

# ANNUAL REPORT **2013 ELECTRIC POWER INDUSTRY OF SERBIA**



# Mission

Electric Power Industry of Serbia mission is secure electricity supply to all customers, under the most favourable market conditions, with continuous upgrading of the services, improvement of environmental protection and welfare of the community.



# Vision

Electric Power Industry of Serbia vision is socially responsible, market-oriented and profitable company, competitive on the European market with a major impact in the region, recognized as a reliable partner among the local and international companies.





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Systems





## Aleksandar Obradović

#### **Acting Director**

In records of Electric Power Industry of Serbia year 2013 shall be registered as historical. Historical results were achieved in all aspects of business operation – in electricity generation, overburden removal and coal production, financial operations, electricity export.

EPS made huge steps towards liberalization and positioning of the company at open electricity market. Activities related to implementation of Framework for Reorganization of PE EPS have also started as well as unbundling of distribution sector from supply.

Electric Power Industry of Serbia achieved record generation in 2013 in all generation sectors – both in thermal sector and in electricity generation from hydro capacities as well. Electricity generation amounted to 37,433 GWh and it was increased by nine percent when compared to 2012, i.e. by about three billion kilowatt-hours. Electricity export has also set a record. EPS sold 3,306 GWh at free market that exceeded the plan by 53 percent and led to revenues of 16 billion dinars. Such a result has not been recorded in Electric Power Industry of Serbia so far.

EPS managed to overcome difficult financial situation from the beginning of 2013. Successful operation, loan restructuring, costs of rationalization and record generation instead of planned loss led to profit of 19.2 billion dinars. By implementation of Framework for Reorganization we shall have an opportunity to additionally reduce EPS operating costs by centralization and corporatization and to measure success of the company by achieved profit.

High voltage market opened on 1 January, 2013 and Electric Power Industry of Serbia retained 97 percent of customers at high voltage. Market opening initiated changes in electric energy sector of Serbia, but EPS has to be ready for them. In the following years full market liberalization is expected and introduction of competition creates an opportunity for Electric Power Industry of Serbia to be strong and leading company not only in Serbia but in the region as well.

EPS shall not leave the market to competition easily. That is why changes in organization of business operation are needed so that we can play the game at the market readily and efficiently. The bases of those changes are Framework for PE EPS Reorganization that was adopted by the Government of the Republic of Serbia in November 2012. Implementation of Framework for Reorganization and setting efficient organization are the only way to make EPS successful and profitable. Key for improvement of EPS business operation parameters is reorganization through corporatization. Electric Power Industry of Serbia has fulfilled one of the tasks from Framework - in accordance with provisions of the Energy Law and compliance with Treaty Establishing the Energy Community of South Eastern Europe and in accordance with Serbian steps towards EU accession, new subsidiary was founded on 1 July, 2013 - EPS Supply. By its incorporation unbundling of activities of trading - supply from electricity distribution and distribution system management started. Framework envisages change of PE EPS legal form into joint stock company and we expect that the Government of the Republic of Serbia and the competent ministry, that provide enormous support, shall soon give a signal for this change as well.

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On the way to profitable company Electric Power Industry of Serbia undertakes several steps to modernize its generation capacities and construct new, larger and stronger ones. We signed the contract with Chinese partners for construction of new thermal power plant Kostolac B3 and extension of mine Drmno in 2013. That is currently the largest investment in Electric Power Industry of Serbia and first investment in generation capacities in the last 20 years. We have started a project in MB Kolubara worth EUR 200 million related to environmental protection and homogenization of coal. Rehabilitation of fourth unit in HPP Bajina Bašta was finalised and that is additional 52 MW of capacity in EPS system. Rehabilitation of HPP Zvornik has started that shall increase the capacity of this power plant by 30 percent.

After almost eight years Kolubara-Metal returned under auspices of MB Kolubara and Electric Power Industry of Serbia. That is the only company in the region that has staff and technical capacity to regularly maintain huge mining equipment and its return shall enable additional savings in business operation.

EPS and company SAP have signed the contract on business software SAP implementation. Introduction of this software and best international practice that it brings, shall enable consolidation, better resources and business process management, as well as better control and transparency of business operation. Information and communication technologies had a huge impact on establishment and start of operation of subsidiary EPS Supply.

Procurement plans have been consolidated in Electric Power Industry of Serbia for the first time for PE EPS and its subsidiaries. Centralization of public procurement led to more rational spending, efficient use of resources; larger number of participants and more favourable bids have been enabled. One of the examples of savings is joint procurement of licences and maintenance services of Microsoft software prod-



ucts, since the most favourable financial conditions were obtained and discount of 33 percent that led to savings of USD 1.7 million.

Health and safety at work is of highest priority. Practice of reporting on most important information on the state in this business activity at PE EPS management meetings has been introduced and measures for improvement of conditions in this field are introduced carefully. None of the activities, achieved result and broken record, Electric Power Industry of Serbia would not be able to achieve without healthy employees that perform their working tasks in safe and secure environment. It is them, the employees of Electric Power Industry of Serbia that I see as the largest, driving force and determining factor in overcoming forthcoming changes in EPS.

-Ast Mills



# Aca Marković, D.Sc. Chairman of Supervisory Board

Electric Power Industry of Serbia proved that it is strong, stable and reliable company in 2013, Record generation of 37,433 GWh was achieved and that was the highest achieved generation in the last 23 years i.e. since 1990, when EPS was formed as the public enterprise. 39.5 million tones of coal was produced and delivered, which is by two million tones more than the last year. EPS export reached three billion kWh, which is also one of the record results and something this year will be remembered by. From January 01, 2013 high voltage electricity market was opened and EPS retained all customers, but one. Financial issues EPS faced at the beginning of the year EPS managed to overcome thanks to good business operation, and good hydrology, readiness of our thermal capacities, export and successful collection of electricity - contributed to year 2013 be the year without losses and from financial aspect much better than it was expected.

With the support of Ministry of Energy, Development and Environmental Protection debts for households and industry were restructured. Customers who had debts and who were ready to accept restructuring, could regulate their debt fully or in maximum 120 installments, accepting regular payment of current bills. Large customers settled their debts, and among them were debtors such as Water Supply Company from Bor, Water Supply Company from Kragujevac and local self-government in Grocka.

Full rehabilitation of hydro power plant Bajina Bašta was completed, fourth unit was put into operation and capacity of this HPP was increased by 52 MW. Fourth unit in HPP Derdap 1 was also completed and the capacity of unit 4 and 6 in this HPP was increased by 15 MW each. Additional contract was signed with Silovije Mašini from Saint Petersburg, to complete the remaining four units in the shortest possible deadline, in no longer than five years. Then we will have new capacity of minimum 60 MW in HPP Derdap 1. Everything is set for the beginning of rehabilitation of HPP Zvornik in the next year, and development of the project for rehabilitation of HPPs Limske will continue. Preparation for opening of new mines for coal production started. One of the most important events in mining sector is the return of Kolubara-Metal in EPS. Kolubara-Metal represents strong support in preparation, rehabilitation and construction of ECS system for overburden, as well as for the coal production and transport system.

After more than two decades the construction of higher thermal capacity was agreed. Contract was not easy to get, since those are complex financial and legal and technical affairs. Contract with Chinese company CMEC foresees the construction of 350 MW capacity unit and increase of annual coal production from nine to 12 million tons. In TPPs-OC-Ms Kostolac all conditions are met for realization of a very important project. After putting this unit into operation, there will also be benefits for EPS business operation, domestic industry development and economy improvement.

New subsidiary EPS Supply was founded and after initial "illness" it is slowly taking the role of independent supplier and performs the function Energy Law stipulates.

Supervisory Board of PE Electric Power Industry of Serbia was founded in December. It got larger authorizations from Serbian Government but also responsibility in terms of monitoring and planning policy and operation of public enterprise. Supervi-

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sory Board is the body with operational role, it has five members, out of which three are selected by the Serbian Government, one from the employees of EPS and one member is independent and the conditions under which it is selected is strictly defined. Law foresees possibility that SB receives tasks from the owner of the capital and to be assessed according to those results. This change insured that business plans do not represent just theory but tasks which should be fulfilled and assessed.

Management and Supervisory Board (as previously Management Board) had excellent cooperation with the trade union of the entire system of Electric Power Industry of Serbia and trade unions of subsidiaries. Trade union is an important part of the operation of each company and there should always exist two sides. One side is management - Supervisory Board, and the other side is trade union. The goal is the same. The goal of trade union is its successful operation within the company and better standard, salaries, working conditions for the employees ... Which is also a goal of Supervisory Board and management. In order to achieve that goal, we had good relation with trade unions of Electric Power Industry of Serbia and subsidiaries, and it would be good to continue such cooperation for the benefit of the company, employees and Serbia.

We have celebrated an important anniversary – 120 years of electric energy activities in Serbia and recalled old but glorious beginnings of electrification of Serbia. For that project – introduction and use of "electricity" for public purposes – most credits go to professor Đorđe Stanojević, thanks to whom first Serbian public plant started with the operation, thermal power plant in Dorćol, Belgrade. And first plant operating under Tesla's principles "Pod gradom" was constructed in Užice in 1900, only four years after the construction of hydro power plant in Niagara. Today we have five preserved hydro power plants older than 100 years and still operating.

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Part of the mission of Electric Power Industry of Serbia is to increase welfare of the community as well as social responsibility. EPS supports all relevant segments of life. It is our permanent choice to contribute to improvement of the health of citizens. development of science, education, culture, sport and religious communities. In 2013, as socially responsible company, and on the occasion of Day of Electric Power Industry of Serbia, EPS sent aid to Association of Blind and Visually Impaired of Serbia, Clinical Center in Niš and Elementary School Stojan Novaković in Blace. We also traditionally supported Olympic Committee of Serbia and almost all sport associations in their efforts to win as much medals as possible. It gave us great pleasure to support professional organizations and institutions in their efforts to bring many topics from the field of energy, renewable energy sources and energy efficiency to domestic and international conferences and events.

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# **Company Data**

Name of the company	Public Enterprise Electric Power Industry of Serbia Belgrade (PE EPS Belgrade)
Head Office	11 000 Belgrade, 2 Carice Milice St
Phone and Fax	+381 11 20 24 600, +381 11 26 27 160
Email, website	eps@eps.rs, www.eps.rs
Registration	Decision BD 80380/2005 Serbian Business Registers Agency
<b>Registration number</b>	20053658
TIN	103920327
Establishment	Public Enterprise Electric Power Industry of Serbia was established July 1 <sup>st</sup> 2005
	by the Government of the Republic of Serbia.

#### **Organizational structure**

Vertically organized enterprise that has founder's rights in 13 subsidiaries and three public enterprises at Kosovo and Metohija. As of June 1999 EPS has not been operating its capacities at Kosovo and Metohija. On the basis of founding PE EPS has shares in subsidiaries:

- Company for cogeneration of thermoelectric power and heating energy Energija Novi Sad JSC Novi Sad, founded with Novi Sad City, in the amount of 50 percent of shares in Company's equity;
- Company Ibarske hidroelektrane Kraljevo, founded with Seci Energia S.p.A, Italy, with 49 percent of shares in Company's equity;
- Company Moravske hidroelektrane Beograd, founded with RWE Innogy, Germany, with 49 percent of shares in Company's equity.

Ownership structure 100 percent owned by the Republic of Serbia.

Bodies of the company (in accordance with the law and Decision on Harmonization of Business Operation of Public Enterprise for Generation, Distribution and Trading of Electricity with the Law on Public Enterprises):

Supervisory Board, Executive Board and Director.

Supervisory Board and Director are appointed by the Government of RS and Executive Board that is comprised of Executive Directors is appointed by the Supervisory Board at the proposal of the Director who holds the position of President of the Executive Board.

#### Activity

Prevailing activity of PE EPS is electricity supply whereas electricity generation, electricity distribution and distribution system management, production, processing and transport of coal, generation of steam and hot water in combined processes are performed in subsidiaries founded by PE EPS for performing of the stated activities.

Number of employees:

31,569 (without Kosovo and Metohija) 36,038 (with Kosovo and Metohija)

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# Organizational Chart

Cabinet

Internal Audit and Control of the Business System

Human Resources

**Energy Generation Department** 

**Electricity Trade Department** 

**Electricity Distribution Department** 

Strategy and Investments Department

Economic and Financial Affairs Department

Legal and General Affairs Department

Electricity Generation, Transmission and Distribution and Coal Production on the Territory of Kosovo and Metohija

Management and Control of **Procurement Department** 

Information and Communication Technologies Department

**Corporate Development Department** 

**Renewable Energy Sources Department** 

IMS Sector

\* Common business functions perform activities within their competence for all subsidiaries and companies within EPS

#### Management

- Chairman of Supervisory Board
- General Manager
- Deputy General Manager
- **Business Function Directors**

**Public Relations Division** 



\*\* As of June 1999, EPS does not operate its facilities on the territory of Kosovo and Metohija

# **EPS in Figures**

# **EPS Installed Capacities**

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GENERATION CAPACITIES Net output capacity	<b>7,124</b> MW
ELECTRICITY GENERATION	<b>37,433</b> GWh
COAL PRODUCTION	<b>39,513,474</b> t
OVERBURDEN REMOVAL	110,485,172 bcm
FULL SUPPLY Domestic market	<b>34,009</b> GWh
SALE Out of EPS system	<b>4,641</b> GWh
TOTAL SALE	38,650 GWh
PURCHASE Out of EPS system	<b>2,207</b> GWh
NUMBER OF CUSTOMERS	3,628,028
Total	4,757
At high and middle voltage At low voltage	3,623,271

Data related to capacities managed by Public Enterprise Electric Power Industry of Serbia





\* As of June 1999, EPS does not operate its facilities on the territory of Kosovo and Metohija

# **Major Events**

#### JANUARY

 1 January – open electricity market for high voltage customers.

#### **FEBRUARY**

• The Management Board of PE EPS made a decision on establishing a company for electricity supply to end customers - EPS Supply.

#### MARCH

- Electric Power Industry of Serbia started an action of rescheduling of old debts to several monthly installments.
- The first phase of modernization of the management and control system in TENT B from SECO donation was completed.
- The Government of the Republic of Serbia adopted the Report on Handing over 53 substations 110/x kV between PE EMS and PE EPS.

#### APRIL

- The Government of the Republic of Serbia appointed new members of the Management Board of PE EPS.
- Seminar "Safety in the First Place" was held for the members of PE EPS management and the directors of the subsidiaries.

#### MAY

- PE EPS, MB Kolubara and Swedish company Sandvik signed a contract for procurement of a spreader for ECS system in open pit mine Field C, within the Environmental Improvement Project in Kolubara Mine Basin.
- Coal production in the area of relocated cemetery in the village of Vreoci started, within the expansion zone of Kolubara Field D.
- Electric Power Industry of Serbia supported the celebration of 1,700th anniversary of the Edict of Milan.

#### JUNE

- PE EPS and SAP Company signed a contract on implementing SAP business software.
- 31st CIGRE Conference 2013 was held.
- Environmental accident in the ash disposal site of TENT A.

#### JULY

- PE EPS, HPPs Drinsko-Limske and Vioth Hydro signed a contract on rehabilitation of HPP Zvornik.
- Kolubara-Metal company was acquired again by the company MB Kolubara.
- PE EPS, company EPS Supply and Distribution Company signed agreements on service provision, in accordance with the Energy Law.
- One more environmental accident in the ash disposal site of TENT A; rehabilitation completed within less than two months.

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#### AUGUST

- Increased price of electricity for residential customers on an average by 10,9 percent.
- PE EPS submitted to competent Republic authorities property legal documentation in order to acquire the ownership of properties.
- Overhaul of power generating unit 4 completed in HPP Derdap 1.

#### SEPTEMBER

- PE EPS, Olympic Committee of Serbia, Handball Association, Volleyball Association and Water Polo Association of Serbia signed sponsorship contracts.
- PE EPS was certified for successful implementation of the quality management system.

#### OCTOBER

- The forth power unit of HPP Bajina Bašta was put into operation, and thus the full refurbishment of this HPP was completed.
- The Day of the Electric Power Industry of Serbia was celebrated.
- The conference "Sustainable Energy Development in South-East Europe" was held.
- On the occasion of 120<sup>th</sup> anniversary of the electrification of Serbia, at the Museum of Science and Technology in Belgrade, exhibition "From Dusk to Dawn" was organized.

