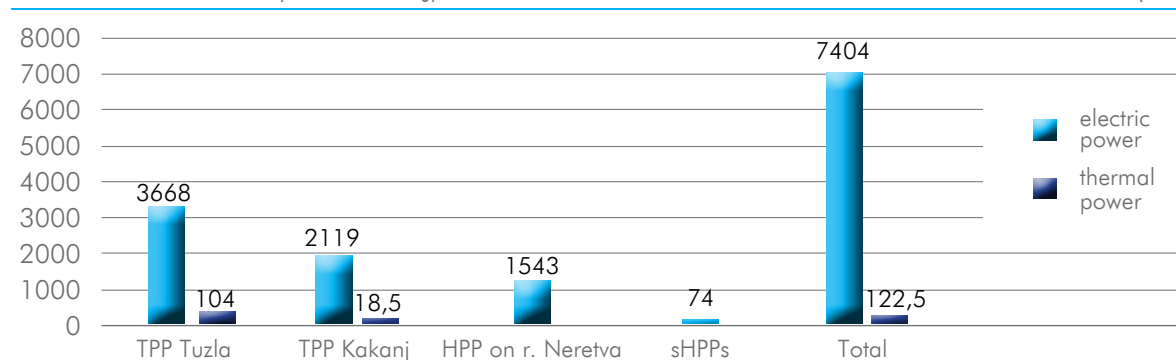


DIAGRAM 2. Balance of the production of electricity and heat in TPP Tuzla and TPP Kakanj (GWh)

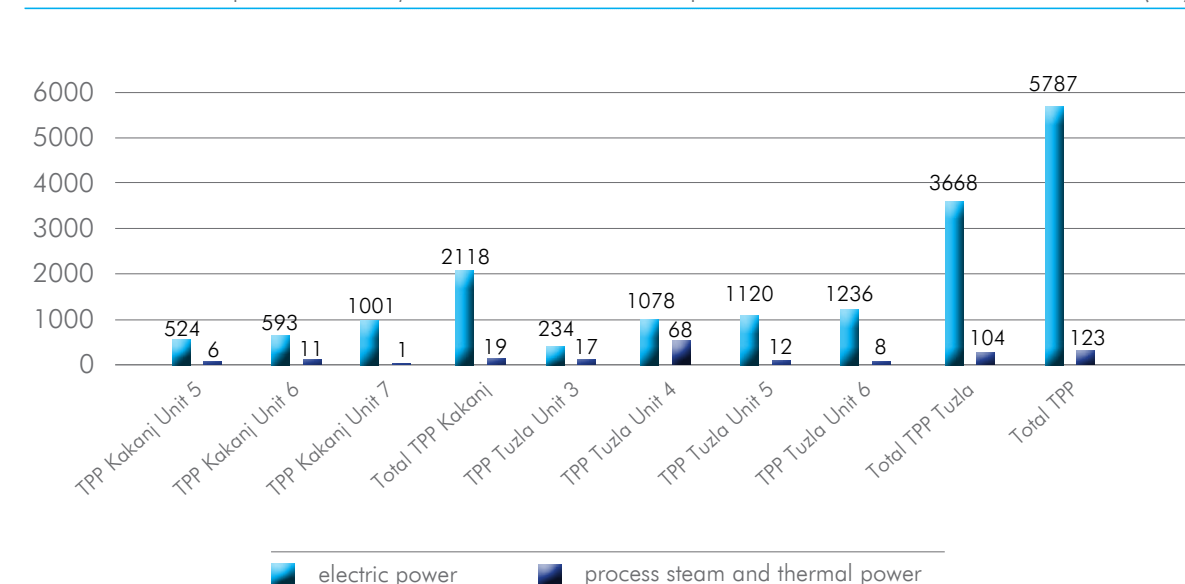


DIAGRAM 3. Balance of the production of electricity in HPP on river Neretva (GWh)

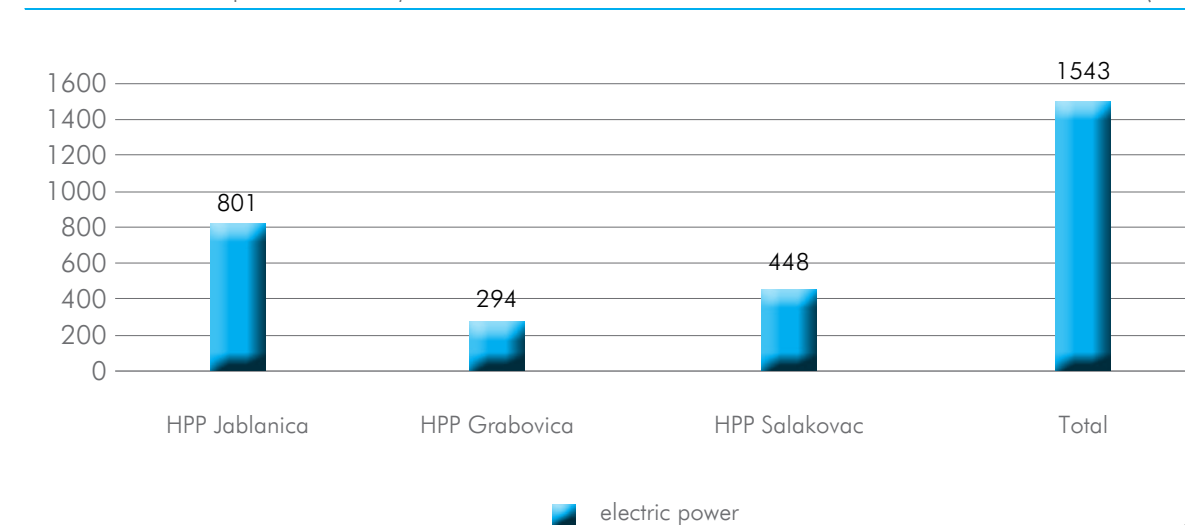
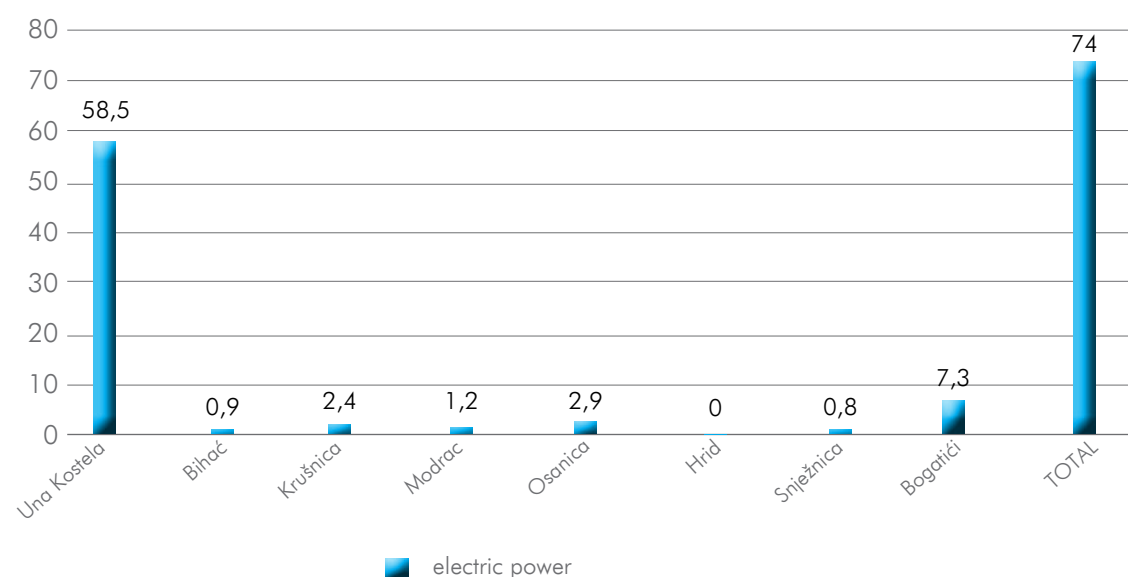


DIAGRAM 4. Balance of the production of electricity in sHPPs

(GWh)



Operation of the electric power system of JP Elektroprivreda BiH in 2014 was characterized by:

- relatively more favourable hydrological conditions; realized natural water inflows, which were 18.9% higher than the planned, 14.7% lower than the inflows in the hydrologically more favourable 2013,
- total purchase of coal than balance-planned amounts lower by 6,0%, but 4,9% higher than the purchase in 2013,
- total electricity production higher by 0.1% than planned, but lower by 0.9% than the production realized in 2013, (it should be noted that the realized electricity production of 7,404 (GWh) represents the second accomplishment by the size from the related production units since 1991),
- total electricity consumption lower than the planned by 1.1% and 0.5% lower than the total consumption in 2013,
- non-tariff sales of electricity higher by 0.9% than the balance-planned one, but 0.1%

lower as compared to the sales in 2013.

In 2014, the thermal power plants spent a total of 5,804,991 tons of coal, of which 5,636,933 tons (97.1%) for electricity production, 142,167 tons (2.4%) for thermal power and process steam production, while the remaining 25,892 tons (0.4%) accounts for ullage and spillage. Of the total quantities, TPP Tuzla spent 3,811,594 tons (65.7%), and TPP Kakanj 1,993,397 tons (34.3%).

For ignition and fire support in boilers, thermal power plants spent 1,499.3 tons of crude oil and 1,138.8 tons of fuel oil.

TABLE 1. Total annual coal consumption in 2014

Power plant	Coal consumption				Specific coal consumption kg/kWh
	for electric power	for thermal power and process steam	Ullage and spillage	total	
TPP Tuzla					
Lignite	2.317.045	97.868	31.083	2.383.831	0,95
Brown coal 1	605.196	23.154	10.431	617.919	0,25
Brown coal 2	782.277	4.979	22.589	809.845	0,63
Total	3.704.519	126.001	18.925	3.811.594	1,01
TPP Kakanj	1.932.414	16.166	44.817	1.993.397	0,91
TOPTAL:	5.636.933	142.167	25.892	5.804.991	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 2014, 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 1.

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	4.057	53.156	966	4.461.696
TPP Kakanj	7.385	75.410	688	2.408.619
TOTAL:	11.442	128.566	1.654	6.870.315

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 expressed in population equivalent (EBS) 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	EBS
	m ³	m ³	
TPP Tuzla	17.415.484	6.948.300	521.355
TPP Kakanj	10.398.622	6.044.335	36.442
TOTAL:	27.814.106	12.992.635	557.797

During 2014, in TPP Kakanj, wastewater treatment facilities treated 6,017,591 m³ of waste water. The plant for treatment of sanitary sewage treated 26,744 m³ of waste water. The decarbonisation process created 23,119 m³ of waste oil, while the wastewater treatment in wastewater treatment facilities created 6,093 m³ of sludge. From sludge thickener on the slag and ash landfill Turbići, 4,408 m³ of sludge was discharged.

Technical chemicals were used for the preparation of process water and for the wastewater treatment in thermal power facilities. The balance of consumption of technical chemicals is given in Table 4.

TABLE 4. Balance of technical chemicals used in wastewater treatment process

TPP	Type of chemicals	Quantity †
Tuzla	Hydrated lime	1.813,05
	Hydrochloric acid	562,28
	Soda lye	633,83
	Iron (III) sulphate	262,96
	NALCO N 72.310	0,18
	Sodium chloride	57,75
	Sodium hypochlorite	7,43
	Levoxine 15	10,80
	Trisodium phosphate	2,30
	NALCO N-3DT 149	20,23
	NALCO N-3DT 199	2,16
	NALCO N-3.434	0,60
	NALCO pHREE 5200	13,93
	NALCO 1700	0,20
	Potassium hydroxide	0,07
Kakanj	Whitewash	847,90
	NALCO 71221	55,36
	NALCO N	7,36
	Sodium hypochlorite	26,05
	NALCO N-3DT 149	23,41
	Feric sulphate	17,08
	Levoxine	6,62
	NALCO N-3DT 199	3,81
	NaOH	70,74
	NALCO 71605	2,12
	NALCO 3434	2,61
	NALCO 7348	1,34
	Ammonium hydroxide	1,47
	Trisodium phosphate	1,22

Impacts on land

TE Kakanj affects the land by taking of land for the purposes of disposal of slag and ash, as well as by deposition of pollutants emitted into the air from combustion plants. In 2014, TPP Kakanj expropriated 8,886 m² of land for disposal of ash and slag. TPP Kakanj has no other indicators of the impact on 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 Veterinary Faculty, Sarajevo carried out the measurement of the radioactivity of slag and ash, the measurement of radioactivity in the production process of TPP Tuzla, 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 the Certificate was issued.

Also, radiological studies in the ecological chain continued. Studies have included measuring of radioactivity in the production process and in the surrounding area of TPP Kakanj, as well as radiological studies of food of vegetable and animal origin located in the local community Doboј.

