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State Environmental Management by Kosovo Power Plants (KEK)

Teuta Kryeziu
Economic High School "Ali Hadri" Peja
teuta--kryeziu@hotmail.com

Besjana Kryeziu
besjana.kryeziu@hotmail.com

Egzon Kryeziu
Accountant ddprint
egzon_kryeziu@hotmail.com

Abstract

In this paper we make scientific analysis of the environmental situation in Kosovo power plants .

Kosovo's plants divided in power plants Kosovo A and Kosovo B power plants

A power plant is divided into blocks of points PP A3 , PP A4 points , and PP 5 , while the power plant is divided into points PP B and PP B1 PP B2

Coal as the main subject of thermo hot sauce , which is taken from surface of mines from Sitnicia and Sibovc , the production of electricity from two power plants in Kosovo , as well as determination of specific monthly expenses from power plants formerly doing .

Management and monitoring of environmental status of power plants Kosovo A and B including air, water and land ,

Management and monitoring of land from Kosovo power plants , the aim of monitoring the soil in areas of power plants Kosovo A and Kosovo B power plant , is defined degree of soil pollution from power plant operations .

Management and monitoring of water in plants, water pollution as a result of technological oil discharges.

Management and monitoring of air from power plants , air pollution as a result of emissions from points in air, transportation etc.

Key Words: KEK, Power Plants, environment, Management

STATE ENVIRONMENTAL MANAGEMENT BY KOSOVO POWER PLANTS (KEK)

Kosovo Energy Corporation, KEC is the only national corporation in Kosovo, which deals with the production of coal and electricity.

In Kosovo we have two power plants, Kosovo A and Kosovo B power plants are both directed by KEC and are the only power plants in Kosovo.

These power plants are built on the site of the Municipality of Kastriotit. Regarding the exploitation of coal, in this location, there have been nearly 100 activities - year since 1922.

The high degree of surface mining operation seen from open to energy production, which continued for about 50 years and that until recent years without any interest for the consequences, impact on the environment.

Given the current situation and inherited for a long time as a result conclude that coal exploitation for decades, primarily for electricity production, has resulted in:

1. The air pollution mainly as a result of emissions from PP-t in the air, transport etc..
2. Pollution of water-as a result of technological wastewater discharges,
3. Degradation of land-as a result of mining activities. Space around the mining area and the surrounding area is characterized by a degraded land.

Degraded space occupies a total area of 32 km2 (15 km2 and 17 km2 mining folding of layers of coal coverage, although financial opportunities are limited, given today at KEK great importance of environmental protection and are making some effort significant environmental protection from the impact of the activities of KEK, but still KEK is currently not in compliance with certain rules regarding environmental legislation of Kosovo and the EU in relation to emissions to air, water and soil quality air and Waste Management. as part of these activities KEK to reduce environmental damage caused by operating activities of KEK, decades earlier and now, are initiated and implemented projects worth a total of 57.2 million €.

Revival of electrostatic precipitation in B1, B2

- Secured firefighting equipment from the ashes of coal, and the training of staff;
- Are located equipment to reduce dust in temporary deposit of lignite in PP A and PP B;
- Repairs to B1, B2, A3, A5 and A4, which directly affect the reduction of pollutant emissions;

- Transfer and handling of hazardous materials by gasification plant;
- Reshaping and green ash dump PP Kosovo A and reclamation of degraded lands;
- Hydraulic transmission project of ash from Kosovo B and Kosovo A in the holes or a passive Mirash Sector ;
- Replacement of electrostatic precipitation in blocks A3 , A4 and A5 ;
- Project disposal and treatment of hazardous substances lot of polychlorinated biphenyls (PCBs) ;
- The monitoring of air emissions from stacks of Kosovo B. KEK goal is to achieve environmental standards set by the end of 2017.

For this purpose has developed operational plan that consists of priority projects necessary to realize, though financial opportunities are limited, given today at KEK great importance of environmental protection and significant efforts have been made to protect the environment from impact of the activities of KEK, but still KEK is currently incompatible with certain rules regarding environmental legislation of Kosovo and the EU in relation to emissions to air, water and soil, and air quality management waste.

Raw materials and energy production
The quantity of the coal extracted during the year 2012 – 2013

as the main fuel power plants in Kosovo taken from surface mines, JP Sibofc and S Sitnica. Processing and temporary storage of coal for the needs of KEK done in two landfills, PP "Kosovo A" and PP "Kosovo B". Were issued during 2013 and about 8,219,393 t in 2012 compared with 2013 results that were issued to 190,996 more coal.

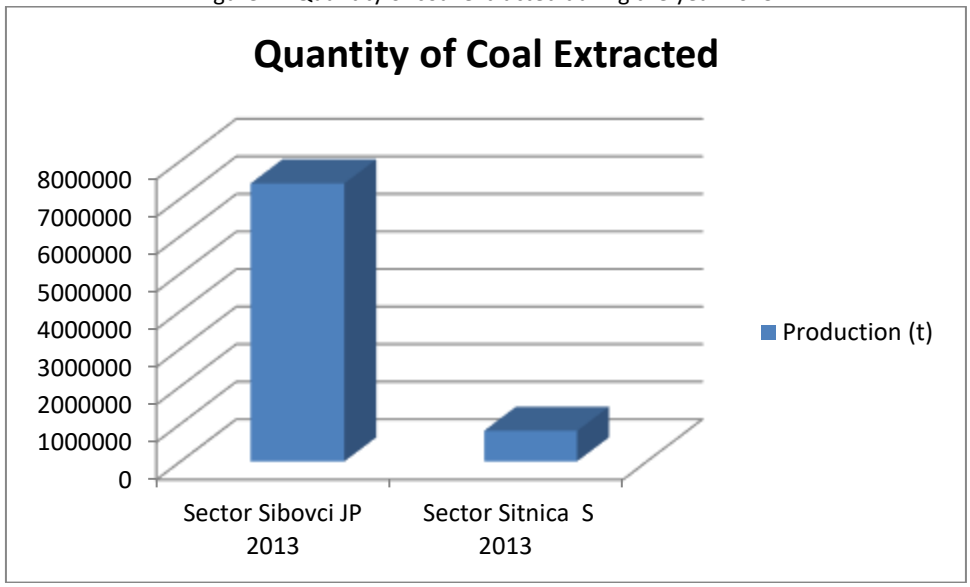
Tab 1. The quantity of coal extracted during the year 2013