#### NOVEMBER

- PE EPS, TPPs-OCMs Kostolac and Chinese company CMEC signed a contract agreement for the second phase of Kostolac B Project (construction of the third unit of 350 MW in TPP Kostolac B and expansion of production in Drmno open pit mine from 9 to 12 million tons of coal).
- Amendment No. 9 to the Contract of refurbishment of HPP Derdap 1 was signed.
- Rescheduling program for the debts for electricity was completed.

#### DECEMBER

- In accordance with the Energy Law, the Government of the Republic of Serbia appointed the Supervisory Board of PE EPS.
- Many companies and institutions, which, as of 1 January 2014, have not been entitled to public supply have signed new agreements with subsidiary EPS Supply.

# **Economic and Financial Affairs**

## **Basic Characteristics of Macroeconomic Trends**

After obtaining the status of the candidate for EU membership, on March 1, 2012 adoption of the decision of European Council on opening accession negotiations with the European Union, on June 28, 2013 and after Stabilization and Association Agreement became effective, on September 1, 2013 - economic policy of the Government of the Republic of Serbia is oriented towards the activities significant for accelerating the processes of European integration.

The main goal of fiscal policy, as a key component of macroeconomic policy is slowing growth and reducing share of public debt in gross domestic product within limitations determined by the Law on the Budget. For that purpose the measures of fiscal consolidation and structure reforms are being implemented.

Economic indicators in 2013 pointed out the trend of recovery of economic activities lead by the industry growth, acceleration of import growth and slowing down import growth, with reduction of balance of payment, reduction of inter-annual inflation, realistic drop of average net income and drop of banks' credit activities.

# INDICES IN 2013

**5.5** percent – industrial production

7.8 percent – customer prices

**2.2** percent – prices in December 2013 compared to December 2012

#### COMPARED TO 2012

by **25.8** percent export growth

by **5.1** percent import growth; export covered import amounted to **71.1** percent

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According to the data by the Statistical Office of the Republic of Serbia, annual value of gross domestic product in fixed prices for 2013 showed growth of 2.5 percent compared to the previous year. Unemployment rate in October 2013 amounted to 20.1 percent.

## Financial Results of EPS Group (consolidated)

Net profit of RSD 19,175 million in business operation was expressed in Profit and Loss Statement of EPS for 2013 and the loss of RSD 692.5 million were foreseen in the plan.

#### **POSITIVE RESULTS**

RSD **33,280** million – from business operation

RSD **9,262** million – from financial activities

Revenue expressed in EPS balance sheet in 2013 was RSD 219.8 billion and had significant impact on total revenue (it makes 89.97 percent of total revenue). Negative results was RSD 20,229 million.

Electricity generation in 2013 was by nine percent higher than the one achieved in the previous year, and the revenue from sold electricity is increased by 19 percent compared to 2012. Electricity export was by 53 percent higher and was 3,306 GWh achieving the revenue of RSD 16.01 billion.

Revenue achieved from heat and auxiliary steam is lower by 12 percent compared to the revenue from the previous year, and compared to the plan by 22 percent. Generation, i.e. the placement of this type of energy is conditioned by the needs for heat depending on the temperature conditions.

Expenses expressed in EPS balance sheet in 2013 were RSD 186.5 billion, which is by 2 percent less than the planned and 5 percent less than achieved in the previous year.



- Other long-term placements record significant growth of 4.6 times due to restructured receivables from electricity customers, from households and legal entities with whom contract on old debt restructuring was concluded in accordance with decisions of Management Board of PE EPS.
- Accumulated losses in business operation on 31.12.2013 were RSD 112 billion, which is by 17 percent less than at the beginning of the year. That is direct consequence of good financial results in 2013.
- Balance of cash and cash equivalents record positive change by 164 percent higher compared to the balance from the beginning of the year. Balance of total liabilities and long-term provisions on 31.12.2013 was RSD 204.9 billion, and receivables RSD 181.5 billion (gross).
- Share of total liabilities in capital and reserves was 25.6 percent. Short-term liabilities were 59.4 percent of total liabilities.

# Generation Results of EPS Group

Electricity generation in 2013 was one percent higher than planned and nine percent higher than realized in previous year. That is the highest realized electricity generation since 1990 and achieved surplus (as difference between generation and consumption in Serbia) was the highest surplus since 1992. Positive generation results are achieved in very favorable hydrological and meteorological conditions along with the high readiness of facilities. Coal production in 2013 was at the planned level and by 5% higher than the results in the previous year.

GEN	GENERATION		Realization 2013	Plan 2013	Realization 2012	Indic	es
	1	2	3	4	5	3/4	3/5
1.	Electricity (with the generation of Small HPPs)	GWh	37,476	37,014	34,509	101	109
2.	Coal	000 t	39,514	39,676	37,513	100	105
3.	Overburden	000 m <sup>3</sup>	110,485	103,850	107,688	106	103
4.	Auxiliary steam	000 t	577	461	504	125	114
5.	Heat	GWh	1,017	1,090	1,134	93	90



# **Electricity Prices**

PLUGGED Into Life Average sale electricity price in 2013 was 6.105 RSD/kWh. Average public supply electricity price amounted to 6.189 RSD/kWh, eligible customers price was 6.287 RSD/kWh.

Average electricity prices (external deliveries)						
Category	Realization 2013	Plan 2013	Realization 2012	Indices		
		RSD/kWh				
	1	2	3	1/2	1/3	
High voltage (110 kV)	4.280	4.264	4.222	100	101	
Middle voltage – total	5.540	5.522	5.315	100	104	
Total high and middle voltage	5.503	5.466	5.055	101	109	
Low voltage (0.4 kV l level)	8.475	8.237	8.012	103	106	
Mass consumption – total	6.039	6.043	5.833	100	104	
- 0.4 kV II level	7.874	7.959	7.595	99	104	
- households	5.792	5.789	5.598	100	103	
Public lighting	5.480	5.462	5.244	100	104	
Low voltage total	6.399	6.365	6.154	101	104	
Public supplier total	6.189	6.164	5.861	100	106	
Electricity deliveries to eligible customers	6.287	6.449	0.000	97	0	
PE EMS Deliveries	6.170	6.235	3.311	99	186	
External deliveries (on demand area of Serbia)	6.194	6.185	5.769	100	107	
Deliveries to other companies (export, electricity traders)	4.637	4.720	4.408	98	105	
TOTAL DELIVERIES	6.105	6.084	5.754	100	106	

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# **Electricity Trading**

## **Energy Balance and Operation of EPS Production Capacities**

Although achievement of the Energy balance (EB) partially or significantly deviated from balance assumptions 2013, those deviations were, however, extremely favourable for annual operation of Electric Power Industry of Serbia.

As regards the temperatures in Belgrade, year 2013 might be regarded as one of the warmest – average annual temperature was 13.6°C and that is by 1.8°C warmer than 120 year average. All months were warmer, apart from March that was slightly colder than average. The highest deviation of temperature was in August (3.3°C) and in the fourth quarter of the year (October and November were warmer by about 3°C and December by about 1°C).

As regards the realised water inflow, year 2013 was characterised by good hydrology and run-of-river power plants exceeded the generation foreseen in the balance. EPS thermal power plants had record generation of 26,537 GWh from available primary energy (coal). However, it was by 1.4 percent lower than balance that might be seen as impact of highly set generation goals. Cogeneration plants were operating only when there was need for heat supply and they generated 167 GWh, that is by about 20 GWh lower than foreseen by the balance. It led to decrease of generation costs.

Sale of electricty to end customers (full supply) was 34,009 GWh, that is by about two percent (about 700 GWh) less than foreseen by the balance due to warmer weather. Sale was lower by about 470 GWh only in the fourth, warmest quarter.

#### HYDRO POWER PLANTS

Run-of-river hydro power plants generated **9,488** GWh that is by **6.1** percent (about **550** GWh) higher than forseen by the balance

Run-of-river HPPs generated by about **200** GWh more than foreseen by the balance in the second and fourth quarter and inflows into reservoirs were higher by the same amount

Total of 2,206.7 GWh was bought, out of which 630 GWh at free market.

High availablity of coal fired power plants and their record generation, good hydrology and weather that was warmer than average enabled sale of 3,305.6 GWh of electricity at the free market and performance of all contractual obligations related to sale based on long-term and annual contracts. It led to significant increase of EPS revenues.

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## **Electricity Trading**

EPS Department for Electricity Trading trades electricity in order to balance and optimse single energy potrfolio of Balance responsible party PE EPS in order to achieve maximum profit from avilable primary energy and sale of system services to transmission system operator.

Tariff customers in the Republic of Serbia were supplied with electricty based on annual contracts that PE EPS had with its generation and distribution subsidiaries by 1 July, 2013. Since that date supply is performed based on the contract with the subsidiary EPS Supply.

Electricity market for end customers in Serbia opened on 1 January, 2013. That is when all customers that are connected to transmission system lost their right to public supply, i.e. to supply under priviliged regulated prices (including transmission system operator PE Elektromreža Srbije for covering losses in transmission system).

End customers that lost their right to public supply bought 1,525.8 GWh under market conditions in 2013. PE Elektromreža Srbije bought 1,018.7 GWh under market conditions for covering losses in transmission system.

Electricity is traded at whole sale electricity market in the energy system of the Republic of Serbia and at the borders of electric energy system of the Republic of Serbia. PE EPS traded with 25 companies in 2013, out of which 23 companies have licence for electricity trading at internal electricity market of the Republic of Serbia and with two foreign companies.



#### TRADING

**3,305.6** GWh was sold at free whole sale electricity market and **630** GWh was bought

Cooperation with Electric Power Industries of Republika Srpska and Montenegro in the area of electricity purchase and sales in accordance with contracts on long-term business and technical cooperation. We bought 1,293.6 GWh from Electric Power Industry of Montenegro and sold 1,235 GWh. We bought 61.5 GWh from Electric Power Industry of Republika Srpska and sold 62.1 GWh for supply of customers in the border area of the distribution system of Electric Power Industry of Republika Srpska.

We bought 65.1 GWh (38.2 GWh in the first seven months) from priviledged producers. Pursuant to the decision of the Government of the Republic of Serbia and signed contracts, PE EPS bought electricity from priviledged producers until the end of July and as of 1 August, 2013 subsidiary EPS Supply buys electricity from priviledged producers.

Electricity trading in 2013 was characterised by good partnership relations with all electricity market participants. All obligations were realized in accordance with the contracts without delays whether in deliveries/receipt of electricity of in collection/ payment of receivables.

# **Open Cast Mines**

Production of coal as a strategic activity in the energy sector of the Republic of Serbia has been confirmed as well in the year 2013. This is clear if one considers that it has been produced and supplied 39.5 million tons of coal, which is two million tons more than in the previous year. This production of coal has enabled the normal electricity generation for domestic needs and export.

The year began by record production in the January in the MB Kolubara (3,054,395 tons), a record monthly transport to thermo power plants (2,942,529 tons) and record daily transport to the TPPs (95,538 tons). During the year 2013, coal mines and thermal power plants have great responsibility for electrical stability in the country. The reliable supply and safe operation of the entire energy system has enabled by its operation.

Coal production in the Republic of Serbia took place in the opencast mines of Kolubara and Kostolac basin, whose production is managed by the Electric Power Industry of Serbia. (Electric Power Industry of Serbia does not operate its facilities in Kosovo and Metohija since the year 1999).

PRODUCTION

Out of the total electricity generated by the EPS during the year 2013, even 70.9 percent is produced in thermal power plants out from coal of Kolubara and Kostolac opencast mines. Produced coal in the MB Kolubara made it possible to generate 53.6 percent of the total electricity in the EPS, and coal from mines of subsidiary TPPs-OCMs Kostolac provided another 17.3 percent of total generation. In the TPP Morava has been used is a mixture of coal from Kolubara and Public Enterprise for Underground Coal Mining.

In the MB Kolubara coal mining is carried out in four opencast mines: Field B, Field D, Veliki Crljeni and Tamnava-West Field. They have supplied by coal TPP Kolubara, TPP Nikola Tesla A and B and TPP Morava.

After a long delay, coal mining has started in the area of the relocated cemetery in Vreoci settlement, which will during the next years provide stable production of coal in this economic association. Long delay of this work in the previous period has caused problems that have led to increased costs and decreasing of production in Kolubara largest opencast mine, Field D.



Unfortunately, consequences of this delay will be felt for several more years, namely up to the achievement of full production on the replacement mine, Field E, which operation is in progress. In order to ensure stable coal production in the coming years it is necessary to accelerate the process of new opencast mines Radljevo and Field G opening.

In the subsidiary TPPs-OCMs Kostolac coal mining took place in the opencast mine Drmno, from which by coal has been supplied TPP Kostolac A and B.

In the course of the year 2013 has been achieved a record production of overburden, which is a consequence of the appropriate organisation of the production process and equipment maintenance process, resulting in greater safety when the coal production is concerned. Part of the deposit is not under mining due to the presence of the ancient settlements Viminacium remains. This deposit is characterized by the presence of large water flows (Danube and Mlava) near the area of coal mining, making the process of operation even more complex.

The average heating of coal for the thermal power plants operation in the MB Kolubara was 7,731 KJ/Kg, and in the subsidiary TPPs-OCMs Kostolac 8,317 KJ/Kg. The ratio of excavated mass of overburden and coal was 2.26 m<sup>3</sup>/t in the MB Kolubara, and 4.67 m<sup>3</sup>/t in the subsidiary TPPs-OCMs Kostolac.

ITS PERCENTAGE IN TOTAL PRODUCTION

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#### COAL PRODUCTION

39,513,474 tons of coal has been produced in opencast mines of MB Kolubara and **TPPs-OCMs Kostolac** 

#### **OVERBURDEN REMOVAL**

110,485,172 cubic meters of overburden has been produced in opencast mines of MB Kolubara and TPPs-OCMs Kostolac

#### RECORDS

In TPPs-OCMs Kostolac has been broken the record for overburden removal 41,139,991 bank cubic meters

In the MB Kolubara has been broken the record in coal production with 3,054,395 tons in January, and there has been also a record month for coal supply to thermal power plants -2,924,529 tons

# Rehabilitation of Capacities for Overburden Removal and Coal Mining

Results of production and statistical analysis of machinery failure indicate that the extent and quality of rehabilitation work on mining mechanization has been adequate during the year 2013. There were no significant major failure of machines both on coal, and the overburden production systems.

On opencast mines of subsidiary MB Kolubara and TPPs-OCMs Kostolac in operation is a large amount of equipment that requires regular ongoing care and regular maintenance through the concept of predictive maintenance. In addition to the basic machinery, in the exploitation is machinery of auxiliary machinery (dozers and pipe layers), as well as a number of additional supporting systems (dewatering and preparatory works). Total technical resources are of very complex nature and require continuous maintenance and care, and therefore rehabilitations and regular maintenance are performed throughout the year.

#### **TECHNICAL MINES RESOURCES**

110 kilometers long conveyor belts

**100** machines heavier than 200 tons in operation

**150,000** weight tons of basic equipment for mining of coal and overburden removal

In the MB Kolubara and TPPs-OCMs Kostolac has been completed in the year 2013 all rehabilitations of equipment and production systems, which are in a function of mining and processing of coal. Production capacities were technically prepared for the winter. However, during rehabilitations are not fully completed all activities foreseen by breakdown list specifications, due to the impossibility of public procurement implementation. This primarily refers to the untimely delivery of parts and equipment: rubber belts, idler bearings, conveyor idlers, steel ropes, steel metal plates, cables and installation materials.

Realization of the energy balance is in a high correlation with the coal production in mining basins, which depends on the technical conditions of production equipment. The age structure of machinery and equipment used in mines is very heterogeneous, and at certain mining fields in operation are machines working for already 45 years. By annual rehabilitation of production systems, devices and machines its production resources are increased and level of systems reliability, and thus slows its technical degradation and reduces the possibility of unplanned failure of the equipment. Therefore, it is extremely important the maintenance plan implementation.

On the other hand, one part of machines and equipment in the mines Drmno and Tamnava-West Field are of newer generations and it is are very modern production systems with high productivity and a significantly lower specific costs in maintenance.