A certificate is issued on the conducted studies, 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

For qualitative acceptance of coal, all coal quantities that are accepted must be properly sampled. Sampling is carried out at the site of the handover and performed by representatives of both the Mine and TPP "Tuzla". Sampling is done according to the applicable ISO standards and Guidelines for quantitative and qualitative acceptance of coal, and the record is made of the sample taken, which signed bilaterally.

Control of coal quality is carried out regularly. Control of coal quality is performed by TPP Kakanj and Inspekt RGH, Ltd. Sarajevo.

Waste management

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

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

Type of waste	Temporarily deposited	Supplied under contracts
	†	†
Iron	1.210,00	1.550,90
Waste paper	3,00	4,34
Aluminium scrap	16,00	6,98
Copper scrap	0,20	1,30
Iron flakes	-	12,34
Waste board	-	116,16
Waste rubber strip	-	104,98
Electric motors	-	65,44
Waste copper cables, insulated	10,00	4,64
Plastic containers of 1.000 l	3,60	35,00
Plastic containers of 200 l	12,00	0,28
Steel	-	116,16
Waste tin barrels	0,19	0,87
Sludge water from bio-rotor/treatment of urban waste water – TPP Tuzla	-	31,5
Mixture of edible fats and oils from kitchen grease – TPP Tuzla	-	10,00
Liquid waste from wastewater reservoirs and canals around the coal depots – TPP Tuzla	-	107,50
TOTAL:	1.254,99	2.168,39

TABELA 6. Generated, temporarily deposited and supplied non-hazardous waste in TPP Tuzla and TPP Kakanj

Type of waste	Temporarily deposited	Supplied under contracts
	†	†
Absorbents, filter material, absorbing materials	-	0,20
Discarded electrical and electronic equipment	-	1,51
Oil filters	0,04	0,73
Fluorescent tubes and waste containing mercury	0,12	0,65
Waste printing toners	0,34	1,00
Sludge from oil separators - TPP Tuzla		2,57
Oil and water (mixture)	2,00	0,20
Synthetic oil for engines and lubrication	0,40	1,10
Waste oil category I	-	18,8
Mineral oils for lubrication	1,20	2,26
Oils for heat transfer containing PCB	0,19	-
Hydraulic oil based on mineral oils	1,50	-
Insulation material containing asbestos	-	1,46
Asbestos-cement panels	20 ,00	-
Oiled cloth	1,70	1,48
Transformer 16 07 08	3,50	9,18
TOTAL:	30,95	41,14

Combustion products disposed of at the slag and ash landfills

TABLE 7. Slag and ash

Type of waste	Quantity deposited on slag and ash landfill	Total quantity
	t	t
TPP Kakanj	Slag from grates in furnaces, slag and dust from boilers (excl. boiler dust under 10 01 04)	117.235
	Fly ash from coal combustion	158.792
TPP Tuzla	Slag from grates in furnaces, slag and dust from boilers (excl. boiler dust under 10 01 04)	89
	Fly ash from coal combustion	150.941
TOTAL:	1.072.274	427.057

TABLE 8. Generated non-hazardous waste disposed of at the slag and ash landfill TPP Kakanj

Type of waste	Generated (Deposited at the landfill) [m ³]
Mixture of concrete and bricks	426
Slag and ash from cleaning	1.126
Waste slag from wastewater treatment	636
Waste soil and gravel	1.170
Waste mineral wool	345
Sludge from decarbonization	23.119
Sludge from wastewater treatment	6.093
Sludge from wastewater thickener	4.408
TOTAL:	37.323



System for transport of slug

HYDRO POWER PLANTS ON RIVER NERETVA

Water used for electric power generation



View from the dam upstream, HPP Salakovac

TABLE 9. Water used in Hydro power plants on river Neretva

Hydro power plant	Used water m ³
Jablanica	3.312.900.000
Grabovica	3.775.800.000
Salakovac	4.567.000.000
TOTAL:	11.656.300.000

TABLE 10. Comparison of balance of electric power generation and used quantity of water 2013/2014

Branch HPP on river Neretva	Electricity production (generator) GWh	Electricity produc- tion (threshold) GWh	Used quantity of water m ³
TOTAL: 2013	1.874,112	1.854,430	13.111.720.000
TOTAL: 2014	1.558,549	1.542,610	11.656.300.000

Waste management

According to the Waste Management Plan, in temporary storages, the waste is selected and temporarily deposited, and supplied to the further treatment (Table 11).

TABLE 11. Generated, temporarily deposited non-hazardous waste HPP on Neretva

Type of waste	Temporarily deposited †	Supplied under contracts †
Waste brass	1,22	-
Waste tires	0,04	-
Waste aggregates	4,10	-
Rope Al-Fe 70/12	0,03	-
Cable 35kV XHP-48/36 1x50	0,04	-
Waste cables	0,69	-
Oil-free waste el. meters and m. transformers	1,99	-
Waste electric motors	0,27	-
Scrap iron of various sizes	27,38	-
Scrap copper	0,63	-
Scrap copper with insulation and other additions	5,79	-
Scrap aluminium	1,02	-
Waste paper and cardboard	0,12	-
TOTAL:	43,32	-

TABLE 12. Generated communal waste in HPP on r. Neretva

Type of waste	Generated waste m ³	Temporarily deposited m ³	Supplied under contracts m ³
Communal waste (floating debris from accumulation)			
Facility of HPP Jablanica	91,00	-	370,00
Facility of HPP Grabovica	251,00	-	
Facility of HPP Salakovac	28,00	-	
Mixed communal waste		-	347,60

TABLE 13. Generated, temporarily deposited and supplied hazardous waste* of HPP on Neretva

Type of waste	Temporarily deposited	Supplied under contracts
	†	†
Carbon brushes	0,01	0,01
Waste paint and varnish containing organic solvents or other hazardous substances	-	0,55
Waste adhesives and sealants containing organic solvents or other hazardous substances	-	0,19
Waste printing toner containing dangerous substances	0,02	0,13
Degreaser (IVASOLCS)	0,05	-
Non-chlorinated hydraulic oil based on mineral oil (turbine oil)	-	0,01
Engine oil	-	0,07
Waste oil from the crane gear (INA EPOL 100)	-	0,16
Turbine oil (Mobil Heavy Medium ISO VG 68)	-	15,15
Oily water	-	7,58
Waste not classified elsewhere (grease)	-	0,22
Other solvents and solvent mixtures	-	0,10
Packaging containing residues of hazardous substances or contaminated by hazardous substances (oily from paint, varnish, etc.)	-	0,04
Absorbents, filter materials, cloth and wiping and absorbing cloths, protective clothes contaminated by hazardous substances	-	4,85
Coolant (antifreeze)	-	0,01
Oil filter	-	0,01
Discarded inorganic chemicals consisting of or containing hazardous substances	-	0,01
Nickel – cadmium batteries	-	0,01
Lead batteries and accumulators	0,53	-
Concrete containing dangerous substances	-	0,19
Fluorescent tubes and other mercury-containing waste	0,06	0,06
Waste electrical and electronic equipment	0,33	1,47
TOTAL:	1,00	30,82

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, and in 2014 we continued with activities of cutting of tree branches and clearing of the route.

Fish stocking

According to the current fishing grounds and submitted annual restocking programs, as well as to the agreements with fishing associations that manage the Neretva river basin, U/OSR „Neretva 1933“ Mostar, OSR „Glavatica“ Jablanica, UG „OSR „Konjic“ Konjic, Mostar, we made a regular annual restocking of water in the catchment of the river Neretva, as follows:

- supply of carp fingerlings and fish (250 – 1.000 g) for restocking of fishing area - fishing zone - Jablanica, Mostar, Konjic;
- supply of brown trout fingerlings and fish (3 – 30 cm), for restocking of fishing area - fishing zone Jablanica, Mostar, Konjic;
- supply of lake trout fingerlings and fish (15 – 20 cm) for restocking of fishing area - fishing zone Mostar;
- supply of arctic char fingerlings and fish (20 – 25 cm) for restocking of fishing area - fishing zone Jablanica, Mostar;
- supply of brook char fingerlings and fish (15 – 25 cm), for restocking of fishing area - fishing zone Mostar;
- supply of soft-mouth trout fingerlings (3 – 15 cm), for restocking of fishing area - fishing zone Mostar and Konjic;
- supply of rainbow trout fingerlings (15 – 20 cm), for restocking of fishing area - fishing zone Mostar.

POWER DISTRIBUTION SUBSIDIARIES**Elektro distribucija Sarajevo***Use of transformer oil*

In the normal course of the process of repair and maintenance of substations and transformers, in the Canton of Sarajevo and Bosnia-Podrinje Canton was spent 7368.97 kg of non-chlorated insulating oil and heat transfer oil based on mineral oil. 1.52% less oil was used compared to the year 2013.

Waste management

In 2014, activities continued on obtaining the necessary permits and approvals for construction of the storage for temporary waste deposit:

The decision on the extension of the issued zoning permit, No. 03-23-551/12-2 issued by the Municipality Ilidža on 21/07/2014.

The decision on approval for the construction of office building, No. 03-23-805/14 MI, issued by the Municipality Ilidža on 01/09/2014.

On 12/09/2014, a requisition was launched for procurement of the services of building the storage for temporary waste deposit, but the open procedure was suspended because it was the first procedure, due to insufficient number of tenders. The Decision on extension of the deadlines for realization of the decisions on investments, No. In-01-39360/14-196./10 of 09/12/2014, extended the deadline for the implementation of the investment decision for storage until 31/12/2015.

On sHPP „Osanica 1“ regular cleaning of the bed of the river Osanica and maintaining of water catchment were performed. Approximately 126 kg of floating waste was collected and disposed of in an appropriate manner. Also, approximately 700 m³ of alluvial deposit was collected and disposed of.

In December 2014, the Public Health Institute of the Federation of Bosnia and Herzegovina, at the request of the Subsidiary „Elektro distribucija“, Sarajevo, stripped and removed five (5) fire detectors with built-in radioactive isotope from the location of the Subsidiary.

Measures to mitigate negative impacts on the environment

Based on the Agreement with the Association of sport fishermen Goražde on improving fish stocks in the basin of the River Osanica and plan for restocking the fishing area of Bosnia-Podrinje Canton Goražde, regular annual fish stocking was conducted.

Due to the free flow of water, fish migration, on the river Željeznica on the Bogatići dam profile for rehabilitation of landslides, restocking was not done in 2014.

On sHPP Osanica 1, regular ongoing and investment maintenance was conducted, as well as cleaning of river sediment at the water intake of sHPP „Osanica 1“.

Other facilities (substations near water protection areas) are regularly monitored and any technical malfunctions are eliminated immediately (which could lead to negative impacts on the environment).



ED Sarajevo

Elektrodistribucija Tuzla*Measures to mitigate negative impacts on the environment*

During 2014, part of the funds for recovery in case of accidental spills of oil was procured: absorbent, hoses and detergent on biological basis for the breakdown and elimination of oil deposits. Absorbent was distributed to operational organizational units, with instructions for use and the responsibility to act.

The construction of the collector system for the collection and treatment of waste water from "dirty surfaces" is ongoing in the part of the Subsidiary which is most exposed to the risk of oil leakage.

The restocking of the basin of the River Brzava was performed in December 2014, with the necessary amount of fish fingerlings.

Elektrodistribucija Bihać*Use of transformer oil*

During normal process, or performing of transformer maintenance works within the Department for maintenance of networks and plants, transformer oil was supplemented. In the activity of electric power generation, within the process of production and maintenance of power facilities in hydro power plants, biodegradable hydraulic oils (HD 68 and SAE 90) and grease (LIS 2) were used. The Department for General Services and Transport uses motor hydraulic oil and antifreeze. 842 l of organic mineral transformer oil, 1,034 litres of hydraulic oil HD 68, 19 litres of oil for bearings, and 119 kg of grease LIS 2 were spent.

Waste management

On the periphery of the city of Bihać in Vedro Polje there is the Central warehouse on an area of about 6,000 m², which is in the final stage of construction. In mid-2014, there was a partial completion of the construction of the Central warehouse in Vedro Polje, and in December 2014, we began moving the warehouse from Krupska ulica to the warehouse in Vedro Polje.

From all business units of the Company, the waste is transported and temporarily deposited in a central warehouse in Bihać, and then secondary raw materials and waste materials are downloaded and transported to the company with which JP "Elektroprivreda BiH" has a contract.

Measures to mitigate negative impacts on the environment

The oil pit 35/10 kV Žito prerada was repaired. The Sector OMiP exercised regular control and maintenance and there were no incidents, and no oil leak that could lead to contamination dangerous for the environment.