Sectors	Production (t)
Sector Sibovci JP 2013	7403010
Sector Sitnica S 2013	816383
Total	8219393

Source: Kosovo Energy Corporation (KEK)

The quantity of extracted coal sector during the year 2013 was 7,403,010 JP Sibofc while Sitnica sector was 816,383. Total production in the two sectors was 8,219,393

Figure. 1. Quantity of coal extracted during the year 2013



Source: Kosovo Energy Corporation (KEK)

Coal in power plants Kosovo A and B for the year 2012 and 2013, from coal in 2012 was 1,069,301 tons PPA3, while PPA4 was 1,777,569 tons and 1,616,853 tons PPA5, we PPB1 coal in 2012 was 2,046,558 tons, while in PPB2 was 2,579,904 tons.

Kosovo coal in power plants A3 for 2013 was 1,558,827 tons, while for PPA4 was 669 155 tons, and we PPA5 was 1,498,002 tons, PPB1 coal in 2013 was 2,666,879 tons, while in PPB2 was 2,535,008 tons.

Table. 2. Coal in power plants A and B

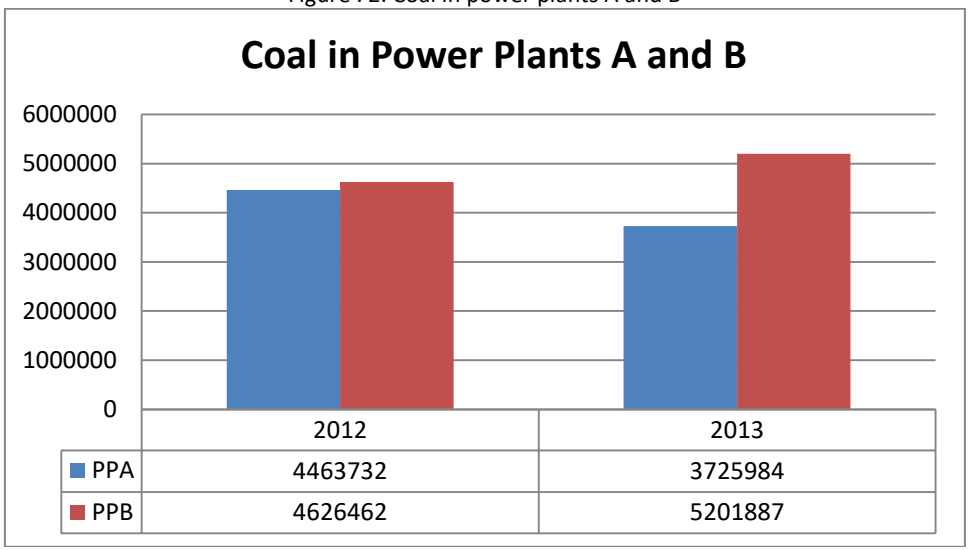
PP	Coal			
Kosovo	(t)			
Years	2012	%	2013	%
A3	1069310	23.95552	1558827	41.83665
A4	1777569	39.82248	669155	17.95915
A5	1616853	36.222	1498002	40.2042
PPA	4463732	100	3725984	100
B1	2046558	44.23592	2666879	51.26753
B2	2579904	55.76408	2535008	48.73247
PPB	4626462	100	5201887	100

Source: Kosovo Energy Corporation (KEK)

Coal in power plants Kosovo A and B for the years 2012 and 2013, in 2012

coals by PPA was 4,463,732 tons, while coal in PPB in 2012 was 4,626,462 tons. Coal in power plants Kosovo A for 2013 was 3,725,984 tons, while coal in Kosovo B power plants for 2013 was 5,201,887 tons.

Figure . 2. Coal in power plants A and B



Source: Kosovo Energy Corporation (KEK)

Production of electricity (MW) in power plants Kosovo A and B during the year 2012-2013.

Electricity production in power plants Kosovo A and B for the years 2012 and 2013, in 2012 the electricity production from PPA3 was 508,330 MWh, while we PPA4 was 908,772 MWh and 692,709 MWh PPA5, electricity production in PPB1 in 2012 was 1,594,672 MWh, while we PPB2 was 2,144,789 MWh.

MWh of electricity production in power plants Kosovo A3 for 2013 year was 914,642 MWh, while for PPA4 was 392,635 MWh and 878,253 MWh was PPA5, electricity production PPB1 MWh in 2013 was 2,106,186 MWh, while we PPB2 was 2,090,128 MWh.

Table .3. Production of electricity MWh

PP	Production of electricity MWh			
Kosovo				
Years	2012	%	2013	%
A3	508330	24.09363	914642	41.84989
A4	908772	43.07362	392635	17.96521

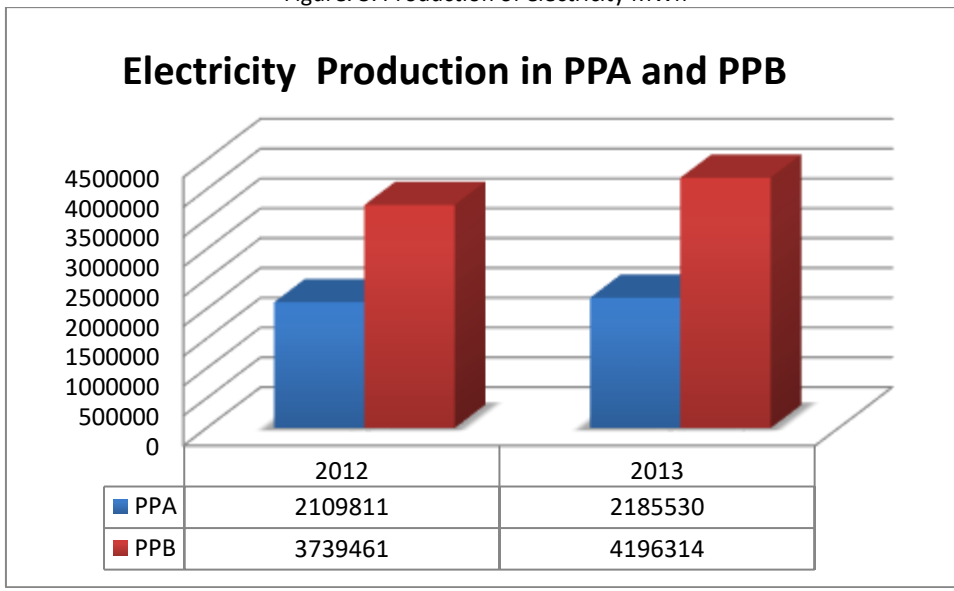
A5	692709	32.83275	878253	40.1849
PPA	2109811	100	2185530	100
B1	1594672	42.64443	2106186	50.19133
B2	2144789	57.35557	2090128	49.80867
PPB	3739461	100	4196314	100