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MB Kolubara	Planned / sy	ystems	Implemented/systems		
TPPs-OCMs Kostolac	to start	to finish	started	finished	
Overburden removal	17	16	16	16	
Coal production	7	7	7	7	
Coal processing	3	3	3	3	



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# **Power Plants**

In the year 2013 was achieved the maximum annual production, by power plants of the Electric Power Industry of Serbia, since the year 1990. Its, without Kosovo power plants, have generated 37,433 GWh of electricity. So far, the best generating results was achieved in terms of very good hydro conditions, but weather ones also: without many intense cold or hot days and with high operating readiness of production units, without which external factors alone would have no impact. In time horizon: hour, day, week, month, and quarter - the process of the PE EPS generating plants development was not jeopardize the supply.

Realized production tasks identified by the Electric Power portfolio are fulfilled with 101.2 percent and achieved generation is higher for 8.6 percent of those achieved in the year 2012. In relation to the balance sheet plans, total generation is higher for 460 GWh and compared to the previous period it was produced by 2,960 GWh of electricity more.

Total sales in Serbia amounted to 34.006 GWh. and it means the power supply for the economy, public services and citizens, but also the performance of the obligations by the PE EPS according to the annual contracts (needs of the subsidiary to generate electricity, to cover losses in transmission, backup supply the requirements of public enterprises from Kosovo). Thus expressed fully supply is lower than the achieved in the similar period by 0.2 percent. Generation was higher for 10 percent than the total sale, or 3,427 GWh, which represents the maximum surplus, since the year 1992. Monthly electricity generation was such that in each month, except in December, was achieved surplus, and the maximum monthly surplus (not only in this year) was recorded in July and amounted to 633 GWh.

The highest monthly production in the year 2013 was recorded in March and amounted to 3,633 GWh. This is the third generation value (December 2007 - 3,704 GWh, January 2009 - 3,691 GWh). The highest consumption was in December and amounted to 3,601 GWh.

Unlike the previous year, there were no periods of extremely low temperatures, as well as periods with several days of high, tropical temperatures. All customer requirements throughout the year 2013 were met without great effort and with large reserve in the system, as opposite to the previous year.



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# Generation of Thermal Power Plants

In the year 2013, thermal power plants whose operating fuel is lignite (units of TENT and TPPs-OCMs Kostolac) has generated a maximum of 26,537 GWh.

With the engaged of more than 83 percent - the highest in the history of the EPS and the highest reliability of over 96 percent, weighted unit of the EPS TPPs, were operating for the second year with reduced forces, due to which the effects of such a high engagement are reduced. Although by the maximum operating time and the minimum number of unplanned downtimes and the minimum length of unplanned downtime rehabilitation, without significant limitation of power during operation caused by problems on equipment (mills, feeding pumps, EF, cleaning of condensers), units have spent a lot of time in the "warm reserve", and a period that ready units conducted in a cold reserve is the highest since the year 1996.

All this, as well as the participation in the secondary regulation of four units in the TENT A, with 300 MW each, has particularly reflected on the performance of the TENT units, which in the year 2013 have generated 20,065 GWh, being less than the maximum production (20,205 GWh) achieved in the year 2011. Total power reserves achieved by these units in the year 2013 were 40 percent higher than the scheduled (due to balancing of the possible units generation with the available quantities of coal), which is 13.5 percent of the energy supplied to the system.

Units of the TPP Kostolac B have generated a maximum of 4,489 GWh, in such a way that overhauled unit B2 has achieved a maximal annual production of 2,352 GWh. Thus, TPPs-OCMs Kostolac has achieved the maximal annual production of 6,472 GWh and surpasses the previous record from the



year 2011 (6,257 GWh). In addition, eight units in the TENT A and TENT B have achieved a cumulative maximum output of 18,778 GWh.

In December 2013 was achieved the maximum monthly production of units in subsidiary TENT and TPPs-OCMs Kostolac. At that time units had the highest hourly engagement of more than 712 hours. Units in the TENT A, with a production of 1,084.8 GWh and overhauled unit of the TENT B1 with 448 GWh, by its maximum monthly achievements have contributed to this record. Units of the TPP Kostolac A and Kostolac B have achieved a maximum monthly output in October with generating in total of 649 GWh.

## **Railroad Transport**



Railroad transport has transported 29.2 million tons of coal for the requirement of power plants in the TENT, which is 100.9 percent of the plan. Coal consumption was 29.4 million tons and slightly is higher than transported.

In December, when units generated the most of energy has been achieved maximum power consumption of 3.24 million tons, and maximum transport was recorded in January and amounted to 2.92 million tons. The highest daily consumption of coal was achieved on December 29<sup>th</sup> – 110,300 tons of coal, and maximum daily transport was realized on 14<sup>th</sup> of January with 105,800 tons of coal. Daily consumption of more than one hundred thousand tons has been achieved 31 times during the 12 months, while the transport exceeds one hundred thousand tons in 13 days in this period.

Transport of coal of this period has not jeopardized generation of units in TENT even for one day, and cumulative percentage of transport achieving has followed production plans of TENT units' implementation degree. The highest occupancy of TENT stockyard, within 12 months, was recorded on 15.11.2013 and amounted to 1.95 million tons of coal.

In the year 2013 coal consumption has amounted to 37.8 million tons of coal. This consumption is lower than the one achieved in the year 2011 nearly for a million tons of coal, whereas total power generation from the TPPs was slightly lower for 72 GWh. Therefore, for the sake of accuracy, it is the best to analyze the specific coal consumption per the generated GWh. Specific consumption of coal include a change in the coal quality, and the specific consumption of heat, too, which means the total technological condition of equipment for the whole unit, as well as the modes of operations in which units were operating during the year.

Specific consumption of coal is the lowest in this year. If units in the year 2013 were operating with a specific heat consumption as in the last year, it would mean that from the year 2013, 39.45 million tons of

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coal would be spent for the generation volume, and by more efficient operation of units with higher coal quality it was consumed almost 1.6 million tons of coal less, which is the same as the unit in the TENT A1 has realized this generating year volume without a single gram of coal. Operating costs of the TPPs are less for EUR 16 million in the year 2013 if compared to the year 2012.

Consumption of liquid fuels was reduced from 62,997 tons to 21,999 tons of crude oil. Head Department for Power Generation monitors total consumption of liquid fuels per units, groups of power plant units, economic associations and the EPS, while was analyzed the structure of consumption due to: equipment, coal quality, lower downtimes than 24 hours, number of downtimes being longer than 24 hours and the other (order by the dispatcher that crude oil is spent in the TPPs due to support of fire or to the required loads increasing is particularly recorded, which in the 2013 was not the case).

Both consumption and specific crude oil consumption per generated GWh is minimal in the 2013. In relation to the relative year, in the 2013 has been spent 2.8 times of crude oil less, and specific consumption was reduced for 3.3 times. In the year 2012 more than 68 percent (or more than 30,000 tons belonged to the category "other" because of consumption in February, which on this base amounted to more than the annual consumption of crude oil in the whole 2011).

Total effects of reduced crude oil consumption has decreased operating costs of the TPPs in the 2013 for nearly EUR 30 million, because through the specific consumption a total crude oil consumption was decreased by nearly 50,000 tons, and not for 40.000 tons as it may be concluded by a simple difference.

## **TPPs-CHPs**



Thermal power plants – Central heating plants have generated 166.8 GWh and in the EPS production has participated with 0.45 percent. Panonske TPPs-CHPs has been engaged in months of the first quarter, as well as in November and December 2013. In February 2012 Panonske have produced 63 percent of seasonal achievement, and such power situation was not in any month of the year 2013 as it was in February 2012.

Technical feasibility of TPPs-CHPs Panonske engagement in the EPS is always carefully analyzed and gravitates toward the most efficient economical operation of these units. Technical condition of equipment in units for the last five years has not been a factor of limitation, so that in the second quarter, Panonske was not involved. Total generation decrease in this season, compared to the relative, amounted to 223 GWh, resulting in the positive performance of the company for reduced gas consumption, which amounts to about EUR16 million.

## HYDRO POWER PLANTS

Hydro power plants generated 10,729 GWh of electricity, which is 862 GWh over the balance foreseen achievements and more for 920 GWh than achieved in the relative season. HPPs have participated in the overall production of EPS with 28.7 percent, and realized production volume is 260 GWh higher than the 24-year average.

Run-off-river power plants have participated with 25.3 percent in a total generation, due to generation of 9,487.7 GWh, which is more than the 24-year average for nearly 500 GWh.

In the first half of the year, inflows was higher than average both in Danube and Drina by more than 30 percent. Cumulative inflows in the Đerdap has lasted from mid-March to mid-May, and then again during the ten days in June. Extremely high inflows was not able to be fully used for generation, because at the time of the highest inflows (approaching to 12,000 m<sup>3</sup>/sec) due to pre-discharging and operation with reduced power and smaller degree of utilisation, was implemented minimal daily production. It was during optimal inflows of about 8,000m<sup>3</sup>/sec for 25 percent lower than the maximum. MAXIMUM MONTHLY GENERATION HPP Đerdap 2 – in January, **154.7** GWh HPP Zvornik – in May, **72.2** GWh HPP Potpeć – in May, **36.8** GWh

In the HPP Bajina Bašta overflows has began at the end of February, and then, similar to the Đerdap, was amplified from the 10<sup>th</sup> of March to the mid-May. Then from July to the end of year was the dry period, primarily in the HPP Bajina Bašta. In the fourth quarter, Danube inflows were below 12 percent of average, and on Drina lower for 35 percent. Thus, the annual inflow of the Danube was 6,054m<sup>3</sup>/sec, or 10.9 percent higher than average, and in Drina, the average inflow was 397m<sup>3</sup>/sec (average 357m<sup>3</sup>/sec). In recent years, it is evident that the relations between the maximum and minimum inflows during the year are growing on Danube and Drina, which is not in favour to the achievement of the desired generation volume.

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# **TECHNICAL EFFICIENCY OF THE EPS GENERATION CAPACITIES**

Technical efficiency of electricity generating capacities is analyzed based on daily monitoring of the generating capacities operating conditions and periodic estimation of the most important (10) indicators of its operation, in accordance with ANSI/IEEE Std 762. Indicator values for the power plants are calculated according to achieved parameters of individual generating units, with consideration of its power.

## THERMAL POWER PLANTS

Regarding the length of (not)operating conditions, in the 2013, thermal units have been operating ready during 87.2 percent of time, 83.2 percent have spent on the grid (effect was achieved when they were in operation 75.4 percent of period in nominal power), 9.4 percent of the time has been scheduled downtimes, 3.3 percent of the time has been unplanned downtimes, and 4 percent of the time units have been in cold reserve. During operation on the grid, has been realized 90.6 percent of possible generation during operation in nominal power, 4.9 percent is not achieved due to the inability to achieve nominal power (Pne), and 4.5 percent because of decreased power due to the requirements of the system ("suppression")

**Engagement coefficient (Ke)** was 83.2 percent, and was the highest in the last 21 years. Weighted blocks of the EPS power plants, at which maintenance and operation we have influence, have spent 7,288 hours on the grid. It is increased operating time of units on the grid of both economic associations in the thermo sector, because duration of scheduled downtimes is reduced for both subsidiaries, as well duration of unplanned downtimes in the TENT.

The increased engagements of units include improvements being made by continuous operation of the same, without downtimes, of more than 3,000 hours (four months). Unit 3 in the TPP Kolubara



(with two boilers) was in operation without break for more than eight months (6,108 hours), and unit 2 in the TPP Kostolac A was in operation without break for more than six months (4,457 hours). TENT B1 and TENT A1 were in operation without a break for more than 3,000 hours (four months). **Coefficient of generation (Kp)** or generated power for the time when units are on the grid was 3,641 MW. System requirements and "time of warm reserve" affects output power, especially if it is an extremely long period. Comparing the average achieved power of the relative period it can be concluded that decreased power resulting from a prolonged period in which units has been in warm reserves operation. The previous year, during operation, units due to the technical minimum and energy of 288 GWh were "loosing" in the power 44 MW, and in 2013, with a warm energy reserves of 1,330 GWh, that power decreasing amounted to 189 MW.

Units were operating with the highest average power in the third quarter, when in warm reserve was spent the least amount of time, and maximum monthly generation ratio was in July, and amounted to 95.4 percent.

In 2013 the lowest Kp was realized in the second quarter, and the main reason for this change was not just a technical minimums, but operation of units in the secondary control. It should be noted that 300 MW units of TENT, after adjustment of the control system were in operation for the first time in the secondary frequency regulation regime in the EES, which was limiting the maximum power of units, but allow optimum utilisation of hydro potentials. Monthly range of average achieved powers for these four units is more than 15 percent in April, compared to achievements in the July. Good coal quality during the year was not a factor of limitation, providing more efficient operation of the TPPs and has minimally influenced variation of this parameter of technical efficiency.

The coefficient of capacity utilization (Ks) is the ratio of totally produced energy for the calendar time product and the nominal net power. Coefficient is directly dependent on the operating time of units and generated power during the engagement. Since the beginning of the TPPs reconstruction, and through increased overhaul activities, rehabilitation, refurbishment and improvement of equipment condition and thermal power plants, Ks was increased for 20.1 percent or 7,474 GWh, meaning that 39.2 percent more of energy was delivered to the system. It means that on an annual basis, compared to the year 2000, electric power system of the EPS has all the time on the grid one more unit of 853 MW (operating with installed capacity Kp=100 percent, without a single downtime during all of 8,760 hours, Ke=100 percent) in the year 2013. Compared with the previous year, an increase of the utilisation coefficient was 5.4 percent, which in the energy is 2,263 GWh, or as on the grid was one more unit of 258 MW all the time.

The results of the rehabilitation project on the TPPs, compared with the achievements in the year 2000, can be quantified through changes in growth of electricity generated by TPP units which cumulatively amounted to more than 49,200 GWh, or an additional of EUR 2.5 billion. During it has not been calculated effects of reduced operating costs: lower specific coal consumption per generated GWh by 6.2 percent (for generating volume production in the year 2013 it is 2.5 million tons of coal less) and reduced specific crude oil consumption of 5.2 times.

Growths, i.e. degree of improvements were not equal: plants that were in the worst condition had the highest degree of improvement, and the best have not lost that status, although the percentage of improvement is not the greatest. In the cumulative growth of energy of 49,226 GWh (almost like two maximum annual generations from the 2011 and 2013) are different and individual impacts of annual plants, too, and for objective comparison of the maximum Ks, it is emphasized that the best ever achieved this coefficient in the EPS have had TENT B in the 1990, when it was 91.9 percent, and the next in line is the coefficient of TENT A4 from the year 2012 in the amount of 90.9 percent.

**Coefficient of operational readiness (Kps)** was amounted even 87.2 percent and is higher by 12.1 percent than the achieved in the relative period and

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maximal since the year 1990. Operational readiness increases from year to year, although the length of scheduled downtimes is not significantly changed until this year.

Scheduled downtime coefficient (Kpz) amounted to minimal 9.4 percent, which is 11.6 percent less than the maximum achieved in the previous year and for the first time is below 11 percent. Reduced duration of scheduled downtime of thermal units was the consequence of a complex financial situation under which was developed Business Plan of the EPS for the year 2013, and in which was considerably limited resources for reconstruction, upgrading and capital overhauls. Overhaul season began on Februarv 6th by scheduled downtime for unit 1 in the TPP Kolubara. Assessing the effectiveness of performed overhauls it can be said that overhauls was completed within the planning framework, except blocks A1 and A2 in the TPP Kolubara, which had a significant extension for the overhaul. Practically, in the TPPs only standard overhauls has been conducted for about 30 days, with the exception of unit TENT A2, Kolubara A1 and A2 on which has been carried out necessary repairs.

Power plants of the EPS are "old", and for the safe and reliable production has to be performed the essential works on the equipment and power plant facilities in high quality, when scheduled, with established funds, as required by the manufacturer's instructions and operation practice according to the technical standards. For the positive matters (such as, for example energy efficiency increasing), it takes a lot of time, knowledge, responsibility and financial resources. In the period since the year 2001 till 2012 in the power plants of the EPS has been invested through technical programs a total of EUR 1.8 billion, from which was invested EUR 1.4 billion in thermal power plants. Employees in the EPS by taking care about facilities in the previous decade, has proven to know how to manage investments in the optimal way in all plants, and the achieved results demonstrate it: for

the invested EUR 1.4 billion through increased generation of thermal power plants was obtained EUR 2.5 billion, without calculating decreasing of operating costs.