The rivers Una and Krušnica are regularly annually restocked, i.e. contracts were concluded with fishing associations, which are competent for management of fishing areas. Based on the Plan of fish stocking and the submitted Study on Restocking harmonized with Fishing Economic Document in 2014, it was agreed to co-finance the restocking of the Una River with brown trout fingerlings (10-15 cm), 23,427 pieces, and grayling fingerlings (10-15 cm), 4000 pieces, and under the Contract No. 03-2-11-41892/2014 of 19/12/2014 of the river Krušnica with brown trout fingerlings (6-10 cm), 18,124 pieces, and grayling fingerlings (12-18 cm), 3,200 pieces.

During 2014, in the Subsidiary „Elektrodistribucija“ Bihać, according to the Plan of the OMiP Sector, vegetation and low plants were cut under the distribution network and around power facilities in a total length 18,817.50 m and area of 271,000 m².

Simultaneously we conducted preventive activities in reviewing the sites with the assumed risk of UXO, and de-mining of the area of 11,883.00 m², building DV 10kV section Goričevac 1.



Transformer sub-station

Elektro distribucija Zenica*Measures to mitigate negative impacts on the environment*

In 2014 the maintenance service was carried out, i.e. clearing under the route of electrical distribution grid in the Zenica-Doboj and Central-Bosnia Cantons, with the aim of increasing the reliability of the route and reducing the number of breakdowns on power facilities.

Elektro distribucija Mostar*Measures to mitigate negative impacts on the environment*

In order to reduce the negative impact on the environment, the entire unusable (dismantled) materials and equipment are disposed of in accordance with the contract on purchase of specified materials and equipment, and treated as secondary raw material.

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 14.

Generated, temporarily deposited and supplied non-hazardous waste in electric power company branches (Tuzla, Sarajevo, Zenica, Bihać and Mostar)

Type of waste	Temporarily deposited	Supplied under contracts
	t	t
Wooden packaging (waste packaging board)	1,05	0
Paper and cardboard	0	5,29
Old tires (waste car tires)	7,30	0
Plastic (waste plastic)	3,75	0
Old equipment not listed under 16 02 09 do 16 02 13 (waste insulators)	0,93	22,19
Old equipment not listed under 16 02 09 do 16 02 13 (waste voltage and measuring substations without oil)	1,45	0
Old equipment not listed under 16 02 09 do 16 02 13 (measuring devices-meters removed from inventory)	26,51	5,28
Copper, bronze, brass (scrap copper of various sizes)	0,25	1,95
Aluminium (scrap aluminium, old Al-Fe rope)	47,51	25,25
Iron and steel (scrap tin, scrap iron)	80,3	49,49
Mixed metals (mixed metals)	0,53	0
Old vehicles without liquids and hazardous substances	5,98	0
Cables not listed under 17 04 10 (self-sustained cable bundle, scrap copper cables with insulation (energetic)	19,07	0
Textile (Waste leather)	0,02	0
Breakers	2,07	0
Cu cables	3,21	0
Tins/iron of various sizes	1,29	0
Waste wooden roll (wooden rolls)	0,78	0
Waste insulators (oil-free)	11,44	0
Old Al rope and cable, various sizes	28,36	0
Steel rope	0	2,16
Old wooden pole, various sizes	19,29	0,85
Old RC pole, various sizes	10,00	0
Old cast iron (cast iron radiators)	1,88	0
Waste copper cables with lead insulation	5,04	1,04
Waste Al cables with plastic insulation	5,07	1,46
Inox	0	0
Transformers without oil	0	2,30
TOTAL:	283,08	117,26

TABLE 15.
Generated, temporarily deposited and supplied hazardous waste* in electric power company branches (Tuzla, Sarajevo, Zenica, Bihać and Mostar)

Type of waste	Temporarily deposited	Supplied under contracts
	t	t
Non-chlorinated insulation oils and oils for heat transfer based on mineral oils (waste transformer oil)	3,37	3,9
Old equipment containing hazardous components not listed under 16 02 09 do 16 02 12 (waste power transformer)	5,70	0
Lead batteries (lead batteries)	1,01	0
Nickel-cadmium batteries (nickel-cadmium batteries)	0,31	0
Toners	0,10	0,71
Oily water	0	1,98
Oily cloth	0,03	0,73
Oily soil and absorbent	0	0,26
TOTAL:	10,52	7,58

TABLE 16. Quantities of hazardous waste delivered to the waste electrical and electronic equipment management system operator (ED Sarajevo, ED Bihać)

Type of waste	Temporarily deposited as at 31/12/2014	Delivered to the waste electrical and electronic equipment management system operator (ZEOS eko-sistem Ltd. Sarajevo)
	t	t
Fluorescent tubes and other mercury-containing waste	0,01	0,03
Discarded electrical and electronic equipment (TV + monitors and MKA)	1,36	6,08
TOTAL:	1,37	6,11

In 2014, the ED Sarajevo did not realize the evacuation of the following quantities of adequately stored equipment within MedPartnership project

TABLE 17.

Name of waste	Quantity	Note
	t	
Transformers and capacitors containing PCB	8,4 (7,13 from capacitors)	Capacitors (with containers) dismantled from TS (MTK-system) (Ažići)
Transformers and capacitors containing PCB	1,10 (0,744 from capacitors)	Capacitors (with containers) dismantled from TS Elektroprivreda Vilsonovo Šetalište 15
Insulation oils or heat transfer oils containing PCB	0,40 (from barrels with oil)	
TOTAL:	8,28	

* In 2014, to the quantity of equipment with PCB temporarily placed in steel containers at the warehouse of the Subsidiary „Elektro distribucija“ Sarajevo, three capacitors from TS 35/6 kV Azot Goražde were added.

** The MedPartnership project is ongoing, through which JP Elektroprivreda BiH Branch „Elektro distribucija“ Sarajevo, in coordination with the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, should permanently dispose of the remaining quantities, 8,279 kg, of dismantled equipment filled with PCB-based insulating medium, that is temporarily placed in the proper steel leak-proof containers at the warehouse of the Subsidiary „Elektro distribucija“ Sarajevo. For Medpartnership project funding was provided; the aim of the project is to export from BiH 200,000 tonnes of pure PCB or equipment with PCB. The project should be completed by the end of 2014. In October 2014, the representatives of the BiH Ministry of Foreign Trade and Economic Relations informed Elektro distribucija Sarajevo, that an international company from France was chosen, which should realize the export and that by the end of 2014 should make a tour of all the sites where equipment with PCB was registered, including subsidiary „Elektro distribucija“, Sarajevo.

04 TREND OF ENVIRONMENTAL IMPACT INDICATORS 2009 – 2014

DIAGRAM 5. Total power generation and consumption of JP Elektroprivreda BiH for the period 2009 - 2014

(GWh)

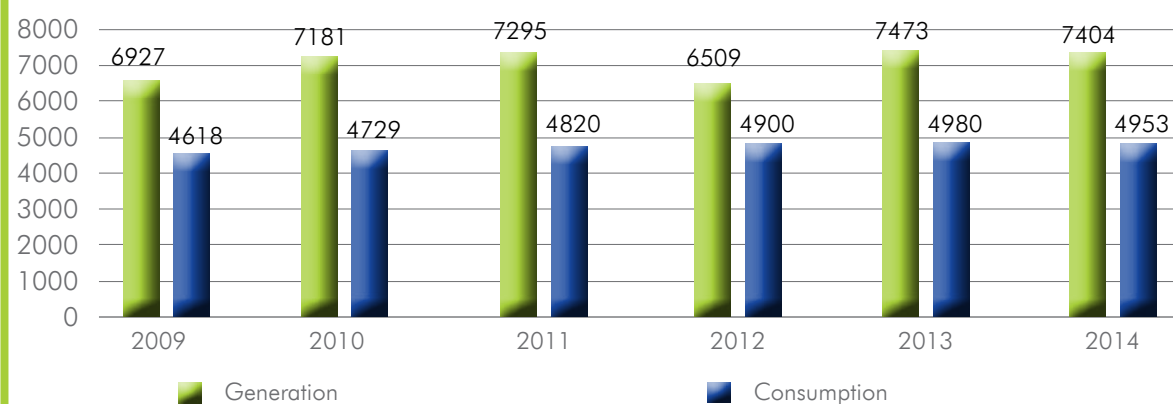


DIAGRAM 6. Power generation in thermal power plants for the period 2009 – 2014

(GWh)

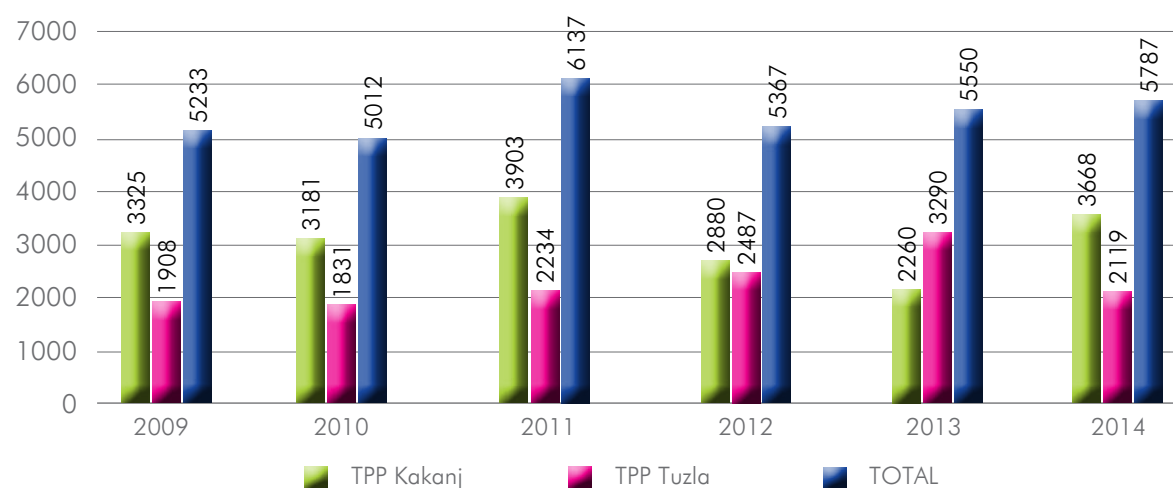


DIAGRAM 7. Coal consumption in thermal power plants Kakanj and Tuzla for the period 2009-2014

(t)

DIAGRAM 8. Emission of SO₂ from thermal power plants Kakanj and Tuzla for the period 2009-2014

DIAGRAM 9. Emissions of NOx from thermal power plants Kakanj and Tuzla for the period 2009 – 2014

(t)

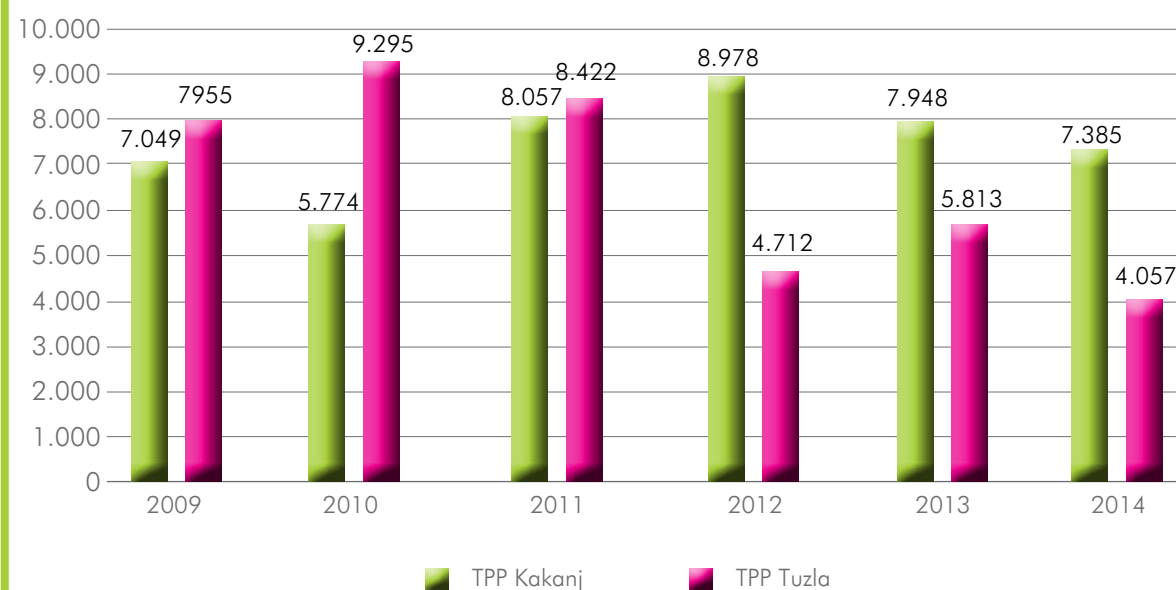
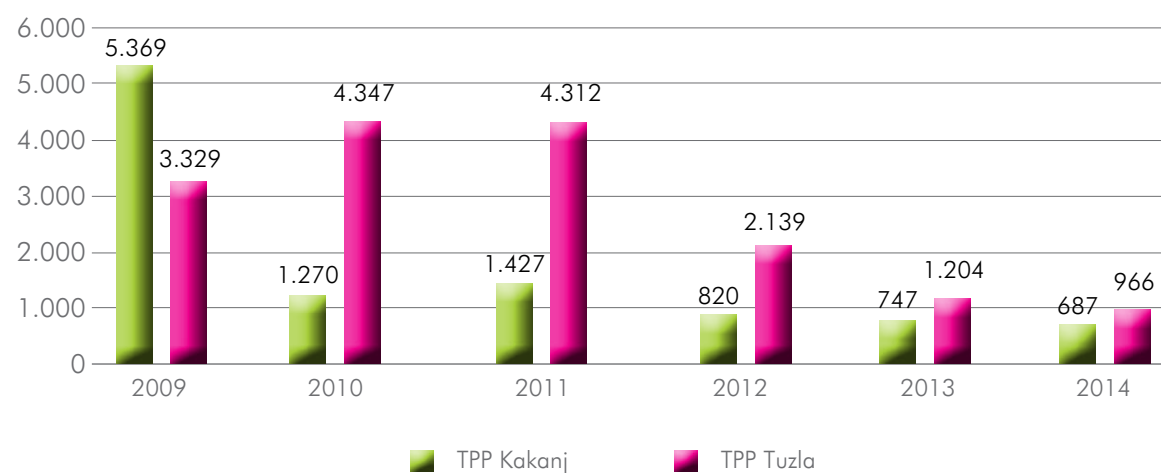


