



Bosnia and Herzegovina
State Electricity Regulatory Commission

**REPORT
ON THE ENERGY SECTOR
OF BOSNIA AND HERZEGOVINA
IN 2009**

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1 FOREWORD

2009 was an important year for the power sector all around the world including Bosnia and Herzegovina. An increase in electricity generation reaching a historic maximum, a record in electricity export and total revenues realized are a proof of the vitality and ability of the Bosnia and Herzegovina's power sector to operate successfully even under the complex energy and economic conditions. This Report is an attempt to provide a comprehensive insight into its basic segments, some basic facts about it and present its achievements and possibilities.

Bosnia and Herzegovina is a country with a complex internal structure including a specific regulatory framework in which three regulatory bodies operate with divided competences and which has not been fully integrated yet in legal and institutional terms. The whole transition and the process of institutional approximation to the European Union has been taking place with some difficulties. Although some issues pertaining to the foundation, operation and development of the key entities responsible for the development of energy activities and the energy system in the country can be interpreted in a different way, it is undisputable that competitive, sustainable, safe and green energy is the main challenge and priority of BiH, while the integration of its energy potential into the European energy market has no alternative.

In 2009, the BiH electricity sector exceeded the energy indicators and financial results of the previous years. Electricity generation was increased by 5.6% reaching a historic maximum of 14,575 GWh, while a record in electricity export of 3,900 GWh was reached. In the natural gas sector, consumption was reduced by 25.8% - end customers consumed a total of 230 million Sm³ of natural gas in 2009.

Due to the ancillary service capacity reduction (secondary regulation) by providers of these services, the electricity system of Bosnia and Herzegovina occasionally operated without this type of regulation causing a justified reaction of the UCTE block coordinator with regard to deviation of BiH control area toward the European interconnection. Consequently, in 2009 the State Electricity Regulatory Commission was dedicated to developing a model for provision of ancillary and system services in the power system of BiH which, *inter alia*, would preclude reoccurrence of similar incidents.

There are many more things yet to be done in the energy sector. 2009 anticipated some important changes of the European energy regulation. The adopted new regulations of the European Union on the internal energy market, the so-called Third Legislative Package is expected to strengthen the energy market, give consumers more protection and the benefit of the lowest possible energy prices while offering companies the chance to compete on a level playing field. The process of transposition of the European *Acquis Communautaire* into national primary and secondary legislation would confront the energy sector with many more challenges, and all three regulatory bodies are determined to actively participate in all these processes in line with their jurisdictions.

Furthermore, the ambitions also include the firm commitment of all three regulatory bodies to continue to strengthen the autonomy and independence of the regulatory function vested in them by law, serving to the general interest and progress of the energy sector, but also of the whole country, by following the best regulatory theory and practice, collecting and processing energy sector information, developments and situation in the energy market and permanently broadening their expertise.

The Report in front of you is the first one prepared in the format and content generally accepted for this type of overviews, and was created by the joint efforts using data provided by all regulatory and national bodies sharing the institutional responsibility for management and regulation of the energy sector in BiH.

2 SUMMARY AND RELEVANT INFORMATION ON THE NATURAL GAS AND ELECTRICITY MARKETS

2.1 Summary

The State Electricity Regulatory Commission in Bosnia and Herzegovina, in cooperation with Regulatory Commission for Electricity in Federation of Bosnia and Herzegovina and Regulatory Commission for Energy of Republika Srpska as well as the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Ministry of Energy, Mining and Industry of the BiH Federation and the Ministry of Industry, Energy and Mining of Republika Srpska prepared the Report on the Energy Sector of Bosnia and Herzegovina which covers all issues as foreseen by the common reporting structure agreed by the members of the Energy Community Regulatory Board. The structure is based on the same pattern used by ERGEG, with some changes and integrations as required by the Energy Community framework.

The Report is prepared also with the purpose of comprehensive reporting to the Energy Community institutions, which is done by the energy regulators of all Contracting Parties.

This Section of the Report summarizes and provides some relevant information on developments in the electricity and natural gas markets, gives an overview of the regulatory framework and the main activities carried out by the regulators in 2009.

Section 3 provides a detailed description of the electricity market operation including regulated as well as market-based services. In 2009, electricity generation increased to the level of a historic maximum of 14,561 GWh, that is, by 5.6% compared to the previous year. A total of 11,597 GWh of electricity was consumed, which is by 4.9% less than in 2008. Consumption of customers connected to the distribution networks was by 2.3% higher than in 2008, while consumption of consumers connected to the transmission network was reduced by 26.9%. An average electricity price for household customers decreased by 0.7%. An average price for commercial customers was reduced also by the same percentage, while an average price for industrial customers increased by 2.8%. As there was no change of tariff elements, the price fluctuation of average prices is only a consequence of the patterns of electricity consumption by individual customer categories. With regard to market opening, the state of play was similar to 2008. Out of 1.3 million end customers in BiH, only one customer purchased electricity in the open market ("Aluminij" d.d., Mostar) for a part of its needs (876 GWh) while it purchased the rest of 616.5 GWh as a tariff customer. Pursuant to the applicable regulations pertaining to the electricity market opening, all customers excluding household customers, have the right to purchase electricity in the market, but they are not using this option for the time being. Although a number of reasons can be given for this state of play, two major reasons are singled out: low electricity prices in BiH in comparison with the closer and wider surroundings and the incumbent dominance.

Section 4 provides a detailed description of the natural gas market. In 2009, end customers consumed 230 million Sm³ of natural gas, which is by 25.8% less than the total consumption in 2008. Consumption of industrial customers connected to the transmission network was reduced approximately by 40%, while consumption of customers connected to the distribution networks was reduced approximately by 13%. At the end of 2009, gas prices for end customers were lower by 31.3% in comparison with the prices at the end of 2008. The reason for the price drop was the reduction of the purchase price of Russian natural gas.

Section 5 provides a short overview of security of supply concerning electricity and natural gas while Section 6 describes public service and customer protection issues, with a special focus on the vulnerable customer protection.

2.2 The Regulatory Framework of Bosnia and Herzegovina

The regulatory framework of the energy sector follows the internal structure of Bosnia and Herzegovina as established by the Constitution. The state of Bosnia and Herzegovina comprises two entities: the Federation of Bosnia and Herzegovina and the Republika Srpska. Brčko District of Bosnia and Herzegovina has a special status. The State Electricity Regulatory Commission in Bosnia and Herzegovina, the Regulatory Commission for Electricity in Federation of Bosnia and Herzegovina and the Regulatory Commission for Energy of Republika Srpska constitute this regulatory framework which was established by the adoption of national and entity laws in the field of electricity in 2002 and the appointment of regulatory commissions' members in 2003.

It should be noted that the competences of RERS, which was initially formed as the electricity sector regulator, were expanded by the RS laws on gas, oil and oil derivatives to covers these fields, too. The Decree of the FBiH Government on organization and regulation of the gas industry sector defines that the relevant Ministry shall perform the function of a regulator until the final establishment of an independent regulatory body at the level of FBiH/BiH. Consequently, SERC and FERK competences still exclusively refer to the electricity sector.

This fact is the main reason for the inclusion of the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Ministry of Energy, Mining and Industry of the BiH Federation and the Ministry of Industry, Energy and Mining of Republika Srpska in the preparation of the Report on the Energy Sector in BiH.

The State Electricity Regulatory Commission (SERC) is an independent and non-profitable institution of Bosnia and Herzegovina (BiH), which acts in accordance with the principles of objectivity, transparency and equality, and has jurisdiction and responsibility over the transmission of electricity, transmission system operation and international trade in electricity.

SERC's jurisdictions include:

- Issuance, modification, suspension, revocation, and monitoring of and enforcing compliance with licenses within its jurisdiction;
- Regulating, approving and monitoring tariffs and tariff methodologies for transmission services, ancillary services and operation of the independent system operator (ISO), as well as supplying electricity customers in Brčko District of Bosnia and Herzegovina;
- Issuance of rules and regulations within its competency, including revision and approval of market rules and grid codes, and terms and conditions for connection and access to network;
- Establishment, monitoring and enforcement of rules related to fair and non-discriminatory third party access to the transmission network;
- Monitoring and enforcement of conditions related to international trade in electricity, in particular ensuring that international technical requirements are met and adhered to;
- Establishing, monitoring and enforcing quality standards for electricity transmission and ancillary services;
- Coordinating and approving investment plans of the company for transmission of electricity, including the plans related to the transmission network and the quality of electricity transmission;
- Monitoring of the efficiency of mechanisms and methods securing the system balance between demand and supply of electricity;
- Consumer protection ensuring: fair and non-discriminatory treatment, high-quality services, competition and the prevention of anti-competitive activity;
- Resolution of disputes among system users, in accordance with regulatory powers and applicable state laws;
- Creation and maintenance of competitive markets when practicable, and prevention of any anti-competitive conduct;

- Approving mechanisms for dealing with congestions of the electricity transmission system capacities;
- Regulation of standards of service, codes of conduct and accounting requirements for licensees;
- Issuance of annual reports and other public information about SERC.

The Regulatory Commission for Electricity in the Federation Bosnia and Herzegovina, (FERK) is a specialized, autonomous, independent and non-profitable organization in the Federation of Bosnia and Herzegovina.

FERK's jurisdictions are:

- Supervision and regulating the relations between power generation, distribution and electricity customers including power traders,
- Prescribing methodology and criteria for defining the prices for supplying of non-eligible customers
- Defining of tariff elements for distribution systems users and tariff elements for non-eligible customers,
- Issuing and revocation of licenses for generation, distribution and tariffs for non-eligible customers,
- Issuing the preliminary construction permits and licenses for usage of power facilities except the facilities for power transmission,
- Defining general conditions for electricity supply,
- Determining the electricity price at the plant outlet.

The Regulatory Commission for Energy of Republika Srpska regulates and monitors the relationships in the market of electricity, gas and oil, pursuant to provisions of the RS Energy Law and competences assigned to it by RS laws in the sector of electricity, gas and oil taking care of providing the principle of transparency, non-discrimination, fairness, stimulating competitiveness and protection of end customers.

RERS is a specialized, independent and non-profitable organization in performing its activities. The task of RERS is to provide conditions for the market opening for free competition in those activities which are not inherently monopolistic and when it is about monopolistic activities to provide all parties with equal treatment, quality of service and fair price accompanied by the profitable running of business of the participants, while concurrently complying with generally accepted international standards.

The basic RERS jurisdictions in the electricity sector include:

- Monitoring and regulation of relationships between generation, distribution and customers of electricity including traders of electricity,
- Prescription of methodology and criteria for determination of both, the price for using distribution network and for supply of non-eligible customers with electricity as well as the methodology for determination of the fee for connection to the distribution network,
- Making tariff system for selling electricity and using distribution network,
- Determination of tariff rates for distribution system users and tariff rates for non-eligible customers,
- Issuance or revocation of the licenses for generation, distribution and trade of electricity,
- Making general conditions for delivery of electricity,
- Determination of the electricity price at the plant outlet.

Pursuant to the RS Gas Law, RERS has the jurisdictions in the natural gas sector as follows:

- Determination of methodology for calculation of costs of generation, transport, distribution, storage and supply with natural gas,

- Determination of the methodology for calculation of costs for connection to the network,
- Making tariff system for calculation of prices for using systems of generation, transport, distribution, storage of natural gas and tariff system for calculation of the natural gas prices for the tariff customers supply,
- Determination of criteria and prescription of conditions for obtaining, amendment and revocation of licenses for activities as well as deciding on, in the proceedings for obtaining, amendment and revocation of licenses for activities in the natural gas sector,
- Settlement of disputes per complaints on decisions of the transport and distribution system operators in proceedings for granting approvals for using network and approval for connection to the network,
- Determination of the minimum annual consumption of natural gas which is used to get a status of eligible customer, to determine the status and keep the register of eligible customers of natural gas,
- Giving consent to the operational rules of the system operator and to the general conditions for supply with natural gas,
- Giving consent to the energy undertakings on the prices of services and prices of the natural gas supplying.

In addition to the jurisdictions in the electricity and natural gas fields, RERS has some jurisdictions in the field of oil and oil derivatives.

Finally, it should be noted that the State Electricity Regulatory Commission has not commenced regulation of electricity generation, distribution and supply in Brčko District of BiH due to different approaches of the Entities towards the Decision of the High Representative for Bosnia and Herzegovina adopted in September 2009. These tasks will be taken over when all necessary conditions are fulfilled.

2.3 Summary of Regulatory Activities

In 2009, the Regulatory Commissions in Bosnia and Herzegovina conducted a number of activities on the creation of conditions for free trade and unhindered electricity supply in accordance with the previously defined quality standard to the benefit of the citizens of Bosnia and Herzegovina, and in compliance with the applicable laws, relevant European directives and the rules of internal electricity market. A detailed description of activities conducted by the Regulatory Commissions individually in 2009 is provided in separate reports on activities which are regularly submitted to the relevant Parliaments for approval on an annual basis.

The three Regulatory Commissions used various modalities of mutual follow up and harmonization of activities, in cooperation with other regulatory bodies in Bosnia and Herzegovina, primarily the Council of Competition of BiH.

The cooperation was realized with the Parliamentary Assembly of Bosnia and Herzegovina (PA BIH), in particular with the Commission for Traffic and Communication of the House of Representatives of PA BIH and the Commission for Foreign and Trade Policy, Customs, Traffic and Communication of the House of Peoples of PA BIH. Of particular importance is the continuation of information exchange and harmonization of key regulatory activities with the Ministry of Foreign Trade and Economic Relation of BIH, which is competent for policy creation in accordance with the Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina as well as with the entity Ministries covering the energy sector.

Furthermore, the Regulatory Commissions followed up activities and trends in the whole energy sector and directly participated in all relevant events.

In 2009, in line with their jurisdictions, the Regulators in BiH were focused on:

- Setting of tariffs for services of electricity transmission, the operation of the Independent System Operator and ancillary services, and setting of regulated generation prices and tariffs for the distribution network and electricity and natural gas supply,
- Issuance of licenses,
- Monitoring of licensed entities,
- Analysis of regulatory rules and practice,
- Creation of regulatory rules,
- Design of a single electricity market,
- Capacity building in terms of the fulfillment of international obligations with regard to regulatory reporting towards the ERGEG structure,
- Social aspect within the field of regulatory practice,
- Monitoring the implementation of the ITC mechanism and establishment of the mechanism for coordinated explicit capacity auctions,
- Sharing information on regulatory practice with the regulated entities and the public.

The Regulatory Commissions, especially SERC, put a particular focus on the activities of international bodies pertaining to the regulation of the electricity market:

- ECRB - the Energy Community Regulatory Board (including the Electricity Working Group, Gas Working Group, Customers Working Group, South East Europe Co-ordinated Auction Office Implementation Group),
- ERRA - the Energy Regulators Regional Association (including the Standing Licensing/Competition Committee, Standing Tariff/Pricing Committee and Legal Regulation Working Group),
- MEDREG - the Mediterranean Working Group on Electricity and Natural Gas Regulation (including Ad Hoc Working Groups on institutional issues, electricity, gas and environment, renewable energy sources and energy efficiency),
- IERN - International Energy Regulation Network.

In 2009, follow up of the work of CEER (Council of European Energy Regulators) and ERGEG (European Regulators' Group for Electricity and Gas) was continued, as well as the analysis of the content and activities related to the adoption of the Third Package for EU energy market liberalization.

Taking into account that the Third Package was published in the Official Journal of EU on August 14, 2009, and entered into force on the twentieth day after the publication, and that the new European Union regulations on the internal energy market will become mandatory for Bosnia and Herzegovina through the Treaty Establishing the Energy Community, the analysis of the content and preparatory activities on the implementation of the relevant provisions were initiated.

2.4 Wholesale Market

The power sector of Bosnia and Herzegovina is characterized by functioning of the "Independent System Operator", Sarajevo (ISO BiH) and the Company for Transmission of Electric Power- "Elektroprenos Bosne i Hercegovine" a.d., Banja Luka (Elektroprenos BiH). These companies were established in July, 2005 and February, 2006 respectively.

Three power utilities

- JP Elektroprivreda Bosne i Hercegovine - d.d., Sarajevo (EPBiH),
- MH "Elektroprivreda Republike Srpske" a.d., Trebinje (ERS), and
- JP "Elektroprivreda Hrvatske zajednice Herceg Bosne" d.d., Mostar (EP HZHB),

are the most relevant entities in the power sector of Bosnia and Herzegovina. All three power utilities perform the activities of generation, distribution, trade and supply in their respective license areas.

Generators, traders and suppliers are present as players in the wholesale electricity market of Bosnia and Herzegovina providing that they are granted the relevant licenses for performance of their activities which are issued by the Regulatory Commissions in BiH in line with their jurisdictions.

As there is no trade in an organized, that is, institutionalized market (exchange) in Bosnia and Herzegovina, trade in electricity is performed on the basis of bilateral contract, thus, it can be said that a bilateral wholesale market exists.

In 2009, relevant changes occurred in the electricity market in comparison with 2008. As a consequence of the global economic crisis, all economic parameters dropped which caused a significant decrease in consumption in the region of South-East Europe. It is estimated that in this region with annual consumption around 200TWh, the decrease in 2009 amounted to 10 TWh, that is, 5%.

A drop in electricity consumption was recorded primarily with large customers in aluminum, chemical and car industries. A drop in global demand, that is, the creation of temporary electricity surplus in the region, which under normal operational conditions suffers from electricity shortages, had the crucial impact on a drop of prices in the wholesale market. An unusually high level of rainfall in the past year resulting in high inflows and a significant generation increase in hydropower plants was also conducive to the decrease in electricity prices on the market.

Notwithstanding this, in 2009 the power sector in BiH excelled the power indicators and financial results of the previous years due to an increase in electricity generation by 5,6%, reaching a historic maximum of 14,561 GWh, and a realized record in export of 3,900 GWh.

Bosnia and Herzegovina does not have its own natural gas production, which is the reason for import of all quantities of this energy source from the Russian Federation. The natural gas import in 2009, as it was the case in previous years, was done by two companies:

- “Energoinvest” d.d. Sarajevo as a leader of Agreement on purchase of gas from the Russian Federation and cosignatory of the international agreements on transport of natural gas
- “BH-Gas” d.o.o. Sarajevo (BH-Gas) as a cosignatory of the Annex to the Natural gas purchase agreement and signatory of the Agreement on transport through Hungary and Serbia.

BH-Gas has been, as it was the case in previous years, the dominant company dealing with wholesaling of natural gas in BiH, and the only one which sells gas to those customers directly connected to the transport gas pipeline in BiH.