The number and length of unplanned downtimes equipment failures was eliminated to a total of 292 hours (calculated by weighting of data for thermal units by its power), which is 48 hours less than in the previous season, and this with an increased engagement of TPPs for 748 hours. This is the smallest duration of unplanned downtimes per annum since the year 1994. In September and May was the minimum duration of failures repair, when weighted thermal unit of the EPS, due to the elimination of defects was unavailable 10.5 and 12.6 hours.

Number of failures amounted to 157, which is 81 less than in the same period and the smallest since the year 1994, because of the minimum number of downtimes being shorter and longer than 24 hours.

Within the structure of the TPPs forced downtimes, the biggest contributor is the boiler plant with 72 percent, turbine with 17.8 percent, protection of 6.9 percent, and generator with 0.24 percent. Total rehabilitation of the CS weighted boiler breaking has lasted for 166.7 hours and from the previous year is shorter by 2.6 hours. In TPP Kolubara A3 and Kostolac A1 for eight years already, i.e. four years in a line, there are no downtimes of the unit due to the CS boiler, because they operate with two boilers.

## **HYDRO POWER PLANTS**

HPPs technical efficiency parameters depend on the technical state of the equipment, also to a large extent of inflows. It is not just low inflows, but also extremely high, as they were in the second half of the first quarter and almost the entire period in the second quarter. All performance indicators related to the duration of the operation on the grid, level of engagement, average achieved power, reliability, capacity utilization and operational readiness are higher than average in the previous year. In the year 2013 has been decreased the scheduled and unplanned downtimes and reserves in relation to the relative period. All the available water potential was processed by hydro power plants without technical limitations.

**Coefficient of scheduled downtimes (Kpz)** achieved in the year 2013 was 14.1 percent and was lower than achieved in the same relative period by 2.6 percent. The maximum length of scheduled downtimes in the year 2013, analyzed since 1995, was achieved by the HPP Uvac, due to the failure of the unit transformer (lightning) and its replacement.

Hydro power plants predominantly affecting achievements in the year 2013 are HPP Derdap 1, considering that revitalization of generating unit A4 was completed and began revitalization of the third in sequence generating unit - A5. In the HPP Bajina Bašta in 2013 was complete revitalization of the fourth generating unit and by this a process of revitalization for the HPP was completed.



**Coefficient of unplanned downtimes (Ki)** was 0.3 percent, being lower for 0.5 percent than the ratio recorded in the relative period. Since the year 1995 coefficient amount of 0.3 percent is between the lowest. Coefficient of unplanned downtimes for run-off-river HPPs, during increased of operating time was reduced by 3.5 times than in the same achieved in the relative period and was 0.2 percent and is a minimal in the period since 2001, but is one of the lowest since the year 1995.

The most common, mainly short-term, unplanned downtimes of the HPPs was due to: oil leak and water from the generator guide bearing, earth - fault at the control voltage, voltage failure and short circuit of current phases on the DV, turbine control system, cooling generator systems, generator excitation systems and generator circuit breakers.

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**Coefficient of engagement (Ke)** was 51 percent, and is higher by 3.5 percent than achieved in the same relative period, and in line with water-rich year, when the operating readiness of the generating unit was not a factor of limitation. During this period, the maximum engagement time since the year 1995, had generating unit A1 in the HPP Potpeć.

**Generation coefficient (Kp)** was 84.7 percent, being higher for 1.8 percent from the relative period. This achievement is maximal since the year 1995, and the greatest impact on this result has been realized by average powers of run-off-river HPPs with the achievement of 86 percent, being higher for 2.1 percent from the achievements in the relative period. Operation with the maximum average power since the year 1995 was achieved by revitalized generating units A1 and A3 in the HPP Bajina Bašta, which achieved an average output of 94.3 and 93.3 MW during this year.

**Operating readiness (Kps)** depends on the engagement time and period which operating ready generating units have spent in reserve. This coefficient



amounted to 81.4 percent, and is higher for two percent than the realized in the same relative period, and run-off-river HPPs have an increasing operational readiness for 3.6 percent, although the time of reserves was reduced by 2.4 percent. After 10 years, this is the first year in which the operational readiness is increased as a synergy of increased engagement and reduced unavailability of run-off-river HPPs.

Achieved remarkable results of the EPS are the result of the management and employees engagement, and also due to more favourable circumstances - hydrological and meteorological as well as accumulated investment and operation from the previous years. Although 2012 and 2013, were two completely different years, business of a serious company has to be stable under extreme conditions, too. In order to reduce uncertainty of changes in technology and complex business activity as ours is, all activities has to be programmed well, with timely implemented established tasks and ensured participation of all key players in order to achieve success.

# MAINTENANCE OF POWER PLANTS

By the prescribed cycles for preventative scheduled maintenance, with a greater scope of works in the so-called capital overhaul, proportionately smaller volume of works in a sustained and the standard annual overhaul, implementation of preventive works during the year, respective investment activities on the existing equipment ("additional investments"), as well as the regular current maintenance, was achieved an appropriate level of equipment and facilities availability.

According to the projections of the business in the year 2013 and complex financial conditions before the start of the season overhauls, has been carried out reduction of the total originally planned financial resources and by it the planned scope of the Maintenance Program for Facilities and Plants of the EPS. Reduction of funds was planned at the level of about 20 percent on average.

It has been decided that a major overhaul to modernize unit TENT A3 and revitalization of the unit in Kostolac B1 is to be postponed for the year 2014, and the rehabilitation and modernization of unit TENT B2 and capital overhaul of TPP Morava were postponed for the year 2015. Capital overhaul of Kostolac A1 and TPP Kolubara A5 have been postponed indefinitely. All prolonged overhauls have been postponed, too. For all thermal units in the year 2013 has been foreseen standard overhauls with duration of 30 days.

Program for hydro power plants has not been reduced, and it was scheduled to complete the reconstruction of the unit 4 in the HPP Derdap 1 and unit 4 in the HPP Bajina Bašta, with the beginning of reconstruction on the unit 5 in HPP Derdap 1. Capital overhauls have been carried out on units 7 and 8 in the HPP Derdap 2, and overhauls for the units 1 and 2 in the HPP Derdap 2 and all 10 units of Vlasina HPPs were postponed. Remaining 34 units are scheduled for standard overhauls.

The objectives of the current maintenance in the year 2013 were: intensive work on the continuous monitoring and establish of the plants conditions, implementation of smaller preventive works on plants, timely analysis of the perceived disturbance and undertaking the required corrective measures at an appropriate time. In cases of sudden breakdown (failure) of plants, it was the organization of rapid correction of faults and restoring the plants in operating conditions, i.e. establishing the ability of plants to perform all the required functions.

Funds for the current maintenance were planned at the level of the year 2012, and it was expected that it would partially mitigate the delay of capital and prolonged overhauls. It was envisaged to increase the amount of funds for the current maintenance later by the revised Annual Business Plan, but due to the late acceptance of the rebalance effects this increase have been symbolic.

Implementation of the Overhaul Program began in February, 2013. The start of overhaul was postponed for two to three weeks for units: TENT A2, TPP Kolubara A3, TPP Morava A1, TPP Kostolac A1, TPP Kostolac A2, TPP Kostolac B1 and TPP Kostolac B2.

Due to the relatively mild winter in Serbia and extremely extensive flow of water, for the EPS was enabled favourable export for large electricity quantities, what with the restriction of costs has led to a significant improvement of financial situation, which created the conditions to implement the reduced maintenance program effectively and efficiently.

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Overhauls were carried out in terms convenient to the needs of the power system, and duration of overhauls was prolonged on the following facilities:

- Unit A2 in TENT A due to the breakout of generator winding during test;
- TPP Kolubara A1 and TPP Kolubara A2 (rehabilitation of turbine bearings) - due to prolonged procedure for the implementation of the public procurement;
- HPP Derdap 1 A4 (prolongation for 225 days) due to additional supplies, which necessity was determined only after dismantling the plant and later because of a "fracture" of the shaft line and the appearance of vibrations during the trial run;
- HPP Bajina Bašta A1 (prolongation for six days) due to the extend scope of works;
- HPP Bajina Bašta A3 (prolongation for eight days)
   due to work on the relocation of the overhead line;
- HPP Uvac (prolongation of 19 days) due to the damage of unit transformer.

Works started in the year 2013 at the generating unit A5 in the HPP Derdap 1 and unit A2 in the TPP Kolubara were continued in 2014.

During the repair of unit 5 in the HPP Đerdap 1 a major of the main equipment and portion of the auxiliary plant units (new turbine impellor, new blades and upper ring of directing device, a new stator for generator, new rotor poles, a new system of control, a new unit transformer and a series of auxiliary equipment) has been replaced. After the examination and rehabilitation of equipment and parts, as well as the installation of new equipment, unit lifetime was increased for 35 - 40 years. Subsequent to acceptance tests and trial run, the unit is introduced into the regular operation. For the HPP Bajina Bašta similarly has been made. Generating unit 4 received a new turbine impellor, new stator for generator, excitation system and the input cap, and it was delivered and installed a new block-transformer, too. A new transformer was installed on the generating unit 3, which in the year 2012 was damaged during it transport to the power plant. Service life of this generating unit was extended, too, also for 35 - 40 years, thanks to the performed inspection, repair of parts and equipment, and installation of new equipment. Generating unit was introduced into regular operation after the acceptance tests and the one-month trial run period.

About the success of the maintenance program implementation testifies the successful operation of all power plants in a part of the winter period until the end of the year 2013, and thereafter, too.

Maintenance and overhaul of facilities for supply of the heating energy and technological steam was realized in the scheduled scope which provided the planned start for heating of cities and operation without unplanned downtimes, and the maintenance of railway capacities in TENT and MB Kolubara was successfully completed, allowing an increased transport of coal up to thermal power plants in the TENT. It is important to note that the reduction of the maintenance program in one season (2013) has not left visible consequences, but such maintenance regime would very quickly jeopardize the production possibilities and led to a significant degradation of capacities for production.

Funds for the maintenance of production capacities in thermal power sector were at the level of the plan (the achievement of 102.5 percent), while in the hydro sector have implementation been increased in relation to the plan for 28.1 percent. Thus, the maintenance costs of power plants has been increased in relation to the plan for 7.54 percent, which is acceptable, considering the fact that by the plan those funds are reduced by about 20 percent compared to the average annual funding for maintenance.

# **Distribution Companies**

## Subsidiary EPS Supply Founding Changes

After EPS Supply founding, electricity distribution subsidiaries, in function of the distribution system operator, carry out business operations for EPS Supply under the Contract on services provision. The principal of this contract on services provision is the unbundling of the distribution system operator and EPS Supply, in which case services provided under this contract are as follows:

- 1. Electricity planning and purchase;
- 2. Electricity sale and end customers relations;
- 3. Economic and financial affairs;
- 4. Legal and administrative affairs;
- 5. Electricity purchase from privileged electricity producers;
- 6. Information telecommunication support;
- 7. Human resources.

## Old Customers' Debts to Subsidiaries

After the founding of EPS Supply, subsidiaries had the remaining responsibility of old debts collection, while Department for Electricity Distribution of PE EPS had the responsibility of collection monitoring. Debt rescheduling was offered to customers, and debt collection in installments, and depending on the number of installments, debts write off in proper percentage. Debts rescheduling is started on August 15, 2013, with the accounts receivable from May 31, 2013, under the condition that electricity bill for Jun 2013 must be paid. Except the rescheduling in 120 installments, customers were given the following discount:

- 40 percent for single debt settlement;
- 35 percent for 12 installments settlement;
- 30 percent for 24 installments;
- 25 percent for 36 installments;
- 20 percent for 48 installments;
- 15 percent for 60 installments.

Debts rescheduling contracts are completed on November 30, 2013. Rescheduling share in total accounts receivable until June 30, 2013 amounts to 16.82 percent.

Consumed electricity accounts receivable on June 30, 2013 (for consumption achieved by May 31, 2013) indicate a very unfavorable debt structure:

- In "households" category, 2.4 percent of customers have debt of 67.65 percent, while these customers number and their share in total debt increases;
- In "other consumption" category, on high and medium voltage, customers who owe more than RSD 10 million made only 5.44 percent, and their debt is 92.31 percent of total debt;
- 6.12 percent of low voltage customers owe 88.31 percent of debt.

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## **Revenues and Expenses**

In the period January - December 2013, overall revenue in the amount of RSD 225,429.2 million (including EPS Supply) was achieved, recording a growth of 23.82 percent compared to the same period last year, and according to the planned ones, it is increased by 2.88 percent.

Total expenses (including EPS Supply) amount to RSD 216,593.4 million. Compared to the previous year, they are increased by 10.88 percent, but according to the planned, are lower by 3.92 percent.

Electricity distribution subsidiaries, achieved total positive financial result amounting to RSD 10.43 billion, which is, compared to the planned amounts, significantly favorable than in the previous year.

## **Customer Relations**

Electric Power Industry of Serbia continuously striving to improve its customer relations, which increased its importance by adoption of the Law on Consumer Protection. Direct communication with customers is primarily implemented by distribution subsidiaries, as well as through the Distribution Department – Trading and Tariff Customer Relations Sector.

Starting from July 1<sup>st</sup>, 2013, when EPS Supply was founded, until December 31<sup>st</sup>, 2013, 245 customers complained to this sector in the category of "wide consumption – household" and 27 legal entities, mainly objecting to the electricity billing. Also, the largest number of complaints and appeals came from the socially vulnerable customer, unable to pay their electricity bill, and therefore special attention was paid to the cooperation with the Ministry of Labor, Employment and Social Policy, as well as competent Ministry. Customer relations improvement is also reflected through discounts providing for customers who regularly pay their electricity bills. Customers who have not paid their obligations, debt reschedule is enabled, while the part of their debt was written off, depending on the number of installment according to the agreement, or customers conditions of extreme social needs (based on the Decree on energy protected customer, or vulnerable thermal energy consumers).

# Action Plan for the Electricity Losses Reduction

Department for Electricity distribution in cooperation with the Electricity Distribution Subsidiaries prescribe measures to be implemented, in order to reduce losses in the distribution part of the power system. This cooperation resulted in Action Plan development for the implementation of measures for losses reduction in distribution part of the power system. The most important measures for losses reduction that are an integral part of the Action Plan are:

- Exsisting measuring points control;
- Electricity meters replacement and calibration;
- Relocation of metering points of the exsisting customers;
- An aplication of new technologies for more efficient detection of unauthorised consumption;
- Electricity meters reading improvement.

Action Plan implementation, led to the losses reduction in 2013 by 1.01 percent compared to the 2012, and the savings of 284.5 GWh or RSD 1,752,378,320.

#### **TRANSFORMER STATIONS (TS)**

**34,529** - total number of TS

37,751.8 MVA - installed capacity

# Cooperation with the Energy Agency of the Republic of Serbia and Competent Ministry

During 2013, an intensive cooperation between subsidiaries representatives and Department for Electricity Distribution of PE EPS with the Energy Agency of the Republic of Serbia (AERS) and the Ministry of Energy, Development and Environmental Protection was carried out. The main focus of the cooperation is on joint work on new Energy Law draft and amendments of the Distribution Code, formulation and processing of complaints, as well as acting on them, and an active participation in public hearings regarding these documents.

Cooperation with AERS also reflected in participation in public discussions regarding electricity market opening for medium voltage customers and other eligible customers, organized by Serbian Chamber of Commerce, where Department for electricity distribution representatives had an active involvement.

In addition, competent Ministry has organized training for employees in Departments of PE EPS for the use of IMIS database and adequate applications, the data input related to the energy balance of the country. Furthermore, Department for electricity distribution began with the use of these applications and filling the database in the field of information within its jurisdiction. Also, in cooperation with competent Ministry and AERS, and coordinated by the National Statistical Office of the Republic of Serbia, Distribution Department representatives have initiated activities in organizing and collecting of appropriate data from the distribution companies, in the way that Republic of Serbia has obligated, according to the EUROSTAT energy statistics rules.