DIAGRAM 10. Emissions of solid particles from thermal power plants Kakanj and Tuzla for the period 2009 – 2014

(t)

DIAGRAM 11. Emissions of CO₂ from thermal power plants Kakanj and Tuzla for the period 2009 – 2014

(t)

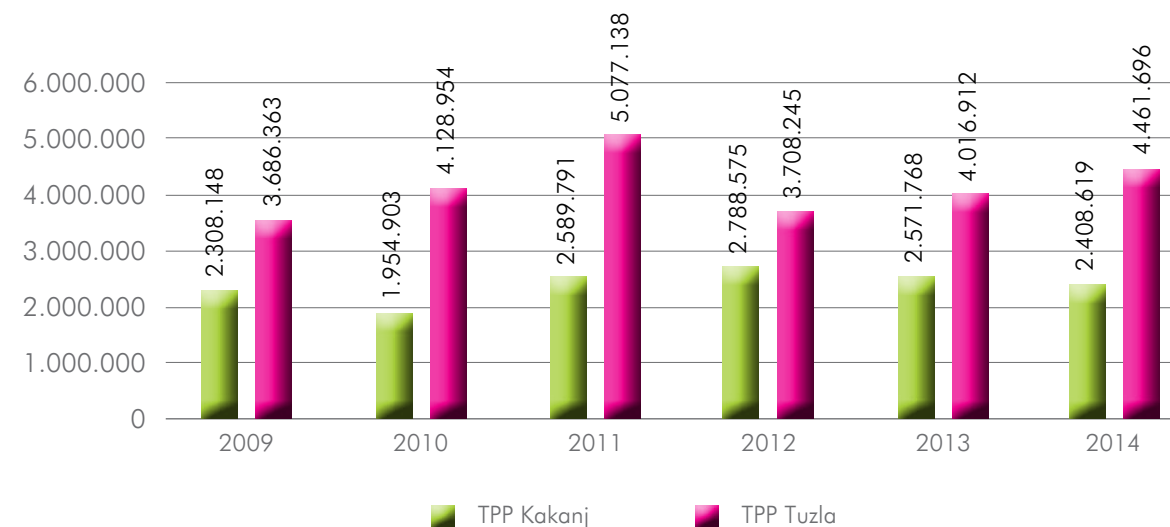


DIAGRAM 12. Total quantity of non-hazardous waste in TPP Kakanj and TPP Tuzla for the period 2009 – 2014

(t)

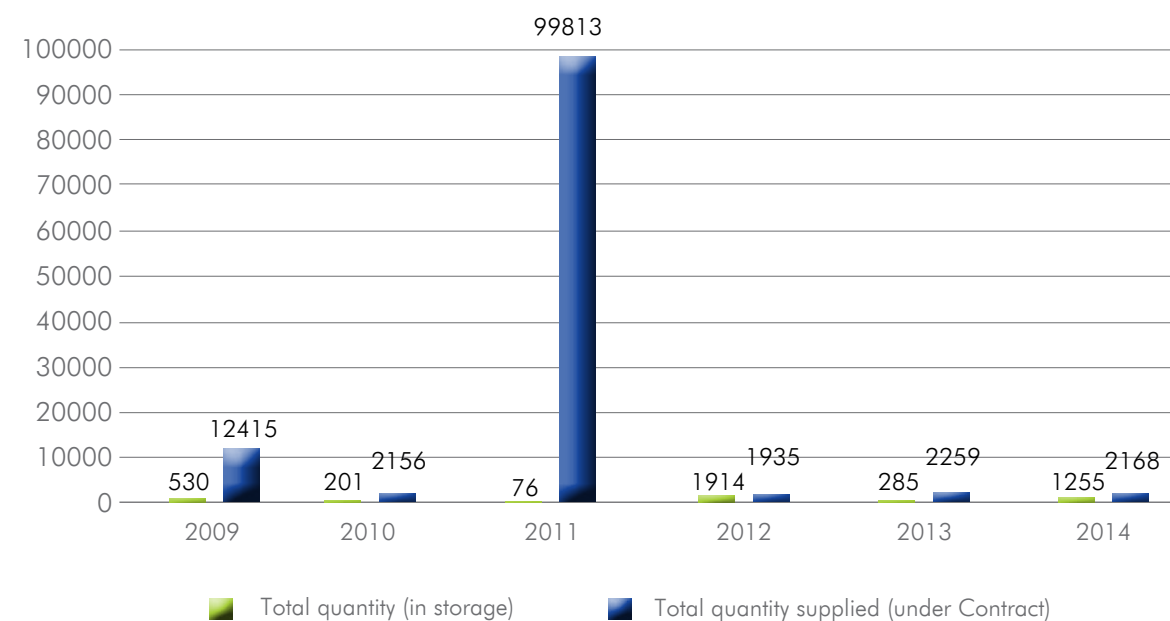


DIAGRAM 13. Total quantity of hazardous waste* in thermal power plants Kakanj and Tuzla for the period 2009 – 2014

(t)

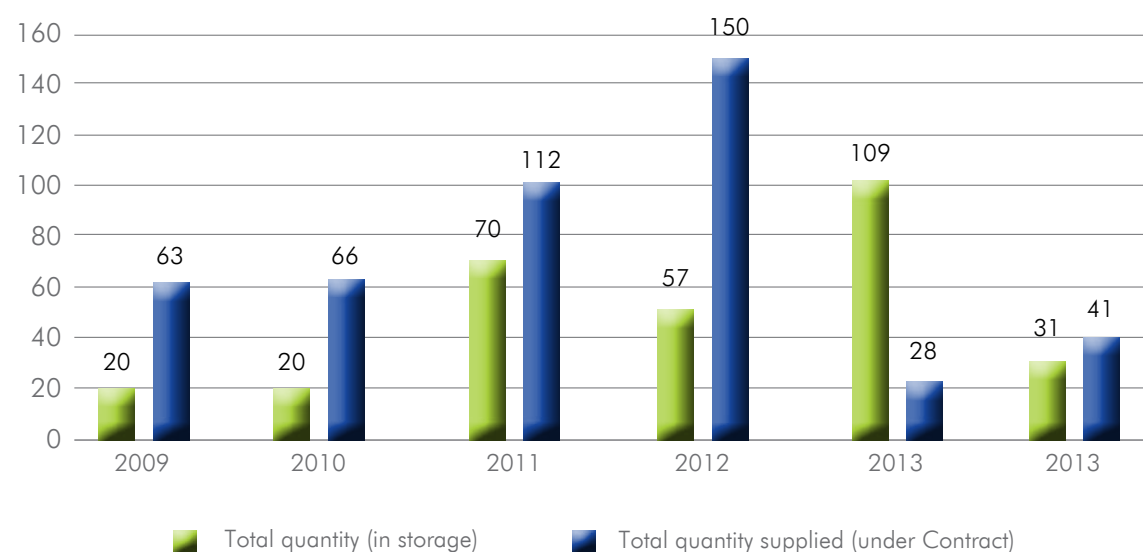


DIAGRAM 15. Electric power generation in HPPs on river Neretva for the period 2009 – 2014

GWh

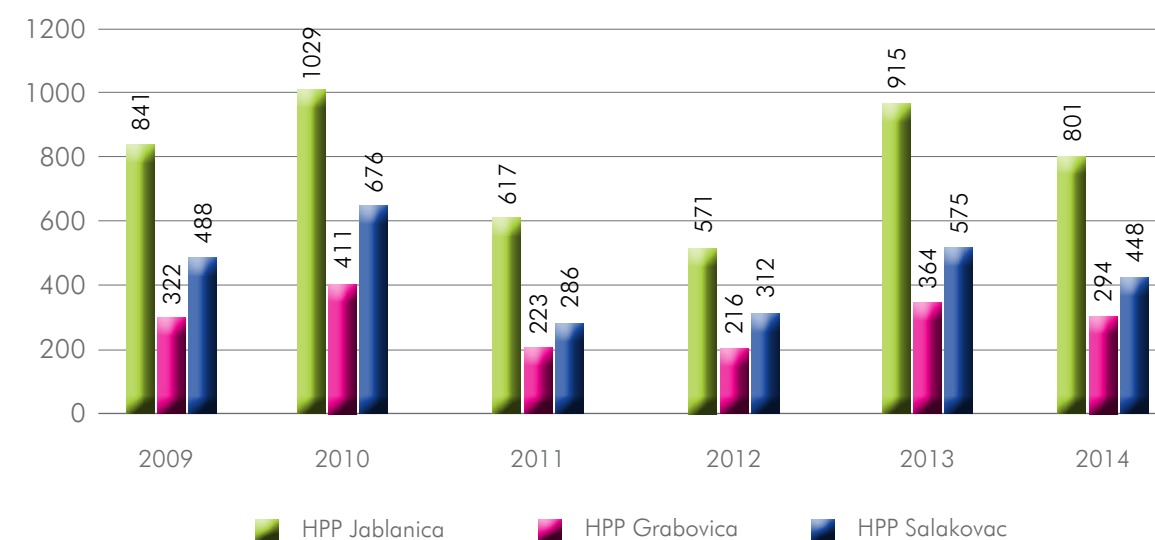


DIAGRAM 14. Total quantities of slag and ash in thermal power plants Kakanj and Tuzla for the period 2009 – 2014

000 (t)

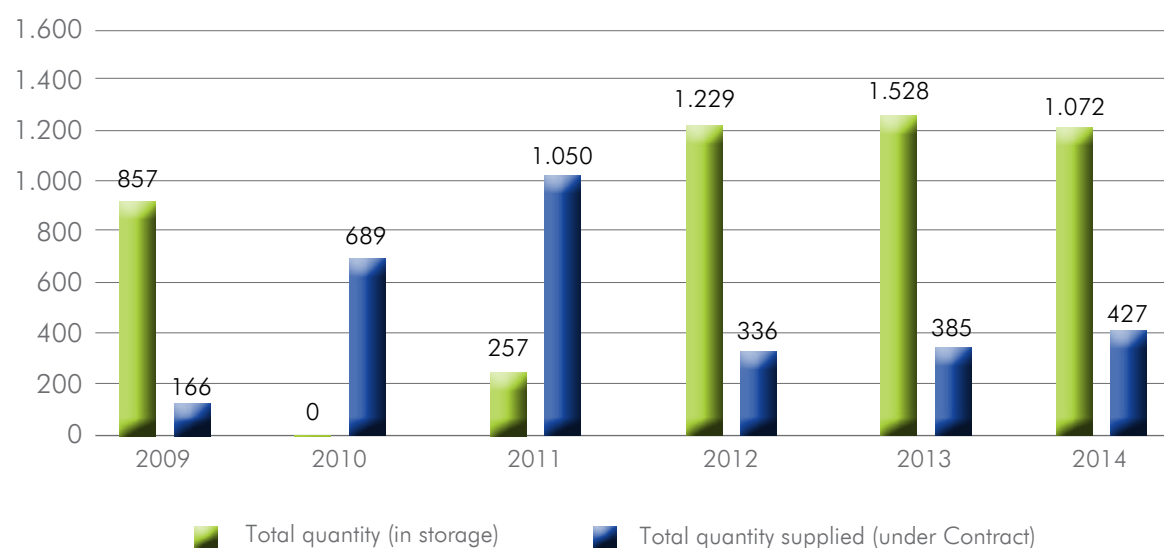


DIAGRAM 16. Quantity of water used for electric power generation in HPPs on river Neretva for the period 2009 – 2014