The distribution company “Sarajevo-gas” a.d. Istočno Sarajevo (Sarajevo-gas) has not been directly connected to the transport gas pipeline, but is connected and supplied through the distribution system of KJKP “Sarajevagas” d.o.o. Sarajevo (Sarajevagas). Taking this into account, Sarajevagas is the second company dealing with the wholesaling in the natural gas market in BiH.

2.5 Retail Market

In the area of RS, five companies operate within the structure of MH “Elektroprivreda Republike Srpske” Trebinje, with licenses for supply of tariff customers, and at the same time they are distribution system operators in this area. In the Federation of BiH, Elektroprivreda BiH Sarajevo and Elektroprivreda HZHB Mostar are granted licenses for supply of tariff customers. These two entities also have licenses for performance of the activity of electricity distribution. The activities of distribution and supply in Brčko District of Bosnia and Herzegovina are performed by JP “Komunalno Brčko” d.o.o., Brčko.

Suppliers of eligible customers are holders of licenses for performance of the activities of trade and supply of electricity in the territory of Bosnia and Herzegovina issued by RERS as well second-tier licenses issued by FERK. These licenses imply electricity sale, including resale.

The SERC Decision on the scope, conditions and time schedule of electricity market opening and FERK and RERS Rules on obtaining eligible customer status of 2006 prescribe conditions, criteria and procedures for obtaining of eligible customer status, and define the rights and obligations of eligible customers and suppliers of eligible customer. These Rules enabled the opening of the retail electricity market, which by then, as far as customers were concerned, was based on sale of electricity to exclusively non- eligible (tariff) customers at regulated prices determined by the Regulatory Commissions in line with the adopted methodologies.

According to the Rules on obtaining eligible customer status and the prescribed time schedule of the market opening, as of January 1, 2008 all customers, excluding household customers, have obtained that status. In an interim period of the market opening, the eligible customer has the right to choose the mode of supply and the right to be supplied as a tariff customer again if he previously used the right to choose and was supplied as an eligible customer. The interim period shall last until January 1, 2012.

In 2009, only one customer used the possibility to purchase electricity in the market, for a part of its needs. That customer was "Aluminij" d.d. Mostar that purchased 876 GWh in the market, while it purchased the rest of 616.5 GWh as a tariff customer. Hence, all eligible customers are still supplied as tariff customers in accordance with provisions of the Rules which provided that possibility during the interim period.

According to energy volumes in 2009, consumption of all customers which have the possibility to obtain eligible customer status amounted to 5,587,994 MWh, while total consumption of all customers amounted to 9,973,447 MWh, which provided the nominal level of openness of 56.03%. As mentioned above, only one customer purchased energy in the market, consequently, the actual level of openness in 2009 amounted to 8.78%.

Supply of natural gas is provided by:

- "BH-Gas" d.o.o., Sarajevo (BH-Gas),
- KJKP "Sarajevogas" d.o.o., Sarajevo (Sarajevogas),
- "Visokogas" d.o.o., Visoko (Visokogas),
- "Sarajevo-gas" a.d., Istočno Sarajevo (Sarajevo-gas),
- "Zvornik stan" a.d., Zvornik (Zvornik stan),
- "K.F.K. - Plin" d.o.o., Kreševo (K.F.K. - Plin).

Due to the limited level of the transport system development, natural gas distribution networks have been developed only in the region of four towns in BiH, in Sarajevo, Istočno Sarajevo, Visoko and Zvornik.

Total natural gas consumption in 2009 amounted to 230,084,506 Sm³, of which 45.1% was consumed by the industrial sector, 32.9% by households and 22% by heating plants.

2.6 Infrastructure

2.6.1 Electricity

Figure 1. outlines the map of the power system of Bosnia and Herzegovina with operational areas of "Elektroprenos BiH", areas of public utilities and generation facilities (state of play as of December 2009).

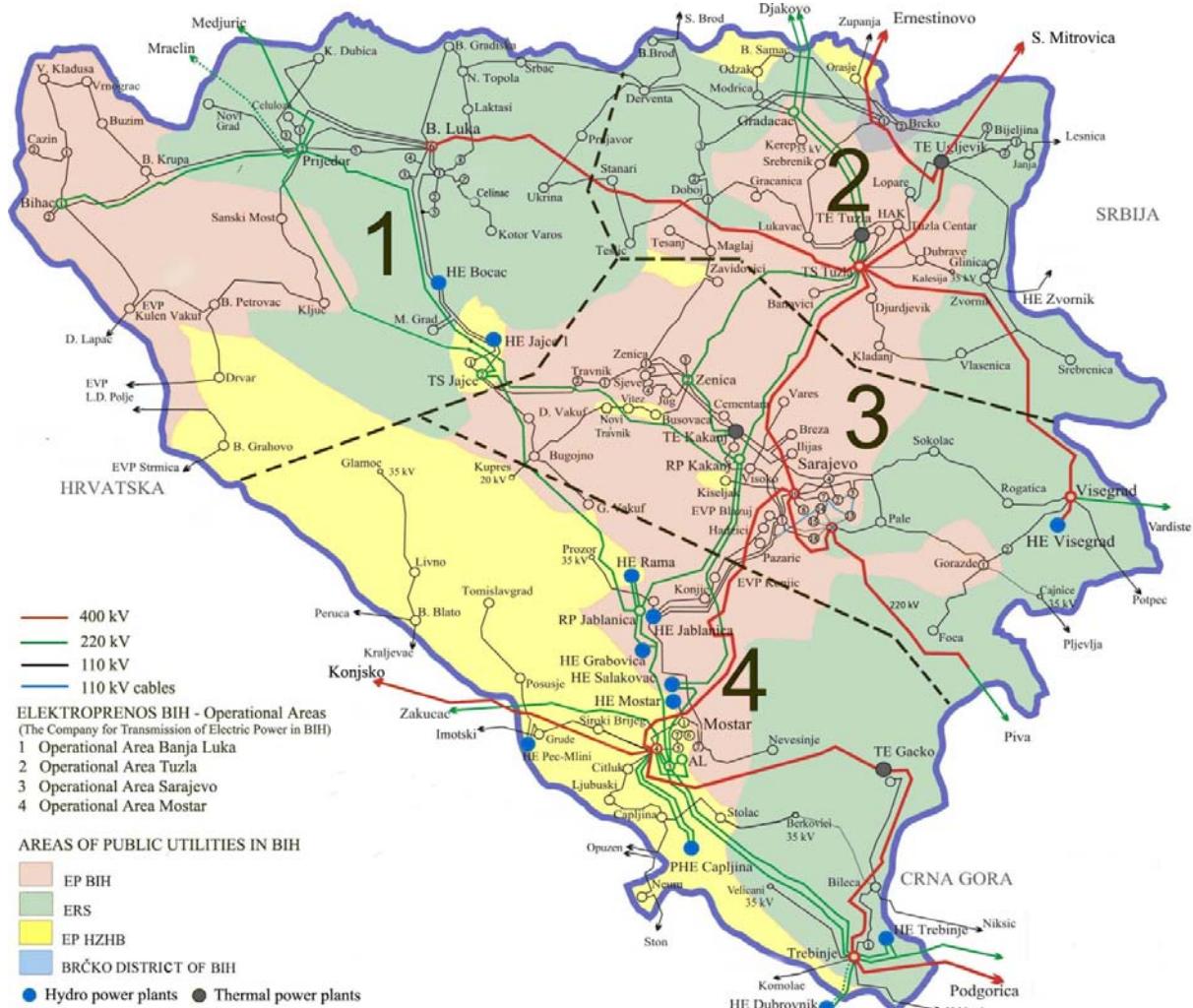


Figure 1. Transmission network and generation facilities of the power system

The basic data on the transmission system of Bosnia and Herzegovina are provided in Table 1.

Table 1. Basic data on the transmission system

transmission lines

Nominal voltage of transmission lines	Length (km)
400 kV	864.73
220 kV	1,524.80
110 kV	3,887.93
110 kV - cable line	31.35

interconnectors

Nominal voltage of transmission lines	No. of interconnections
400 kV	4
220 kV	10
110 kV	22
Total	36

sub-stations

Type of sub-station	No. of substations	Installed capacity (MVA)
TS 400/x kV	9	6,090.5
TS 220/x kV	8	1,423.0
TS 110/x kV	127	4,690.5

transformers

Transmission ratio	No. of transformers	Installed capacity (MVA)
TR 400/x kV	14	4,900
TR 220/x kV	14	2,100
TR 110/x kV	216	5,204

After the transformer 400/110 kV in the sub-station Višegrad and the cross-border 110 kV transmission line Bosanski Brod - Slavonski Brod (Croatia) were connected to the power transmission system during 2008, and new 110/x kV substations Janja, Banja Luka 7 and Banja Luka 8 were put in operation, the most important events in 2009 include:

- connection of the cross-border 220 kV transmission line Prijedor 2 - Mraclin (Croatia), and
- connection of the cross-border 110 kV transmission line Grude - Imotski (Croatia).

The most important investment in generation facilities refers to construction of HPP Mostarsko blato. The installed capacity is 2x30 MW while an expected annual generation amounts to 170,000 MWh. Putting into operation of these two power plants is expected in 2010.

2.6.2 Natural Gas

The natural gas transport system (Figure 2) consists of three companies:

- "BH-Gas" d.o.o. Sarajevo (132 km of the transport gas pipeline in FBiH),
- "Gas promet" a.d. Istočno Sarajevo - Pale (24,2 km in RS)
- "Sarajevo-gas" a.d. Istočno Sarajevo (40 km in RS).

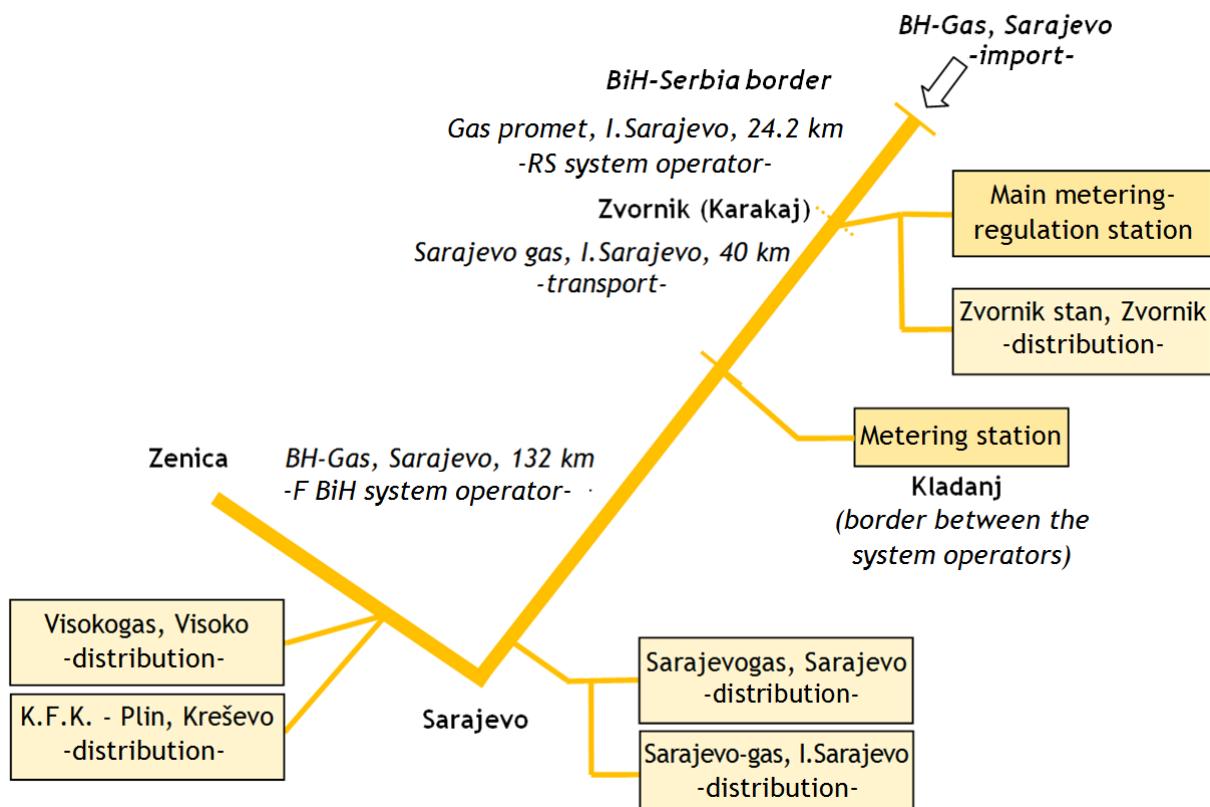


Figure 2. Scheme of the gas transport system in BiH

Bosnia and Herzegovina does not have its own natural gas production, which is the reason for import of all quantities of this energy source from the Russian Federation through the transport system in Ukraine, Hungary and Serbia, in the direction of Beregovo - Horgoš - Zvornik. The transport system in Bosnia and Herzegovina was constructed in the period from 1979 to 1984 and it is connected to the transport system of JP "Srbijagas" Novi Sad, Serbia in the town of Šepak, and it ends in Zenica, which practically means that there is no

transit of natural gas in BiH, namely, the gas pipeline system serves exclusively for supply of customers in BiH.



Figure 3. The transport gas pipeline of Ukraine - Hungary - Serbia - Bosnia and Herzegovina

Basic characteristics of the natural gas transport system in BiH in 2009 are given in Table 2.

Table 2. Characteristics of the natural gas transport system

Length of the basic gas pipeline	196.2 km
Diameter of the gas pipeline	406.4 mm
Maximum projected pressure	50 bar
Maximum projected capacity	$10^9 \text{ Sm}^3/\text{year}$
Rented capacity before BiH	$750 \cdot 10^6 \text{ Sm}^3/\text{year}$
Maximum technical capacity	0.00105 TWh/h
Maximum hourly gas flow	0.00067 TWh/h

3 REGULATION AND PERFORMANCE OF THE ELECTRICITY MARKET

3.1 Regulatory Issues

3.1.1 Management and Allocation of Interconnection Capacity and Mechanisms to Deal with Congestion

Allocation of cross-border transmission capacities in 2009 was performed in accordance with the so-called '*pro rata*' principle which basically is not market-based and favors the existing incumbents, giving each of them an adequate part of available cross-border capacities. Capacities were allocated on an annual, monthly and daily basis.

Pursuant to the Temporary Rules, in 2009 SERC adopted conclusions on allocation of funds based on charges for non-use of allocated cross-border transmission capacities, which were used to determine payers and users of the funds and their purpose. Pursuant to *Regulation 1228/2003/EC of the European Parliament and of the Council of June 26, 2003 on conditions for access to the network for cross-border electricity trade*, the purpose of these funds was investment in development and construction of BiH cross-border capacities towards the neighboring countries.

ISO BIH developed and submitted to SERC for approval new *Rules of Allocation of the Right to Use Cross-Border Transmission Capacities* which are based on market principles. Allocations are performed via explicit auctions, thus maximizing market value of transmission capacities. It is planned to start capacity allocations in 2010 pursuant to the new Rules on an annual, monthly and daily basis.

3.1.2 Regulation of Activities of Transmission and Distribution Companies

3.1.2.1 Regulation of Activities of the Company for Transmission of Electric Power and System Operator

Jurisdictions and powers of the State Electricity Regulatory Commission include, *inter alia*, approval, monitoring and enforcing tariffs and tariff methodologies for transmission and ancillary service regulation.

SERC adopted the Tariff Pricing Methodology for Services of Electricity Transmission, Operation of the Independent System Operator and Ancillary Services. The Methodology determines the tariff structure and tariff pricing method for activities of electricity transmission, transmission network management and ancillary service provision.

The Methodology is based on the method of traditional regulation ('*cost of service*') by which the regulator approves annual revenue requirement of a regulated company, sufficient to cover justified costs of the company, and calculates tariffs on the basis of physical indicators which are defined by an annual power balance. The implementation of the Methodology ensures that approved tariffs are transparent, non-discriminatory and based on justified costs of operation and maintenance ('*cost reflected*'), encourage energy efficiency, create stable relations in the electricity market, encourage development of regulated activities, take into consideration protection of the environment and reflect standards common in international practice. Within the Methodology adoption, the form and content of application forms for provision of data in tariff proceedings were determined. As a rule, the regulatory period lasts one year.

As far as network tariffs for electricity distribution are concerned, these tariffs are under jurisdiction of the entity Regulatory Commissions, FERK and RERS, and are adopted in tariff proceedings pursuant to tariff methodologies developed by these Commissions. Tariff elements for the distribution network use include costs of the distribution network and distribution losses as well as costs of the transmission network use, cost of operation of the Independent System Operator in BiH and costs of ancillary services determined by SERC. Tariffs for the distribution network use are also based on the principles of traditional regulation ('cost of service'). Determined revenue requirement consists of justified costs of operation, maintenance, management and development of the network, costs of justified electricity losses and return on capital.

The regulator determines in tariff proceedings validity of the application, based on which final prices, that is, tariff rates, are adopted. The regulator adopts its decision autonomously, independently of any other governmental agency. The duration of a regulatory period is not prescribed separately, and tariffs proceedings are launched either upon an initiative of regulated companies or the regulator. For calculation of tariff elements, technical and financial data and documentation are used which are submitted by distribution companies to the regulator pursuant to the Rule on tariff methodology and tariff proceedings and the Rule on reporting in prescribed time intervals. On the basis of these data the regulator considers the scope, type of quality of services provided by distribution companies to their users as well as costs of their operation, that is, their justification. Justification of costs is assessed in accordance with the type of cost, an analysis of their purpose, analysis of quantity and price and benchmarking.

Most outages occur in the distribution system. Therefore, the onus of the responsibility for reliability of supply rests on distribution networks. However, such events in the transmission system cannot be neglected either, since they result in supply interruptions for a high number of customers, and sometimes even in a total collapse of a part or the whole of the system. This is the reason why it is important for the reliability of the transmission system to be on a high level.

Taking into account that Elektroprenos BiH is the owner of all 110/x kV substations, including middle voltage feeders in these substations which mostly have distribution functions, monitoring of supply interruptions on this level gains additional importance. In that respect, Elektroprenos BiH gathers and processes the related data pertaining to the technical aspect of the transmission system operation.

These data are presented through indices of continuity of customer supply: SAIFI, SAIDI and ENS. SAIFI index (*System Average Interruption Frequency Index*) indicates the average number of interruptions per customer during a year. SAIDI index (*System Average Interruption Duration Index*) indicates the average interruption duration for each customer in minutes per year. Supply interruptions are divided into short interruptions lasting less than three minutes and long interruptions lasting three minutes and longer. Long interruptions include planned (announced) and unplanned (unannounced) interruptions.

Table 3. provides SAIDI indices caused by interruptions in the transmission network, that is, the network under TRANSCO jurisdiction, while Table 4. provides SIADI indices in the transmission network including also interruptions in MV feeders caused by events in the distribution network.