## **Small HPPs Operation**

The most dynamic events in the Serbian power system, during 2013 happened in the field of planning and preparation, construction and connection to the distribution system of small hydropower plants (SHPPs) and small power plants (SPPs) in general. The competent Ministry announced in 2013 the second public invitation (the first one was published in 2012), tender for the construction of SHPPs, thus opening the door to those who want to invest in the construction of SHPPs. All potential investors who have applied for specific locations of SHPPs were ranked at above mentioned tender, and the ones ranked as the first, signed a memorandum of understanding with the Ministry. The largest number of potential locations and already constructed SHPPs is in the area of Elektrosrbija and Jugoistok subsidiaries.

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# Connection to the Distribution System

Unlike large power plants (capacity more than 100 MW), of which connection investments may be maximum seven to eight percent of the entire plant value, SPPs connection investments may jeopardize the viability of investments in small power plant itself. Moreover, there are some SHPPs whose connection investments exceed the investment in the plant. Due to these problems, the Ministry has, in cooperation with the Department for Electricity Distribution of PE EPS, initiated a series of meetings with investors' representatives, distributors and local governments, with the aim of finding an optimal solution. In fact, in some municipalities (e.g. City of Priboj) total installed capacity of the future SHPPs exceeds the local consumption, in which case it would be necessary to construct new substations 35/10 kV, power lines 35 kV. and even TS 110/35 kV.

SHPPs connection to the distribution system is determined by the Distribution Code. During 2013 amendments regarding the changes of the Rules in the field of SPPs connection to the distribution system, and regarding the connection criteria, were made and adjusted with all five distribution companies. Changes are approved by the Energy Agency of the Republic of Serbia, and officially adopted and published in the Official Gazette of RS, in April 2014.

By rules application, adopted in December 2009, over the past four years it has been noticed that the criterion of permissible voltage changes during the transition process of generator startup/shut down, that is, criterion of maximum permitted generator unit capacity at the plant, are too strict and not applicable in the Distribution System of the Republic of Serbia. Therefore, this criterion, which has been taken from the regulations of the Western countries, through amendments, was replaced by a new criterion, which made connection to the distribution system much easier.

## **Operation Problems**

It was observed that some SHPPs are often decommissioned due to the voltage protections effect. Voltage oscillations on a daily basis and regulation of the capacity factor of the aggregates has as a result, and still have in many SHPPs, an outage from the facility unit due to the voltage protection effects. Therefore, the amendments provide that all synchronous generator units must have an implemented voltage regulation instead of the capacity factor regulation, and nominal capacity factor of synchronous generators must be 0.8, unless it is defined otherwise by the distribution system operator.

Amendments to the Rules related with the connection of SPPs to the distribution system were made, as it became clear that the adoption of new rules would take a while, due to the alignment of this bylaw with the new Energy Law and the new Regulation in terms of supply and electricity generation, which should be made after the adoption of the Law. Changes made easier and faster SPPs connection to the distribution system, and new technical requirements, must be met by the plants during the operation, were prescribed.

# **Strategy and Investments**

In line with the strategic guidelines of the Serbian energy sector, Electric Power Industry of Serbia seeks to launch initiatives that will strengthen the company, bring it closer to its regional competitors and make possible the achievement of European norms and standards. Due to market liberalisation, one of the main activities of the company is electricity market analysis. Feasibility and cost - benefit studies and investment projects are being prepared.

#### **INVESTMENT STRUCTURE**

RSD **24.5** billion invested PE EPS:

Own funds **21** 

Loans 2

Consumer funds 1.2

Donations **0.2** 

# Development and Strategic Planning

Principal projects, studies and activities comprising scientific research and drafting of investment - technical documentation of EPS in 2013 included:

- Feasibility Study and Preliminary Design Reconstruction aimed at extending the operating life and increasing capacity of Unit 3 (305 MW) TPP Nikola Tesla A;
- Investment and technical documentation for the construction of Unit B3, 350 MW, TPP Kostolac B;
- Amendments to the Spatial Plan of the Kolubara Lignite Basin;

- Investment and technical documentation for the construction of the TPP Kostolac B industrial railway until the existing railway network;
- Investment and technical documentation for the construction of the Kostolac Pier;
- Preliminary Study examining the technical and economic feasibility of renewable fuel co-combustion with coal by EPS power plants;
- Pre-Feasibility Study and General Design for the (energy) use of waste materials created during coal processing, coal of low calorific value, biomass and combustible industrial waste at the Kolubara Lignite Basin;
- Preparation of tender documentation for the procurement of basic equipment as part of the Kolubara Lignite Basin Environmental Improvement Project;
- Preliminary Design and Feasibility Study examining the introduction of a coal quality control and management system of the Drmno mine – Kostolac Lignite Basin;
- Study examining the reserves and resources of coal and gravel in the western part of Kostolac Lignite Basin;
- Report providing the results of the Radljevo deposit laboratory tests - Kolubara Lignite Basin (Part I);
- Feasibility Study and Preliminary Design of the Drmno mine development to secure coal for new thermal power plants.

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# Joint Ventures with Foreign Partners

In 2013, Electric Power Industry of Serbia continued the implementation of capital projects through various forms of business cooperation with foreign partners:

- Selecting and attracting foreign partners for thermal power plants firing the Kolubara Basin coal (TPP Kolubara B, 2 x 375 MW and TPP Nikola Tesla B3, 740 MW);
- Selecting and attracting a strategic partner to reconstruct or construct a new gas-steam plant at the CHPP Novi Sad;
- Implementation of investment projects with the Italian company SECI Energia S.p.A.;
- Implementation of investment projects with the German company RWE AG.

Based on the Preliminary Cooperation Agreement signed between PE EPS and the Italian company Edison as a potential strategic partner on the TPP Kolubara B construction project, the feasibility phase was initiated. The main task of this phase is the technical due diligence involving engineering and certification of the existing equipment at the TPP Kolubara B site. During 2013, in addition to the technical due diligence, project financing solution was intensively negotiated.

Cooperation Protocol between PE EPS and a consortium of Chinese companies CEE and the Chinese company SEC (signed in 2011) covers the financing, design, construction, commissioning, operation and maintenance of a thermal power plant. Subsequently, in 2012 a contract was signed for the Feasibility Study with the Preliminary Design examining Unit 3



construction (up to 800 MW) at the TPP Nikola Tesla B site with the Northeast Electric Power Design Institute of China as the contractor and Vattenfall Europe Power Consult GmbH as the subcontractor. In 2013 Phase I of the Study was finalised and project financing solution intensively negotiated.

To follow up on the project involving the reconstruction of existing and/or construction of a new gassteam plant at the CHPP Novi Sad site during 2013 preparations were made to continue negotiations with the potential strategic partner regarding the bid submitted by the consortium of three companies from Russia, Slovakia and Greece. The bid was submitted to the Energija Novi Sad, a joint venture of PE EPS and the City of Novi Sad.

## **ENVIRONMENTAL PROTECTION**

By signing the Energy Community Treaty and adoption of appropriate directives at the EU level, Electric Power Industry of Serbia has undertaken a series of obligations and tasks in the field of environmental protection to align the operation of its power plants with EU standards by late 2017.

## **Air Protection**

Major environmental projects and programs of the Electric Power Industry of Serbia are related to emissions from thermal power plants (sulphur oxides, nitrogen oxides and dust). The largest projects are associated with desulphurisation, primarily the Nikola Tesla A TPP desulphurisation project. This project is financed from the loan proceeds provided by JICA (Japan International Cooperation Agency) for a total of 28,252 billion yen. The pre-qualification process was completed while contract signing is expected by September 2014. The entire project should be completed by 2017. This means that the deadline stipulated by LCPD (Large Combustion Plant Directive) would be respected, when all our power plants should comply with the obligations arising from the directive.

Another major project planned but not yet implemented is the Nikola Tesla B desulphurisation project. Securing funding is a key issue for the project. It is possible that funding for this project will also be provided by the JICA. Simultaneously, there are plans for projects at the Kostolac B TPP where, under the Chinese loan, all necessary measures on units B1 and B2 will be implemented, enabling them to meet the defined emission values. This project is planned for 2014 and 2015. When it comes to NOx emissions reduction, there is an ongoing project on unit A5 of the Nikola Tesla A TPP. In negotiations with the company Hitachi, the so-called primary measures on the existing boiler furnace have been agreed ensuring that emissions are below the value defined by LCPD (200 mg). This would be the value defined by the IED (Industrial Emissions Directive), which is much stricter than the domestic applicable regulations and the LCPD. In this way, the current directive and the one expected to enter into force after 1 January 2018 will be observed in a single step. The denitrification project will cover all the Nikola Tesla A and B units, followed by the Kostolac B1 and B2, while there are discussions to implement some measures on the Morava TPP.

Electric Power Industry of Serbia has largely implemented the dust emissions reduction projects. Majority of power plants have already been adapted to the provision under which emissions have to be lower or equal to 50 mg/m<sup>3</sup> (for above 500 MWth facilities). In the course of 2014, it is expected that the Nikola Tesla A3 unit electrostatic precipitator will be reconstructed as part of the major overhaul, while in 2015 there are plans to reconstruct the Morava TPP electrostatic precipitator. These facilities will fully comply with standards and requirements, whereby dust emissions of the A3 unit and the Morava TPP will equal 30 mg/m<sup>3</sup> and 50 mg/m<sup>3</sup>, respectively.

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## Water Protection

In addition to the significant projects from the field of air protection, there are projects related to wastewater treatment in thermal power plants. A project of this type is taking place at the Nikola Tesla B TPP, funded through IPA. This activity was assigned to a consortium KPRIA - LAD, a contract valued at EUR 7.5 million. In mid-November 2013, the contractor handed over the preliminary design defining all of the technological sections. The entire project will be completed by late 2015.

Draft tender documentation for the Nikola Tesla A wastewater treatment were prepared in collaboration with the European delegation. Wastewater treatment project was also planned at the Kostolac B TPP, which will be financed by the 2013 IPA funds. This will be the first project to be run under the so-called decentralized management procedure, i.e. project management will be taken over by the relevant ministry. Preparation of the investment-technical documentation for the construction of wastewater treatment plants in other thermal power and hydropower plants has been initiated.

# **Soil Protection**

The current project in this area involves the replacement of the Kostolac A TPP ash and slag handling system. Consortium comprising the companies Clyde - Bergemann and Goša Montaža was selected as a contractor. Project value is EUR 18.6 million secured from a loan extended by the KfW bank. It is expected that a similar project including ash and slag handling system reconstruction, along with gypsum will also be implemented at the TPP Nikola Tesla A.

#### **PROJECT VALUE/million EUR**

**40.2** - Reconstruction/replacement of existing electrostatic precipitators of the Nikola Tesla A3, TPP Morava and Kostolac B1 and B2

**70** – Primary NOx emissions reduction measures of the Nikola Tesla TPPs units A3, A4, A6, B1 and B2, TPPs Kostolac (B1, B2, A1 and A3) and Morava TPP

**426** – Desulphurisation plants on units Nikola Tesla A3, A4 and A6, Nikola Tesla B1 and B2, Kostolac B1 and B2

**30** – Wastewater treatment plants – TPP Nikola Tesla A and B and TPP Kostolac B (2013-2016)

58 – Ash and slag handling system reconstruction TPP Nikola Tesla A

# Waste Management

Waste management implies implementation of applicable legislation in this area, as well as an introduction of an information system for industrial waste management.

#### Waste Disposal

Under the project entitled Support to Environmental Protection in the Energy Sector implemented in collaboration between IPA an EPS, Disposal of PCB Oils and Equipment Project is being realised. The aim is to resolve the issue of electrical devices filled with PCB oil. The first part of the project Status Update -Inventory Preparation and PCBs Destruction Possibilities by Applying Current Domestic Technologies was finalised. After the second part of the project is completed – Substitution of PCB Transformers with Dry Transformers, PCB Equipment and Waste Elimination and PCB Transformer Decontamination – PCB oils will fully be eliminated from PE EPS facilities.

#### Waste Valorisation

**Fly ash valorisation** is primarily based on exploring the possibility of applying ash in construction and road industries, and its application in building railway and road infrastructure.

"Energy waste" valorisation - in the context of obtaining secondary energy sources, replacement or alternative fuel - when waste coal, waste oil, waste absorbents, rubber, ion exchangers, and other organic waste from production and technological processes are reused.

#### Recycling

Waste oil recycling - activities aimed at examining the possibilities of recycling waste oils created in large quantities in EPS (transformer, turbine, motor, gearbox, hydraulic oils) by applying existing domestic technologies.

**Recycling of Ni-Cd batteries** - Extension of battery life by employing existing domestic technologies, which is in line with EU activities in the field of industrial waste.



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## Integrated Permits (IPPC)

Environmental Protection Sector of EPS is intensively involved in preparation and submission of the socalled integrated permit applications, encompassing all environmental protection measures of a facility. Applications have been submitted to the relevant ministry for 10 thermal power plants of EPS (Nikola Tesla TPPs, Kostolac TPPs, Panonske CHPPs, Vreoci Heating Plant part of the Kolubara Coal Basin).

Power plants of EPS have not been able to fully meet the emission requirements defined LCPD and IED directives. This is primarily related to emissions of sulphur and nitrogen oxides, which are technically complex, capital-intensive and time-consuming. Individual members of the Energy Community are given the possibility to avoid the situation when on 1 January 2018 some of their units will have to be decommissioned for failing to meet the criteria regarding the limit values by proper planning and execution of environmental projects and by preparing a national emissions reduction plan. Indeed, this decision does not in any way delay the environmental measures leaving enough time for all the required measures to be implemented and to avoid compromising power system stability caused by the decommissioning of a number of thermal power plants with installed capacity below 300 MWe.

Shifting this date has no impact on the operations and activities taking place within the sector. The very act of signing the Energy Community Treaty and the obligations arising from EU accession, undertaken by Serbia, clearly defined environmental responsibilities. EPS is making an effort to fulfil any commitments in the shortest possible but realistic time frame. All environmental projects are considered and coordinated in cooperation with subsidiaries, whose role in project implementation is crucial. EPS plans to implement a number of projects, and chances are good that it will meet all of its obligations in this area. One of the key requirements is to provide the necessary funding while the relevant ministry and the Serbian Government play an essential role in this. Rough estimates suggest that Serbia will have to earmark some EUR 10 billion by 2030 to meet EU environmental standards.

# Information - Communications Technologies

Information - Communications Technologies (ICT) of EPS has experienced a major transformation in 2013, primarily by establishing an ICT Department earlier this year. It brought together in one place all the activities of the former Information System Sector and Telecommunications Project, strengthened by a new organisation and competences, establishing the basis for vertical coordination, management and planning within the ICT function of EPS and its subsidiaries.

In cooperation with the consultants engaged for the project entitled Unbundling of Distribution and Supply, ICT function reorganisation plan was prepared comprising the following steps: consolidation, standardisation and optimisation, aimed at EPS Group corporatisation and transformation into a modern, well-organised, profitable and market-oriented company.

One of the most important tasks was organising and coordinating ICT activities related to the start-up of EPS Supply and its further operation.

# **IT Projects**

The SAP ERP system implementation project of EPS and EPS Supply has been initiated in June this year as the basis of a single EPS Group business information system. The project was implemented according to plans, meaning that the following SAP EPR system modules were commissioned:

- Financial Accounting (FI)
- Management Accounting (CO)
- Materials Management (MM)
- Loan Management (LM)
- Investment Management (IM)

Furthermore, for the purpose of consolidated reporting and other analytical and reporting needs, Business Warehouse database is used on the new SAP HANA platform, based on In-memory technology (SAP BW on HANA), which is a high performance and flexible BI platform for integration, consolidation, data analysis and reporting. EPS is the first regional company to implement the SAP HANA technology. A long-term roadmap envisages horizontal (subsidiaries) and vertical (new modules and functionalities) expansion of the SAP ERP system on a common EPS Group data centre infrastructure.

During 2013 in cooperation with Oracle two major projects have been initiated:

- Formation of a single master customer data base containing the DSO's billing system data as a master data source for a central billing system, reporting and portfolio segmentation of EPS customers, also providing support to the CRM and IVR customer relations systems;
- 2. Document management and collaboration system, setting the foundation for electronic records of EPS Supply and the flow of incoming invoices of the Kostolac TPPs and OCMs, which will become a competence centre for this solution.

ICT Department is involved in defining Smart Metering strategies, as well as setting the basis for the development of a new, high-quality feasibility study which will be used to obtain EBRD loan funds.