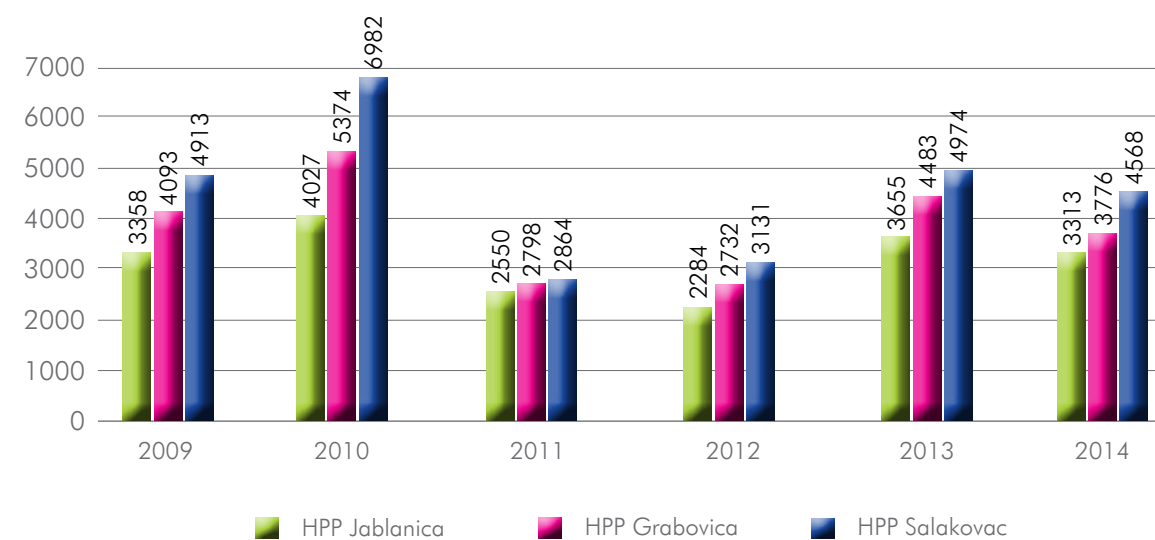
(million m³)

DIAGRAM 17. Total quantity of non-hazardous waste in HPPs on river Neretva for the period 2009 – 2014

(t)

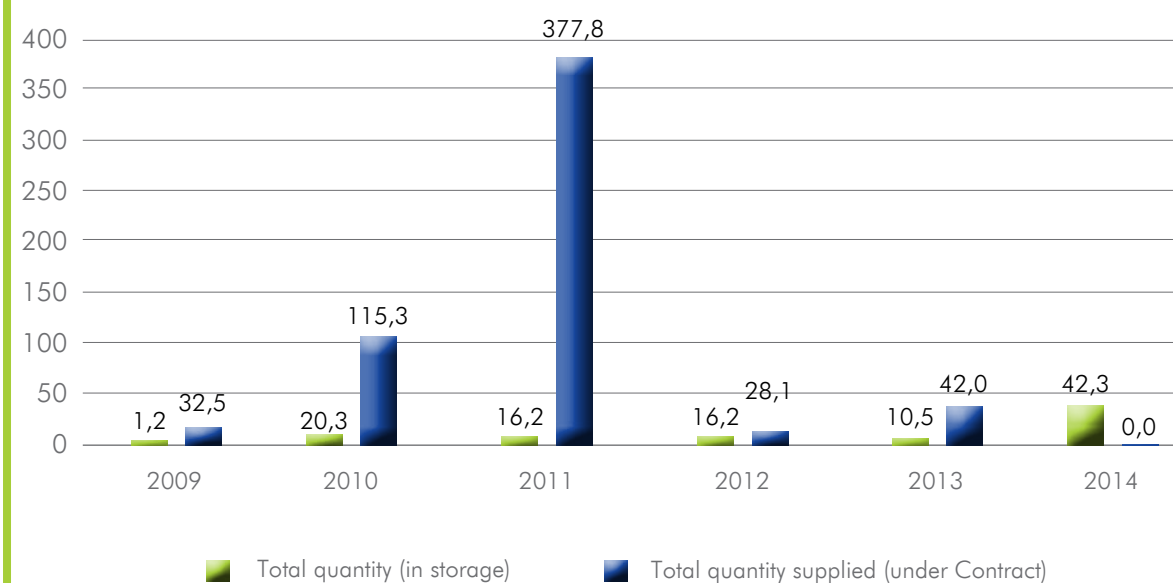


DIAGRAM 18. Total quantity of hazardous waste* in HPPs on river Neretva for the period 2009 – 2014

(t)

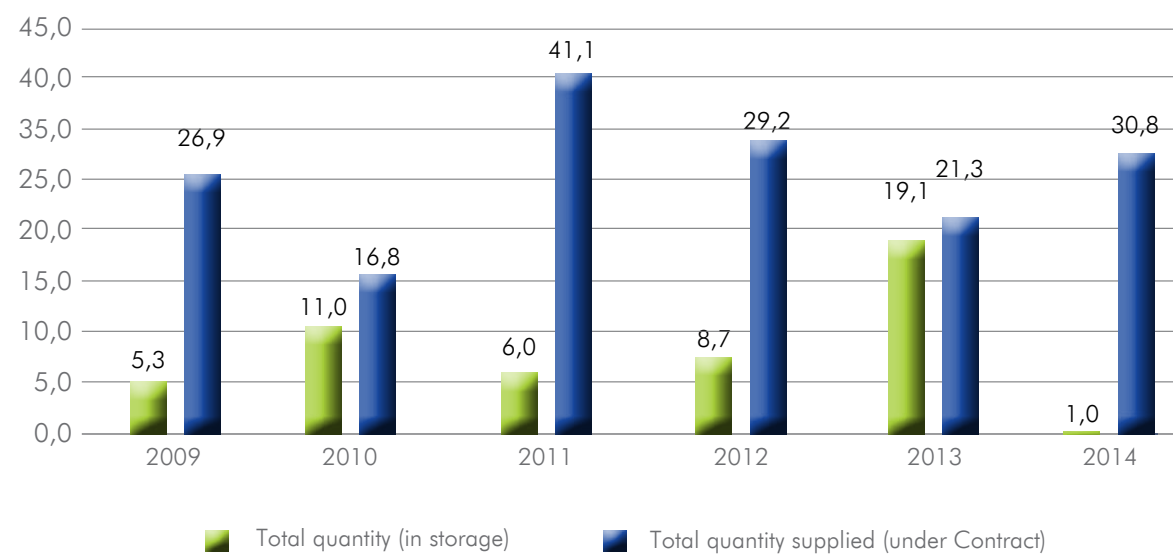
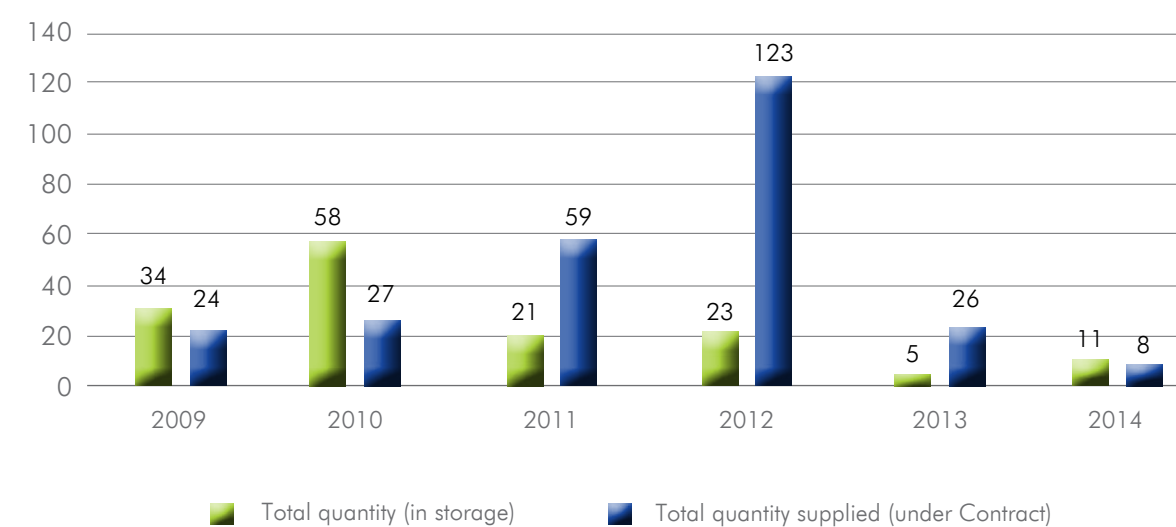


DIAGRAM 19. Total quantity of non-hazardous waste in distribution subsidiaries: Sarajevo, Tuzla, Bihać, Zenica and Mostar for the period 2009 – 2014 (t)



DIAGRAM 20. Total quantity of hazardous waste* in distribution subsidiaries: Sarajevo, Tuzla, Bihać, Zenica and Mostar for the period 2009 – 2014 (t)



5 REALIZATION OF CONDITIONS OF ENVIRONMENTAL AND WATER PERMITS

THERMAL POWER PLANTS

Thermal power plant Tuzla

In order to fulfil the obligations set in the Environmental permit in 2014, 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%,
- pre-treated wastewater (oily wastewater, sanitary sewage waste water, surface precipitation water),
- separately treated 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),
- 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.

The project of building a closed system of return water is ongoing. The main design was completed and revised and the Urban Permit obtained, which is a condition for the start of construction. The expert team of TPP "Tuzla" came to the conclusion that the system of return water in the total amount for all units could be simplified and the Main Design was changed and finished. Given the amendments to the Main Design, a request to change the Zoning permit was submitted. On 14/05/2014 the contract was signed for works on the closed cycle of return water. Works are in progress. The demolition of the cooling tower is part of this project and making the project documents is in the process. A tender was published for the selection of contractors. The preliminary design was prepared and the revision of the same is ongoing. This investment decision also planned the works on the demolition of electrostatic precipitators of units 1 and 2. The revision of the preliminary design of electrostatic precipitator destruction was made. The preparation of documentation for getting building permits for the demolition of electrostatic precipitators of units 1 and 2 and the cooling tower number 2 is ongoing.

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,
- to introduce environmentally friendly technologies for the transport of ash.

For the Project of construction of the silo for electrostatic precipitator ash, the Main Design was developed and revised. Urban planning permit and building permit were obtained. The project was completed, an internal technical inspection conducted and all the identified shortcomings removed.

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

Goal: to bring the landfill to environmentally acceptable condition.

To continue the re-cultivation, the documentation was prepared as required to prepare the Rehabilitation and Regulation Plan. It was delivered to the Department of Planning of the city of Tuzla in order to begin the activities on drafting the Rehabilitation and Regulation Plan.



Thermal Power Plant Kakanj

Removing electrostatic precipitators of units 1 & 2

In order to obtain the Environmental permit for the removal of electrostatic precipitators of units 1 & 2, the procedure of environmental impact assessment was launched.

Removing the cooling tower RT2

In order to obtain the Environmental permit for the removal of the cooling tower RT2, the procedure of environmental impact assessment was launched.

Desulphurization of units 5 & 6

In the framework of the flue gas desulphurization of units 5 & 6, FMET issued the Decision on the development of the Study on Environmental Impact Assessment. The deadline for the completion of the Study is the end of 2015.

Thermal Power Plant Kakanj

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

Reducing energy consumption

- The replacement of last fields of electrostatic precipitators with baggy filters on Unit 7 completed
- New fans for flue gases were installed with variable speed control on Unit 7
- Supply of coal is done with guaranteed composition

Installation of baggy filter on Unit 7

By installing baggy filters on Unit 7, the thermal power plant generated values of particulate emissions below 10 mg/mn³.

Arrangement of slag and ash landfill

- Fencing of the landfill on the north, west and east is completed
- Final activities are ongoing for the realization of technical and biological re-cultivation of the area in which the disposal of slag and ash is permanently finished - Phase II,
- slag and ash conveyors were purchased,
- a part of surface preparation for disposal of slag and ash is completed,
- activities are ongoing on the rehabilitation of the collector Slapnički Potok,
- activities are ongoing for the expansion and rehabilitation of the existing facility for wetting the ash before disposal at the landfill,
- the preparation of the Main Design for extending the landfill spray system is ongoing.