Table 3. SAIDI indices for the transmission network

Year	2008	2009
<i>Planned interruptions (min/customer)</i>	324.46	503.58
<i>Unplanned interruptions (min/customer)</i>	77.14	103.03
<i>Total</i>	401.59	606.60

Table 4. SAIDI indices for the transmission network including also interruptions in MV feeders caused by events in the distribution network

Year	2008	2009
<i>Planned interruptions (min/customer)</i>	810.02	847.61
<i>Unplanned interruptions (min/customer)</i>	661.66	877.17
<i>Total</i>	1,471.68	1,724.78

Independently of Elektroprenos BiH, similar indices are gathered by all three public utilities in BiH on the distribution level, that is, on voltage levels of 35, 20 and 10 kV. SAIFI and SAIDI indices are obtained by monitoring the number and duration of interruptions in TRANSCO's facilities resulting in supply interruptions for customers directly connected to the transmission network and/or supply interruptions in middle voltage feeders exceeding three minutes.

Table 5 provides data on energy-not-supplied (ENS) due to interruptions in the transmission network.

Table 5. Energy-not-supplied due to interruption in the transmission network (kWh)

Year	2008	2009
<i>Planned interruptions</i>	2,991,660	2,252,227
<i>Unplanned interruptions</i>	1,526,602	1,570,863
<i>Total</i>	4,518,263	3,823,090

Although the duration of interruptions in 2009 increased in comparison to the previous year, the amount of energy-not-supplied is lower in comparison to 2008. Gathering and processing data on availability and reliability of the system is a crucial, long-lasting, permanent process which is an important aspect of the quantitative evaluation of the power system operation as a whole. Available data are one of the important bases for the planning of power infrastructure development.

Pursuant to their licensing conditions, ISO BiH and Elektroprenos BiH are obligated to publish information pertaining to services under the jurisdiction of these companies. On the web page of the Independent System Operator there is available information on electricity consumption and generation on the current day, consumption and generation charts, a chart of deviations as well as an archive of these data for any day in the past, information on the Indicative generation plan, information on auctions, cross-border capacities and other types of information.

On the web page of the Company for Transmission of Electric Power, besides general information about the Company, there are other pieces of information pertaining to technical data on transmission lines and substations under the Company's jurisdiction, a map of the BiH power system, legislation, announcements, notices on procurement procedures etc.

3.1.2.2 Ancillary Services/Balancing

The model for the provision and use of ancillary services in the power system of BiH is defined by the *Tariff Pricing Methodology for Services of Electricity Transmission, Operation of the Independent System Operator and Ancillary Services* and the *Decision on Determination of Tariff for Ancillary Service*. In the model devised in this way, ancillary service providers are on one side (generation license holders) while the users are on the other side (licensed suppliers and eligible customers directly connected to the transmission

network). In the current phase of the power sector restructuring, the number of participants in the ancillary service system is reduced and in practice brought down to the three existing power utilities, eligible customers ("Aluminij" Mostar) and "Komunalno Brčko". At the same time, these are the entities that occur in financial calculations, where the power utilities are on the side of both receivables and payables, while eligible customers and ED Brčko are only on the side of payables.

In the model for the provision of ancillary services, the Independent System Operator gives orders to generation units to provide these services in situations where such arrangements are necessary to ensure the operation within the defined technical frameworks and maintain the power system security.

Non-allowed deviations on an hourly basis of each balance responsible party are calculated and paid pursuant the provisions of Market Rules. Pursuant to Market Rules, ISO BIH uses regulated electricity prices at outlets of generating units for calculation of prices for non-allowed deviations.

After hourly nominations are received, ISO BIH calculates and announces the imbalance price to be used during the following day for all settlement periods during the following day (exchange program).

There is one imbalance price for hours in which the BiH control area has a surplus of capacity/energy, that is, hours in which the system is 'long' and another imbalance price for hours in which the BiH control area lacks capacity/energy, that is, hours in which the system is 'short'. The system is considered 'long' in an hour during which the regulation error of the control area is positive.

'Top-up Imbalance Price' (VCD_d) for Day d equals the regulated energy price of the most expensive generating unit nominated for that day d and is applied during those settlement periods for which the system turns 'short'. 'Spill Imbalance Price' (NCD_d) for Day d equals the regulated energy price of the cheapest generating unit nominated for that day d and is applied during those settlement periods for which the system turns 'long'.

At the end of 2008 and the beginning of 2009, unwanted, i.e. non-allowed deviations from the daily schedules reached drastic levels, which disturbed normal operation of the system, and caused a reaction of the UCTE block coordinator. Therefore, SERC insisted on introducing settlements and payments for unwanted deviations as stipulated by the Market Rules. Since then (April 1, 2009) according to statements of all stakeholders, these deviations have been reduced to more acceptable levels which can be seen in Figure 4.

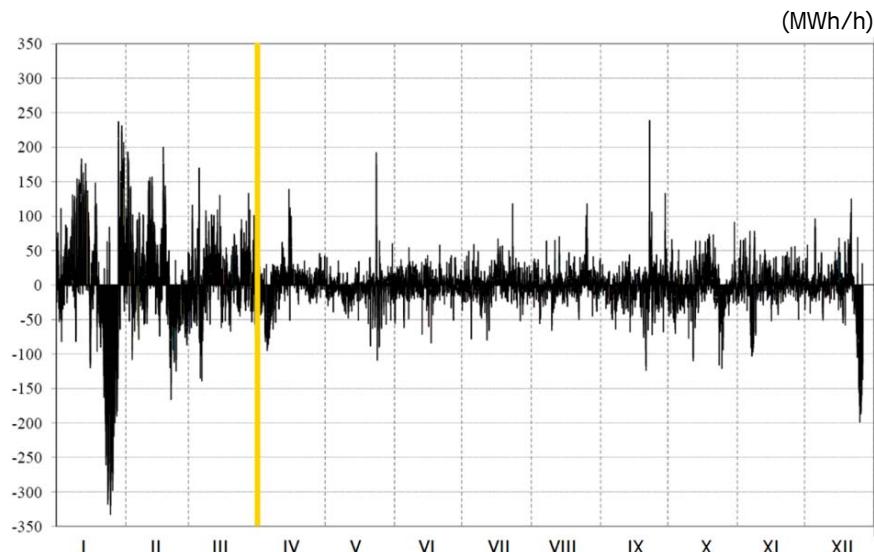


Figure 4. Unwanted hourly deviations of BiH toward interconnection in 2009

Although the system for the provision and use of ancillary services operated properly in 2009, there is some room for improvement and removal of shortcomings observed; consequently, with the readiness expressed by key stakeholders, it can be expected that the system for provision of ancillary services would be improved in the forthcoming period.

3.1.2.3 Regulation of Activities of Companies Performing Distribution Activity

Quality service regulation and electricity distribution system improvement ensue from legal jurisdictions of the Entity Regulatory Commissions.

Quality of supply is defined by the General Conditions as:

- Continuity of electricity delivery (ability, adequacy of the power network to ensure the continuity of electricity supply in specific period expressed by continuity indices for delivery),
- Commercial service quality (level of service provision by distributors, that is, suppliers as prescribed by General Conditions) and
- Supply voltage quality (the standard of the supply voltage quality includes nominal voltage levels at the supply point and nominal value deviations, nominal frequency values and allowed deviations and other voltage characteristics (wave form, symmetrical feature of phase values etc.) with deviation limits prescribed).

Pursuant to Licensing Conditions of electricity distribution licenses, licensees are obligated to ensure reliable and quality supply of end users with electricity, take all necessary measures to improve reliability and quality indices, keep records and establish a database with indices of the continuity of electricity delivered and the quality of services provided and produce regular annual reports on these indices which should be accessible to the public via their own web page.

The mentioned prescribed obligations are of 'general' nature, while the efficient quality service regulation is a very complex task implying previously established quality standards based on the database of indices which define quality of electricity supply. Continuous collection of reliable data on the supply continuity and commercial service indices during a representative period preceding the definition of quality standards are of particular importance. Subsequently, an introduction of incentives, that is, penalties is possible when tariffs are set and an introduction of compensation payments to affected customers in accordance with the established standards. The representative period should last between three and five years.

SAIDI value indices for individual licensed entities in the electricity distribution activity in 2009 presented in minutes per end customer are provided in Table 6, which shows that the values for planned and unplanned as well as total SAIDI index are a few times more unfavorable than in the European countries where the values of unplanned and planned SIADI range between 50 and 250 and 10 and 200 minutes per end customers respectively on an annual basis.

Part of the quality of supply refers to the quality of commercial services, which refers to the evaluation of services provided by a distributor/supplier to end customers (e.g. timeframe for connection of a facility to the distribution network, information on connection and the amount of connection fee), restart of supply in case of a breakdown affecting only one end customer (e.g. replacing a fuse at the end customer's connection), resolution of complaints about voltage quality and electricity metering, contacts with end customers (directly, in writing or by phone - waiting period), meter reading and billing (frequency).

Table 6. SAIDI indices for the distribution network (min/customer)

Distributor	planned interruptions	unplanned interruptions	Total
<i>Elektrokraina</i>	914	1,302	2,216
<i>Elektro Bijeljina</i>	1,096	2,034	3,130
<i>Elektro Doboj</i>	322	320	642
<i>Elektrodistribucija Pale</i>	462	3,364	3,826
<i>Elektro Hercegovina</i>	510	1,437	1,947
<i>Elektroprivreda HZHB</i>			1,221
<i>Elektroprivreda BiH</i>			1,440

Service centers are established within all entities performing the distribution activity, and their function is communication with end customers and an efficient resolution of claims and complaints. Distribution system operators are obligated to publish tariff elements for electricity distribution system users, tariff elements for non-eligible customers, general conditions for delivery and supply, Distribution Grid Code and fees for connection of end customers to the distribution network on their web pages and premises of their service centers. Furthermore, an end customer can find other types of useful information there e.g. different types of application forms, instructions on how to obtain connection for electricity, claim resolution.

3.1.3 Effective Unbundling

Electricity transmission is a monopoly activity, and as such it has to be regulated in order to enable use of the network to all users in a non-discriminatory and transparent manner at regulated prices. Unbundling of the transmission activity from other power activities into separate companies is of particular importance (administrative-functional and legal unbundling) to ensure impartiality in the provision of services. Transmission unbundling from the market activities of generation and supply has been ensured by the formation of two separate companies at the level of Bosnia and Herzegovina and they are: Elektroprenos Bosne i Hercegovine, Banja Luka and the Independent System Operator of Bosnia and Herzegovina, Sarajevo.

The distribution activity is still performed within legal entities which also perform the activity of supply of tariff customers, which is the case in RS and Brčko DBiH, that is, within legal entities performing the activities of generation and supply, which is the case in FBiH.

In 2009, Elektroprivreda BiH, Sarajevo merged with seven companies - coalmines.

3.2 Competition Issues

3.2.1 Description of the Wholesale Market

Electricity which is not intended for end consumers but for further sale is traded on the wholesale market. The wholesale market also includes all forms of cross border trade in electricity.

Generators, traders and suppliers are present as players in the wholesale electricity market of Bosnia and Herzegovina providing that they are granted the relevant licenses for performance of their activities which are issued by the Regulatory Commissions BiH in line with their jurisdictions.

As there is no trade in an organized, that is, institutionalized market (exchange) in Bosnia and Herzegovina, trade in electricity is performed on the basis of bilateral contract, thus, it can be said that a bilateral wholesale market exists.

3.2.1.1 Generators

The entire electricity generation in Bosnia and Herzegovina is produced by hydropower and thermal plants. Most of the facilities were put in operation between 1955 and 1989 during a period of intensive construction of power facilities in Bosnia and Herzegovina. All thermal power plant blocks are dimensioned to operate with domestic coals of the energy value of 8,000-12,000 kJ/kg (lignite) and 14,000-17,000 kJ/kg (brown coal).

Out of 3,834 MW installed in total, more than 98% of generation capacities are in possession of the three dominant companies: EP BiH, EP HZHB and ERS. The rest encompasses independent generators owning some twenty small hydropower plants and generators producing electricity for self-consumption with surplus being placed in the power system: Natron-Hayat Maglaj, GIKIL Lukavac, Birač Zvornik and KJKP Rad Sarajevo.

According to the applicable regulations, independent generators can conclude contracts on electricity sale with a tariff customer supplier or a licensee with a license for trade and supply of customers in the territory of Bosnia and Herzegovina.

Within the Mixed Holding Company "Elektroprivreda Republike Srpske" generators operate as dependant legal persons. Part of electricity generated by these companies in the public service system, in proportion to their share in total generation, is intended for supply of tariff customers with a surplus being placed by the Company in the market based on bilateral sales contracts concluded by the parent company with traders or electricity suppliers.

Table 7. gives an overview of installed generation capacities by type and ownership, while Table 8. provides the basic data on all generation facilities in Bosnia and Herzegovina.

Table 7. An overview of installed generation capacity by type and ownership (MW)

Power plants	EP BiH	EP HZHB	ERS	Independent generators	Total
Hydro power plants > 5 MW	514.400	792.600	720.000		2,027.000
Hydro power plants < 5 MW	3.366		5.900	20.141	28.973
Thermal power plants	1,125.000		600.000		1,725.000
Industrial power plants				52.500	52.500
Gas power plants				0.298	0.298
Total	1,642.766	792.600	1,325.900	72.939	3,834.205

Independent generators have concluded sales contracts with tariff customer suppliers within the companies which are competent for the areas where power plants are located. Sales contracts concluded by the power utilities with independent generators define conditions of sale and electricity prices.

Table 8. Basic data on generation facilities in Bosnia and Herzegovina

Power plant	Municipality	Ownership	Initial year of operation	Installed capacity (MW)	Generation 2009 (GWh)
HPP Jablanica	Jablanica	EP BiH	1955	180.000	829.627
HPP Grabovica	Mostar	EP BiH	1982	115.000	319.520
HPP Salakovac	Mostar	EP BiH	1982	210.000	482.085
HPP Mostar	Mostar	EP HZHB	1987	72.000	257.330
HPP Jajce 1	Jajce	EP HZHB	1957	60.000	232.640
HPP Jajce 2	Jajce	EP HZHB	1954	30.000	166.720
HPP Rama	Prozor	EP HZHB	1968	160.000	805.820
PHE Čapljina	Čapljina	EP HZHB	1979	440.000	386.280
HPP Peć Mlini	Grude	EP HZHB	2008	30.600	91.030
HPP on Trebišnjica*	Trebinje	ERS	1965-1981	287.000	1,236.644
HPP on Drina	Višegrad	ERS	1989	315.000	1,054.136
HPP on Vrbas	Mrkonjić Grad	ERS	1982	110.000	286.581
HPP Bogatići	Trnovo	ERS 72%, EP BiH 28%	1947	8.000	27.079
HPP Mesići	Rogatica	ERS	1950	3.000	19.280
HPP Tišča	Vlasenica	ERS	1990	2.000	5.521
HPP Vlasenica	Vlasenica	ERS	1950	0.900	4.210
TPP Tuzla	Tuzla	EP BiH	1964-1978	715.000	3,325.631
TPP Kakanj	Kakanj	EP BiH	1956-1988	410.000	1,907.973
TPP Ugljevik	Ugljevik	ERS	1985	300.000	1,559.004
TPP Gacko	Gacko	ERS	1983	300.000	1,434.021
SPP Una Kostela	Bihać	EP BiH	1952-1954	9.400	43.755
SPP Krušnica	Bosanska Krupa	EP BiH	1905	0.460	1.474
SPP Bihać	Bihać	EP BiH	1911	0.160	0.959
SPP Snježnica	Teočak	EP BiH	2002	0.422	0.755
SPP Osanica	Foča-Ustikolina	EP BiH	1998	0.994	2.908
SPP Hrid	Stari Grad (Sarajevo)	EP BiH	1918	0.400	0.000
SPP Modrac	Lukavac	Ind. gen. 51%, EP BiH 49%	1998	1.898	8.683
SPP Botun	Fojnica	Independent generator	2005	1.109	3.058
SPP Majdan	Fojnica	Independent generator	2005	2.802	6.675
SPP Jezernica	Fojnica	Independent generator	2005	1.376	3.807
SPP Mujakovići	Fojnica	Independent generator	2005	0.805	5.744
SPP Jelići	Gornji Vakuf	Independent generator	2005	1.350	4.345
SPP Sastavci	Gornji Vakuf	Independent generator	2005	0.800	1.910
SPP Bila voda	Jajce	Independent generator	2006	0.055	0.264
SPP Mošćani	Travnik	Independent generator	2006	0.708	2.487
SPP Duboki potok	Gornji Vakuf	Independent generator	2005	0.850	2.360
SPP Prusac 1	Donji Vakuf	Independent generator	2006	0.647	3.156
SPP Pogledala	Fojnica	Independent generator	2007	0.690	2.404
SPP Pršljanica	Bugojno	Independent generator	2008	0.200	0.893
SPP Osanica 4	Goražde	Independent generator	2008	0.630	0.487
SPP Torlakovac	Donji Vakuf	Independent generator	2008	0.470	1.664
SPP Trešanica 4	Konjic	Independent generator	2008	1.200	3.265
SPP Mujada	Donji Vakuf	Independent generator	2009	1.281	5.518
SPP Čemernica	Pale-Prača	Independent generator	2009	0.500	1.197
SPP Vitez 1	Vitez	Independent generator	2006	1.200	4.470
SPP Buk	Široki Brijeg	Independent generator	1991	0.140	0.765
SPP Divič	Kotor Varoš	Independent generator	2005-2008	2.280	4.080
SPP Štrpcí	Rudo	Independent generator	1998	0.080	0.260
KJKP "Rad"	Novi Grad (Sarajevo)	Independent generator	2001	0.298	0
Global Ispat	Lukavac	Independent generator	1958	16.500	10.833
Natron-Hayat	Maglaj	Independent generator	1981	31.000	2.207
Birač Zvornik	Zvornik	Independent generator	1978	5.000	0

*including capacity of one generating unit at HPP Dubrovnik

Total generation of 14,561.52 GWh was realized in Bosnia and Herzegovina in 2009, of which 99.48% was produced by the dominant generators (EP BiH, ERS and EP HZHB), with the rest of 0.48%, that is, 76.28 GWh being produced by independent generators. Table 9. provides a structure of electricity generated in Bosnia and Herzegovina in 2009.