Source: Kosovo Energy Corporation (KEK)

Production of electricity MWh in power plants Kosovo A and B. The production of electricity in a power plant for 2012 was 2,109,811 MWh, while Kosovo B power plant for production in 2012 was 3,739,461 MWh.

Production of energy in power plants Kosovo A for 2013 was 2,185,530 MWh, while Kosovo B power plant production for 2013 was 4,196,314 MWh.

Figure. 3. Production of electricity MWh



Source: Kosovo Energy Corporation (KEK)

Specific costs of coal (T/MWh) in power plants Kosovo A and B

Specific expenses of coal T / MWh in power plants Kosovo A and B for 2012 and 2013, spending in 2012 by PPA3 specific coal was 1.769 T / MWh, while in 1.956 was PPA4 T / MWh and 1,798 PPA5 T / MWh, spending coal specifications we PPB1 in 2012 was 1,283 t / MWh, while in 1,203 was TCB2 T / MWh.

Specific expenses of coal T / MWh in power plants Kosovo A3 for 2013 was 1.7043 t / MWh, while for PPA4 was 1.70247 t / MWh, and we PPA5 was 1.7056 T / MWh, coal costs specific to T / MWh in 2013 PPB1 1246 was T / MWh, while in 1213

was PPB2 T / MWh.

Table. 4. Specific expenses of coal (T / MWh)

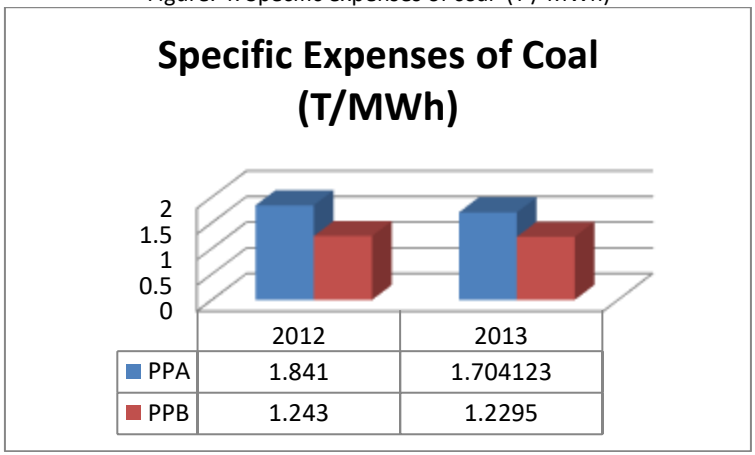
PP Kosovo Years	Specific expenses of coal (T / MWh) 2012	2013
A3	1.769	1.7043
A4	1.956	1.70247
A5	1.798	1.7056
PPA	1.841	1.704123333
B1	1.283	1.246
B2	1.203	1.213
PPB	1.243	1.2295

Source: Kosovo Energy Corporation (KEK)

Specific expenses of coal (T / MWh) in power plant Kosovo A and B power plant in a specific expenses for 2012 was 1,841 T/ MWh, while Kosovo B power plant for 2012 was 1,245 expenses T / MWh.

Specific expenses of coal (T / MWh) in power plants in Kosovo A for 2013 was 1.7041 T / MWh, while Kosovo B power plant spending for 2013 was 1.2995 T / MWh.

Figure. 4. Specific expenses of coal (T / MWh)



Source: Kosovo Energy Corporation (KEK)

Spending specific heat (KJ / MWh) in power plants Kosovo A and B

Expenses specific heat KJ / MWh in power plants Kosovo A and B for 2012 and 2013, expenses in 2012 by PPA3 specific heat was 13,860 KJ / MWh, while we PPA4 was 15,452 KJ / MWh and we PPA5 14,210 KJ / MWh, spending specific heat in PPB1 in 2012 was 10,139 KJ / MWh, while in 9,503 was PPB2 KJ / MWh.

Expenses specific heat KJ / MWh in power plants Kosovo PPA3 for 2013 was 13,464 KJ / MWh, while for PPA4 was 13,464 KJ / MWh, and we PPA5 was 13,475 KJ / MWh, specific heat costs KJ / MWh in 2013 PPB1 was 10,003 KJ / MWh, while we PPB2 was 9,582 KJ / MWh.

Tabele.5. Expenses specific heat (KJ / MWh)

PP Kosovo	Expenses specific heat (KJ / MWh)	
Years	2012	2013
A3	13860	13464
A4	15452	13464
A5	14210	13475
PPA	14507.33	13467.66667
B1	10139	10003
B2	9503	9582
PPB	9821	9792.5

Source: Kosovo Energy Corporation (KEK)