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## **IT Infrastructure**

To optimise performance and integration of information, business and corporate processes, in 2013, a formation of a single EPS data centre began. Its essential objectives involve enhancing the common hardware and software information resources, their consolidation and standardisation, both at the level of business applications and corporate procedures. The data centre is based on the new generation of IBM products. It is a Pure system incorporating the possibility of rapid business changes, default Cloud infrastructure, as well as ease of implementation and management of ICT resources. All new integrative IT projects in 2013 were implemented on the data centre infrastructure located within a secure room at the Centar Kragujevac premises.

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## **Telecommunications Systems of EPS**

The telecommunications system of EPS comprises a network of fibre optic cables on the main and regional levels, SDH technology-based transmission network and an IP/MPLS technology-based packet network.

In the course of 2013, after Elektrodistribucija Beograd and Centar subsidiaries were included, all subsidiaries were integrated into a single optical network facilitating business information and data exchange and making it more efficient and intensive. EPS Supply became a new member of the EPS telecommunications system. Based on own optical infrastructure and by activating new SDH and IP nodes Kolubara B was linked (employees from Kalenić) with the EPS system. Employees were integrated into the EPS IP telephony system enabling business data exchange.

Further connection to the EPS telecommunications system has been continued, primarily branches of electricity distribution subsidiaries. In Elektrovojvodina, operating units based in Vrbas (where SDH node was activated), Senta and Kanjiža were connected. Following international obligations, 110 kV facilities between HPP Derdap 2 and the Romanian side plant Portia de Fier 2 were linked by an optical cable, along with the routers transmitting voice traffic aimed at implementing operational telephony between power plants and data transfer between SCADA systems. Elektrodistribucija Valjevo, a branch of Elektrosrbija, was connected with the telecommunications system of EPS, while the head office in Kraljevo was integrated with the corporate IP telephony system. Elektromorava Požarevac branch was connected with the Centar Kragujevac subsidiary head office. Most companies possess a highquality, safe and free internal telephone traffic via a private IP telephone network.

The implementation of the IP telephony and business data transmission project entailed building a high availability corporate packet network with strict requirements in terms of service quality. This created network infrastructure supporting a number of power system services. Examples of new services include audio-conferencing and video-conferencing systems.

Audio-conferencing system (Webex) is a web-based system consisting of a central software system for management and control of conference sessions combining audio, video and web conferencing into a single unit. Video-conferencing system (Telepresence) is a unique/integrated solution within the existing IP phone system. Telepresence solution was introduced into the EPS Group system while head offices of all subsidiaries have already been successfully connected to the headquarters in Belgrade.

The telecommunications system of EPS built on the main level is in the phase of intense connection with the telecommunications networks of subsidiaries on regional and local levels. Such networks are, wherever possible, based on optical infrastructure, SDH transmission networks and IP telephony network of EPS. This has brought the telecommunications system of EPS Group (PE EPS and its subsidiaries) to its highest development level so far, while its functionalities make it the most complex private telecommunications system in Serbia.

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# Legal Affairs

The most important legal affairs in the Electric Power Industry of Serbia in 2013 were defined by the document Framework for Reorganization of PE EPS, adopted by the Government of the Republic of Serbia in November 2012, as well as by the adoption of new Law on Public Enterprises.

In the document Framework for Reorganization of PE EPS, it is anticipated that the process of corporatization of the Electric Power Industry of Serbia will be started through several activities:

- Changing legal form of PE EPS into a joint stock company;
- Legal, organizational and financial division of the activities of general interest and market energy activities within the meaning of the law, where the activities of general interest would be organized in the subsidiaries;
- Achieving maximum efficiency of business operations through the improvement of corporate management and relationships within EPS Group.

Framework for Reorganization of PE EPS are the basis for the beginning of reorganization of PE EPS, and thereby also the basis for performing the obligations taken over in accordance with the Agreement on the Establishment of Energy Community of South East Europe from 2006, Agreement on Stabilization and Association and Energy Law.

Newly adopted Law on Public Enterprises redirected the activities from corporatization of the Electric Power Industry of Serbia to bringing the founding acts of PE EPS in line with the provisions of the Law on Public Enterprise. In June 2013, the Government of the Republic of Serbia passed the Decision on bringing the business of the Public Enterprise for electric power generation, distribution and trade in line with the Law on Public Enterprises. Based on this decision, the Statute of the Public Enterprise Electric Power Industry of Serbia was prepared. By the adoption of the Statute of PE EPS, necessary conditions will be created for continuation of the planned organizational changes. Organization of the management in PE EPS has been planned as two-tier structure, i.e. the bodies in PE EPS would be the Supervisory Board and the General Manager. Executive Board will also be formed, comprised of the General Manager and seven executive directors that will unify management function.

Public enterprise Electric Power Industry of Serbia founded the company EPS Supply, thus meeting the conditions related to legal, organizational and functional unbundling of the activities of electricity supply from the activities of electricity distribution, in accordance with the obligations stipulated by the Energy Law regarding the unbundling of vertically integrated entities. Relations in connection with service provision to the newly founded company are regulated among the company EPS Supply and five distribution system operators, through service provision agreements. On 1 July 2013, the Energy Agency of the Republic of Serbia gave a license for public supply to the company EPS Supply, which since that time has been a public supplier to all electricity customers supplied at regulated prices.

In late 2013, status change was made - acquisition of the company Kolubara-Metal by the parent company - MB Kolubara. Between these two companies, there is an immediate production-technological and economic connection of the acquiring company and the acquired company. This status change allowed for reduction and rationalization of operating expenses, simplification and optimization of the work process, optimum engagement of production and personnel capacities and resources.

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In the course of financial year, very important activities were continued in all economic entities within EPS Group on record keeping and providing property-legal documentation for entry of ownership for properties used by PE EPS and its subsidiaries, over which ownership right could be acquired in accordance with the Law on Public Property. In the mid-2013, a request was submitted to the Government of the Republic of Serbia, through the competent Ministry, for acquiring the ownership of a large number of properties. The request was documented with 15,000 pages of property-legal documentation. This request did not include the properties representing electricity distribution network. It is expected that the issue of ownership over the properties representing electricity distribution network will be governed by the Energy Law, which is under preparation. Determination of ownership rights over properties is a prerequisite for the evaluation of equity of PE EPS, for the purpose of changing the legal form of PE EPS into a joint stock company.

# **Management and Control of Procurements**

Establishing control over conducting procurement procedures, rational use of resources and reducing current operational costs to the required volume – are the basic activities of the Management and Control of Procurement Department, which was established in 2012. Since the beginning of the Department operation, liability has been imposed on the companies/subsidiaries to submit on weekly basis the data on the procurements planned to be initiated that week.

For the first time, in the Electric Power Industry of Serbia, procurement plans of PE EPS and 13 companies/subsidiaries have been consolidated, with the planned value amounting to around RSD 250 billion.

Control of procurement procedures was provided through participation of the Department representatives in the commissions, both for the procurements in other departments and, depending on the importance of a procurement, in a certain number of the procurements in the companies/subsidiaries (for example: conveyor belts in TPPs-OCMs Kostolac and MB Kolubara for which contracts have been concluded). It is important to mention participation in commissions for around 50 procurements of intellectual services of preparing studies with preliminary designs, the most important ones being: Preparation of the Feasibility Study for constructing new 300 MW unit in TPPs-OCMs Kostolac, Desulfurization, Waste water of Kolubara-Prerada, Solar Power Plants, Wind Generators, small HPPs, procurement of software licenses. For all the aforementioned, contracts have also been signed. When speaking of participation in the public procurement commissions of other companies/subsidiaries, average savings in procurement procedures of 3 to 7 percent of the bid price were achieved, and 10 percent of the estimated price on an average - in negotiation procedures with bidders.

By the control over conducting procurement procedures in companies/subsidiaries where the Department representatives have not participated, some irregularities have been established in conducting the procurement procedures. In the Report on the control of concluded contracts of companies/subsidiaries for the first quarter of 2013, methods were proposed for solving these problems.

#### ACHIEVEMENTS

Savings of RSD **6** billion achieved based on the control of justification of needs (non-approval of initiating the procurement procedures that are not necessary)

RSD **48** billion planned for conducting procurement procedures

RSD **42** billion approved

By conducting all procurements for the Legal and General Affairs Department (large and small ones), undisturbed functioning of PE EPS was ensured, and the representatives of the Management and Control of Procurement Department, as the commission members, also took part in procurements for other departments (Strategy and Investments Department, Information-Communication Technologies Department, Human Resources Management Function, Economic and Financial Affairs Department). All the procurements for the company EPS Supply were also conducted (successfully contracted printing of envelopes, bills, computer equipment procured, office premises leased, Agreement for Data Center signed). Procurement of Oracle licenses and service for the needs of PE EPS and subsidiaries was carried out. By centralization of this procurement (licenses and the support service for Oracle software products, combined with consulting services for the implementation of these products) financially most favorable bid was obtained, but also the most efficient SW application, with specific benefits for business operations.

By the procurement for SAP information system for the needs of PE EPS and the company EPS Supply, RSD price fixing was achieved for the services of implementing SAP ERP. Under the most favorable conditions, efficient and safe introduction of SAP ERP in PE EPS and the company EPS Supply was achieved, as a base for business information system and model for all other subsidiaries, according to the strategic implementation plan.

Assessment of actual needs for strategic raw materials was made, and based on that centralized procurements of energy generating products were conducted, by which considerable cost savings were achieved (NIS: Premium fuel oil, "medium S" - USD 25 per ton - other companies obtain premium oil of USD 50 to 70 per ton; EURO DIESEL – price at the level of OMV price, Euro Diesel for further sales; HCL – decrease of price through centralized procurement - RSD 8 million in 2013 compared to 2012).



#### PROCUREMENT OF ORACLE LICENSES AND SERVICES

**52.78** percent discount was achieved in relation to the official prices specified in the price list

Additionally,  ${\bf 4}$  percent discount achieved in the negotiation process

#### **PROCUREMENT OF SAP information system**

**25** percent discount was achieved for activation of the present SAP licenses

**5** percent of the offered price and additional savings were achieved in the negotiation process

The following contracts were implemented:

- Fuel oils on behalf and for the company TPPs-OCMs Kostolac and the company TPPs Nikola Tesla for 2012, contract value 447 million, as well as a contract in the amount of 937 million, on behalf and for the subsidiaries for the procurement of fuel oil, "medium S" and NSGS for 2012;
- HCL for 2012, contract value RSD 14.7;
- Contact for the procurement of ion-exchange resins for 2013 on behalf and for the companies/subsidiaries, fully implemented, whereas the contract value is EUR 210,610.

Control has been provided for the documents related to modifications of the signed contracts (annexes) and justification of entering into new contracts – non-approval of illegal annexes to the contracts whose validity period has expired, change of method and terms of payment. Entering into contract for freight forwarding services for goods that have not been contracted.

QMS procedures were prepared, related to the manner of conducting public procurement procedures in accordance with the new Public Procurement Law. Along with the procedures, forms were also prepared for mandatory documents used in conducting the procurement procedures. The goal is to define the guidelines for procurement procedures, unify the work process, simple, accurate and systematic carrying out of procurement procedures.

Management and Control of Procurement Department takes an active part in giving opinion with regard to dilemmas arising from application of the Public Procurement Law (e.g. with regard to engaging separated companies, companies from the territory of Kosovo and Metohija, interpretation of controversial provisions of the Public Procurement Law). In addition, considerable contribution was made in obtaining positive opinions of the Public Procurement Administration for conducting procurement procedures by taking an active part in drafting the documentation submitted to the Public Procurement Administration for opinion. Besides the aforementioned, since legal possibilities in implementing a procurement process affect strategic decisions, a need has been recognized for informing the management of PE EPS about essential conditions governed by the Public Procurement Law. In this respect, presentations were held regarding the implementation of new Public Procurement Law, in



PLUGGED Into Life connection with public procurement centralization (expert teams), definition of the Client's responsible person in the Public Procurement Law, as well as a presentation related to corruption and conflict of interests in the Public Procurement Law and possibilities of implementing the framework agreement. At the same time, participation of the Department representative was provided in the monthly meetings of the directors in the field of energy generation and investments and strategy, in the part related to procurement issues.

Participation of coworkers was provided in the work of expert teams for preparing revised procurement plan for 2013 and preparing procurement plan for 2014, for implementing the 2<sup>nd</sup> phase of the construction of new 300 MW unit within TPPs-OCMs Kostolac, with the use of the Chinese loan, and for implementing SAP information system.

Initiative has been started for systematic and centralized carrying out of procurement procedures through forming unique centers in the subsidiaries for the purpose of more efficient conducting of procurements and establishing quality control in the procurement process and contract implementation. Based on that, the companies Elektrosrbija and Jugoistok already have modified the existing list of job positions in a manner proposed by the Department. In keeping with that, Management and Control of Procurement Department gives its consent to the list of job positions in a subsidiary, related to organizational units dealing in procurements, whereas regulation of organizational affairs has also been planned in other subsidiaries in the proposed manner.

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Keeping in mind legal restrictions that cause numerous problems in conducting of public procurements, consequently also endangering normal functioning of electric power systems (primarily due to requests for protection of rights submitted by the bidders, in respect of which the Republic Commission decides on the deadlines which are considerably longer than those prescribed by law), Management and Control of Procurement Department is engaged with regard to the issue of faster resolution of requests for protection of rights filed in the public procurement procedures in PE EPS and its subsidiaries. In that respect, meetings were initiated with the representatives of the Republic Commission and the Public Procurement Administration with regard to resolution of key issues for PE EPS, pertaining to conducting procurement procedures.

# Development and Improvement of Business System

Management of the projects of strategic importance for EPS Group in the most efficient manner, along with the use of standardized methodology and application of the best European practice, as well as along with optimal use of human and financial resources of the company, is recognized in the Electric Power Industry of Serbia as a significant segment of the business operations. Because of that, in 2013, the Department for Development and Improvement of Business System was established. The newly established Department is a central unit for strategic projects within EPS Group, and its key goal is an efficient implementation of strategic projects that will contribute EPS to become a profitable company in liberalized market, an attractive employer, and also to provide reliable and quality electricity supply while observing environmental requirements.

The Department is engaged in managing the projects of strategic interest for EPS, which should enable improving the group performances and strengthening EPS position in domestic and regional market. These are primarily the projects that require participation of several companies/subsidiaries and departments within PE EPS, resulting in significant changes in organization and business operations.

During 2013, three key strategic initiatives were started:

- Defining the corporate and investment strategy of PE EPS;
- Unbundling of distribution system operator (DSO) and public supplier (PS);
- Improvement of the efficiency and productivity of PE EPS (Reorganization).

These projects should define the future strategy, enable EPS to meet regulatory and legal unbundling requirements, and at the same time to take steps for reorganization, so that EPS could become a company with efficient business operation. Each project is implemented by a special project team made of the EPS employees and expert consultants, whereas the project is managed by the Steering Committee comprised of the top management of PE EPS.

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Scope of work for the three strategic projects:

Strategy, Unbundling and Reorganization



Unbundling is related to the five existing distribution companies, while in the Reorganization the emphasis will be on the parent company - EPS and seven subsidiaries for electric power generation, heating energy production and coal production. The Strategy project shall on high level assess company as a whole, and the center of the project shall be development of long-term investment strategy.



Implementation of the projects Defining the Corporate and Investment Strategy of PE EPS and Unbundling of Distribution System Operator (DSO) and Public Supplier (PS) started in 2013, and the commencement of implementation of the project Improvement of the Efficiency and Productivity of PE EPS is expected in 2014.

# Renewables

In agreement with the strategic documents of the Serbian energy sector and its own development interests, Electric Power Industry of Serbia aims to increase the share of renewable energy in its generation portfolio. As one of the most influential electricity generation companies in the region, EPS is committed to applying the latest technologies in the field of renewable energy, increasing efficiency and economically justified and sustainable energy development, primarily on the basis of water resources.

In this respect, the priority of EPS is to revitalise and modernise existing large and small hydropower plants, build new small hydro power plants, and also develop wind farms and solar power plants along with municipal waste combustion and biomass utilisation plants for which possible locations are being investigated.

In addition, EPS is determined to employ its hydropower potential of watercourses where building hydropower plants is proven to be feasible, whether on locations already owned by EPS or in their immediate vicinity. In addition to these locations, EPS plans to build small hydro power plants on locations granted in the competitions of the Ministry of Energy, Development and Environment.