Table 9. Structure of electricity generated (MWh)

<i>Power plants</i>	<i>EP BiH</i>	<i>EP HZHB</i>	<i>ERS</i>	<i>Independent generators</i>	<i>Total</i>
<i>Hydro power plants > 5 MW</i>	1,682.566	1,939,820	2,596.860		6,219.246
<i>Hydro power plants < 5 MW</i>	10.351		29.012	63.237	102.600
<i>Thermal power plants</i>	5,233.604		2,993.025		8,226.629
<i>Industrial power plants</i>				13.040	13.040
<i>Gas power plants</i>					0.000
<i>Total</i>	6,926.521	1,939,820	5,618.897	76.277	14,561.515

It should be emphasized that 9 licensed generating companies (2 thermal power plants encompassing coalmines, 3 larger hydro power plants and 4 small hydro power plants) operate within MH "Elektroprivreda Republike Srpske" and they do not operate on the market independently but within the Parent Company which owns a license for trade and supply in the internal market and an international trade license. In addition to generation licenses, EP BiH and EP HZHB have distribution and supply licenses as well as international trade license.

As far as concentration in the market of Bosnia and Herzegovina is concerned, it can be concluded that in comparison with the closer and wider surroundings, the situation is favorable because the share of the largest generator EP BiH amounts to 47.57%. However, it should be taken into account that each public utility has the dominant position in its retail market area, because they can act to a significant extent independently of the real or potential competitors due to their market power and a low number of independent generators. In the situation with regulated prices which still exist for end customers, the abuse of the dominant position by the power utilities is limited, which may seem a paradox.

The calculation of Herfindahl-Hirschman index (HHI) for installed capacity results in 3462, and 3929 for produced energy, so it can be concluded that there is high concentration in the market of Bosnia and Herzegovina, because these numbers exceed considerably the value of 1800, which is taken as the border value between moderate and high concentration.

3.2.1.2 Traders

Electricity traders are energy entities, holders of licenses for performance of the activities of electricity trading and supply in the territory of Bosnia and Herzegovina and second-tier supply licenses issued by the Regulatory Commission for Energy of Republika Srpska and the Regulatory Commission for Electricity in Federation of Bosnia and Herzegovina respectively, and owners of licenses for performance of activity of international trade in electricity issued by the State Electricity Regulatory Commission.

In 2009, owners of licenses for trading in the territory of Bosnia and Herzegovina conducted purchase and sale of electricity both in the internal BiH market and in cross border trade based on bilateral contracts concluded with generators within the three existing companies in BIH (ERS, EP BiH and EP HZHB) and on a mutual basis.

In 2009, a drop in consumption in Bosnia and Herzegovina compared to 2008 amounted to 4.9% or in the absolute amount around 600 GWh. In this process, consumption in the distribution network increased by 2.3%, while consumption of large customers decreased by 26.9%. The decrease occurred mostly due the two largest electricity customers in BiH - Aluminij Mostar and Mittal Steel Zenica. The realized consumption of Aluminij Mostar, the only eligible customer in 2009, was reduced by 28% or by 347 GWh compared to 2008.

Significant surpluses in electricity generation resulted in an increase in the trade scope in the national electricity market. As an illustration, an overview of trade transactions in March 2009 was provided below. (Figure 5).

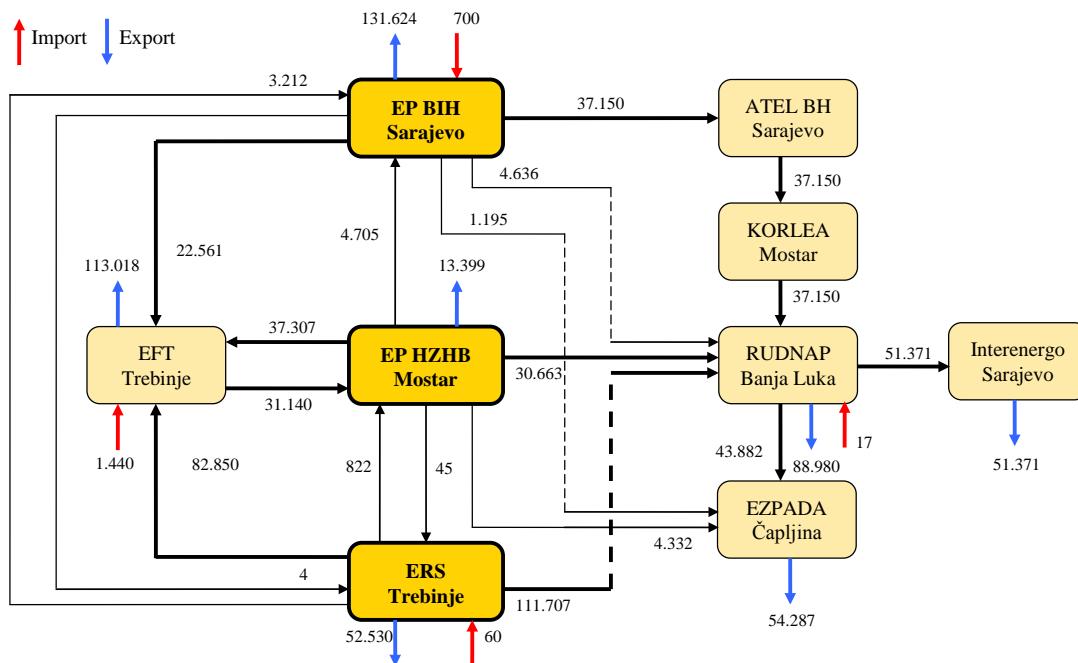


Figure 5. Trade transactions in March 2009

Total energy traded in the BiH wholesale market in 2009 amounted to 4,827 GWh. This is a total amount of energy purchased and sold by entities owning trading licenses in mutual bilateral transactions. Among public utilities and purely trading companies the largest scope of trading was achieved by Elektroprivreda BiH and EFT Trebinje respectively, followed by Rudnap Banja Luka and Atel Sarajevo. A total scope of internal trading transactions is provided in Table 10.

Good connections of the BiH System with the neighboring power systems enable intensive cross border trade. This enables placement of electricity in the countries in the region which have significant shortages.

A record in export in 2009 resulted in a higher number of cross-border trade transactions. These transactions cover a large number of traders who take over electricity on BiH borders with the neighboring countries. Figure 6. provides an overview of participants in cross-border trade per borders of Bosnia and Herzegovina, while Table 12. provides a scope of international transactions.

Table 10. Scope of internal trading by entities (MWh)

Trader	Purchase	Sale
EFT	1,300,353	653,856
EP BiH	105,234	1,648,657
ERS	11,816	1,256,895
ATEL	515,950	513,880
EP HZHB	644,037	248,296
KORLEA	577,418	190,941
EZPADA	190,321	1,638
INTERENERGO	182,714	480
RUDNAP	1,136,250	309,856
GEN-I	142,619	2,285
ČEZ BiH	20,072	
Total	4,826,784	4,826,784

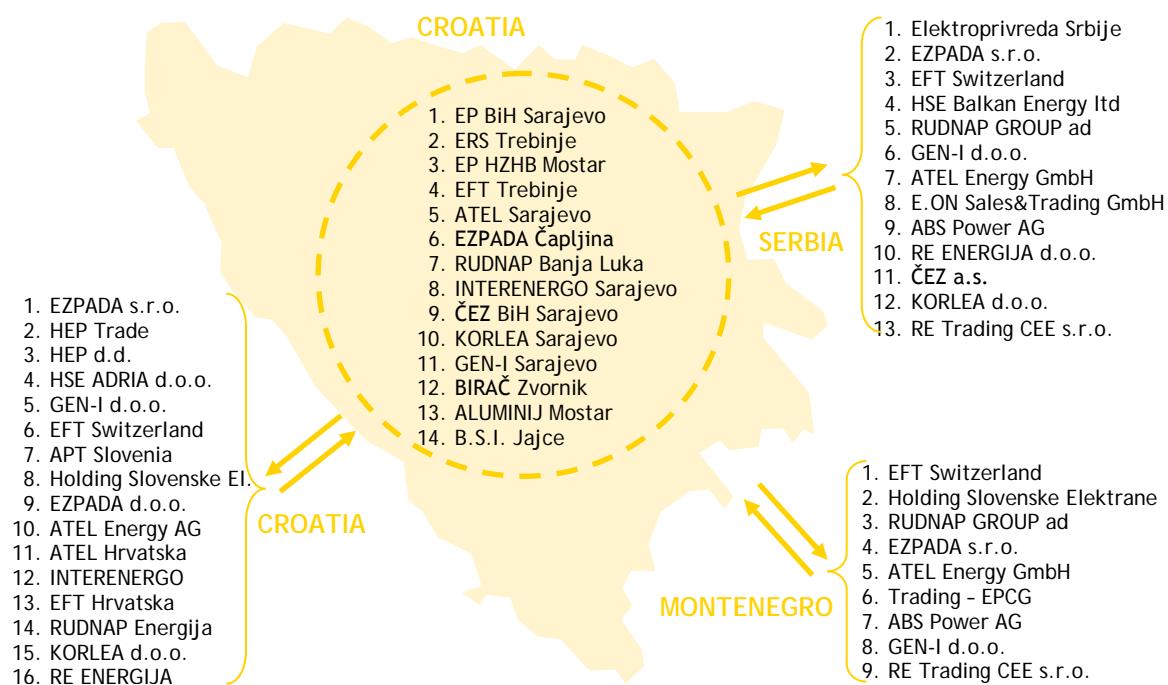


Figure 6. Participants in cross-border trade per borders

Usually, the biggest export is realized toward Montenegro and Croatia. Among the domestic entities, the biggest import was realized by Aluminij Mostar, which imported 876 GWh for self-consumption or 95% of total import realized in 2009, while the biggest exporters were EP BiH with 852 GWh and Rudnap with 832 GWh. Table 11. provides an overview of import and export by countries (including transit).

Table 12. An overview of international transactions (MWh)

Trader	Export	Import	Transit
EP BiH	851,553	1,690	
EP RS	492,252	9,544	
EP HZHB	134,936	270	
EZPADA	188,683		176,547
ALUMINIJ		876,000	
RUDNAP	832,284	5,890	190,640
EFT	664,222	17,725	1,349,667
INTERENERGO	182,822	588	18,847
KORLEA	392,669	6,192	48,900
GEN-I	140,334		321,742
ATEL	2,286	216	12,648
ČEZ BiH	20,072		3,768
<i>Total</i>	<i>3,902,113</i>	<i>918,115</i>	<i>2,122,759</i>

Table 11. Import and export of electricity, including transit (MWh)

Country	Export	Import
Croatia	2,575,677	1,666,579
Serbia	1,216,416	1,120,294
Montenegro	2,232,779	254,001
<i>Total</i>	<i>6,024,872</i>	<i>3,040,874</i>

In 2009, registered transit of electricity through the BiH transmission network amounted to 2,122 GWh. International trade companies perform transit of electricity via their companies registered in BiH. BiH realizes income on the basis of transit by participation in the ITC mechanism (Inter-TSO Compensation Mechanism) - in 2009 a total income of 10,341,109 BAM was realized (1€=1.95583BAM), which results in an average fee for transit of energy amounting to 4.87 BAM/MWh, that is, 2.49 €/MWh.

3.2.1.3 Prices

As previously mentioned, there is no trade in an organized market (exchange) in Bosnia and Herzegovina but trading is performed in the bilateral market based on bilateral contracts concluded between traders and generators (mostly with the three existing power utilities) or with other traders. Due to lack of an institutionalized market, there is no systematic recording and announcing of wholesale prices, which gives a semi-formal or informal character to any information on these prices.

In 2009, relevant changes occurred in the electricity market in comparison with 2008. As a consequence of the global economic crisis, all economic parameters dropped which caused

a significant decrease in consumption in the region of South-East Europe. It is estimated that in this region with annual consumption around 200TWh, the decrease in 2009 amounted to 10 TWh, that is, 5%.

A drop in electricity consumption was recorded primarily with large customers in aluminum, chemical and car industries. A drop in global demand, that is, the creation of temporary electricity surplus in the region, which under normal operational conditions suffers from electricity shortages, had the crucial impact on a drop of prices on the wholesale market. An unusually high level of rainfall in the past year resulting in high inflows and a significant generation increase in hydropower plants was also conducive to the decrease in electricity prices on the market.

Unlike in 2008, when electricity prices on the wholesale (bilateral and exchange) European market continuously increased reaching a level of 93.10 €/MWh for guaranteed delivery (European Energy Exchange - EEX Leipzig), in 2009 a significant drop in electricity prices on the wholesale market was noted.

The realized wholesale prices in BiH, from the level exceeding 90 €/MWh in the middle of 2008, dropped to the level of 40 €/MWh, and even lower in the middle of 2009. By the end of the year, the prices partially recovered oscillating in the range 45 - 50 €/MWh.

3.2.2 Description of the Retail Market

3.2.2.1 Suppliers

Electricity suppliers are entities performing the activity of supply which is conducted pursuant to General Conditions for Delivery and Supply of Electricity, Tariff System for Electricity Sale and contracts between suppliers and customers.

In Bosnia and Herzegovina there are two types of electricity suppliers: suppliers of non-eligible (tariff) customers and suppliers of eligible customers.

Suppliers of non-eligible customers are users of licenses for supply of tariff customers issued by RERS and FERK who purchase and deliver electricity for end customers in a regulated manner.

In the area of RS, five companies operate within the structure of MH "Elektroprivreda Republike Srpske" Trebinje, with licenses for supply of tariff customers, and at the same time they are distribution system operators in this area. In the Federation of BiH, Elektroprivreda BiH Sarajevo and Elektroprivreda HZHB Mostar are granted licenses for supply of tariff customers. These two entities also have licenses for performance of the activity of electricity distribution.

Suppliers of eligible customers are holders of licenses for performance of the activities of trade and supply of electricity in the territory of Bosnia and Herzegovina issued by RERS as well second-tier licenses issued by FERK. These licenses imply electricity sale but also resale, that is, wholesale.

Table 13. provides the basic data from the license register for trading and supply activities.

A specific situation with regard to supply of end users exists in the area of Brčko District BiH where this service is provided by JP "Komunalno Brčko". As mentioned in Section 2.2 of the Report, in Brčko DBiH regulatory practice has not been established yet for the activity of generation, distribution and supply of electricity and this company performs its activities without a license.

Table 13. Basic data from the license register for trading and supply activities

No.	Licensee	Address	Activity	Regulator
1.	<i>Service and Trading Company "Energy Financing Team" d.o.o. Trebinje</i>	<i>Trebinje, Obala Luke Vučković bb</i>	<i>Trading and supply of electricity in the territory of BiH</i>	<i>RERS</i>
			<i>International trade in electricity</i>	<i>SERC</i>
2.	<i>Aluminum Factory "Birač" a.d. Zvornik</i>	<i>Zvornik, Karakaj bb</i>	<i>Trading and supply of electricity in the territory of BiH</i>	<i>RERS</i>
			<i>International trade in electricity</i>	<i>SERC</i>
3.	<i>"Rudnap" d.o.o. Banja Luka</i>	<i>Banja Luka, Jevrejska bb, Tržni centar Vidović</i>	<i>Trading and supply of electricity in the territory of BiH</i>	<i>RERS</i>
			<i>International trade in electricity</i>	<i>SERC</i>
4.	<i>Mixed Holding "Elektroprivreda Republike Srpske"-Parent Company a.d. Trebinje</i>	<i>Trebinje, Stepe Stepanovića bb</i>	<i>Trading and supply of electricity in the territory of BiH</i>	<i>RERS</i>
			<i>International trade in electricity</i>	<i>SERC</i>
5.	<i>"IDIM TRADE" d.o.o. Bijeljina</i>	<i>Bijeljina, Njegoševa 55</i>	<i>Trading and supply of electricity in the territory of BiH</i>	<i>RERS</i>
6.	<i>"EZPADA" d.o.o. Čapljina</i>	<i>Čapljina, Ante Starčevića 5</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
7.	<i>"Korlea" d.o.o. Mostar</i>	<i>Mostar, 11. lipnja 31 A</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
8.	<i>JP Elektroprivreda Bosne i Hercegovine d.d. - Sarajevo</i>	<i>Sarajevo, Vilsonovo šetalište 15</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
9.	<i>JP "Elektroprivreda Hrvatske zajednice Herceg Bosne" d.d. Mostar</i>	<i>Mostar, Zagrebačka 1</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
10.	<i>"Interenergo" d.o.o. Sarajevo</i>	<i>Sarajevo, Fra Andela Zvizdovića 1A/9</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
11.	<i>"ČEZ BiH" d.o.o. Sarajevo</i>	<i>Sarajevo, Fra Andela Zvizdovića 1</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
12.	<i>"GEN-I" d.o.o. Sarajevo</i>	<i>Sarajevo, Hamdije Kreševljakovića 7c</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
13.	<i>"Atel BH" d.o.o. Sarajevo</i>	<i>Sarajevo, Mehmeda Spahie 26</i>	<i>II tier electricity supply</i>	<i>FERK</i>
			<i>International trade in electricity</i>	<i>SERC</i>
14.	<i>"RE Energija" d.o.o. Sarajevo</i>	<i>Mostar, Zagrebačka 1</i>	<i>II tier electricity supply</i>	<i>FERK</i>
15.	<i>"Aluminij" d.d. Mostar</i>	<i>Mostar, Baćevići bb</i>	<i>International trade - import of electricity for self-consumption</i>	<i>SERC</i>
16.	<i>"B.S.I." d.o.o. Jajce</i>	<i>Jajce, Brune Bušića bb</i>	<i>International trade - import of electricity for self-consumption</i>	<i>SERC</i>

3.2.2.2 Market Opening

In line with their competences, the Regulatory Commissions gradually establish the regulatory framework for market opening in Bosnia and Herzegovina through secondary legislation. The SERC Decision on the scope, conditions and time schedule of electricity market opening and FERK and RERS Rules on obtaining eligible customer status of 2006 prescribe conditions, criteria and procedures for obtaining of eligible customer status, and define the rights and obligations of eligible customers and suppliers of eligible customer. These Rules enabled the opening of the retail electricity market, which by then, as far as customers were concerned, was based on sale of electricity to exclusively non-eligible (tariff) customers at regulated prices determined by the Regulatory Commissions in line with the adopted methodologies.

According to the Rules on obtaining eligible customer status and the prescribed time schedule of the market opening as of January 1, 2008, all customers, excluding household customers, have obtained that status. In an interim period of the market opening, the eligible customer has the right to choose the mode of supply and the right to be supplied as a tariff customer again if he previously used the right to choose and was supplied as an eligible customer. The interim period shall last until January 1, 2012.

In 2009, only one customer used the possibility to purchase electricity in the market, for a part of its needs. That customer was "Aluminij" d.d. Mostar that purchased 876 GWh in the market, while it purchased the rest of 616.5 GWh as a tariff customer. Hence, all eligible customers are still supplied as tariff customers in accordance with provisions of the Rules which provided that possibility during the interim period.