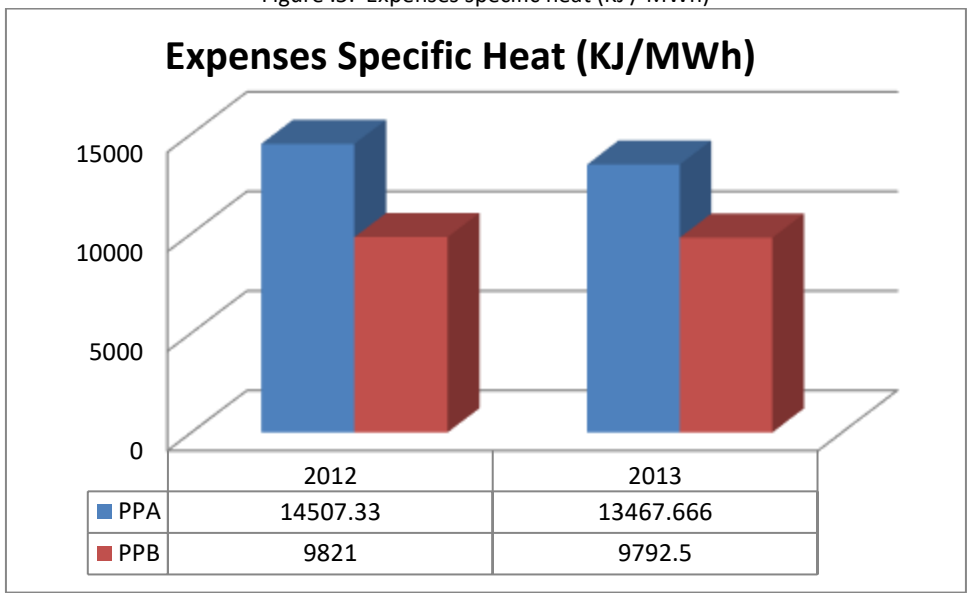
Expenses specific of heat (KJ / MWh) in power plant Kosovo A and B. expenses specific heat in a power plant for 2012 was 14507.33 KJ / MWh, while Kosovo B power plant for 2012 was 9821 expenses KJ / MWh .

Expenses specific of heat (KJ / MWh) in power plants in Kosovo A for 2013 was 13467.66 KJ / MWh, while Kosovo B power plant spending for 2013 was 9792.6 KJ / MWh.

Power plants Kosovo A and B monthly expenses and determine specific costs in power plants Kosovo A and Kosovo B power plants

Table. 6. Monthly expenses and travel costs at specific power plants Kosovo A and B

Figure .5. Expenses specific heat (KJ / MWh)



Source: Kosovo Energy Corporation (KEK)

	PP - A		PP - B	
Months	**Monthly expenses(t)**	**Specific expenses(t/MWh)**	**Monthly expenses(t)**	**Specific expenses(t/MWh)**
January	338347	1.71055	527470	1.26908
February	337226	1.70987	481782	1.24537
March	360393	1.71064	236319	1.14168
April	294460	1.70227	522418	1.25299
May	253088	1.70484	466338	1.20847
June	259871	1.69937	493477	1.24467
July	338376	1.70471	429580	1.22816
August	371191	1.71268	102965	1.23201
September	249839	1.70387	391316	1.20863
October	246144	1.70046	472479	1.25848
November	301147	1.69802	461052	1.23041
December	375902	1.69696	473262	1.23041
Total	3725984	1.7045	5058458	1.2292

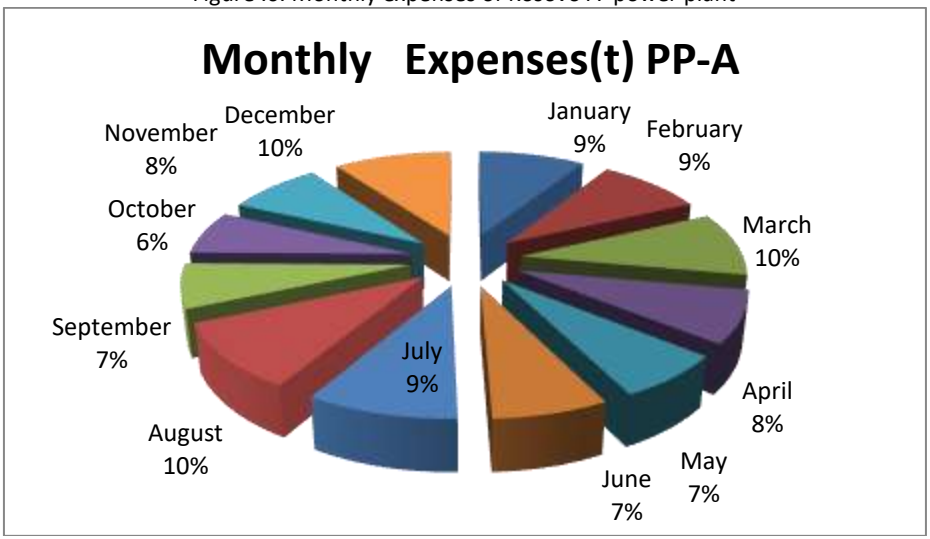
Source: Kosovo Energy Corporation (KEK)

So as you can see from the table, during 2013 both plants have spent about

8,784,442 t of coal. Compared to 2012 (in 2012, plants have spent about 8,358,457 t coal), results that were spent during 2013 about 425,985 t of coal or 5.1% more. During the 2013 Kosovo A, spent an average of about 1,705 t / MWh, while Kosovo B about 1.23 t / MWh. Power plants are currently working to ways of measuring the quantities of coal consumed to be advanced.

Monthly costs in power plants Kosovo A for year 2013, in the figure shows that the largest expenses occurred March 10%, August 10%, and December 10%, with small expenses have occurred in October 6%.

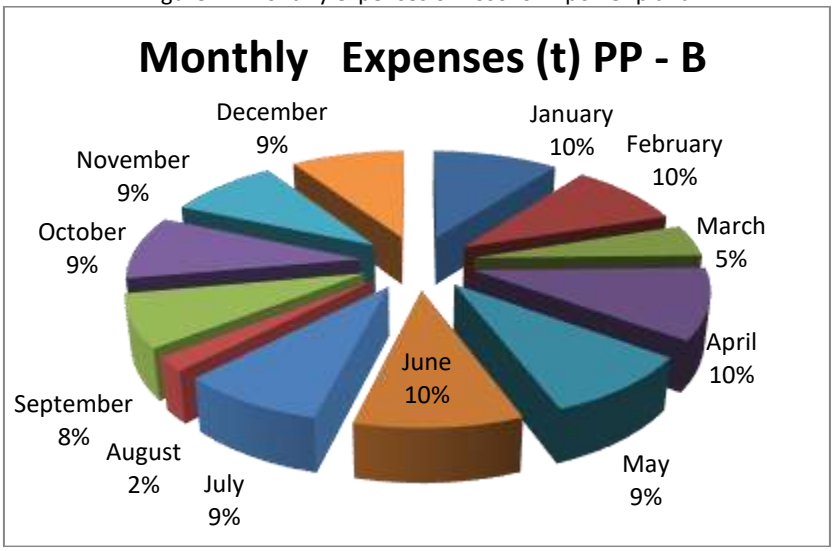
Figure .6. Monthly expenses of Kosovo A power plant



Source: Kosovo Energy Corporation (KEK)

Monthly costs in power plants Kosovo A for 2013, the image shows that the biggest spending occurred January 10%, February 10%, April 10%, May 10%, November 10%, with small expenses has occurred in the month August 2%.