Desulphurization and denitrification of flue gases

- reducing emissions of SO₂ and NO_x from thermal power plants

- Activities are ongoing on the preparation of the Study of the possibility to purchase and use timber and agricultural biomass in the TPP
- activities on the development of investment-technical documentation for reduction of SO₂ and NO_x emissions are ongoing

Water permit

After the expiry of the Water permit on 15/03/2014, activities have been initiated to request a new one. The Agency for the Sava River Basin has issued a new Water permit for TPP Kakanj No. UP-1/25-3-40-134-5/14 of 18/04/2014, with the validity period of five (5) years, that is until 18/04/2019.



Hydro Power Plants on Neretva/ HPP Jablanica

HYDRO POWER PLANTS ON RIVER NERETVA

- Federal Ministry of Environment and Tourism issued the Environmental permits for:
- HPP Jablanica No.: UPI 05/2-23-20/14 SS of 13/05/2014
- HPP Salakovac No.: UPI 05/2-23-11-19/14 SS of 23/05/2014
- HPP Grabovica No.: UPI 05/2-23-11-18/14 SS of 20/05/2014

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

- Safety of dams and reservoirs
- Security and reliability of functioning of the technological process
- Protection of water quality
- Waste management
- Minimizing other negative impacts on the environment

Water permits

According to valid water permits, regular activities were conducted.

POWER DISTRIBUTION

Elektro distribucija Sarajevo

Environmental Permit No. UP-1:09-23/14 (renewed) for sHPP "Osanica 1" in Goražde was issued by the Ministry of Urban Planning, Spatial Planning and Environmental Protection of Bosnia-Podrinje Canton Goražde on 27/10/2014, for a period of 5 (five) years. A system for monitoring environmentally permitted flow (24-hour remote monitoring from DC) was established).

Elektro distribucija Tuzla

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

Elektro distribucija Bihać

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

HPP „Una“ Kostela-Bihać installed capacity 9,4 MW

New Water permit for the existing facility was issued with the Decision No.: UP-I/25-3-40-328-18/13 of 04/03/2014. The Federal Ministry of Environment and Tourism issued the Environmental permit for HPP Una Kostela No.: UPI/05-2-23-11-127/13 SS of 03/03/2014.

sHPP „Krušnica“ Bosanska Krupa installed capacity 2 x 230 kW

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

sHPP „Bihać“ Bihać installed capacity 160 kW

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

Elektro distribucija Mostar

In the field of water protection, in accordance with the regulations, continuous supervision is performed on the correctness of oil tank in the brick built TS 35/10 kV and 20(10)/04 kV, and, if necessary, intervention on the same.

06 ENVIRONMENTAL SYSTEM MANAGEMENT

DIRECTORATE OF THE COMPANY

At its 229th session held on 14/07/2015, the Management of the Company adopted the following Conclusion No. 9./229:

- the report is accepted on the activities on the construction and implementation of environmental management system in compliance with ISO 14001: 2004 and integration with existing management systems in the Directorate of JP Elektroprivreda BiH d.d. - Sarajevo,
- approval is given to the responsible persons for the construction and implementation of environmental management system in the Directorate of the Company after the official publication of new editions of standards ISO 9001: 2015 and ISO 14001: 2015 (September/October 2015), correct the Project which is an integral part of the decision U-01-19237/14-168/15 and harmonize the same with the requirements of these standards.

THERMAL POWER PLANTS

TPP Tuzla

Certification company TÜV Croatia Ltd., performed a control audit of the Integrated Business Management System of TPP "Tuzla" in August 2014.

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.

As a special obligation to the employees of TPP "Tuzla" the improvements were recommended by the auditors, and should be completed until the re-certification audit in 2015.

Recommendations for improvement (related to standard ISO 14001:2004) is to assess the compliance with the requirements of environmental permit within the evaluation of compliance with legal and other regulations.

TPP Kakanj

An external certification audit of the environmental management system was executed in mid-June 2014. 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 2014, and the assessment of the compatibility of work of TPP Kakanj with legal and other environmental requirements was initiated.

Improving environmental management system is largely manifested through an increased level of implementation of the requirements of standard BAS EN ISO 14001: 2006. In addition, the implementation of the requirements of environmental management system as required by this standard has proven to be an excellent tool in the systematic approach to the implementation of numerous environmental legal requirements, or standards in the field of environmental management.

HYDRO POWER PLANTS

Hydro power plants on river Neretva

The program was developed to improve the integrated management system (IMS) for 2014 on the basis of which the following activities were carried out:

- the orders were carried out in terms of improving the IMS from supervisory audit of 2014,
- a review of the IMS document was conducted,
- an internal audit was conducted in May and June of 2014,
- exercises were conducted in facilities/sector teams response in the case of environmental hazards, and check of the response of outside organizations,
- theoretical and practical training and drill of facility shift personnel of HPP Jablanica were conducted in the procedures for preparedness and response in case of environmental hazards under Activities Program Number: HEJ-01-01/11 of 10/3/2011, with presenting the latest methods and technology in application of absorption devices in the prevention and collection of bulk waste oils and agents for cleaning of oily surfaces,
- assessment of compliance with labour and other environmental requirements was carried out in August 2014,
- recertification audit of integrated management system in the branch was held on 30 and 31/10/2014 by an authorized certification body „TUV CROA- TIA-TUV NORD GROUP“, according to the requirements of standards EN ISO 9001:2008 and EN ISO 14001:2004.



Hydro Power Plants on Neretva/ HPP Salakovac

POWER DISTRIBUTION

Elektrodisribucija Tuzla

Certification of environmental management system was carried out on 17 and 18 June 2014, with the certification of the system according to ISO 9001, which together form the Integrated Management System - IMS. The Branch continuously works to improve the relationship with the environment, through a systematic approach to waste management, control of environmental aspects, identification and implementation of legislation, the fulfilment of the set environmental goals, and corrective and preventive actions.

Elektrodistribucija Sarajevo

The certificate was obtained in accordance with the requirements of standard BAS EN ISO 9001:2008 from a certification company from Essen (TUV NORD CERT GmbH) and was valid until 02/06/2014. The introduction and construction of environmental management system in accordance with BAS EN ISO 14001: 2006 is planned in the future period, after an analysis of the situation and the effect of the introduction of the Quality Management System.

Elektrodistribucija Bihać

In 2014 a staff training was planned in implementation of environment management system, but it was not implemented by the end of 2014.

Elektrodistribucija Zenica

The branch office „Elektrodistribucija“, Zenica has not established the environmental management system under BAS EN ISO 14001:2006.

Elektrodistribucija Mostar

The Branch „Elektrodistribucija“, Mostar for several years has had implemented, documented and regularly audited quality management system in accordance with the requirements of Standard BAS EN ISO 9001:2008.

In 2014, a surveillance audit was conducted by a certification company from Essen (TUV NORD CERT GmbH).

The introduction and construction of environmental management system in accordance with BAS EN ISO 14001: 2006 is planned in the future period, after an analysis of the situation and the effect of the introduction of the Quality Management System.

ENVIRONMENTAL PROTECTION IN SCOPE OF DEVELOPMENT OF ELECTRIC POWER FACILITIES



Thermal Power Plant Kakanj

THERMAL POWER PLANTS

Thermal power plant Tuzla

The rehabilitation of environmental monitoring system was agreed - the emission of pollutants into the air - construction of platform extension on the chimneys. In 2014, studies were carried out which will be the base for developing the Rehabilitation and Regulation plan as follows:

- Study of the environmental impact of slag and ash landfill „Plane, Divkovići I and Divkovići II“;
- Study of the possibilities of re-cultivation with Pedologic elaborate;
- Preparatory geotechnical study (mission G1) with an analysis of the impact of underground mining operations in slag and ash landfills “Plane Divkovići I and II Divkovići”;
- Study of the disposal of slag and ash from TPP “Tuzla”.

The activities were initiated on the capital repair of Unit 3.

Thermal Power Plant Kakanj

During 2014 there no reconstructions of the existing units. Regular overhaul of Unit 7 was performed.



Overhaul

HYDRO POWER PLANTS

Hydro power plants on river Neretva

In HPP Jablanica, the Neretva riverbed was cleaned on the stretch dam-outlet bodies. The pre-turbine shutters 2 and 3 were rehabilitated.

In HPP Grabovica the activities were continues on a major overhaul of unit 1 and replacing the management and automation system of unit 1 and unit 2.

U HE Salakovac the activities continued on development of the project of Geophysical tests of sides and stilling, check the stability of the dam HES.

Sector for Strategic Development at the Company Directorate

Campaign of measurement of wind potential and solar energy potential



Switchyard of Hydro Power Plant Jablanica

POWER DISTRIBUTION

As part of the electricity distribution activities, new power facilities were built (Table 18), and the existing electric power facilities were reconstructed (Table 20).

The newly built substations 10(20)/0.4 kV 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 of power transformer (oil pan of volume of minimum 0.6 m³- oil tight).

TABLE 18. Specification of new built facilities

type of facility:	Unit	ED Bihać	ED Mostar	ED Sarajevo	ED Tuzla	ED Zenica	Σ:
TS 20/0,4 kV	(pcs)				1		1
	(kVA)				160		160
lines 20 kV	(km)		1			2	3
TS 10(20)/0,4 kV	(kom)	19	6	11	11	11	58
	(kVA)	6.720	830	3.810	1.861	2.000	15.221
lines 10(20) kV	(km)	10	28	18	5	13	74
LV lines	(km)	66	63	173	179	157	639
AMM*:							
total	(pcs)		269	5.954	4.426	3.698	14.347
households	(pcs)		265	5.954	3.952	3.445	13.616
OP** I group	(pcs)		4		286	168	458
OP II group	(pcs)				181	83	264
buyers 10 kV	(pcs)				7	2	9

* AMM means a remote control (reading) system of meters in accounting points

** OP means other consumption

TABLE 19. Connecting the new facilities to the electricity grid

description:	unit of measure:	ED Bihać	ED Mostar	ED Sarajevo	ED Tuzla	ED Zenica	Σ:
	Number of derived new LV connections, total	1.551	298	4.087	2.085	1.583	9.604
LV	Households (one-phase connection)	824	163	2.788	1.396	1.108	6.279
	Households (three-phase connection)	467	118	652	402	181	1.820
	Households, total	1.291	281	3.440	1.798	1.289	8.099
	OP I group	39	13	563	0	19	634
10 (20) kV	OP II group	221	4	84	287	275	871
	Facilities in a special zone	8	5	121	3	2	139

TABLE 20. Specification of reconstructed facilities

type of facilities:	unit of meas.:	ED Bihać	ED Mostar	ED Sarajevo	ED Tuzla	ED Zenica	Σ:
TS 35/x kV	(pcs)		4		2		6
lines 35 kV	(km)		5,1		26,5		31,6
TS 10(20)/0,4 kV	(pcs)	14	5	2	4	12	37
	(kVA)	690	390	650		1770	3.500
lines 10(20) kV	(km)	1,5	10,0	7,6	30,7	6,9	56,7
LV lines	(km)	23,7	48,8	19,2	47,6	47,3	186,6
OMM***	(pcs)	0	469	6.456	2.490	5.518	14.933

*** OMM means metering points

8 CAPITAL INVESTMENTS

HYDRO POWER PLANTS

HPP Vranduk on the river Bosna

Implemented activities:

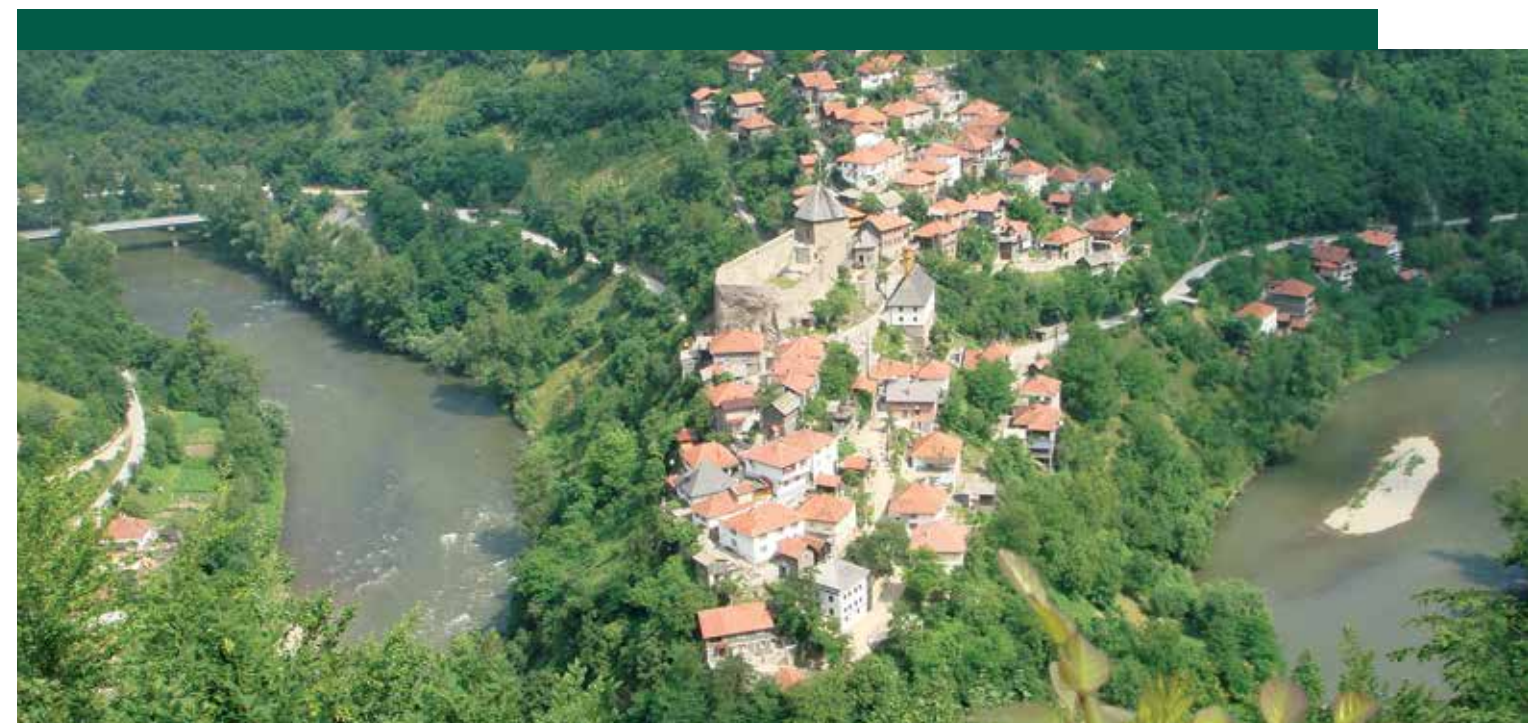
- Preliminary design, Environmental Impact Study, Environmental permit, Certificate for connection to the power system
- Contract and Program for the friendly environment
- Management Plan for maintaining the national monument Old Town Vranduk
- Study of the cultural and historic heritage
- Implemented contract on geodetic surveying for the purposes of Main Design
- Field and laboratory preliminary geological and geotechnical, geophysical and sei-smological investigation works for the level of the main design
- Surveying and stabilization of geodetic points for technical auscultation for the development of the main design on sites of the HPP Vranduk and riverbed of Bosna
- Signed Contract for Study of Baseline survey of ecosystem
- Study zero / current status done for all the individual objects in the scope of the architectural ensemble of the Old Town Vranduk

HE Janjići on the river Bosna

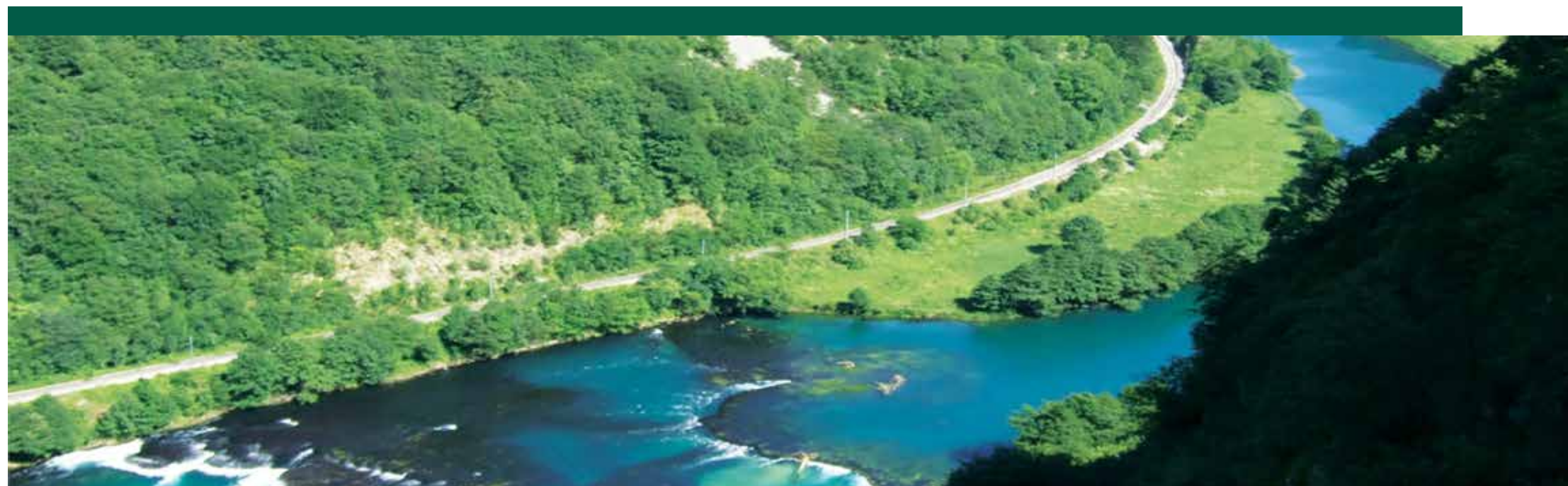
- Preliminary design of HPP Janjići, and
- Study of fauna Baseline survey and Environmental and Social Impact assessment Study for HPP Janjići. According to the plan, the mentioned projects and studies should be completed in Permit. After their completion the process follows of obtaining Preliminary Water Agreement and the Environmental Permit.

Other activities:

- Constant observation of piezometric wells executed and geological exploration carried out for HPP Janjići
- Constant observation of the water levels of the river Bosna on the set gauging rods provided downstream of the planned dam of HPP Janjići.



Hydro Power Plant Vranduk on the river Bosna



River Una

HPP Una Kostela and Annex on the river Una

Contracts signed for:

- Preliminary design for reconstruction and expansion of HPP Una Kostela;
- Review of the preliminary design for reconstruction and expansion of HPP Una Kostela;
- Study with research for environmental flow (EPP) - Qepp on the profile of HPP Una Kostela: For the existing HPP Una Kostela a new decision on the water permit was obtained, which in accordance with the Ordinance on the calculation of environmental flow (EF) requires calculation of new features of EF. Calculation of production of the power plant established the damage caused by the application of this Ordinance. As the value of the EF has a significant impact on new plant and selection of basic parameters of the same, we started the development of the Study with research works on environmental flow of the river Una on the profile of HPP Una Kostela, in accordance with the Water Law, the articles of the said Ordinance which establish a framework to determine the EF on heavily modified water bodies and the EU Water Directives.

HE Kovanići on the river Bosna

- Feasibility study which includes geological exploration and a preliminary environmental impact assessment

The feasibility study is still at an early stage of development, the plant parameters have not been adopted yet, but within the initial field research the consultant who prepares the Study, in his first report informed that the first planned backwater of 268 m above sea level, due to the dumping or compromising of 48 houses is not feasible from the environmental aspect. In addition to houses, this angle would threaten the infrastructural facilities (trunk road M17 and the bridge on the railway line Šamac - Sarajevo). According to preliminary analysis, backwater of 263.5 m asl will be acceptable from the environmental aspect.



Thermal Power Plant Tuzla

THERMAL POWER PLANTS

Unit 7 - 450 MW in TPP Tuzla

Closing of funding structure - selection of project partner:

On 27/08/2014, we signed the contract on the construction of Unit 7 - 450 MW in TPP Tuzla - EPC contract (Engineering Procurement and Construction Agreement). In the period 27/08-7/9/2014, we filed an application for a loan in The Export-Import Bank of China, Concessional Department for Preferential loan and accompanied it with the necessary supporting documents.

Basic technical data of Unit 7 (under the EPC contract):

In order to meet the environmental conditions, we provided the best available technique (BAT), by which the emissions of pollutants into the air will be reduced to the limit values in accordance with the Industrial Emissions Directive (Directive 2010/75/EU), and the degree of efficiency of 42%.

Implemented program of friendly environment for the construction of Unit 7 in TPP Tuzla:

The Municipality Tuzla and JP Elektroprivreda BiH have implemented the Agreement on the implementation of the Program of Friendly Environment for the construction of Unit 7 in TPP Tuzla, with established projects and approved funds for implementation of projects.

Unit 8 - 300 MW in TPP Kakanj

The Analysis of the technical background and project development, complement of the Investment and technical documentation for Unit 8 in TPP Kakanj, were completed to meet the requirements of the Preliminary water permit.

Permits and approvals obtained in 2014:

Obtained Water permit No. UP-I/25-1-40-608-2/14 of 03/03/2015, issued by the „Agency for the Sava river basin“ Sarajevo.

Implemented program of friendly environment for the construction of Unit 8 in TPP Kakanj

The Municipality Kakanj and JP Elektroprivreda BiH have implemented the Agreement on implementation of the Friendly environment program for the construction of Unit 8 in TPP Kakanj, with established projects and approved funds for implementation of projects.

The projects were implemented in local communities Papratnica, Slapnica, Čatići, Doboј, near the thermal power plant.

SMALL HYDRO POWER PLANTS

The preparation and construction of Phases I and II of sHPP on the basin of the River Neretvica

The planned activities under the Program of friendly environment with the Municipality of Konjic were implemented

Projects of wind farms „Preparation and construction of Wind Farm Podveležje, City of Mostar“

Implemented activities to prepare the construction of the Project WF Podveležje

- As a precondition for the conclusion of the Loan and Project Agreement with the German Development Bank (KfW) a tender procedure was conducted and a contract was signed for the Baseline Study of birds and bats at the site Podveležje.

09 PREPARATION OF PLANNING AND STUDY DOCUMENTS

- Technical support for Wind Farm Vlašić – Travnik

In preparation of the project Wind farm Vlašić, an Agreement for technical assistance for the Wind farm Vlašić in Travnik - Bosnia and Herzegovina was signed with the Consortium of Ove Arup & Partners International Ltd. (OAPIL) United Kingdom (Consortium Leader), COWI A/S Denmark, MM Consulting Serbia, Energoinvest Inc. Bosnia and Herzegovina, Geotechnical Studio Ltd. Croatia and BH Bušenje Ltd. Bosnia and Herzegovina. Within 15 months of the duration of the Agreement, the following will be done:

- Feasibility study of the project
 - Baseline study of birds and bats
 - Study of the environment and social impact assessment of the wind farm
 - Geological and geotechnical investigations
 - Transport Study
 - Study of connecting the wind farm to the power grid, and
 - Tender documents for the design and construction of the wind farm.
- Long-term development plan of Elektroprivreda BiH by 2030 with Strategic Plan
 - The impact of coal quality on the cost of electricity production and coal price
 - Study of utilization of wind potential at the site Medveđak-Bihać
 - Defining the optimal methodology for determining the specific consumption of heat of thermal units of EP BiH as a basis of the system management in function of energy efficiency
 - Analysis and testing of potential benefits by integration of smart electricity meters in the of distribution networks management systems
 - Using of wind potential to produce electricity on Mountain Vlašić



Wind turbine

10 ENERGY EFFICIENCY

16001
EN
ISO
50001



To achieve the set objectives in the field of energy efficiency, JP Elektroprivreda BiH follows and implements its own Policy of energy efficiency, as part of integrated activities within the Energy efficiency management system which is currently being introduced in the Company, all in accordance with standards EN 16001 and EN ISO 50001.

Based on an analysis of energy efficiency indicators achieved in 2014, primarily the net energy efficiency of the production thermal park of the Company, as well as losses in distribution network, it can be said that there has been some improvement compared to 2013. The average annual specific consumption of heat by thermal units totalled to 11,915 kJ/kWh, and is less than that of 2013 (12,132 kJ/kWh) by 1.8%, but is higher than the planned (11,784 kJ/kWh) by 1.1%. The result of improved specific consumption of heat compared to 2013 is mainly a result of improved plant of the reconstructed Unit 6 of TPP Tuzla where the recent reconstruction significantly increased net efficiency (to 34%). In doing so, the specific consumption in TPP Tuzla was 11,870 (kJ/kWh), which is by 52 (kJ/kWh), or 0.4% less than planned, while in TPP Kakanj it was 11,992 (kJ/kWh) and was by 439 (kJ/kWh), or 3.8% higher than planned consumption.

Distribution losses amounted to 401.6 GWh, or 9.14% in relation to gross distribution consumption, and were lower than planned by 31.1 GWh or 7.2%, and were lower than in 2013 (9.58%) by 4.6%.