According to energy volumes in 2009, consumption of all customers which have the possibility to obtain eligible customer status amounted to 5,587,994 MWh, while total consumption of all customers amounted to 9,973,447 MWh, which provided the nominal level of openness of 56.03%. As mentioned above, only one customer purchased energy in the market, consequently, the actual level of openness in 2009 amounted to 8.78%.

3.2.2.3 Customers and Consumption

Table 14. provides the number of customers by individual suppliers and consumption categories on December 31, 2009.

Table 14. Number of customers by suppliers and consumption categories

Supplier	110 kV	35 kV	10 kV	other consumption	households	public lighting	Total
<i>Elektrokraina</i>	2	3	249	16,204	223,281	95	239,834
<i>Elektro Bijeljina</i>	1	4	153	5,654	96,228	67	102,107
<i>Elektro Doboj</i>	2	6	95	5,145	86,084	17	91,349
<i>Elektrodistribucija Pale</i>	5	61	4,059	51,028	34	55,187	
<i>Elektro Hercegovina</i>	5	28	2,273	25,787	206	28,299	
<i>Elektroprivreda HZHB</i>	3	3	125	14,847	168,805	1,484	185,267
<i>Elektroprivreda BiH</i>	5	48	556	52,376	630,503	5,031	688,519
<i>Komunalno Brčko</i>		1	22	4,178	30,318	389	34,908
Total	13	75	1,289	104,736	1,312,034	7,323	1,425,470

1.425 million customers are registered in BiH in total, of which 1.312 million are customers in the category of household or 92% of the total number of customers. It should be stressed that all mentioned suppliers perform the activities of distribution and supply of tariff

customers in the strictly defined geographic areas, which implies their incumbent status. This is further supported by the previously mentioned fact that all customers (except one) have retained their tariff customer status and that not a single case of switching has been recorded.

Table 15. provides an overview of total electricity consumption in 2008 and 2009 with shares of individual categories in total consumption.

Table 15. Electricity consumption in 2008 and 2009

Consumption categories	2008		2009	
	(MWh)	%	(MWh)	%
110 kV	2,897,822	23.8	2,118,368	18.3
35 kV	467,256	3.8	496,727	4.3
10 kV	1,210,361	9.9	1,223,914	10.6
<i>other consumption</i>	1,579,463	13.0	1,579,248	13.6
<i>households</i>	4,257,444	34.9	4,385,453	37.8
<i>public lighting</i>	159,352	1.3	169,736	1.5
<i>self-consumption of TPP and mines, pumping</i>	14,151	0.1	14,336	0.1
<i>losses in the distribution network</i>	1,280,797	10.5	1,303,034	11.2
<i>losses in the transmission network</i>	326,500	2.7	306,458	2.6
Total consumption	12,193,147	100.0	11,597,275	100.0

Figure 7. illustrates the change of net electricity consumption in Bosnia and Herzegovina in 2009 in comparison with 2008 by consumption categories of end customers. A significant drop of consumption by customers connected to 110 kV voltage level can be noticed, which is a consequence of the recession which considerably affected the industry in 2009.

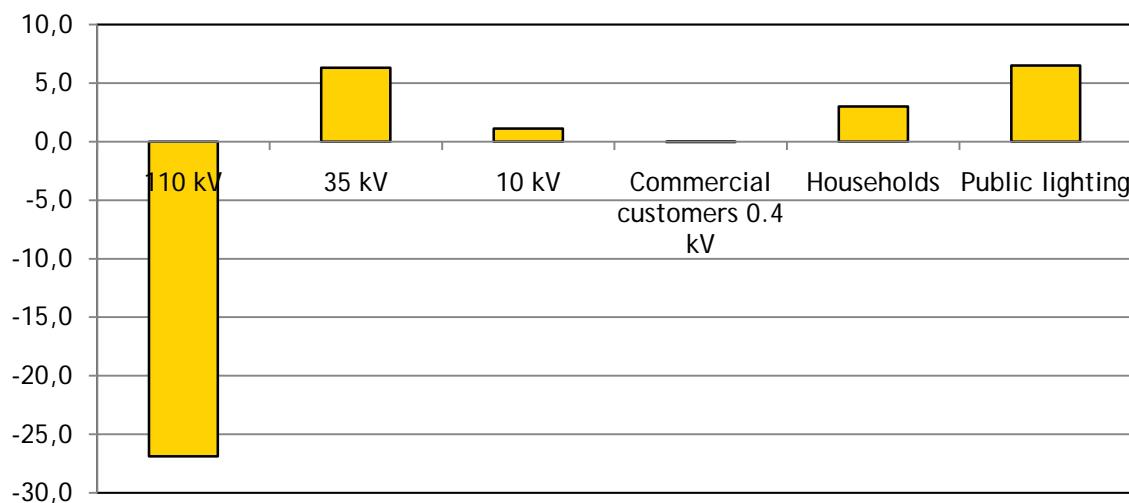


Figure 7. Change of net electricity consumption (%)

3.2.2.4 Losses

In 2009, losses in the distribution network amounted to 1,303 GWh or 14.23% in comparison with gross distribution consumption, which is a slight decrease compared to the previous year when losses amounted to 14.30%.



Figure 8. Losses in the distribution network in 2009

Figure 8. illustrates distribution losses of all entities performing the activity of electricity distribution in Bosnia and Herzegovina. When analyzed by licensed entities, considerable differences can be observed because losses range between 10% and 20%.

3.2.2.5 Prices

Figure 9. illustrates the trend of average realized electricity prices for end customers in Bosnia and Herzegovina.

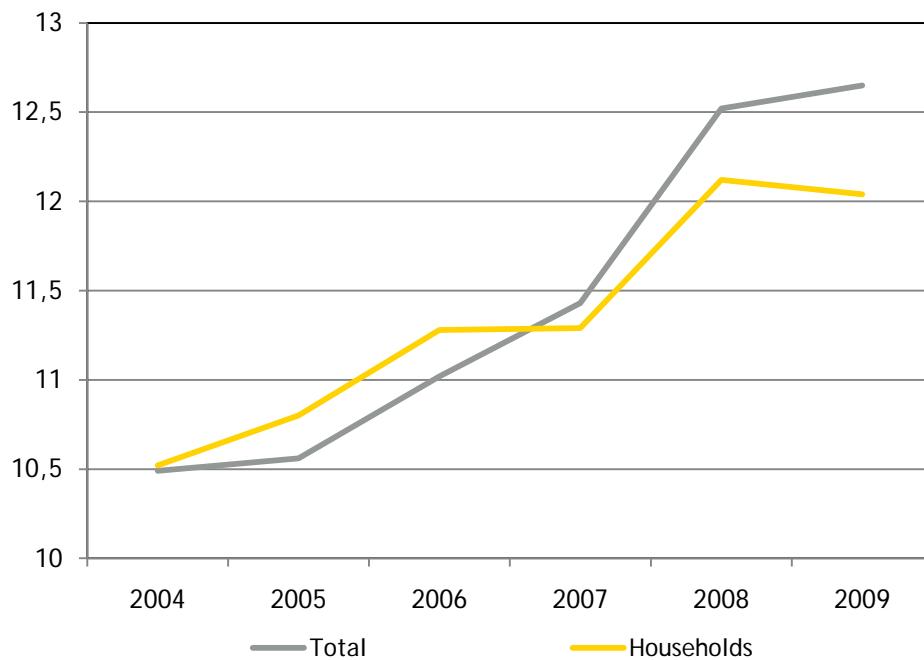


Figure 9. Average realized prices in BiH (pfennig/kWh)

In 2009, an average realized electricity price for end customers amounted to 12.65 pfennig/kWh or 6.47 €c/kWh (1BAM=100pfennig). An average realized price for households amounted to 12.04 pfennig/kWh or 6.16 €c/kWh. In the period 2004-2009 the average

realized electricity price was increasing by the rate of 3.8%, while the rate for households was lower amounting to 2.7%.

Pursuant to a new methodology for electricity price monitoring, Figures 10. and 11. illustrate shares of individual components in the electricity price for an average industrial customer connected to the voltage level of 10 kV and an average customer in the category of households respectively.

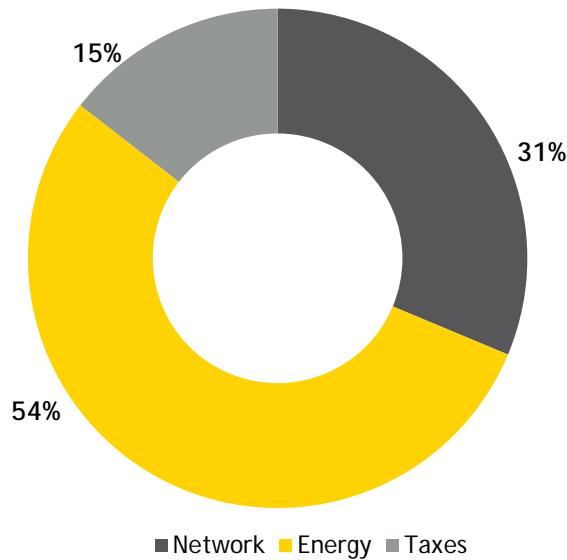


Figure 10. Share of individual components in the price for industrial customers at 10 kV

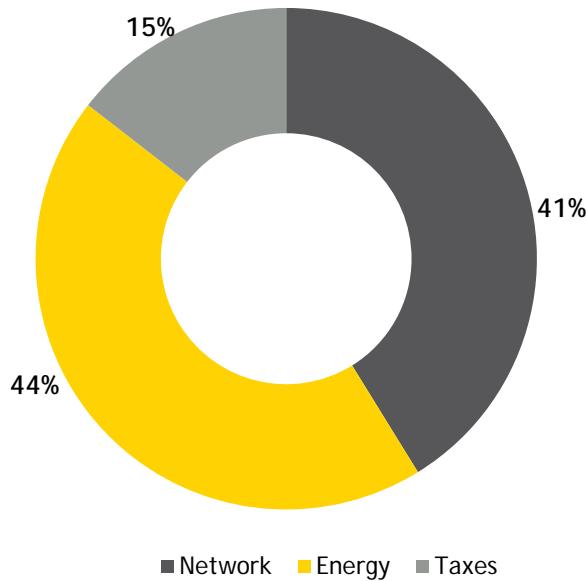


Figure 11. Share of individual components in the price for households

It is obvious that the share pertaining to network fee of the average customer in the category of households is higher than the corresponding share of the industrial customer, while the share of fee for energy and supply is lower.

Figure 12. provides average prices (without VAT) for industrial customers (10 kV) and households in 2009.

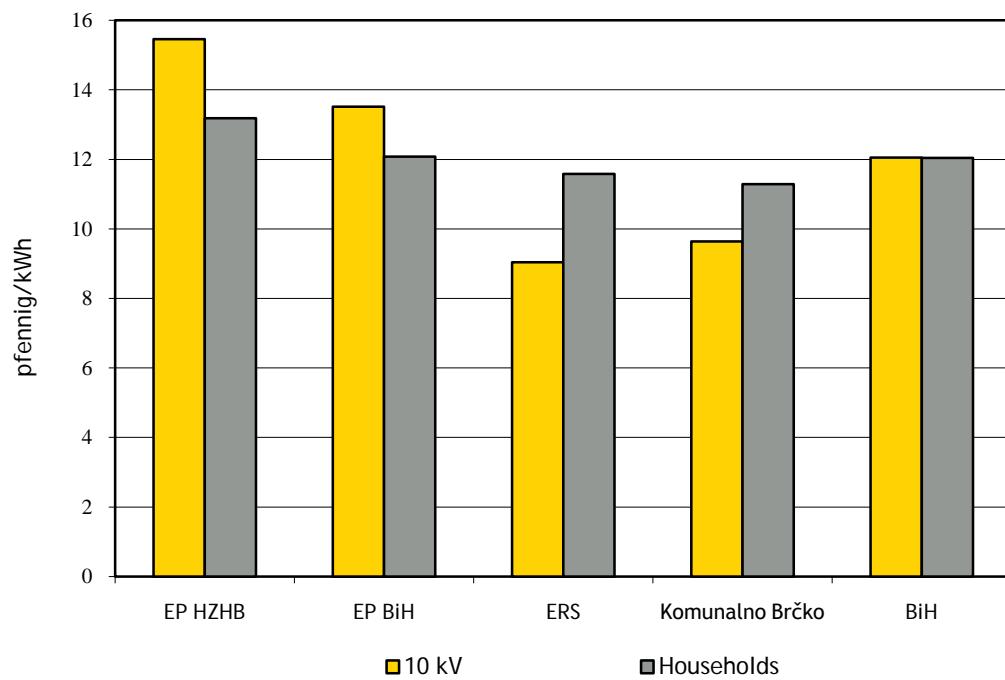


Figure 12. Average electricity prices

The supplier EP HZHB has the highest electricity prices both for industrial customers and households. The lowest prices for industry have customers supplied by the distribution companies which are part of ERS, while regarding households, the lowest prices have household customers in Brčko District BiH.

4 REGULATION AND INDICATORS IN THE NATURAL GAS MARKET

4.1 Regulatory Issues

4.1.1 Control and Allocation of the Cross Border Transmission Capacities and Mechanism for Congestion Solving

The function of the transport system operator in Bosnia and Herzegovina is performed by two companies, "Gas promet" a.d. Istočno Sarajevo - Pale and "BH-Gas" d.o.o. Sarajevo. According to a decision of the Republika Srpska Government, Gas promet is appointed as transport system operator in RS, while according to the Decree of the BiH Federation on organization and regulation on the gas industry sector, BH-Gas is determined to be transport system operator in the BiH Federation.

Total natural gas consumption in BiH in 2009 amounted to 230 million Sm³, which approximately corresponds to a third of the annual gas pipeline capacity. If the percentage of the gas pipeline utilization is viewed compared to the maximum hourly capacity (see Table 2), it can be concluded that in 2009 the percentage of the utilization of the transport gas pipeline amounted to 63.8%.

The company "BH-Gas" exports and delivers natural gas to distribution and industrial customers. This practically means that in the natural gas market in BiH in 2009, as well as in previous years, the natural gas transport service is used only by the company "BH-Gas". On the basis of the previously mentioned technical data on the capacity and utilization of the capacity of the transport gas pipeline in BiH, it can be concluded that there was no capacity congestion.

Natural gas is transported to BiH on the basis of the long term agreements on transport between the companies "BH-Gas" and "Srbijagas" from Serbia for the part of the transport gas pipeline from Šepak to Zvornik, namely, between the companies "BH-Gas" and "Sarajevo-gas" a.d., Istočno Sarajevo for a part of the transport gas pipeline from Zvornik to the metering station near Kladanj.

Natural gas transport prices in BiH in 2009 were determined on the basis of negotiations between the companies, and not on the basis of a transparent tariff methodology defined in advance.

4.1.2 Regulation of Activities of Transmission and Distribution Companies

As already stated in Section 2.2 of the Report, in Bosnia and Herzegovina, the regulatory framework has not been fully established in the legal and institutional terms. Consequently, different levels in the field of tariff methodology development were reached. The Regulatory Commission for Energy of Republika Srpska adopted the Rule on tariff methodology in the system of transport, distribution, storage and supply with natural gas and in 2009 the procedure was initiated to determine tariff rates for regulated companies. In Federation BiH, the key documents were not adopted related to the tariff methodology and determination of tariffs for use of gas systems. As the result, in 2009 costs and conditions of natural gas transport in BiH were defined by contractual relations between the companies.

The Rule on tariff methodology in the system of transport, distribution, storage and supply with natural gas in RS, determines the principles, method and procedure establishing the following:

- Methodology for calculation of costs of transport and transport system control, distribution including the distribution system control, storage and supply with natural gas,
- Methodology for calculation of costs of connection to the network for transport and/or distribution of natural gas,
- Tariff system for calculation of costs for access and usage of the system for transport, distribution and storage of natural gas and tariff system for calculation of the natural gas price for supply of tariff customers.

This tariff methodology is based on the following principles:

- Tariffs which are determined in the natural gas sector are based on justified costs of performing activities in order to provide the functioning and development of the system,
- An energy undertaking is entitled to, through tariffs defined by the tariff system, achieve revenue requirement to compensate all justified costs of performing activity and get fair return on the invested means for performing the activity for which the tariffs are determined,
- Revenue requirement and justified costs are determined separately for each regulated activity in the natural gas sector and for each energy undertaking,
- Costs of performing the activity, whose accounting is unbundled from other activities performed by the energy undertaking, are allocated to calculation elements and consumption categories defined by the tariff system,
- Allocation of costs of energy undertaking to calculation elements and consumption categories is based on the principle of causality which provides allocation of the system costs to those users due to whom those costs occurred.

Annual revenue requirement from the energy undertaking's services at regulated prices includes the following components:

- Justified costs of operation and maintenance, including the costs of depreciation of permanent tangible and intangible assets, approved by the Regulatory Commission,
- Approved return on capital, on the base and at the rate approved by the Regulatory Commission,
- Calculated tax on profit applying the prescribed rate of tax on the taxable base contained in the amount of the approved return on equity.

In this process, other revenues achieved by using resources intended for performance of the regulated activity are deducted if the associated costs are included in the revenue requirement.

The revenue is to compensate justified costs of performing the regulated activity of the energy undertaking, expressed in the financial report, which include:

- costs of using facilities, equipment and devices,
- costs of material,
- costs of operation,
- costs of services,
- costs of general operational and administrative works.

Justified costs include also the associated part of costs for financing of administration and corporate duties which are carried out within vertically or horizontally integrated energy undertakings.

In addition to covering costs of the current operation, annual revenue requirement for the services in the natural gas sector should also provide the conditions for investment in the system development. Justification of occurrence of each type of cost is estimated on the basis of the purpose of the cost incurrence, and taking into account conditions, circumstances and available information in the moment of making decision which caused incurrence of costs.

Revenue requirement for the energy undertaking for performing the regulated activity is allocated to calculation elements and consumption categories following the principle of causality. The principle of causality means allocation of the associated costs of the regulated activity to a particular calculation element where the costs depend on the amount of that calculation element, and then the costs assigned to each calculation element are allocated to the categories of customers depending on the volume and method of their natural gas consumption.

Unit prices of services in the natural gas sector per tariff rates are calculated on the basis of allocated annual revenue requirement and volume of services expressed in the calculation elements for the respective category of consumption.

The tariff system in the natural gas sector defines consumption categories and tariff groups of customers, and calculation elements for which the unit prices (tariffs) are approved by the Regulatory Commission pursuant to provisions of the Rule on the tariff methodology in the system of transport, distribution, storage and supply with natural gas.

The tariff proceeding, in which the Regulatory Commission gives its consents to tariff rates proposed by the regulated company on the basis of the tariff methodology, is initiated at a request of the regulated company or Regulatory Commission, whereby the regulatory period is proposed by the energy undertaking and its duration is not prescribed in advance.