Figure .7. Monthly expenses of Kosovo A power plant



Source: Kosovo Energy Corporation (KEK)

Environmental condition monitoring of power plants Kosovo (KEK)

Monitoring and protection of land from pollution power plants Kosovo (KEK)

Environmental law specifies "Monitoring, discharge of emissions and environmental record keeping" and "Environmental Information System" of issues that must be implemented by KEK.

Monitoring of land should be made according to Law no. 02/L-26, Article 20 and 21 of Article 20 land from pollution

Article .20.1. To enable the production of regular and safe in order to protect people, plants, animals and the environment, implemented to protect land from pollution.

Article. 20.2. Protecting land from pollution becomes with a ban, restriction and prevention of direct transfer, the transfer through air and water of harmful and undertaking measures for protection and improvement of the land.

Article. 20.3 is prohibited to release hazardous substances and dangerous, which damage and change the productive capacity of the land. Section 21 of the Land Monitoring.

Article. 21.1. In order to protect the land from pollution should be continued research and monitoring of the situation and the degree of soil pollution by harmful substances which include:

- Determining the area and degree of soil pollution - inventory;
- Continuous monitoring of the status and changes in soil properties as physical, chemical and biological;
- Establishment of information system for soil pollution. The purpose of monitoring the land in the area of Kosovo A and Kosovo B is to determine the extent of soil contamination from the operation of power plants.

Monitoring the Earth in space power plant "Kosovo -A"

The soil reaction (pH value), as that asset (pH H2O) and substitute it or physiological active acidity (pH in 1M KCl), were determined by the method electro metric parallel to the glass electrode and Sentron. Based on the values of pH in KCl, can be determined by the rate of reaction-Schachatschabel Scheffer, ie can be defined land classes, as follows:

1. Very acidic 4.9
2. Weak acid 5.0 - 6.9
3. Neutral 7.0
4. Weak alkaline 7.1-9.0
5. Lot alkaline 9.1

The following are the results of chemical and physical analyzes of soil and heavy metal analysis conducted by INKOS, for any month in two sampling points in areas of Kosovo-A Power Plant.

Table 7. Results of chemical analysis of soil, sampling location VM - 1

The depth	M. n0	pH-water	CaCO3	Humus	MO%		Nutritional elements (mg / kg)		
profile			%	%		P2O5	K2O	Ca	Mg
0 - 20 cm	1	8.13	7.12	1.91	2.82	63.7	49.5	2137	413
Rating		Easy	Average	Average	Average	Average	lower	Average	Very
		basic	carbon						high
20 - 40 cm	2	8.2	8.14	2.56	2.94	59.1	55.6	2273	467
Rating		Easy	Carbon	Average	Average	Average	Average	Average	Very
		basic							high
40 - 60	3	8.31	8.73	1.96	2.12	51.6	41.4	2451	448
Rating		basic	Carbon	Average	lower	Average	lower	Average	Very
									high
60 - 80	4	8.11	6.56	1.15	1.41	32.5	31.4	1765	313
Rating		Easy	Average	Average	lower	lower	lower	Average	Very
		basic	carbon						high
80 - 100	5	8.13	7.8	1.07	1.22	28.8	35.4	1761	389
Rating		Easy	Average	Average	lower	lower	lower	Average	Very
		basic	carbon						high

Source: Kosovo Energy Corporation (KEK)

Earth Monitoring Division spaces Kosovo B

Tab. 8. Results of chemical analysis, sampling location VM 1.TCB

The depth	M. nr	pH-water	CaCO3	Humus	MO%		Nutritional elements (mg / kg)		
profile			%	%		P2O5	K2O	Ca	Mg
0 - 20 cm	1	8.47	8.31	2.3	2.8	118	154	1930	44
Rating		Basic	Carbon	Average	Average	Average	high	Average	lower
20 - 40 cm	2	8.26	9.17	2.1	2.4	96	132	1880	71
Rating		Easy	Carbon	Average	lower	Average	Average	Average	High
		basic							average
40 - 60	3	8.48	14.2	1.8	2.2	103	87	2120	87
Rating		Basic	Carbon	Average	lower	Average	high	Average	lower
60 - 80	4	7.73	6.4	1.9	2.5	88	102	1430	52
Rating		Easy	Average	Average	lower	Average	high	Average	lower
		basic	carbon						
80 - 100	5	8.61	12.6	1.3	1.6	61	51	2060	68
Rating		Basic	Carbon	Average	lower	Average	Average	Average	Average

Source: Kosovo Energy Corporation (KEK)

Management and monitoring of waste from power plant Kosovo A and B The quantity of the ash as a product of work in Kosovo power plant

Waste in larger quantities are the products of combustion of coal-ash. Ash produced from the combustion process in boilers as riffraff and ash flying.

Volume production depends mainly on the content of non-combustible materials (usually inorganic substances) in lignite.

The current rate of non-combustible materials in coal is about 30%. Both points A and B that have built their landfills for the disposal of ash.

Bottom ash appears as sand until petty particulate matter (particles) in the fly ash are typically between 30 and 5. Below we present the quantities of ash production during 2013 from points A and B points

Table. 9. Amount of ash as a product of labor in Kosovo power plants

Production of ash

			Production of ash		
Power Plants			TCA		TCB
		2012	2013	2012	2013
total production (t/v)		574239	590195	620988	770361
specific production (t/MWh)		0.25	0.27	0.17	0.188

Source: Kosovo Energy Corporation (KEK)

So the total amount of ash produced during 2013 for both PP was 1,360,556 t. Now corroded and fly ash from PP A hydraulically transported to sites of S. Mirash empty. Passive ash dump PP A along with wastelands and lagoon covers an area of about 234 ha. Whereas passive ash dump PP Kosovo B occupies an area of over 60 ha.