As for the implementation of the pilot project in the Supply through which the selected target group of customers would get detailed advice on measures related to increasing energy efficiency in final consumption of electricity, the pilot project was not realized in the originally planned way. However, permanent monitoring of consumption was introduced for customers at high and medium voltage, which are located in the AMM system. Following a detailed analysis of these data access, we would start to advise customers about the possibilities of savings in the electricity consumption.

As for the other activities in 2014 which were formally implemented in the framework of the structure of Energy Efficiency Management, the following was carried out: Promotional flyer "Saving electricity" for customers, together with the accounts for the electricity, was delivered to final customers in March 2014;

- An educational session was also held on Energy Efficiency Management (Energy Management System) in production facilities in accordance with EN ISO 50001;
- The decision was prepared for the introduction of Energy Management System in production facilities and the Directorate of EP BiH, and
- The guidelines for long term development of the Company in the field of energy efficiency by activities for the period until the year 2030 were finalized.

EDUCATION

Thermal power plant Tuzla

Leading Expert associate in 2014 attended the following training:

- Seminar for LEAD auditor according to standard ISO 14001:2004, organized by TUV Croatia, according to IRCA international certification company,
- Workshop (organized by UNDP) on the theme of preparing NAMA projects, i.e. measuring and reporting and verification of planned and actual results,
- Workshop (organized by UNDP in collaboration with the European Foundation for Climate Change) on the subject of International policy in the field of climate change.

Hydro power plants on river Neretva

In 2014, with the aim of further education expert seminars were held on the topic: „Method of management, legal frameworks, and risks related to hazardous waste, manner and procedures of collection, transport and sources of hazardous waste; “The methods, techniques and tools for risk assessment at work-requirements Law on safety at work” and “Safety and Protection at work”.

Elektro distribucija Tuzla

In 2014, organized by the Department for management systems, internal training was conducted for new 37 internal auditors, who will be gradually included in the auditing process, and for the introduction of Environmental management systems. Thus the number of really useful auditors increased to 98. All newly recruited employees with a university degree will be in the future trained to be internal auditors, because the introduction of new ISO systems (18000, 27000, 31000) will require increasing the number and scope of internal audits.



12 FINANCIAL INVESTMENTS

For now, JP Elektroprivreda BiH does not keep separate records on investments and 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 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 55,749,280 KM. This indicator is a confirmation that environmental protection is an important part of the total business also in financial aspect. The following table, according to available data, provides financial indicators by subsidiaries, at the level of the Company Directorate, and the total for JP Elektroprivreda BiH d.d. – Sarajevo.

TABLE 21. Financial indicators of activity in the domain of environmental

KM

management Organization	Financial resources
Subsidiaries	
TPP Tuzla	6.108.968
TPP Kakanj	14.747.024
HPP na Neretvi	2.856.469
ED Sarajevo	25.972
ED Tuzla	290.996
ED Mostar	142.128
ED Bihać	277.755
ED Zenica	595.760
Fees for air pollution of TPP Kakanj	3.246.351
Fee for air pollution of TPP Tuzla	2.279.257
Company Directorate	
Sector for strategic development	1.794.000
Capital investments	3.271.940
Water charges and communal utilities	20.112.660
TOTAL:	55.749.280

3 INSPECTION AND ORDERS

Thermal power plant Tuzla

On 01/04/2014, Federal inspector for Environmental Protection in Urban - environmental inspectorate, performing regular inspection, found that the inspection finding is regular and that the Operator fulfils the measures imposed by the environmental permit.

The Cantonal Administration for Inspection upon the report (from 15/12/2014) by the Police Station West, and following the report by inhabitants of local community Šiški Brod sent a report to the Federal Administration for Inspection. On the basis of this report, Federal Inspector for Environmental Protection in Urban - environmental inspectorate inspected the Thermal power plant "Tuzla". On the basis of examination of the continuous monitoring of air emissions, no accidental release of dust into the air was observed.

Elektro distribucija Sarajevo

The Cantonal Administration for Inspection carried out eight (8) inspections of the production facility of sHPP „Osanica 1“:

Water management inspector has made an inspection on 05/02/2014, and it included an examination of implementation of the measures ordered to install gauges to measure and control the environmental flow. All works on the construction and setting up a system for monitoring environmental flow were completed on 07/04/2014, which was registered in the Record of inspection No. UP-1-12-25-01075/2013- 7ES-0017-P.

In the other seven inspections, the water management inspector found no remark.

Elektro distribucija Tuzla

During 2014, there was one inspection of the building of the Subsidiary „Elektro distribucija“ Tuzla, the production activity of building of sHPP Sniježnica. Inspection was carried out by the Cantonal inspector for the protection of environment and nature, and the reason was that sHPP Sniježnica did not have an environmental permit, because the existing one had expired, although an application for a new license was submitted upon the expiry of the permit.

The competent Cantonal inspector issued a decision to provide environmental permit for that facility within 90 days. Environmental permit was issued by the competent Cantonal Ministry and thus the decision of the inspector was revoked.

Elektro distribucija Bihać

In 2014, the Municipal communal inspection examined the branch „Elektro distribucija“ Bihać:

clearing vegetation, mowing and landscaping of scarps and shore of the supply channel to sHPP "Una" Bihać were in this case performed upon the inspector's order.

The retaining wall and fence on the supply channel of sHPP Bihać were repaired.

4 RISK ASSESSMENT AND INCIDENT SITUATIONS

THERMAL POWER PLANTS

Thermal power plant Tuzla

The Plan to prevent accidents - incidents threatening the environment is described by the procedure PT 44/02 Preparedness and response in case of danger. The said procedure prescribes the programs of activities carried out in TPP "Tuzla" in identifying potentially dangerous situations and unexpected events that may have adverse effects on the environment, as well as the actions taken to mitigate the consequences. In TPP "Tuzla" 7 potential environmental incidents/emergency cases were identified, as follows:

1. Explosion of hydrogen during electrolysis, storage and during use and maintenance of the hydrogen plant
2. Fire/explosion of propane-butane bottles or propane-butane storage or explosion in the use of the same
3. Explosion in a warehouse of technical gases (acetylene, oxygen and argon)
4. Uncontrolled emissions of SF₆ and products of its decomposition
5. Fire - explosion of storage of heating oil
6. Fire in the warehouse of oil and lubricants
7. Appearance of the environmental dust on the landfill Jezero II

Thermal power plant Kakanj

Regarding risk and incidents assessment in TPP Kakanj, in accordance with legal requirements and the requirements of BAS EN ISO 14001:2006, the following activities were conducted so far:

- As part of the procedure of Environment management system which describes the method of risk and potential incidents assessment, potential environmental incidents were identified that may arise in TPP Kakanj, and programs were made to react in the case of any of the identified potential incidents.
- Acquisition of certain devices for response in the event of environmental incidents was completed
- Occasionally employees are trained how to response in the event of environmental incidents.

POWER DISTRIBUTION

Elektro distribucija Tuzla

In drafting the Action Plan with measures and deadlines for the gradual reduction of emissions and pollution in the reservoir Sniježnica and sHPP Sniježnica, we made the Plan of prevention of major accidents, and the Plan of management of incident/accidents dangerous for the environment.

In accordance with the Law on Environmental Protection, we made the Internal Intervention Plan for the Subsidiary.

On 06/05/2014, due to a fault in the transformer radiator on location Međaš, Kalesija municipality, there has been a discharge of mineral oil in and around the substation. Employees intervened by spreading of sawdust and absorbent powder. Oily absorbent with a layer of oily soil was delivered to the contracted operator for disposal as hazardous waste.

On 07/08/2014, on STS 10/04kV "Ristići", on the site MZ Treštenica, a transformer was disconnected and pulled down of the pole, by unknown persons. During theft of the transformer, part of oil leaked into the surrounding soil. Employees cleared the area, and collected oily materials (earth, absorbent, cleaning cloths) in the depots of hazardous waste until the final delivery to the licensed operator.

Elektro distribucija Zenica

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

During 2014, there were no incidents and emergency measures in the field of environmental protection.

DISPUTES IN THE DOMAIN OF ENVIRONMENTAL PROTECTION

Thermal power plant Kakanj

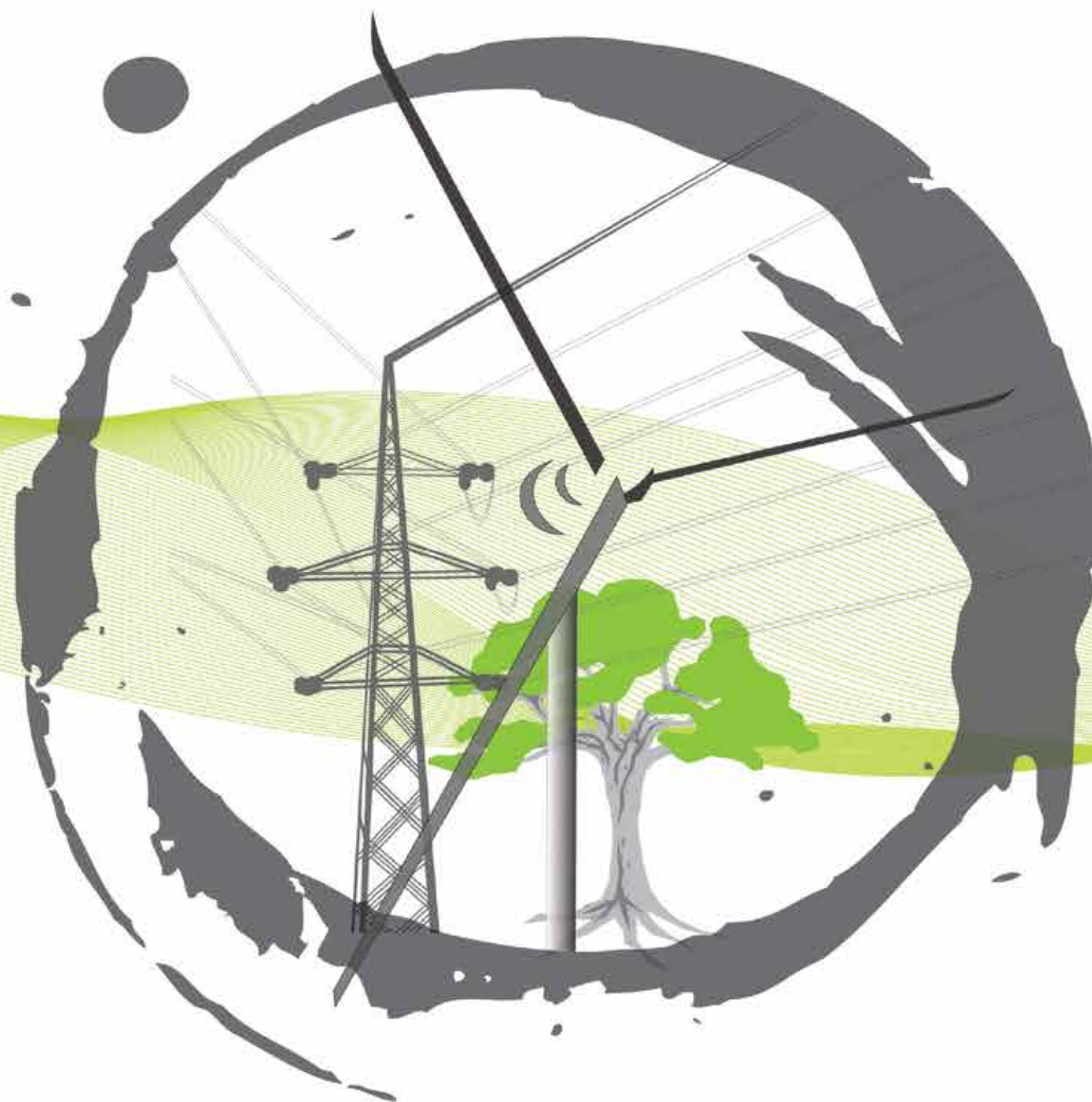
The dispute before the Municipal Court in Sarajevo was instituted upon the complaint of Zenica-Doboj Canton against the JP Elektroprivreda BiH d.d. - Sarajevo, in order to collect receivables arising from fees for air pollution regulated by the Decision on the amount of compensation for the pollution of the air caused by thermal power plants, in conjunction with the Air Protection Act, with the value of the dispute of 1,527,105.00 KM. The claim has been rejected in the first instance, and the appellate proceeding is ongoing on the appeal of the plaintiff, before the Cantonal Court.

Hydro power plants on river Neretva

On 11/07/2013, a complaint was received from "Laks Export-Import" Ltd. Mostar and others against the respondent JP Elektroprivreda BiH, for damages. The proceeding continued in 2014.



Hydro power plants on Neretva/ Hydro power plant Grabovica



design-merima smajlovic

www.elektroprivreda.ba

Public Enterprise Elektroprivreda of Bosnia and Herzegovina d.d. - Sarajevo