If, during the regulatory period, the gas price is changed by more than ±5% on the market compared to the price which was used for calculation during the tariff proceeding in the supply activity, the energy undertaking may correct the price at which tariff customers are supplied unlike the change of the procurement price of natural gas.

The zoning tariff model is applied in the activity of transport, and the zones are divided in two natural gas transporters in Republika Srpska.

The Methodology for calculation of costs of connection to the network, which is an integral part of the Rule on tariff methodology in the system of transport, distribution, storage and supply with natural gas, includes costs of constructing the connection of the facility and they are determined by adding the following costs: costs of necessary equipment, devices and material for construction of the connection, costs of completed works, costs of obtaining and developing documents, creation of other conditions for the connection construction; as well as a part of system costs occurred as a precondition for connection.

Regulation of the service quality and improvement of reliability of natural gas transport and distribution systems will be the subject of further activities of the Regulatory Commission for Energy of Republika Srpska in exercising its competences while monitoring the application of operational rules and general conditions for supply adopted by the competent bodies of the companies and approved by the Regulatory Commission. The companies, within the reporting obligations defined by the license requirements for performance of activities, submit to the Regulatory Commission reports on the quality of supply. Also, the license requirements for performance of activities of transport, distribution and control of the natural gas distribution system oblige licensees to ensure and undertake all necessary measures for reliable and qualitative performance of activities, to keep updated records on supply interruptions, system losses, quality of services rendered. Information for users regarding technical possibilities of the system, connection costs, access and use of the system, as well as the possibilities for submission of complaints and appeals should be published on the notice board and website of the company. The process related to the data collection on the quality of the services rendered started in 2009.

According to the Decree on organization and regulation of the gas industry sector in Federation BiH, the transport system operator is obliged to guarantee reliable and qualitative gas delivery from the entry point of the gas transport system in the area of FBiH region to metering-regulation stations of the distribution system operators and end users directly connected to the transport system. The transport system operator in Federation BiH is obliged to:

- possess the license for performing the energy activity of natural gas transport,
- posses a use permit for the facilities of the existing transport system,
- keep, maintain and develop a safe, reliable and efficient transport system,
- ensure technical preconditions, under economically optimum circumstances, for intake of gas in the transport system, which is imported from different sources and directions and for gas transit,
- connect to the transport system those legal persons who obtained the energy permit of the transport system operator for connection to the gas system, namely, which fulfilled the conditions from the secondary legislation of the Decree,

- establish and ensure the operation of the dispatch center for the transport system control, metering system and system for monitoring parameters of gas quality and gas delivery quality,
- ensure objective, equal and open conditions of access to the transport system, pursuant to the decree and secondary legislation,
- develop a contingency plan and submit it to FMEMI for approval,
- manage the gas system in case of proclamation of the crisis according to the Decree and secondary legislation,
- give the prescribed information to market participants that are directly connected to the transport system, sufficiently in advance, on the volume and date of interruption of gas transport and expected reduction of transport capacities,
- create and adopt development plans for development, construction and modernization of the gas transport system pursuant to provisions of the Decree and valid legal regulations. Development plans are adopted for the period of at least 3 years and should be approved by FMEMI,
- give prescribed information on investment projects related to the transport system and planned exit from the operation of some facilities of the transport system,
- ensure protection of the confidential information of commercial nature, which is described as a business secret.

According to provisions of the Decree on organization and regulation of the gas industry sector, distribution system operators in Federation BiH are obliged to:

- Keep, maintain and develop a safe, reliable and efficient distribution system,
- Connect to the distribution system all legal and natural persons who obtained the energy permit in the previous proceedings providing that they have the construction license or if it is considered that the facility was built on the basis of the construction license according to the provisions of the special regulation, namely according to provisions of this Decree and secondary legislation,
- Establish and ensure the operation of the dispatch center for distribution system management, metering system, system for monitoring of gas quality parameters and quality of gas delivery and gas odorizing devices,
- Distribute gas based on concluded agreements,
- Develop a contingency plan on the basis of the prescribed measures, once a year update it and submit to the respective ministry of the Cantonal government for approval,
- Maintain parameters of gas quality and gas delivery quality and balance the distribution system,
- Ensure objective, equal and open conditions of access to the distribution system, pursuant to this Decree and secondary legislation,
- Ensure, on the level of the distribution system, metering of the gas consumption, including reading of metering devices and in accordance with the Decree and secondary legislation submit to the transport system operator the data required for the gas system balancing,
- Develop and submit to FMEMI the annual report on reliability, safety and efficiency of the distribution system, on the system development plan realization, quality of meeting requirements of the users, the system equipment maintenance and fulfillment of other duties and exercising the rights referred to in this Decree,
- Give prescribed information to the transport system operator and operators of the connected distribution systems for the purpose of safe and efficient functioning and development of interconnected systems,
- Give prescribed information to market participants that are directly connected to the distribution system, sufficiently in advance, on the volume and date of the gas distribution interruption and expected reduction of distribution capacities,
- Ensure protection of confidential information of commercial nature that it found out while performing the activity, and which has characteristics of a business secret.

When it comes to balancing, there were no significant activities in 2009.

4.1.3 Effective Unbundling

The existing legislation in BiH contains the provisions related to unbundling requirements. In 2009, there were no significant activities related to unbundling.

4.2 Competition Issues

4.2.1 Description of the Wholesale Market

Bosnia and Herzegovina does not have its own natural gas production, which is the reason for import of all quantities of this energy source from the Russian Federation. The natural gas import in 2009, as it was the case in previous years, was done by two companies:

- “Energoinvest” d.d. Sarajevo as a leader of Agreement on purchase of gas from the Russian Federation and cosignatory of the international agreements on transport of natural gas
- “BH-Gas” d.o.o. Sarajevo (BH-Gas) as a cosignatory of the Annex to the Natural gas purchase agreement and signatory of the Agreement on transport through Hungary and Serbia.

BH-Gas has been, as it was the case in previous years, the dominant company dealing with wholesaling of natural gas in BiH, and the only one which sells gas to those customers directly connected to the transport gas pipeline in BiH.

The distribution company “Sarajevo-gas” a.d. Istočno Sarajevo (Sarajevo-gas) has not been directly connected to the transport gas pipeline, but is connected and supplied through the distribution system of KJKP “Sarajevogas” d.o.o. Sarajevo (Sarajevogas). Taking this into account, Sarajevogas is the second company dealing with the wholesaling in the natural gas market in BiH.

The natural gas wholesale price for the company “BH-Gas”, namely for all customers directly connected to the transport gas pipeline in BiH, is determined by the BiH Federation Government, owner of the company “BH-Gas”, following the proposal of the “BH-Gas”. In 2009, this price had a trend of decreasing. In the first quarter of 2009, namely in the period from November 1, 2008 to March 31, 2009 the natural gas wholesale price in BiH amounted to 800.00 BAM/1000 Sm³, namely, 409.03 €/1000 Sm³. In the period from April 1 to December 31, 2009 the natural gas price was lower than in the previous quarter and it amounted to 520.00 BAM/1000 Sm³, namely, 520,00 BAM/1000 Sm³, i.e. 265.87 €/1000 Sm³. The natural gas prices were valid for the following conditions t=15°C, p=1.01325 bar, net calorific value of natural gas H_d=34,075.60 kJ/Sm³. The natural gas price did not include a value added tax amounting to 17% in BiH.

Table 16. provides volumes of natural gas traded in the wholesale market in BiH in 2009.

Table 16. Volumes of natural gas traded in the wholesale market in BiH (Sm³)

1	Import	230,084,506
Distribution companies	Sarajevogas, Sarajevo	133,963,187
	Visokogas, Visoko	4,626,717
	Sarajevo-gas, Istočno Sarajevo	3,003,167
	Zvornik stan, Zvornik	2,213,132
	K.F.K. - Plin, Kreševo	1,356,000
2	Total distribution companies	145,162,203
3	Total industrial customers (BH-Gas)	84,922,303

4.2.2 Description of the Retail Market

Due to the limited level of transport system development, natural gas distribution networks have been developed only in the region of four towns in BiH, in Sarajevo, Istočno Sarajevo, Visoko and Zvornik. The construction and management of the distribution systems are carried out by four distribution companies:

- KJKP "Sarajevogas" d.o.o., Sarajevo
- "Visokogas" d.o.o., Visoko
- "Sarajevo-gas" a.d., Istočno Sarajevo
- "Zvornik stan" a.d., Zvornik.

According to the Decree of the BiH Federation on organization and regulation of the gas industry sector, in June 2009 the Federal ministry of energy, mining and industry issued the License for performance of energy activities of gas distribution to the applicant "K.F.K. - Plin" d.o.o. Kreševo.

The natural gas consumption structure in BiH per categories of end users is given in Table 17. and Figure 13.

Table 17. Natural gas consumption structure per categories of customers (Sm³)

Suppliers	End user categories		
	Industry	Households	Heating plants
Sarajevogas, Sarajevo	13,769,733	71,601,464	48,591,990
Visokogas, Visoko	2,983,924	1,642,793	
Sarajevo-gas, Istočno Sarajevo	411,379	2,220,478	371,310
Zvornik stan, Zvornik	302,949	289,266	1,620,917
K.F.K. - Plin, Kreševo	1,356,000		
BH-Gas	84,922,303		
Total per categories	103,746,288	75,754,001	50,584,217
Percentage share	45.1	32.9	22.0
Total consumption			230,084,506

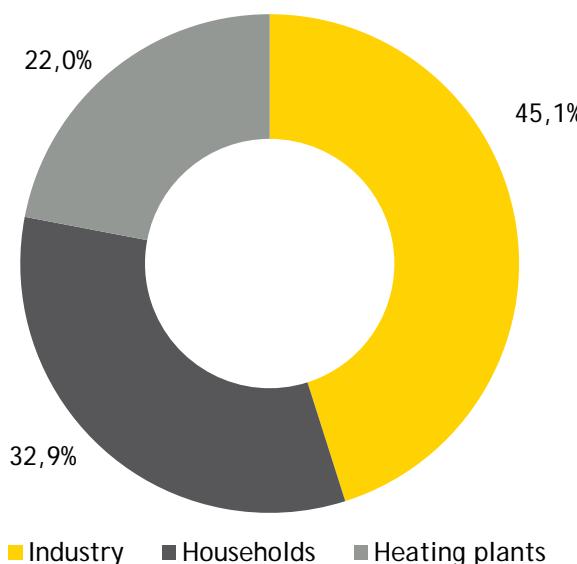


Figure 13. Natural gas consumption structure per categories of customers

The procedure for determination of natural gas prices in BiH applied until 2009 was based on local communities, municipalities in Republika Srpska and BiH Federation approving natural gas prices determined by the companies within the gas sector.

After RERS determined the Methodology for calculation of prices in the energy activities of the gas sector in December 2008, the Company "Sarajevo-gas" Istočno Sarajevo initiated the first tariff proceeding in 2009. The Regulatory Commission gave its consent to the prices determined pursuant to this Methodology, being effective as of January 2010.

Table 18. provides average retail gas prices without VAT from December 2009 (taking into account the price for the metering point) for the typical customer in two categories of consumption - households and commercial customers supplied by Sarajevo-gas and Zvornik stan, whereby natural gas has the following technical characteristics: 15°C; 1.01325 bar; net calorific value 34,075.60 kJ/m³.

Table 18. Average retail gas price (Sarajevo-gas and Zvornik stan)

Category of consumption	Sarajevo-gas, Istočno Sarajevo			Zvornik stan, Zvornik		
	BAM/m ³	BAM/GJ	BAM/kWh	BAM/m ³	BAM/GJ	BAM/kWh
Households (annual consumption 500 m ³)	0.68	20.00	0.07200	0.79	23.12	0.08322
Commercial customers (annual consumption 12.280 m ³)	0.72	21.20	0.07633	0.72	21.09	0.07592

Based on the example of the natural gas price of the company "Sarajevo-gas" Istočno Sarajevo, Table 19. provides a structure of costs of the natural gas price for the end user in the category of households and commercial consumption which were applicable in December 2009. The end user's natural gas bill includes '*metering point*' which is calculated in the amount of 3.00 BAM on a monthly basis.

Table 19. Structure of the natural gas price (Sarajevo-gas, Istočno Sarajevo) (BAM/m³)

	Households	Commercial customers
Procurement price from BH Gas	0.52	0.52
Transport and distribution services	0.03	0.03
Procurement price	0.55	0.55
Distribution and supply cost	0.07	0.17
Gas price	0.62	0.72
Gas price with VAT	0.7254	0.8424

The natural gas prices for end users in BiH Federation in 2009 were created in the same way as it was the case in 2008, namely, following a proposal of the distribution companies, local communities (Cantonal Governments) approved the proposed prices.

Table 20. provides an overview of the structure of the natural gas retail price for end users supplied by the biggest distribution companies in BiH, KJKP "Sarajevogas" d.o.o. Sarajevo. In the end user's natural gas bill, '*metering point*' is calculated in the amount of 2.00 BAM

on a monthly basis. It is important to say that the gas distribution price, namely, the service of Sarajevogas has not changed since 2002.

Table 20. Structure of the natural gas price (Sarajevogas - Sarajevo) (BAM/Sm³)

Categories of customers	Procurement price	Service of Sarajevogas	Selling price	VAT (17%)	Price with VAT
<i>Households</i>	0.520	0.06	0.580	0.099	0.679
<i>Heating plants</i>	0.520	0.07	0.590	0.100	0.690
<i>Big customers</i>	0.520	0.23	0.750	0.128	0.878
<i>Small customers</i>	0.520	0.24	0.760	0.129	0.889
<i>Special customer</i>	0.520	0.124	0.644	0.109	0.753

As it can been seen, categorization of customers in BiH Federation is slightly different than in Republika Srpska.

Figures 14.-16. provide benchmarking of prices and their trend for typical customers from the categories of households and industry. It should be noted that the Eurostat methodology defined several typical customers, and here there are benchmarking data for the household of category D2, characterized by the annual consumption between 20 and 200 GJ and industrial customer I1 characterized by the annual consumption of less than 1,000 GJ. The presented prices exclude taxes, and refer to the second half of 2009.

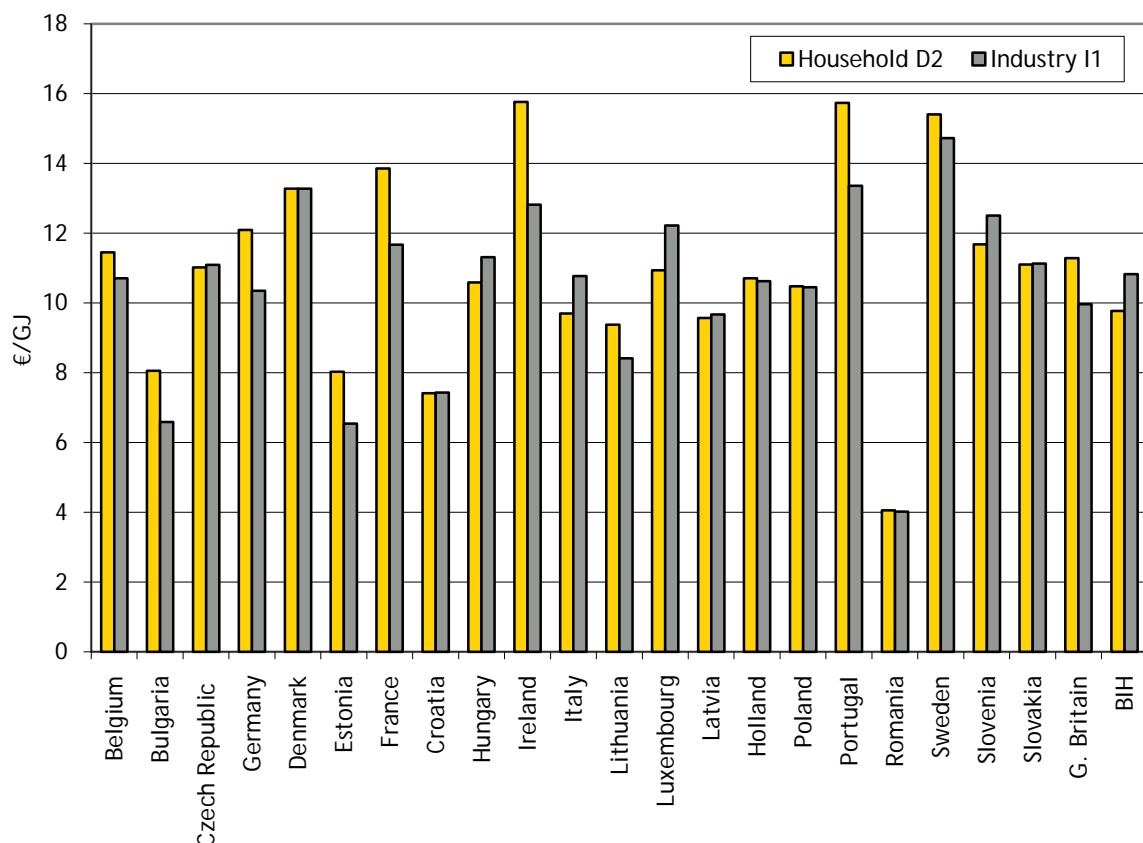


Figure 14. Average gas prices for households (D2) and industry (I1) in the second half of 2009