Oils composition of BPK (polychlorinated polychlorinated biphenyls)

Regarding the problem even further , enough to update equipment and waste composition of polychlorinated biphenyls (PCBs) , consultancy (Lavalin of Canada) engaged by the World Bank, based on the results of the inventory made at KEK , is involved in undertaking work for the conclusion of this inventory , review of available data , documentation and reports regarding equipment in KEK and beyond .

PP Kosovo - A, according to our information we have : 6 transformers allegedly contaminated with oil containing PPB , transformer stations weight is : our 20.2 , while the share of oil is assumed that is contaminated with PCBs : 2.64 hour .

TPP Kosovo B (here are included transformer belonging to nearby premises of PPB , and you currently managed by CPD - lo) , according to our information are : 22 transformers allegedly contaminated with oil containing PPB , weight power station is : our 59.92 , while the weight is assumed that oil contaminated with PPB is : our 14:49 .

Networks Division and Supply , KEDS now , according to our information are : 14 transformers allegedly contaminated with oil containing PPB , the weight of the transformer stations is : our 547.9 , while the weight of material contaminated with PPB is : our 134.14 .

KEK and KEDS total , according to our information , 42 transformers that are assumed to be contaminated with oil containing PPBs , transformer stations weight is : 628.0 our weight and assuming that oil is contaminated with PPBs is : 150.27 tons.

From the Canadian company - "Lavelin" reviewed 377 transformers,

capacitors 216 and 398 relay at KEK even wider as Trepçë, Fero-Nickel, etc. Sharrcem. The amount of oil in transformers controlled: 7000 tons, the amount of oil in equipment: Unknown; estimated quantities of PpB-contaminated materials: 27,000 tons.

Radioactive substances in power plant Kosovo A and B

KEK inventory of radioactive equipment and filling lines have established cooperation with MESP and are in joint efforts to find opportunities for their treatment. DSK zone (gasification) is building a bunker with some radioactive material. These container with radioactive sources are isotopes of cobalt (Co-60) that have been installed in the gasification unit generators. Bunker for storage of radioactive materials is built in 1988. At this bunker are three types of stored radioactive sources:

- Type I: 12 sources, with initial activity A0 = 3.70 GBq;
- Type II: 18 sources, with initial activity A0 = 0.74 GBq;
- Type III: 4 sources, with initial activity A0 = 1:48 GBq

Bunker constantly checked by teams of KFOR and KSF , which make the measurement of radioactivity . Measured values are not dangerous for short exposure time . But however it is not recommended within the bunker entrance . Radiation around the bunker is the normal value .

In March 2012 deployed warheads radioactive gear 26 from Block A5 , A4 and A3 block and are located in the Bunker of gasification .

All radioactive sources of gamma spectrometry is done and all have proved that they are 60/27 Co with a maximum amount of radiation doses in the eye of the container from 12.21 - 25.5μSv / h .

From the results obtained mean that the average natural background in this space does not impact the radioactive sources in the area frequented by employees . In Kosovo PP B , the hydraulic transmission system are mounted ash 3 (three) pieces of equipment for measuring the density of the ash , and radioactive composition from 1 (a) in , the old line " B " - Type : Egress Hauser DG57 - Filling : Cs - 137 , line 10 and line 30 ash hydraulic transmission with nomenclature - 0ETK13CD001 and 0ETK33CD001 (for two lines) type : radioactive Source : Enders Hauser - Measuring Source Container QG020/100 radiometric , and recipient of radioactive rays : Enders Hauser - Measuring Gamma pilot M FMG60 radiometric and one of the same type is located in the warehouse Kosovo PP B.

PP "Kosovo-A", the old Bunker ash still remain three container with radioactive sources, and which should leave the bunker and sent ash bunker

storage Special for the same material.

KEK is currently undertaking activities for the deployment of three radioactive sources from PPA and PPB from a radioactive source of radioactive bunker located on the grounds of chemical separations.

Transmission system hydraulic ash PP "Kosovo A" in early 2013 placed the 4 (four) device for measuring the density of the ash, which have padding radioactive (Producer: Behold Technologies GmbH & COKG; isotopes Cs 137 with dose of 0.009-0.01μS / h at one meter distance).

1.3.4. Oils in power plant waste disposed of Kosovo (KEK)

Within the space of KEK are considered deposited amount of waste oils. Action Plan with waste oils by Nr.03/07 AI aims to protect human health and the environment from pollution by waste oils (WO) and material waste oils (MWO) .1.2

To enable the deployment and operation of the system convenient and secure environment for managing and controlling the oil, WO and MWO . Prevent, reduce, limit pollution of water, soil, air and empower obligations and prohibitions on waste management and material waste oils with oils.

Table. 10. Disposed waste oils in KEK 2012

Divisions	quantity VM and MMV (l)
Division of Kosovo PP A / chemical separations	8000/10800
Division of PP Kosovo B	27400
Coal production division	16000
Total	62200

Source: Kosovo Energy Corporation (KEK)

Scrap metal in Kosovo power plant

KEK has classified waste metals, including steel, iron, aluminum, chromium and copper along with the tire removed from the conveyor belts of coal and overburden.

The above materials are mainly localized in areas of mining and generation in Obilic which are managed by power plants and MS through companies licensed for the treatment of metal waste and waste oils from Kosovo A are for sale 700 tons of waste metal, 200 tons of scrap metal the remaining 5.0 tons of copper and Kosovo B towards 2000 tons iron waste and scrap of copper towards 5 tons. While the RPD

found 500 tons of metal waste and 20 tons of iron-copper waste.

Table 11. Quantity of scrap metal at KEK

Divisions	Waste of iron (tons)	Copper waste (tons)
PP Kosovo A	700	5
DPQ	500	20
PP Kosovo B	2000	5
Total	3200	30

Source: Kosovo Energy Corporation (KEK)

Water management and monitoring of power plants Kosovo (KEK)

Effluent WATERS IN RPD - 2013 Water Law No . Kosovo Water 04/L-147 29 April 2013 , Pristine AI NR.13/2008 to the limits of effluents discharged into water bodies and public sewage system effluent water monitoring in CPD - 2013 is based on the annual operating plan (POV -2013) developed by mining D. engineering S. Environmental respectively . About 34 parameters monitored , physic - chemical and microbiological . Effluent water quality laws R. Kosovo respond namely the EU directives

The issue of water pollution is also one of the biggest environmental problems . Generating electricity requires providing large amounts of water . The highest amount of water vapor released by plants as not harmful , but a part of it , as a result of using different processes , subject to the pollution . The main pollutants of these waters by KEK , are :

- Different plants and wastewater technology , laboratories , working units ,
- Waste of fuel , ash , waste oils and other chemicals and hazardous waste ,
- Maintenance ,
- Sanitary facilities (toilet) and
- Mining activities .