It should be noted that the Electric Power Industry of Serbia is not engaged in designing, consulting or providing any service in this area. All RES potential tests and analyses are carried out solely for its own use and cannot be commercialised.

Another important segment gaining in importance and recognised as one of the priorities of the Serbian Sustainable Development Strategy is energy efficiency. Given that the Electric Power Industry of Serbia already recognised energy efficiency as an essential element of the company's energy policy, substantial activities have been undertaken. In this respect, EPS has within the scope of its competence considerably raised the energy efficiency of its facilities and created conditions for this to be a continuous process.

As a responsible company, Electric Power Industry of Serbia continued improving its energy efficiency by commissioning a study entitled Analysis of Resources and Programs for Organised Monitoring and Upgrade of Energy Efficiency in Coal Production and Electricity and Heat Generation and Distribution. This is a multidisciplinary study including consideration of energy efficiency in all sectors of EPS setting the foundation to introduce a company-wide energy management system (ISO 50001). As a result, this would set the scene for efficient operation and timely response to obligations stemming from the Law on Energy Efficiency.

To promote energy efficiency within the energy sector, a range of activities raising customer awareness about the importance of energy efficiency and the need for individual contribution to increasing energy efficiency have been conducted, when in addition to organising public campaigns promoting the use of energy saving lamps, EPS distributed to its customers more than 30,000 free energy saving lamps.

The above activities are aimed at:

- Increasing security of energy supply and its efficient use;
- Boosting competitiveness;
- Reducing negative environmental impacts;
- Encouraging responsible behaviour towards energy.

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## Hydro

Revitalisation of the following large hydropower plants was completed:

- HPP Ovčar Banja and HPP Međuvršje a project funded by EPS;
- HPP Bajina Bašta a project jointly funded by EPS and KfW.

Revitalisation of the HPP Đerdap 1 and HPP Zvornik have commenced as part of the operating life extension and efficiency increase of these HPPs. Additionally, there are plans to revitalise Vlasinske HPPs, HPP Bistrica, HPP Potpec and PSHPP Bajina Bašta.

To further increase RES generation, preparations for the construction of new generating facilities with a potential partner have been initiated. Possibilities of constructing new hydropower plants within the scope of the following projects are under consideration:

- Ibar HPP Project;
- Morava HPP Project;
- Middle Drina Project;
- Đerdap 3 PSHPP;
- Bistrica PSHPP;
- Project involving the construction of a fourth unit at the HPP Potpec;
- Project involving the construction of a fifth unit at the HPP Bajina Bašta.

In order to provide a clearer insight into feasibility of building new RES capacities, the development of necessary investment and technical documentation has largely been initiated, along with environmental impact assessment studies, spatial plans and urban planning documents, as well as preparations concerning opinions, conditions, approvals and permits:



- A public call was announced by the competent of resor ministry for investment-technical documentation for SHPPs. Tender documentation was completed and posted on EPS website;
- Verification and upgrade of the Đerdap 1 reservoir siltation simulation-prognostic model results by using observation data and measurements from 2006 - 2010;
- 8 SHPPs on water supply reservoirs;
- 15 SHPPs reconstruction of small hydropower plants owned by EPS.

## Wind

Pre-Feasibility Study and General Design examining wind farm development at the Kostolac Lignite Basin, installed capacity of 30 MW (in progress).

# Solar

Feasibility Study and Preliminary Design analysing the Kostolac Solar Power Plant development, installed capacity up to 5 MW (in progress).

# Human Resources

## **Development of Human Resources**

Electricity market opening, change of ownership structure and the company restructuring are the greatest challenges for the Human Resources Function in the Electric Power Industry of Serbia. In view of the fact that only by continuous, planned and meaningful investment into knowledge innovation and employees' development, work efficiency can be increased and business operation improved, implementation of the program of professional development was continued in 2013 as well. All forms of professional development were included. In this way, more than RSD 127 million was invested into improvement of the employees' knowledge and skills, i.e. 76.5 percent of the total planned funds for these purposes.

PROFESSIONAL DEVELOPMENT IN 2013					
COMPANY/SUBSIDIARY	PLANNED FUNDS	REALIZED FUNDS			
HPPs Đerdap	8,600,000.00	7,655,315.00			
HPPs Drinsko-Limske	1,900,000.00	1,801,918.00			
TPPs Nikola Tesla	19,780,000.00	17,149,764.91			
Panonske CHPs	4,500,000.00	1,168,882.37			
TPPs-OCMs Kostolac	10,570,000.00	13,414,689.62			
MB Kolubara	20,368,000.00	19,143,732.33			
Elektrovojvodina	40,000,000.00	32,559,577.79			
Centar	5,164,992.30	5,164,992.30			
Elektrosrbija	12,724,000.00	9,048,718.90			
Elektrodistribucija Beograd	4,827,000.00	2,086,876.11			
Jugoistok	6,233,000.00	2,287,249.20			
PE EPS	31,788,800.00	15,834,884.78			
TOTAL:	166,455,792.30	127,316,601.31			

The need to decrease all types of costs led to more intensive use of internal resources in all parts of the company, with an increasing orientation towards internal trainings, which do not require special financial funds. In most cases, these were regular periodic trainings in the field of health and safety at work, environmental protection and fire protection. Testing of employees that need to know prescribed measures and instructions for handling and maintaining devices and plants, as well as those handling hazardous materials was performed. Integrated quality management system is a field in which numerous trainings are conducted in the system of the Electric Power Industry of Serbia, which indicates the importance paid to this business segment. Foreign language courses, mastering and improving computer skills, obtaining and renewal of licenses, as well as trainings in so called "soft" skills (team work, communication, leadership skills etc.) were conducted.

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Beside trainings, employees have the possibility of obtaining higher education degree, if it is estimated that it is for the best interest of the company and that it would contribute to the quality of work performance.

Initiating new projects requires follow-up and innovation of professional knowledge, and one of the methods is to participate in professional conferences in the country and abroad. The experts of the Electric Power Industry of Serbia have a possibility to participate in professional conferences and frequently they also present their scientific and professional papers.

## Health and Safety at Work

Electric Power Industry of Serbia pays special attention to health and safety at work, the field which beside direct influence on business operations has even greater - social influence. For creating healthy and safe conditions at work, as well as for providing health protection for employees in EPS, more than RSD 508.9 million was invested in 2013.

Based on recognized and identified risks in the system, the whole spectrum of preventive measures was applied, and the greatest attention was paid to the usage of work equipment, means and equipment for personal protection at work, education of employees for safe and healthy work and provision of appropriate conditions of working environment. In keeping with that, only for preventive and periodic examination of work equipment more than RSD 15.1 million was spent in the previous year, whereas the volume of funds required for testing the conditions of working environment amounted to almost RSD 5 million. In addition to these mandatory inspections and tests, special attention was paid to their regular maintenance, significant both for appropriate and safe work with equipment. Although the use of personal protection means and equipment is in principle the last measure to be applied, the nature of operations and working activities performed by the employees of EPS imposes the use of means and equipment for protection at work, regardless of all other measures applied. For the procurement of appropriate means and equipment for personal protection - more than RSD 187.7 million was spent, but since their procurement has no meaning by itself, special attention is paid to the control of their use.

System for health and safety at work, which is designed in such a way that the focus is on the work place, i.e. implementation of measures which should provide safe and healthy work place, cannot function unless the employees themselves are included in an active and appropriate manner. Education of employees for safe and healthy work is therefore the most significant aspect, and together with provision of information and notification, this type of education has not only the goal to introduce employees with risks and measures but also to improve relation of employees towards this area, primarily through development of their consciousness about its importance. Therefore the programs for education of employees for safe and healthy work are frequently extended by additional trainings. Around RSD 6.4 million was spent for implementing these programs.

Significant aspect of care for employees is monitoring of their health condition. It is carried out through preliminary and periodic medical examinations of employees working at positions with increased risk. For that purpose, more than RSD 153 million was spent. We are especially proud of the fact that we have provided health protection even for the employees who do not work at positions with increased risk, i.e. for those for whom we are not required to provide protection pursuant to occupational safety and health regulations. This health protection includes specialist medical examinations (oncological and gynecological) and regular medical check-ups for which more than RSD 73.6 million was spent. Besides that, we sent the employees diagnosed with some disease to rehabilitation, prevention of work disability or recreation, based on the recommendations of competent health institutions, and for that purpose we spent more than RSD 67.7 million in the previous year.

Our intention is to become leaders and an example of a well arranged system in this field, in the following period, through unified business policy and procedures, by coordination of professional jobs at the level of the entire system.



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## **Relations with Trade Unions**

In difficult business conditions that began to radically change with the opening of electricity market for high voltage consumers, trade unions and employees in EPS confirmed high consciousness of the necessity of changes in EPS business system. Employees and their trade union representatives expressed their full loyalty to the subsidiaries in the EPS system and to the whole system that as such is capable of responding to all market requirements and requirements of electricity buyers. Both the employees and Trade Union consider corporatization and organizational transformation of EPS group a necessary process of improving customer relations and achieving the highest possible financial operating result in the market.

Under such conditions, the management and trade union representatives agreed at the beginning of 2013 to extend the validity period of collective agreements until legal and other required conditions are met to improve the present provisions, primarily in the sense of unifying the criteria and making a stronger relation between salaries and work and work results. It has been principally agreed that for the employees whose work will no more be needed due to the process of corporatization and transformation of EPS, proper remuneration will be provided, which should be primarily directed into programs and projects for opening new jobs and reemployment.

In 2013 long-term practice of humanitarian aid was continued. Using the solidarity funds which are organized in all EPS subsidiaries and central solidarity fund, medical treatments and other types of health care of employees and their family members were financed. In this way those forms of health care not covered by health insurance were provided. Sports games, which became tradition of gathering and competition, were held from qualification to final contests, in all branches, in all subsidiaries, business activity groups and in the end, the final contest for EPS winner was held. High level of physical readiness of the contestants, their skill in certain disciplines and long-term rivalry of teams made the games attractive not only for the participants but also for the residents of the places where they were held.

During the entire year, not only the participants of sport games but also all the employees were using different types of recreation in sports, health and recreation centers in the places where they live, in reputable spas and places popular for tourism in Serbia. Recreation activities were followed with useful information about the manner of keeping good health and preventing diseases.

All these activities were based on the provisions of the collective agreements. Collective agreements in each subsidiary founded by PE EPS regulate in the same manner not only the rights of employees, but also relations between trade union and employer with adequate flexibility in adjusting to specific circumstances and financial capacities of social partners.

# **Internal Audit and Control**

Internal audit can be monitored through three basic segments – as financial audit, business operation audit and management audit. It represents subsequent supervision, it has formal organizational structure and the basic criteria used are objectives and policies of the company in accordance with internal audit standards and legal regulations. In performance of internal audit procedure, an auditor also uses professional ethics codes. The procedure itself is done according to previously arranged phases which begin with internal audit planning, investigation and data collection and end with analysis and reporting. Results are presented in certain form which requires objectiveness, concision and clarity, with the emphasis on the solution proposal.

Internal audit has been developed as supporting part of management and as such, in its development, it has started also the collection of data and information with the aim of achieving reporting of better quality of all those entering in entrepreneur undertaking. Today internal audit represents business function of the company that objectively and independently helps company to meet its objectives and tasks – with the emphasis on continuous efforts for business operation improvement. Each company defines its objectives and internal audit, according to the company's needs, assesses if the risks that may result in poor business operation have been removed or minimized.

Internal audit estimates results of risk management, evaluates adequacy and internal control systems' efficiency, i.e. methods and procedures adopted by PE EPS management, with the aim of achieving business policy and more successful company management. Internal control system consists of policies and procedures adopted by PE EPS management. One of the main tasks of internal audit is also consulting and advisory function.

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During 2013 Internal Audit and Control performed the following:

- Public procurement systems audit in the subsidiary TENT for the period between 01.01. and 31.12.2012, with emphasis on business relations, i.e. contracts concluded with Feromont

   Inženjering from Belgrade (upon the request of the Anti – Corruption Team of the Ministry of Energy, Development and Environmental Protection);
- 2. Public procurement audit in negotiation procedure without publishing for the procurement of civil works for the construction of energy and business building complex of PE EPS and the subsidiary EDB in Blok 20 in New Belgrade - 1;
- Business operation audit for the first quarter in 2013 in the subsidiary Elektrovojvodina;
- 4. Audit of the procedure of connection of residential and business facilities at Skopljanska Street in Niš upon the request of "Agrohim", Niš.
- 5. Billing system audit in the subsidiary EPS Supply and in all distribution subsidiaries;
- 6. Audit of the process of engagement of the executors in the distribution subsidiaries from the date of entering into force of the Law on Enforcement and Security.

In the period between 19.11.2013 and 31.12.2013, function of Internal Audit and Control in PE EPS acted several times upon the request of the Anti-Corruption Team of the Ministry of Energy, Development and Environmental Protection and undertook certain activities. Internal Audit and Control performs its function based on the Annual Business Plan, to which general manager of Electric Power Industry of Serbia gives his consent, ad hoc orders of general manger of EPS and specific requirements of authorized governmental bodies and institutions.

# Integrated Management Systems

A number of activities were undertaken during 2013 with the aim of establishing process organization using the tools of top management i.e. integrated management systems. By achieving synergy of teams dealing with these activities at the level of EPS Group the harmonization of processes and procedures started. Therefore, trainings for management were organized with different topics: purpose and role of quality management system in modern organizations and definition and monitoring of key indicators of business operation processes as the measure of business operation of every company.

Implementing supervisory and recertification checks, prominent certification agencies confirmed stability and evident improvement of integrated management systems within EPS Group during the previous year as well. Positive reviews and praises were sent to PE EPS and all subsidiaries. The effort of the company to implement standard requirements, as well as to make business moves uniform and of recognizable form is recognized, thus reflecting the essence of unique, process-oriented company in the best possible manner.

Realizing the activities planned for 2013, especially participating in internal checks of integrated management system in EPS group, Sector for Integrated Management System in PE EPS was provided with large data base for connecting certain modules with subsidiaries.

High level of cooperation was achieved between sectors for IMS and subsidiaries within Electric Power Industry of Serbia thanks to regular exchange of experiences and information, including consideration of the problems which we come upon in everyday operation.

Harmonization and coordination of integrated management system improvement programs in EPS Group also enabled integration of other management systems PE EPS selected. Thus, implementation of standard requirement ISO 50001 Energy Management Systems within one subsidiary was completed in the last year.

Subsidiaries within Electric Power Industry of Serbia achieved significant level of quality management system integration, environmental protection and health and safety at work, by using IT support and applications which fulfill the needs of management system as well. Information security management system was certified in some subsidiaries. This insured secure management of not only information related to management systems, but also other data related to business operation. Integration of implemented management systems is more efficiently managed by identified processes with the fulfillment of standard requirements.

Requirements of technical regulation of the Republic of Serbia are being successfully implemented in large projects for the preparation of the construction of energy entities. Conditions for systematic approach to quality infrastructure activities within PE EPS are created, and thus systematic fulfillment of all requirements from the field of infrastructure: the requirements of accreditation, metrology, standardization and harmonization assessment.

Progress in this field and commitment to use modern process management methods and tools are also evident on the table with overview of integrated management systems in PE EPS and subsidiaries, compared to the first year of certification until the end of 2013.