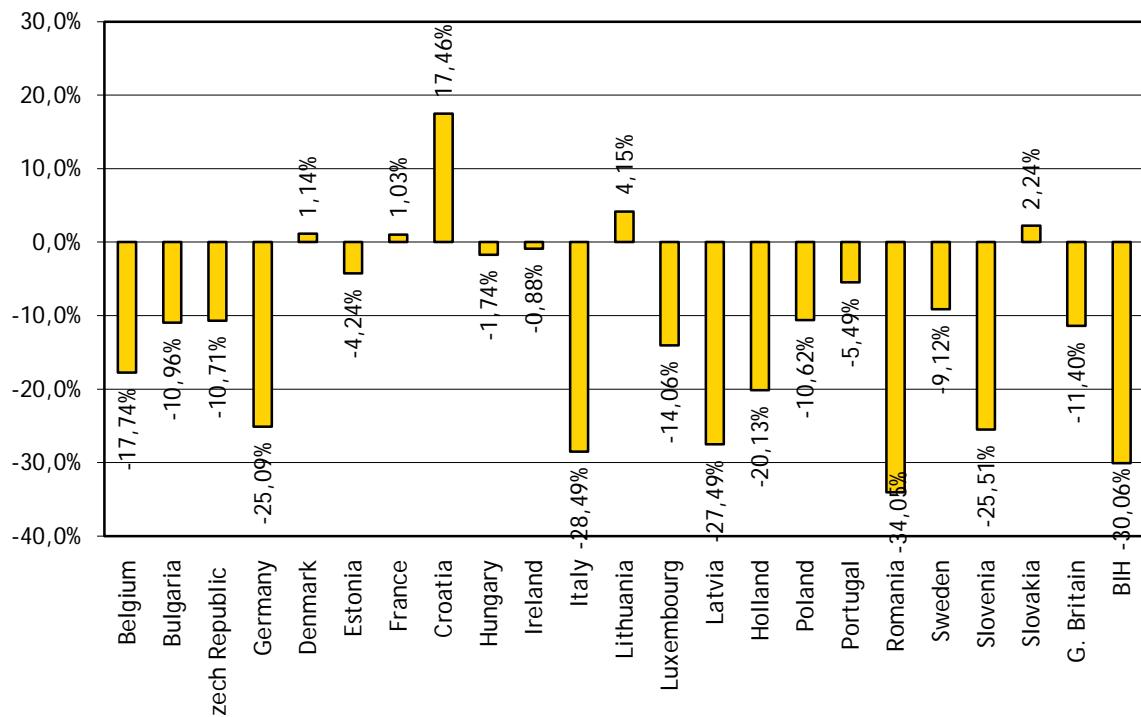


Figure 15. Ratio of gas prices for households in 2009 and 2008

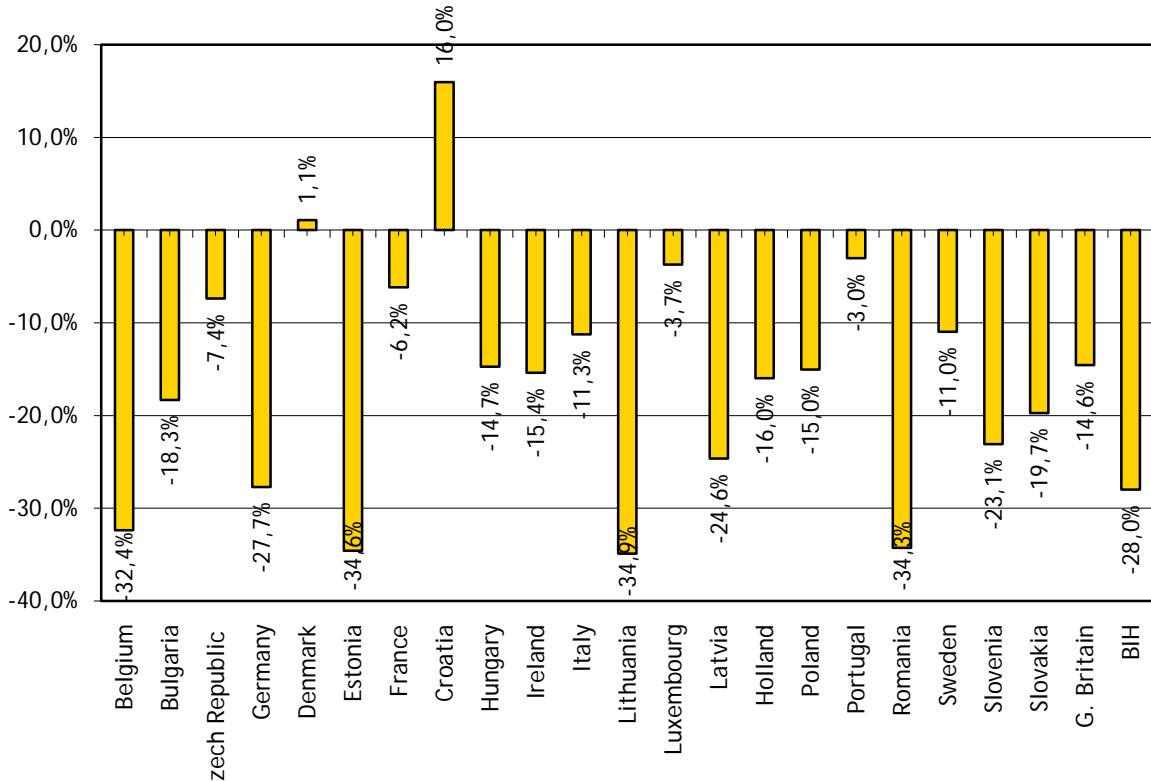


Figure 16. Ratio of gas prices for industry in 2009 and 2008

5 SECURITY OF SUPPLY

5.1 Electricity

5.1.1 Generation and Demand Developments

In the previous period, Bosnia and Herzegovina has had constant electricity surpluses in the power balance. Historically, surpluses were present from mid '80-ties of the last century when many generation facilities, hydro and thermal, of total capacity above 1000 MW were commissioned. The last time when electricity cut-offs were caused by generation shortfalls was in October 1983, and from that time the security of supply was not endangered, with an exemption of the war period from 1992 to 1995. From Table 21. presenting total generation and demand in BiH in period 1996-2009, it can be noticed that both, generation and demand in 2009 were doubled compared to amounts in 1996.

Table 21. Total generation and demand in BiH in period 1996-2009 (GWh)

Year	Total generation	Total demand	Surplus
1996	7,781	5,838	1,943
1997	8,757	6,832	1,925
1998	9,588	8,006	1,582
1999	10,564	8,885	1,679
2000	10,406	9,379	1,027
2001	11,379	9,779	1,599
2002	10,755	9,524	1,231
2003	11,267	10,084	1,183
2004	12,743	10,720	2,023
2005	12,748	11,371	1,377
2006	13,675	11,492	2,183
2007	12,175	11,603	573
2008	13,784	12,193	1,591
2009	14,562	11,597	2,964

5.1.2 Peak Load

A maximum hourly load in 2009 amounted to 2,033 MW and was realized on January 5 at 18th hour, and a minimum hourly load was 790 MW, realized on April 5 at 5th hour. Maximum daily demand was realized on January 10 amounting to 40,382 MWh, while minimum daily demand was realized on April 5th amounting to 25,527 MWh.

A historical load maximum was reached on December 31, 2008 at 18th hour amounting to 2,117 MW. Maximum hourly load in 2007 was 2,078 MW (also on December 31 at 18th hour), which shows that compared to the previous two years in 2009 a reduced maximum load of the power system was registered.

5.1.3 Security of Supply in Mid-Term and Long-Term Perspective

There are several referent documents when it comes to the security of supply perspective in the following period. In Table 22. the scenarios of demand forecasts in BiH in the period 2010-2019 are shown in line with the relevant documents.

Table 22. Scenarios of demand forecast in BiH in the period 2010-2019

Year	Forecast according to GDP		Forecast according to actualized referent scenario from the Indicative Plan 2008-2017		Forecast according to Energy Sector Study in BiH		Forecast for UCTE members - actualized from 2007		Forecast according to development strategies for energy sectors in FBiH and RS	
	(GWh)	%	(GWh)	%	(GWh)	%	(GWh)	%	(GWh)	%
2010	12,028	3.00%	11,911	2.35%	12,327	2.98%	11,604	2.20%	12,228	4.00%
2011	12,389	3.00%	12,161	2.10%	12,738	3.34%	11,860	2.20%	12,718	4.00%
2012	12,761	3.00%	12,392	1.90%	13,165	3.35%	12,121	2.20%	13,226	4.00%
2013	13,144	3.00%	12,629	1.91%	13,607	3.36%	12,388	2.20%	13,755	4.00%
2014	13,538	3.00%	12,872	1.93%	14,066	3.37%	12,623	1.90%	14,305	4.00%
2015	13,944	3.00%	13,122	1.94%	14,542	3.38%	12,863	1.90%	14,878	4.00%
2016	14,335	2.80%	13,378	1.95%	14,965	2.91%	13,107	1.90%	15,473	4.00%
2017	14,736	2.80%	13,639	1.95%	15,403	2.93%	13,356	1.90%	16,092	4.00%
2018	15,149	2.80%	13,905	1.95%	15,856	2.94%	13,610	1.90%	16,735	4.00%
2019	15,573	2.80%	14,176	1.95%	16,324	2.95%	13,869	1.90%	17,404	4.00%

According to the Report of Union for the Co-ordination of Electricity Transmission ("UCTE Transmission Development Plan/Evolution of the UCTE Generation - Load Balance" Edition 2008), in the part related to the demand forecast for period 2008-2018, mid-term forecast for Bosnia and Herzegovina specifies annual increase of 2.2% until 2013 and long-term 1.9% per annum until 2018.

A theoretical forecasting model for electricity demand, on the basis of correlation with gross domestic product, is based on the linear functional relation between electricity demand and GDP, meaning that for a certain level of GDP it is necessary to consume adequate electricity amount. In the World Bank documents (BiH Mid-Term Development Strategy, 2004-2007), in accordance with a reform scenario, the realistic growth in GDP of 5.3% in 2009 and 2010 is anticipated. With assumed growth in GDP of 5.3% annually until 2015, an increase in electricity demand of 3% annually until 2015 is specified.

"BiH Energy Sector Study for period 2005-2020" has considered the electricity demand in accordance with three scenarios. The scenario that, on the level of BiH, envisages in the following period an increase in electricity demand of total 64% or in average 3.4% annually, is chosen as the referent one. At the same time, in the same period, 2.5 times growth in GDP is assumed. These two data result in electricity demand elasticity coefficient of 0.53 which is the characteristic of the countries in transition that, in past, had extensive electricity consumption, and with application of measures for increase of energy efficiency, the energy consumption per unit of realized GDP will be reducing.

A Ten-Year Indicative Generation Plan, designed by the Independent System Operator, regularly updated per annum, gives growth rates in range of 2.35% for the beginning up to 1.95% for the end of the forecasted period (2010-2019).

In the previous period both Entities in BiH have done the forecasts for electricity demand through studies for the strategic development of energy sector in FBIH and RS. It is interesting that both documents, in the mid-term (basic) scenario, have given demand growth rate of 4%.

It should be mentioned that the above Table shows electricity demand in the transmission network without losses. Summarizing all mentioned scenarios, based on their similarities, certain groupings can be done - second and fourth scenarios, as well as third and fifth scenario, so based on this, the following three scenarios are the result:

- Forecast according to actualized referent scenario from Indicative Plan, so-called pessimistic or lower scenario
- Forecast according to GDP - realistic or basic scenario
- Forecast according to BiH Energy Sector Study - optimistic or higher scenario

Figure 17. shows the realization of electricity demand in BiH in period 1997-2008 and forecasts according to the three mentioned scenarios for period 2009-2019.

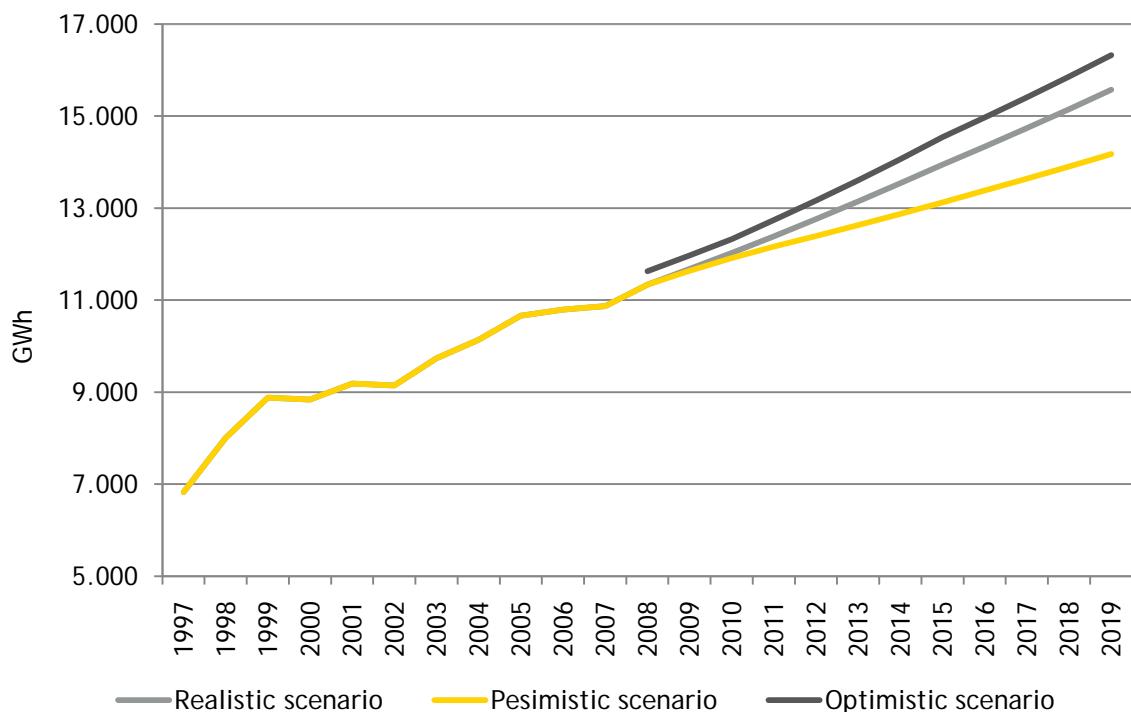


Figure 17. Demand in transmission network in BiH for the period 1997-2009

The Indicative Generation Plan includes also the scenario of growing gross distribution demand, based on the data about load increase in the nodes 110/x kV. Based on these data, it can be concluded that distribution demand will have average growth of about 2.7% in the following planned period, according to the basic scenario.

The Power Balance in the transmission network for the three scenarios of demand growth for the period 2010-2015 with existing and planned generation facilities is shown in Table 23. It can be noted that in all three scenarios there is a surplus in all analysed years only if new facilities are put in operation. Without new facilities until 2014, there is a shortfall in the most unfavourable (higher) demand scenario.

Table 23. Power balance in transmission network for period 2010-2015

Demand (GWh)	Year					
	2010	2011	2012	2013	2014	2015
Scenario 1, Forecast according GDP - basic scenario	12,028.0	12,389.0	12,761.0	13,144.0	13,538.0	13,944.0
	3.00	3.00	3.00	3.00	3.00	3.00
Scenario 2, - lower scenario	11,911.0	12,161.0	12,392.0	12,629.0	12,872.0	13,122.0
	2.35	2.10	1.90	1.91	1.92	1.94
Scenario 3, Forecast according Energy Sector Study - higher scenario	12,327.0	12,738.0	13,165.0	13.6	14,066.0	14,542.0
	2.98	3.33	3.35	3.36	3.37	3.38
Generation (GWh)						
RAMA	650.0	650.0	650.0	650.0	650.0	650.0
HPP ČAPLJINA	200.0	200.0	200.0	200.0	200.0	200.0
MOSTAR	247.0	247.0	247.0	247.0	247.0	247.0
JAJCE 1	233.0	233.0	233.0	233.0	233.0	233.0
JAJCE 2	157.0	157.0	157.0	157.0	157.0	157.0
PEĆ - MLINI	82.0	82.0	82.0	82.0	82.0	82.0
JABLJANICA	705.0	705.0	705.0	705.0	705.0	705.0
GRABOVICA	288.0	288.0	288.0	288.0	288.0	288.0
SALAKOVAC	408.0	408.0	408.0	408.0	408.0	408.0
TREBINJE						
DUBROVNIK	1,270.0	1,270.0	1,270.0	1,270.0	1,270.0	1,270.0
VIŠEGRAD	909.2	909.2	909.2	909.2	909.2	909.2
BOČAC	274.0	274.0	274.0	274.0	274.0	274.0
HPP Total (GWh)	5,423.2	5,423.2	5,423.2	5,423.2	5,423.2	5,423.2
TUZLA G-3	390.0	390.0	195.0	0.0	0.0	0.0
TUZLA G-4	906.0	906.0	906.0	906.0	906.0	906.0
TUZLA G-5	966.0	966.0	966.0	966.0	966.0	966.0
TUZLA G-6	1,032.0	1,032.0	1,032.0	1,118.0	1,118.0	1,032.0
KAKANJ G-5	522.0	522.0	522.0	522.0	522.0	522.0
KAKANJ G-6	342.0	342.0	342.0	342.0	342.0	342.0
KAKANJ G-7	1,140.0	1,140.0	1,235.0	1,235.0	1,235.0	1,235.0
GACKO	1,535.0	1,535.0	1,400.0	1,535.0	1,535.0	1,535.0
UGLJEVIK	1,260.0	1,560.0	1,560.0	1,560.0	1,560.0	1,410.0
TPP Total (GWh)	8,093.0	8,393.0	8,158.0	8,184.0	8,184.0	7,948.0
HPP MOSTARSKO BLATO	170.0	170.0	170.0	170.0	170.0	170.0
ENERGY 3		15.0	49.0	53.5	70.8	70.8
TPP STANARI					1,500.0	3,000.0
SMALL HPP ON RIVER SUTJESKA	102.7	102.7	102.7	102.7	102.7	102.7
VJETROENERGETIKA BiH	8.3	95.0	95.0	95.0	95.0	95.0
HPP USTIKOLINA						255.0
HPP VRANDUK						98.3
TPP TUZLA, BLOK 7						
TPP KAKANJ, BLOK 8						
SYSTEM OF PIPE HPP			200.5	352.8	437.6	437.6
WPP LJUBUŠA	105.0	210.0	210.0	288.0	288.0	
WPP PAKLINE	110.0	220.1	220.1	398.8	398.8	
WPP KUPRES		98.2	196.4	196.4	196.4	
WPP GRADINA	88.4	88.4	237.8	237.8	402.2	
New Sources Total (GWh)	178.3	686.1	1,233.9	1,638.3	3,497.1	5,514.8
Generation Total (GWh)	13,694.5	14,502.3	14,815.1	15,245.5	17,104.3	18,886.0
<i>Losses 3% related to generation</i>	410.8	435.1	444.5	457.4	513.1	566.6
BALANCE Scenario 1	1,255.7	1,678.2	1,609.6	1,644.1	3,053.2	4,375.4
BALANCE Scenario 2	1,372.7	1,906.2	1,978.6	2,159.1	3,719.2	5,197.4
BALANCE Scenario 3	956.7	1,329.2	1,205.6	14,774.5	2,525.2	3,777.4

5.1.4 Generation Capacities Adequacy

Total installed capacity of the generation facilities in BIH is 3,384.205 MW. Out of this, 2,027 MW is related to hydropower plants; 1,725 MW to thermal power plants; 28.973 MW is installed capacity of small hydropower plants (< 5MW) connected to the distribution network and owned by power utilities in BIH and independent generators, while 52.5 MW is installed in industrial power plants. BIH still has no finished wind power plant, but there are perspective locations in southern and south-western part of the country where certain capacities will probably be built until 2015. An overview of new generation capacities, as planned, approved or in the construction process is given in Table 24.