For all water flows arising from the industrial area of KEK , and at some point in the recipient , KEK has engaged INKOS Institute to monitor . KEK has engaged INKOS Institute to monitor the discharge water (wastewater discharged by power plants and mines) .

Also at some point this institute also conducted monitoring of recipients (river and Drenica) , in order to verify their quality and damage assessment (pollution) that may cause KEK.

Surface waters:

- Lismore – Sitnicia, Dep . PPA ash – Dardhishte, .waters white PPA, wells main Gasification, Palaj - Sitnica ,Baseni collector – TCB, Technological, waters – PPB, Dep . East Ash – PPB, Exit final PPB water ,Plemetin - Sitnica .
- Groundwater : P1.Dep . PPA eastern ash . P2.Dep . top western and eastern ash a P3.Deponia PP A PPB . P4 ash top western Deep PPB .
- Consumption of carbonated water and mineralized in power plants of Kosovo A and B during 2013
- Water Consumption carbonized and mineralized in power plants of Kosovo A and B up during 2013

PP Kosovo A is supplied with raw water from River Lab , but if necessary by Hydro System - Lepenc and Batllava Lake , while Kosovo B is supplied with raw water from the system ibër -Lepenc .

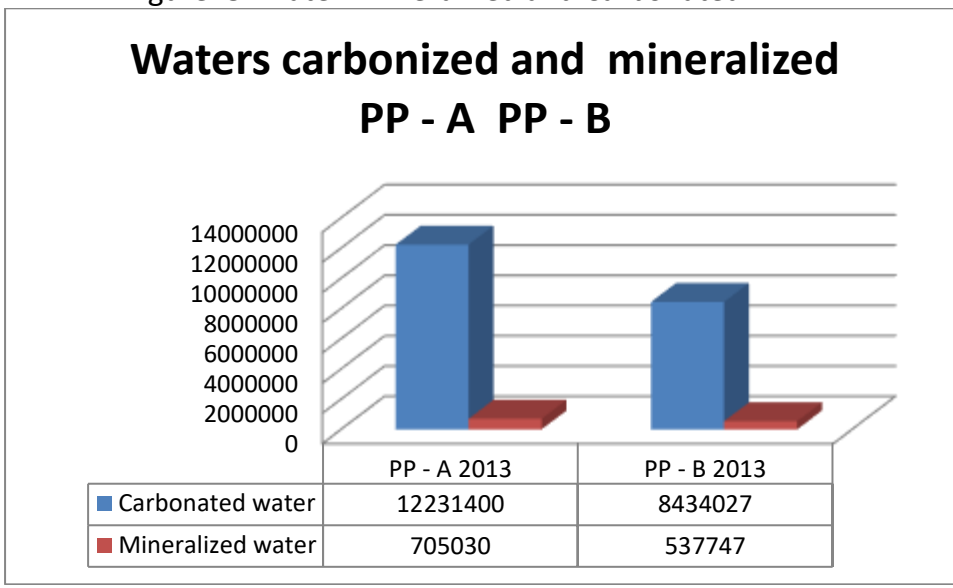
Specific costs carbonated water in a power plant for 2013

Table. 12. Consumption of carbonated water and mineralized during 2013

			PP - A 2013	PP- B 2013
	Total costs	m3	12231400	8434027
Carbonated water	Specific costs	m3/MW	5.6	2
	Criterion	m3/MW	2.1 - 2.6	2.1 - 2.6
	Total costs	m3	705030	537747
Mineralized water	Specific costs	m3/MW	0.323	0.14
	Criterion	m3/MW	0.1	0.06

Source: Kosovo Energy Corporation (KEK)

Figure. 8. Water Mineralized and Carbonated PPA - PPB



Source: Kosovo Energy Corporation (KEK)

Water consumption is 12231400 m3 in Kosovo A and Kosovo B 8,434,027 m3 in Kosovo A consumption is extremely high. According to Table 5 also seen the excesses of criteria designed for mineralized water and carbonated.

Management and Monitoring of air from power plants Kosovo (KEK)

Air law aims to regulate and guarantee the right of citizens to live in a clean air environment, protecting human health, fauna, flora and natural and cultural environment. Law on protection of air pollution adopted by the Assembly of Kosovo 03/L-160, Official Gazette of the Republic of Kosovo. No. 67/29 March 2010. Kosovo Environmental Law, Nr.03/L-25 Article 21, the IPPC (Integrated Prevention Pollution Control) 03/L-043 environmental consent issued by Kosovo MESP

Air protection law provides three levels of contamination: VMin ., V Med. and VMax.

Due to the project designs electrostatic precipitation in Kosovo B, then the non-existence of plants for reduction of pollutants like NOx and SO2, the high content of inorganic substances in coal and other problems during the combustion process, emissions of pollution in the atmosphere are higher than the allowed values border. PP Kosovo and PP Kosovo A5 A3 and A4 measured particulate emissions, emissions and other polluting gases are calculated. In PP Kosovo B since August of 2012 are set analyzers for measuring the emission of gases and dust.

Emision of Particulate Installing new electrostatic precipitation in PP

Kosovo A has ended ; A5 09/30/2012 operates from new electrostatic precipitant . AlsoPP A3 operates from 31.12.2012 new electrostatic precipitators ,PP A4 and works with new electrostatic precipitant since 08/12/2013 . Can conclude that PP Kosovo A , after changing the FE , with design that provides particle emissions under the criteria provided a significant improvement is made on the basis of which the environmental community will breathe more freely .