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			egrated Ma	gemer		
	QMS	EMS	OHSAS	ISMS	EnMS	Laboratory/ Control body
PE EPS	2008/TS 2011/TS	Ongoing project	Ongoing project			
Subsidiary	QMS	EMS	OHSAS	ISMS	EnMS	Laboratory/ Control body
HPPs Đerdap	2005/SGS 2011/SGS	2008/SGS 2011/SGS	2011/SGS	2013/SGS		
HPPs Drinsko-Limske	2009/SGS 2012/SGS	2009/SGS 2012/SGS	2009/SGS 2012/SGS	2011/SGS		
TPPs Nikola Tesla	2005/SGS 2011/SGS	2008/SGS 2011/SGS	2010/SGS 2013/SGS			Laboratory accreditation is in progress: -Thermo technical -Vibrodiagnostics -Emission analysis -chemical analysis of fuels and combustion produc HAGIPS according to SRPS ISO/IEC 17025
MB Kolubara	2009/BV 2012/BV	2009/BV 2012/BV	2010/BV 2013/BV			2007/ATS Laboratory for coal and waste water testing 2011/ATS • Centre for Testing of Coal and Waste Waters – branch Prerada (physical and chemical testing of solid fuel and enviromental samples and water sampling) 2012/ATS • Tamnava Laboratory (physical and chemical testing of solid fuel and water)
TPPs-OCMs Kostolac	2006/SGS 2012/SGS	2011/SGS	2012/SGS		Project implementation started EnMS	Preparation for accreditation of laboratory for: -testing the quality of waste, surface and under- ground water -testing of ambient air quality according to ISO170
Panonske CHPs	2002/SGS 2011/BV	2008/TS 2011/BV	2010/SGS 2011/BV		System implemented	
Elektrovojvodina	1998/QS/ SZSSGS/TR 2013/Ct	2013/Ct	2013/Ct	Ongoing project		2011/ATS • Accredited control body for meters ac- cording to SRPS ISO/IEC 17020
Elektrodistribucija Beograd	2001/QS/SZS 2011/QMS/Ct	2010/Ct 2013/Ct	2012/Ct	2012/Ct		2012/ATS Accredited control body for meters accor ing to SRPS ISO/IEC 17020, obtaining recertification acording to SRPS ISO/IEC 17020:2012.
Elektrosrbija	2006/TS 2012/SGS	2007/TS,SGS 2011/SGS	2009/TS,SGS 2012/SGS			2013/ATS Accreditation of control body for meters according to SRPS ISO/IEC 17020
Jugoistok	2005/TS 2010/SGS 2013/Ct	2010/SGS 2013/Ct	2010/SGS 2013/Ct			2012/ATS Accreditation of control body for meters according to SRPS ISO/IEC 17020 - Authorization or verification of electricity meters obtained in Nover ber 2013. Unique register number OM 068
ED Centar	2001/QS/SZS 2008/TS 2011/SGS	2008/TS 2011/SGS	2008/TS 2011/SGS			2012/ATS Accreditation of control body for meters according to SRPS ISO/IEC 17020

#### Legend:

QS	Quality System	ISS	Institute for Standardization of Serbia
QMS	Quality Management System, ISO 9001	SGS	Societe Generale de Surveillance
EMS	Environment Management System, ISO 14001	TS	TUV SUD
OHSAS	Occupational Health and Safety Management System, BS OHSAS 18001	Ct	Certop
IMS	Integrated Management System	BV	Bureau Veritas
ISMS	Information Security Management Systems, ISO 27001	TR	TUV Rheinland
EnMS	Energy Management System ISO 50001	ATS	Accreditation Body of Serbia
LIIIVIJ	Energy Management System iso Sooon	7015	Accreditation body of Scibia

#### **Certified Bodies:**

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# **Public Relations**

Liberalization of electricity market in Serbia, which started with high voltage on January 1st 2013, unbundling of electricity supply and distribution activity and establishment of the new subsidiary EPS Supply required from Public Relations Sector to develop marketing and public relations strategy (with accompanying communication plan). Both documents had goals: to explain middle voltage customers, who may choose supplier from 1.1.2014 that EPS is still the most reliable supplier with the most competitive prices and explain public the reforms of electricity sector which have the impact on every citizen in Serbia.

By realizing strategies and communication plans adopted by the management of the company, Public Relations Sector conducted planned and continuing communication with targeted public:

- internal Management of the Company, Employees and Trade Union;
- external the Government of RS, competent Ministry, Energy Agency of RS, political and expert public, electricity customers, the Association of Consumers, current and future business partners.



Key messages for public were defined, as well as communication channels and tools. Apart from other activities, EPS and Serbian Chamber of Commerce held series of round table meetings in the largest cities of Serbia with middle voltage customers, in order to timely inform them about the fact that they will enter liberalized market and that they will no longer buy electricity at regulated prices. The most important communication channel in informing the public were media.

During 2013 in print and e-media and on web portals EPS had 9,609 posts in total. The largest number of posts (7,914) were informative, while 930 posts were affirmative, and there were 765 negative posts in total.



Media had positive approach towards topics: business operation of EPS, production results, investments into energy sector, company reorganization towards market liberalization.

1,708 TV footages about EPS were shown in total – 7,154 minutes totally (approximately five footages daily 20 minutes long).

There were almost 4,000 posts on internet portals about EPS.

The management of EPS, with Aleksandar Obradović as Acting Director, had regular monthly meetings with editors and journalists of Serbia media.

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#### The most common INFORMATIVE TOPICS

**756** posts - Customers' debts for spent electricity

**514** posts - Business results of EPS and subsidiaries within EPS

**415** posts - Restructuring of old debts for electricity

**360** posts - Electricity price

In company magazine "kWh", with monthly circulation of 10,000 copies, the official positions of the management on key topics were presented. Topics elaborated in "kWh" were taken over also by external media. Prominent economic analysts and university professors as well as European experts and representatives of international energy association had the opportunity during interviews to present their positions on reforms in energy sector and market liberalization, the importance of competition for business operation of the company like EPS, the need to create market environment, as well as possible issue resolution which EPS Group faces.

Internal e-newsletter "E-info" had almost 400 information from all subsidiaries and branches of EPS. It was sent every day to more than 700 addresses in EPS and externally. On internet presentation of PE EPS, which is important channel for communication with external public, data are updated on daily basis and the most important information are posted. Top management and experts of EPS participated in events with the topics related to market liberalization, organizational changes and EPS reorganization and establishment of Company EPS Supply. Public Relations Sector, together with the most influential expert media, organized several conferences and round table meetings with the topics related to market liberalization, establishment of distribution system operator, reorganization and corporatization of EPS, renewable energy sources and investments in EPS as the prerequisite for Serbian economy development.

Participation of the Company on expert domestic and international fairs, conferences and meetings was always noted and present in media. For successful participation on international fair ENERGETIKA 2013, EPS was awarded certificate of Association of Serbian Market Communications (UEPS).

Electric Power Industry of Serbia, as socially responsible company, by donations and sponsorships supported health system, education, science, culture, religious organizations and sport in 2013. That support was in accordance with Decision on criteria and the manner of using funds for sponsorships and donations, in a transparent and systematic manner.



# Tables

### Consolidated Balance Sheed of PE EPS and Subsidiaries

ltem	n		Balanc	Index	
	1	EDP -	12/31/2013	1/1/2013	macx
1	2	3	4	5	4/5
	Assets			RSI	000 0
Α	FIXED ASSETS (002+003+004+009)	001	944,442,936	955,770,961	99
I	UNPAID REGISTERED CAPITAL	002	0	0	C
II	GOODWILL	003	0	0	C
	INTANGIBLE INVESTMENTS	004	3,211,415	2,628,341	122
IV	PROPERTY, PLANT, EQUIPMENT AND BIOLOGICAL ASSETS (006+007+008)	005	933,364,323	950,469,208	98
1.	Property, plant and equipment	006	932,650,629	949,833,969	98
2.	Investement properties	007	409,256	374,790	109
3.	Biological assets	008	304,438	260,449	112
V	LONG-TERM FINANCIAL INVESTMENTS (010+011)	009	7,867,198	2,673,412	294
1.	Investments in capital	010	1,239,099	1,243,912	100
2.	Other long-term financial investments	011	6,628,099	1,429,500	464
В	CURRENT ASSETS (013+014+015)	012	151,335,335	118,929,668	127
I	INVENTORIES	013	25,831,885	26,858,930	96
11	FIXES ASSETS AVAILABLE FOR SALE AND ASSETS OF DISCOUNTING OPERATIONS	014	0	0	(
	SHORT-TERM RECEIVABLES, INVESTMENTS AND CASH (016+017+018+019+020)	015	125,503,450	92,070,738	136
1.	Receivables	016	82,342,143	74,700,931	11(
2.	Receivables on account of prepaid income tax	017	0	726,343	(
3.	Short-term financial investments	018	6,835,844	1,899,191	360
4.	Cash equivalents and cash	019	35,524,098	13,460,762	264
5.	Value-added tax, accruals and prepaid expanses	020	801,365	1,283,511	62
IV	DEFFERED TAX ASSETS	021	0	0	(
с	OPERATING ASSETS (001+012+021)	022	1,095,778.271	1,074,700,629	102
D	LOSS EXEEDING THE VALUE OF EQUITY	023	0	0	(
Е	TOTAL ASSETS (022+023)	024	1,095,778,271	1,074,700,629	102

ltem	
1	2
	Equity and
А	EQUITY (102+103+104+105+106-107+108-109+110)
I	FIXED CAPITAL
Ш	UNPAID REGISTERED CAPITAL
111	RESERVES
IV	REVALUATION RESERVES
V	UNREALISED GAINS ON SECURITIES
VI	UNREALISED LOSSES ON SECURITIES
VII	НЕРАСПОРЕЂЕНИ ДОБИТАК
VIII	LOSS
IX	TREASURY SHARES
В	LONG-TERM PROVISIONS AND LIABILITIES (112+113
I	LONG-TERM PROVISIONS
II	LONG-TERM LIABILITIES (114+115)
1.	Long-term loans
2.	Other long-term liabilities
	SHORT-TERM LIABILITIES (117+118+119+120+121+12
1.	Short-term financial liabilities
2.	Liabilities on account of assets available for sale and of discounting operations
3.	Operating liabilities
4.	Other short-term liabilities
5.	Liabilities on account of vat and other public revenues, accruals and deferred income
6.	Liabilities on account of income tax
с	DEFFERED TAX LIABILITIES
D	TOTAL EQUITY AND LIABILITIES (101+111+123)
E	OFF-BALANCE SHEET ASSETS

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			6	
	EDP	Balanc		Index
	2	12/31/2013	1/1/2013	A / F
مطانمهنانه	3	4	5	4/5
nd Liabilit				RSD 000
0)	101	800,096,551	780,821,851	102
	102	360,010,128	359,988,038	100
	103	0	0	0
	104	0	0	0
	105	553,061,114	556,848,676	99
	106	20,235	12,539	161
	107	730,355	686,477	106
	108	0	0	0
	109	112,264,571	135,340,925	83
	110	0	0	0
13+116)	111	204,866,374	201,687,681	102
	112	14,620,434	13,272,433	110
	113	68,480,151	62,131,899	110
	114	66,101,130	58,143,363	114
	115	2,379,021	3,988,536	60
-122)	116	121,765,789	126,283,349	96
	117	25,155,056	33,092,959	76
and assets	118	0	0	0
	119	59,354,785	63,036,062	94
	120	4,914,600	4,034,628	122
	121	29,469,222	26,111,206	113
	122	2,872,126	8,494	33.814
	123	90,815,346	92,191,097	99
	124	1,095,778,271	1,074,700,629	102
	125	254,964,862	258,938,673	98

#### Consolidated Income Statement of PE EPS and Subsidiaries

ELEMENTS		ACTUAL 2012	PLAN 2012	ACTUAL 2011	Index	
1	2	3	4	5	(3/4)	(3/5)
I	OPERATING REVENUE	219,808,081	218,377,541	190,643,247	101	115
П	OPERATING EXPENDITURE	186,527,654	191,129,432	195,915,885	98	95
1.	Electricity procurement	29,303,536	24,001,030	25,962,566	122	113
2.	Material and fuel costs	11,558,809	16,050,652	17,722,986	72	65
3.	Maintenance	16,182,139	15,958,240	18,112,729	101	89
4.	Depreciation	37,269,631	38,020,438	44,397,781	98	84
5.	Employee costs	53,870,992	55,232,241	52,946,743	98	102
6.	Insurance	2,376,977	2,411,146	2,275,874	99	104
7.	Statutory obligations	5,287,667	3,876,816	4,497,464	136	118
8.	Liabilities towards the state	13,357,136	13,314,227	13,304,981	100	100
9.	Scientific research	586,204	2,094,833	653,672	28	90
10.	Other operating expenditure	16,734,563	20,169,809	16,041,089	83	104
1-11	Operating profit/loss	33,280,427	27,248,109	-5,272,638	122	(
111	FINANCIAL REVENUE	16,663,822	11,008,072	13,633,993	151	12
IV	FINANCIAL EXPENDITURE	7,401,515	12,434,071	10,303,927	60	72
III-IV	Financial profit/loss	9,262,307	-1,425,999	3,330,066	0	27
V	OTHER REVENUE	7,851,599	5,807,131	13,335,739	135	59
VI	OTHER EXPENDITURE	28,080,952	32,321,747	55,807,355	87	50
V-VI	Other profit/loss	-20,229,353	-26,514,616	-42,471,616	0	(
VII	PROFIT FROM DISCONTINUED OPERATIONS	0	0	0	0	(
VIII	LOSS FROM DISCONTINUED OPERATIONS	0	0	0	0	C
VII-VIII	Net profit/loss from discontinued operations	0	0	0	0	0
А	TOTAL REVENUE (I+III+V+VII)	244,323,502	235,192,744	217,612,979	104	11
В	TOTAL EXPENDITURES (II+IV+VI+VIII)	222,010,121	235,885,250	262,027,167	94	8
A-B	Total profit / loss	22,313,381	-692,506	-44,414,188	0	
	Tax Expenditures	-4,355,125	0	-667,790	0	
	Deffered Tax Revenues/Expenditure	1,216,616	0	32,756,783	0	
	NET TOTAL PROFIT/LOSS	19,174,872	-692,506	-12,325,195	0	

## PE EPS Business Indicators

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		I-XII 2013.	I-XII 2012.	Index
1	2	3	4	(3/4)
1	Number of employees at the end of period	33,335	33,451	100
2	Total revenues, mil RSD	244,324	217,613	112
3	Total expenditures, mil RSD	222,010	262,027	85
4	Operating revenues, mil RSD		190,643	115
5	Operating expenditures, mil RSD	186,528	195,916	95
6	Net loss current year, mil RSD	0	-12,325	0
7	Net profit current year, mil RSD	19,175	0	0
8	Accumulated loss, mil RSD	112,265	135,341	83
9	Total fixed assets, mil RSD	944,443	955,771	99
10	Capital, mil RSD	360,010	359,988	100
11	Capital and reserves, mil RSD	800,097	780,822	102
12	Total liabilities, mil RSD.	204,866	201,688	102
13	Long-term foreign currency liabilities, mil RSD	53,885	56,636	95
14	Total net current fund, mil RSD	29,570	-7,354	0
15	Share of total long-term funds in total assets (assets),%	86.2	88.9	97
16	Share of inventories in current assets,%	17.1	22.6	76
17	Share of receivables, investments, VAT and accruals in current assets,%	59.5	65.5	91
18	Share of total equity and revaluation reserves in total liabilities,%	73.0	72.7	100
19	Share of total short-term liabilities in total liabilities,%	59.4	62.6	95
20	Share of total liabilities in equity,%	25.6	25.8	99
21	Ratio of account payables to receivables,%	15.5	32.8	47
22	Ratio of account payables to short-term receivables without TV fee,%	31.7	59.7	53
23	Ratio of account payables to receivables from sale (customers),%	9.3	16.4	57
24	General liquidity ratio	1.24	0.94	132
25	Reduced liquidity ratio	1.03	0.73	141
26	Account payables days	63	112	56
27	Account receivables days	236	301	78
28	Share of long-term liabilities in foreign currency in total long-term liabilities, $\%$	26.3	28.1	94
29	Turnover ratio of total current assets	1.45	1.60	91
30	Turnover ratio of account receivables	1.55	1.21	128
31	Turnover ratio of account payables	5.82	3.25	179
32	Share of operating income in total income,%	90.0	87.6	103
33	Share of operating income in total expenditures,%	84.0	74.8	112
34	Total revenues / total expenditures ratio,%	110.1	83.0	133
35	Operating revenues /Operating expenditures ratio,%	118	97	121
36	Net income / (loss) margin,%	0.0	-5.7	0
37	Net income / (loss) margin,%	7.8	0.0	0
38	Accumulated loss to total revenue ratio,%	45.9	62.2	74
39	Accumulated loss to capital ratio,%	14.0	17.3	81
40	Loss per employee, 000 RSD	0.0	-368.5	0
41	Gross profit per employee, 000 RSD	575.2	0.0	0



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#### Note

In "Annual Report of Electric Power Industry of Serbia 2013" the most important indicators and information on operation of the company were given for the indicated year. Texts were written based on data that have been submitted from all Departments of PE Electric Power Industry of Serbia, from the management and common business functions of the company.