Emission of sulfur dioxide SO2 In PP Kosovo A SO2 emissions are calculated , whereas in Kosovo B measured . Emissions of sulfur dioxide (SO2) is based on the composition of coal in terms of So and alkaline character of coal desulphurization own respectively conducted within the boiler . When sulfur burns , established SO2 and a significant part connected with the boiler ashes precipitant . In PP Kosovo A and Kosovo B nor are installed De - SO2 . Emissions of NOx in PP Kosovo A NOx emissions are calculated , whereas in PP Kosovo B measured . The reason is NOx emissions of nitrogen content in coal and combustion air .

Emissions of Nox caused by combustion of nitrogen which is involved in coal and mainly by the presence of nitrogen in the air . Nitrogen oxides are formed by chemical reaction of nitrogen and oxygen from the air disocuar , followed the hearth . Oxidation of nitrogen needed for a certain level of temperature in the hearth and a sufficient amount of oxygen . At points PP A and B is not used any method for reducing NOx emissions .

Emission of carbon dioxide Emission of carbon dioxide in Kosovo A is based on calculations by coal quality and power blocks based on reports stoichiometry chemical reaction. But in Kosovo B measured .Dioxide carbon appeared not directly harmful effects to humans and the ecosystem, but it is a significant factor in global warming. CO2 emission is proportional to the carbon content of fuels and fuel quality burned.

Table. 13. Average emissions for PPA and PPB in 2013 and their difference compared with 2012

PP	Powder	SO2	Nox	CO2
Kosovo	mg/Nm3	mg/Nm3	mg/Nm3	mg/Nm3
A3	53	775	706	261.96
A4	649	837	716	264.2
A5	51	751	681	263.4
PP A	251	790	701	263.1867
B1	672	664	840	237.3
B2	657	692	829	239.1

PP B	664.5	678	835	238.2
the EU				
criteria	50	400	500	

Source: Kosovo Energy Corporation (KEK)

Category-I there is clean air or dirty little (not to exceed the threshold proposed air quality (VP)

Category-II more or less polluted (proposed value is exceeded (VP) but not exceeding the maximum value (VM)

Category-III - pollution is the biggest environmental air (maximum limit values exceeded (VM)

INKOS Institute, at some point made the determination of the concentration of main pollutants in the air. These include emission of SO2 and dust, sediment and air particles (in the courtyard of INKOS). Emission average for 2013 was as in Table 12 and 13.

Table. 14. SO2 and soot Emission PPA
Average SO2 Emission soot, and LGS Sediment area

Industrial EPD for January-December 2013

Sampling location	INKOS					Inkos
Pollutants	SO2	Soot	Sediment	Sediment	Sediment	LGS
			INKOS	PP Kosovo A	Dardhishte	
Concentration	14.91	6.5	305.33	337.84	488.55	66.44
	Average for 24 hours			mg/m2 day		mg/m3
	(mg/m3)					
PML	150	50	300mg/m2 day			150

Source: Kosovo Energy Corporation (KEK)

By measuring the environmental quality of the Institute is engaged "Inkosi" and in collaboration with Environment Protection sectors near power plants are set to be places for sampling in the yard INKOS, Kosovo A, Dardhishte, as seen from the table are set these parameters: SO2, soot, LGS and sediment. Based on the results we have seen average annual excess sediment easy at all sampling points, in addition to a complete implementation. Other parameters are within the allowed limits.

Table 15. SO2 and soot Emission PPB
Average SO2 Emission soot, and LGS Sediment area

Industrial EPD for January-December 2013

Sampling location	INKOS					Inkos
Pollutants	SO2	Soot	Sediment	Sediment	Sediment	LGS

			INKOS	PP Kosovo B	PLEMETIN	
Concentration	26.63	6.03	356.42	376.7	214.3	71.24
	Average for 24 hours			mg/m2 day		mg/m3
	(mg/m3)					
PML	150	50	300mg/m2 day			150

Source: Kosovo Energy Corporation (KEK)

By measuring the environmental quality of the Institute is engaged "Inkosi" and in collaboration with Environment Protection sectors near power plants are set to be places for sampling in the yard INKOS, Kosovo B, Kastriot , as seen from the table are set these parameters: SO2, soot, LGS and sediment. Based on the results we have seen average annual excess sediment easy at all sampling points, in addition to a complete implementation. Other parameters are within the allowed limits.

Conclusion

At the end of this paper we look at the analysis and research Kosovo Energy Corporation, in its two plants PPA and PPB, In this paper we have done a summary of the management and monitoring of the environmental situation in Kosovo power plants, including the quantity underlying the conceiving for two coal power plants, electricity production from power plants and power plants PPA CAP. Specific costs of coal power plants in both PPA and PPB.

Monitoring and protection of land from pollution power plants in Kosovo, Establishment of information system for soil pollution. The purpose of monitoring the land in the area of Kosovo A and Kosovo B is to determine the extent of soil contamination from the operation of the plant. Managing and monitoring of power plant waste, ash produced from the combustion process in boilers as riffraff and hi flying , at KEK, the inventory of radioactive equipment and filling lines have established cooperation with MESP and are in joint efforts to find opportunities for their treatment.

Management and monitoring of water from Kosovo power plants, power generation requires providing large amounts of water. The highest amount of water vapor released by plants as not harmful, but a part of it, as a result of using different processes, subject to the pollution.

Management and monitoring of air from Kosovo power plants, project designs Because of electrostatic precipitation in Kosovo B, then the non-existence of plants for reduction of pollutants such as NOx and SO2, the high content of inorganic substances in coal and other problems in the process combustion, emissions of

pollution in the atmosphere are higher than the values allowed border.

RECOMMENDATION

Energetic Corporation of Kosovo we have a recommendation:

- Construction of a new power plant, and to be more clean, filters are used for the prevention of pollution, a portion of the money to be funded by the government of Kosovo and the rest of Parva be funded by outside donors, taking consider that Kosovo has a small budget and not able to build it power plants, construction of termocentrales be done in places where there are people.
- We termocentralve Kosovo not used filters for environmental pollution.
- Removal of houses that are near power plants (last eruption in a plant warehouse has caused environmental damage and pollution largely from hydrogen explosion. because they're old equipment is almost 100 years old
- Continuous monitoring of the status and changes in soil properties as physical, chemical and biological;
- Then there should be facilities for the reduction of pollutants such as NOx and SO2,

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