Table 24. An overview of planned new generation capacities

New Capacities (MW)	2010	2011	2012	2013	2014	2015
HPP Mostarsko blato	60.0					
WPP Merdžan Glava i Poljice		20.0		10.0		
WPP Merdžan Glava, Mali Grad, Sveta Gora i Poljice	46.0					
TPP Stanari					300.0	
Small HPP Sutjeska	23.3					
HPP Ustikolina						63.6
HPP Vranduk					22.0	
TPP Tuzla, Unit 7						
TPP Kakanj, Unit 8						
System of Pipe HPPs on river Bosna (HPP Cijevna 1-6 and HPP Doboj)			56.1	34.2		
WPP Ljubuša	80.0				29.0	
WPP Pakline	80.0				65.0	
WPP Kupres		77.0				
WPP Gradina	26.0		44.0		44.0	
Total:	129.3	206.0	133.1	88.2	416.0	107.6
Cumulative:	129.3	335.3	468.4	556.6	972.6	1,080.2
Existing facilities (base yr. 2008)	3,681.6	3,681.6	3,681.6	3,681.6	3,681.6	3,681.6
TOTAL:	3,810.9	4,016.9	4,150.0	4,238.2	4,654.2	4,761.8

New units in thermal power plants are to be commissioned in the period after 2015: TPP Tuzla, Unit 7 of installed capacity 450 MW in 2017; TPP Kakanj, Unit 8 of installed capacity 300 MW in 2018. With the construction thereof, the existing units that definitely should leave the network because of their deterioration will come off the network.

TPP Stanari of installed capacity 300 MW, in accordance with information given by investor EFT, is to be commissioned in 2014. For these three major generation facilities, the preparation works for obtaining permits, design studies etc., are ongoing.

Having in mind that construction of new hydropower plants lasts from three to five years and for thermal power plants up to eight years, implementation of the programme for construction of new power plants should follow planned schedule, because, as previously mentioned, generation adequacy in mid-term (until 2015) is not endangered, but in case of delay in commissioning of planned facilities, generation adequacy after 2015, becomes somewhat endangered.

In planned period 2010-2015, investors have applied for construction of significant installed capacities in wind power plants. Total installed capacity is 1,157 MW with planned annual generation of 3,241 GWh.

It should be mentioned that locations where construction of wind power plants is planned, at the moment and probably also in time frames when their commissioning is planned, have no adequate transmission network that can accept planned capacities, although for certain locations even concession agreements have been signed.

Although some reserves can be mentioned in relation to the schedule planned for construction and commissioning of wind power plants, the basic issue is capability of transmission network to accept planned capacities. On one hand, limitation of installed capacity against network capability has an adverse impact on investors' economic effects, and acceptance of full installed capacity of planned wind power plants will require construction of additional transmission capacities, redesign of transmission network and increase of voltage level with significant investments in transmission capacities. On the other hand, construction of significant wind power capacities related to total installed capacity of the system aggravates regulation performances of the system, setting more severe conditions for providing adequate reserves, generation operation and dispatching. Also, Bosnia and Herzegovina has not adopted complete legal and technical rules for construction and exploitation of wind power plants connected to the transmission network. An addendum to Grid Code, partially related to wind power plants, is planned in 2010.

5.1.5 Transmission Network Adequacy

Capacity and energy balances in the transmission network in Bosnia and Herzegovina show significant surpluses in all planned years. At the end of planned period, exports possibility will be such that the existing cross-border lines probably will not be able to fulfil safety criteria, and especially in transit conditions that can be expected after planned construction of major generation capacities in Bulgaria and Romania. However, past experiences show very doubtful reality of the schedule for generation capacities construction, in BIH and in the region, as well as uncertainty of their realization, especially in the first planned years, meaning that, from the aspect of covering power balance in transmission network in Bosnia and Herzegovina and transmission network adequacy (internal and cross-border), although there are uncertainties, there should be no difficulties. In case of somewhat worse hydrology, and delay in construction of wind power plants or non-realization of their planned construction, expected surplus will be significantly reduced, even for scenarios with the lowest growth of electricity demand. Regardless the generation adequacy, in the regime of full availability of all lines and transformers, transmission network elements are loaded relatively low, and there are sufficient reserve for the further load growth and power transmission. Inside the recent configuration of BIH transmission network there are about twenty radially supplied SS 110/x kV and several solid points that slightly influence the reliability and security of customers' supply. In future, those should be removed. The main risk factor is the outage of one of the major 300 MW units, but in practice, it is shown that even in those cases, due to sufficient reserve the supply of customers is not endangered.

5.1.6 Recent Investments and Significant Events

The most important investment in generation facilities refers to construction of HPP Mostarsko blato. The installed capacity is 2x30 MW while an expected annual generation amounts to 170,000 MWh. Putting into operation of these two power plants is expected in 2010.

After the transformer 400/110 kV in the sub-station Višegrad and the cross-border 110 kV transmission line Bosanski Brod - Slavonski Brod (Croatia) were connected to the power transmission system during 2008, and new 110/x kV substations Janja, Banja Luka 7 and Banja Luka 8 were put in operation, the most important events in 2009 include:

- connection of the cross-border 220 kV transmission line Prijedor 2 - Mraclin (Croatia), and
- connection of the cross-border 110 kV transmission line Grude - Imotski (Croatia).

5.1.7 Authorization Criteria and Investment Incentives

Pursuant to Article 6.2. of EU Directive No. 96/92/EC or Directive EU 2003/54/EC, respectively, "each transmission system operator shall draw up and publish under State supervision, at least every two years, a regular estimate of the generating and transmission capacity, including interconnections. The estimate shall cover a period defined by each Member State".

Clause 3.18. of Licensing Conditions for Performance of the Activity of the Independent System Operator, defines that "The licensee is obliged to develop an indicative generation development plan for a ten-year period with data supplied by the generators, distribution companies and end-customers directly connected to the transmission system. The plan shall be expanded every year with the year which has not been previously included in the plan. The procedure for the plan expansion shall be the same as with its issuance. The Indicative Generation Development Plan shall be submitted to SERC for approval by the end of August for the following year". Pursuant to Section 4.3. of Grid Code, the objective of the Indicative Generation Development Plan is to inform the users (current and prospective) about the needs and construction projects of new generation capacities. The generation planning process will take into account the following:

- Required generation capacities to cover peak load;
- Power balances in the transmission network;
- Reserves in capacity and energy and possible shortfalls;
- Harmonization with the transmission system development plan;
- Meeting its power needs from own sources as a basic criterion for development of the Indicative Generation Development Plan.

With Article 16 of Connection Rules, SERC has defined the payment of only 50% of the fixed part of connection fee for the power generation facilities using renewables. Facilities using hydropower shall be able to use this benefit if their granted capacity does not exceed 10 MW.

Pursuant to their jurisdictions, the entity regulatory bodies, FERK and RERS, create conditions for the power sector development in the activities of power generation and distribution.

5.2 Natural Gas

In the existing BiH legislation, safety of supply has been treated to some extent, but not in a way to meet requirements referred to in Directive 2003/55/EC and in Directive 2004/67/EC. Namely, the Gas Law in Republika Srpska prescribed that the transport system operator is responsible for control, maintenance and development of the transport system in Republika Srpska, as well as for insurance of a safe, reliable and efficient natural gas transport, while the Republika Srpska Government is obliged to adopt a special regulation that will determine the rules for insurance of safety of supply and delivery of natural gas. Such a regulation was not adopted in 2009.

On the other side, the Decree on organization and regulation of the gas industry sector in BiH Federation provides that the transport system operator is obliged to keep, maintain and develop a safe, reliable and efficient transport system, and is also obliged to develop and propose, to the respective ministry, a contingency plan as well as to manage the gas system in case of proclamation of the crisis. This plan was not adopted in 2009.

As stated previously, BiH does not have its own natural gas production, which is the reason for import of all quantities of this energy source from the Russian Federation. The natural gas transport from the Ukraine-Hungarian border to BiH is carried out using one transport direction, while the transport system in BiH is connected only to the transport system in Serbia. Taking into account everything previously stated, the level of security of supply with natural gas is not satisfactory.

The natural gas supply from the Russian Federation is done on the basis of the contract on the natural gas delivery between the company "Gazexport" from Moscow and

"Energoinvest" from Sarajevo. This contract was signed in 1997, conditioned by the dept payment for the natural gas delivered in the period from 1992 to 1995. The company of "BH-Gas" is the cosignatory of the Agreement on the natural gas delivery.

Natural gas transport through Hungary and Serbia is carried out on the basis of the long term Agreements on natural gas transport, a signatory of which is "BH-Gas" as well as the cosignatory of the Annex to the Agreement on natural gas purchase. The agreement on the natural gas transport with Hungary and Serbia is applicable until 2018 and 2017 respectively.

In 2009, "Energoinvest" and "BH-Gas" ensured, through the foreign partner ("Gazexport") delivery of necessary quantities of natural gas for the BiH market, following the requirements of customers. If the period of the January gas crisis, due to the Ukraine-Russian dispute, is excluded, there have neither been any considerable problems in delivery nor in the gas transport through Hungary and Serbia.

During the January gas crisis, caused by the dispute between Russia and Ukraine, BiH market was directly affected by interruption of the natural gas delivery, as it was also the case with markets in other 12 European countries. The fact that the BiH market is supplied by one source, using one transport direction, and the fact that BiH does not have its own storage capacities drastically decreased the system flexibility. Accordingly, the "BH-Gas" company, with the consent of the BiH Federation Government made an arrangement on the emergency delivery of natural gas with the Hungarian company "E.ON Földgáz Trade" in the respective period, which reduced the effect of the crisis.

In the continuation of 2009, there were intense activities on the conclusion of arrangements between "BH-Gas" and "E.ON Földgáz Trade" which would regulate the issues of possible forthcoming emergency gas deliveries. In June 2009, a Framework agreement on cooperation was concluded between the companies "BH-Gas" and "E.ON Ruhgras AG" (as parent company of "E.ON Földgáz Trade" and "E.ON Földgáz Storage") which, *inter alia*, contains provisions on:

- Undertaking all reasonable efforts for the offer of 'back-up' deliveries of natural gas to "BH-Gas" with the first priority in BiH, in order to increase safety of supply, and particularly in cases of crisis in the natural gas supply in BiH,
- possible storage of natural gas quantities following the request of "BH-Gas" in order to increase the flexibility of the BH market supply;

On the basis of this bilateral cooperation, general, that is, framework conditions of deliveries were defined and a legal basis was created based on which necessary arrangements might be concluded. Furthermore, as far as the planned consumption and supply of customers with natural gas are concerned, the same can be insured on the basis of the above mentioned agreement also in case of commercial and emergency deliveries, so the supply can only be damaged in case of extremely low temperatures, which can usually have a negative impact on the system balancing independently of its technical characteristics.

As already stated, the natural gas consumption in 2008 in BiH amounted to 230 million Sm³. After the drastic decrease of the natural gas consumption in the period from 1992 to 1995, natural gas consumption was slowly increasing and achieved its maximum in 2005 when it amounted to approximately 390 million Sm³, followed by the constant decrease of consumption afterwards. Figure 18. gives a historical overview of natural gas consumption.

Fluctuation of natural gas consumption is the consequence of the consumption instability in the industrial sector. The ratio between consumption in the industrial sector and retail sector and central heating system has been considerably changed. The consumption in the retail sector has been constantly increasing, while on the other side there is a negative trend of natural gas consumption in the industrial sector. As the result of this fact, there is a very significant disproportion between the summer and winter consumption. The consequence of these trends are achievements of maximum daily, that is, hourly capacities of the gas pipelines in the winter period when the air temperatures are some degrees below zero.

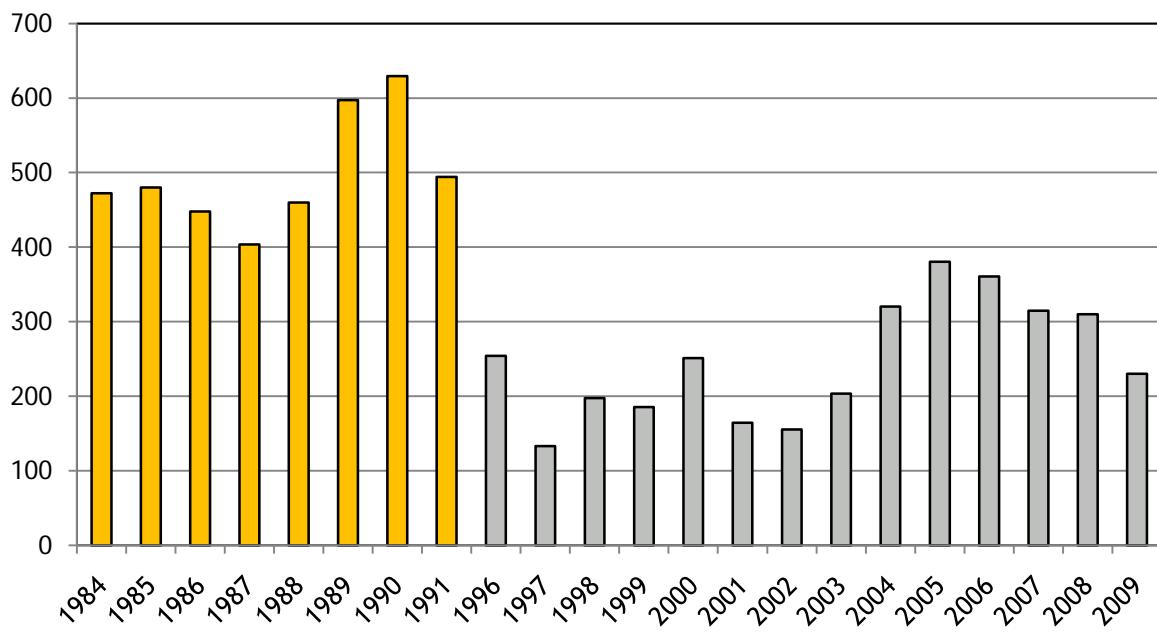


Figure 18. A historical overview of natural gas consumption in BiH (Sm^3)

Figure 19. provides a historical overview of the natural gas consumption structure. As it can be seen in the Figures 18. and 19., as of 2005 total consumption of natural gas was constantly decreasing, concurrently a share of the industrial consumption being supplied directly by the transport gas pipeline was drastically decreasing. Natural gas consumption of this category of consumers in 2009 was slightly higher than a third of consumption of this sector in 2005. There are two major reasons for the negative trend in the natural gas consumption in the industrial sector, and they are: reduced economic activity of the biggest industrial customers and availability and competitiveness of heating oil (mazut) as a backup energy source.

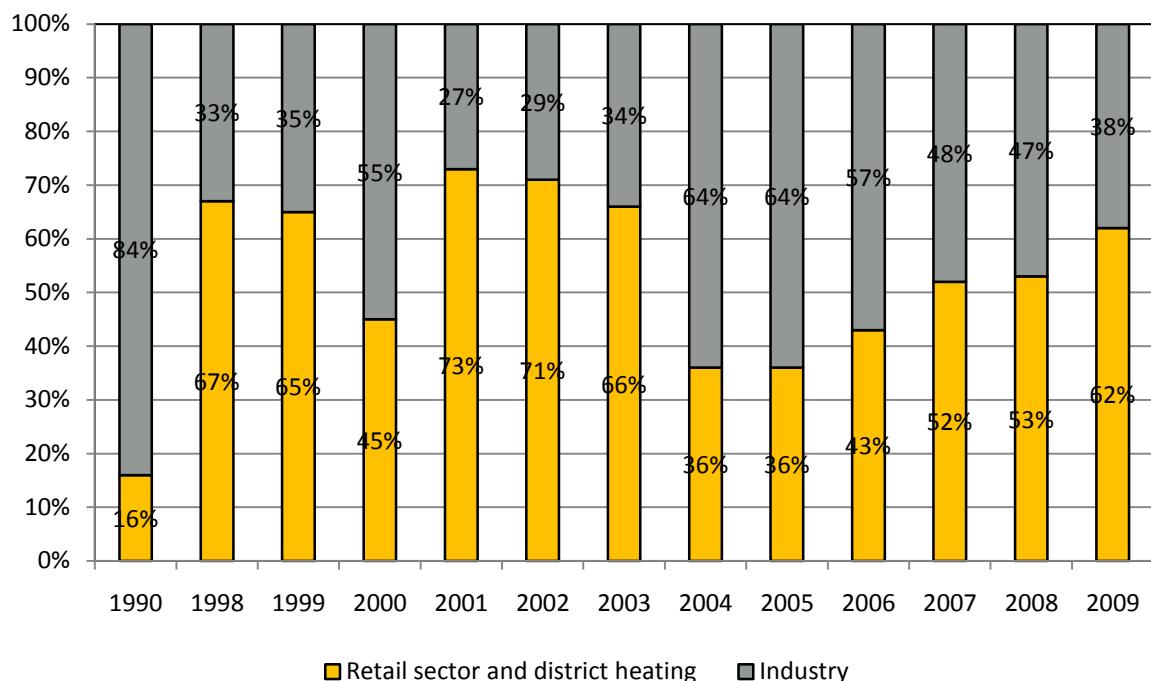


Figure 19. A historical overview of the natural gas consumption structure (%)

The supply diversification is related to both diversification of supply sources and diversification of supply directions, and increase of numbers, that is, capacity of interconnections. Evaluation of development projects in the system of the transport gas pipelines of high pressure assumes not only detailed analyses of the potential gas market and routes of new gas pipelines within the area of one country, but also the analysis of development of the same systems of the neighboring countries in order to, from the standpoint of purchase and transport of natural gas, achieve the most cost-effective and safe supply with natural gas.

When it comes to international activities and initiatives for construction of transport gas pipelines, it is important to mention two key initiatives. Having recognized the need and importance of construction of the Ion-Adriatic gas pipeline, in December 2008, BiH accepted and signed the Ministerial declaration on the Ion-Adriatic gas pipeline. This action gave a full political support to this project, while BiH representatives were appointed to the relevant institution for preparation and realization of this project.

Another important initiative is the construction of the so-called Gas Ring of the Energy Community. BiH declared itself in favor of it and accepted this initiative. The acceptance of the initiative means that development plans within BiH shall be adjusted to be part of the Gas Ring of the Energy Community.

The Entity Governments in BiH developed or have been in the process of developing strategic documents which recognize the projects directed towards development of the transport gas network. In the continuation, there is an overview of the planned development projects on the levels of BiH Federation and Republika Srpska.

The transport system operator in BiH Federation, "BH-Gas" is among other things in charge of development of the transport network in the BiH Federation territory. Accordingly, and taking into account the geographical position of BiH, "BH-Gas" considers that extension of the natural gas transport network in BiH aiming at provision of new transport directions, entries and possibly a new source of natural gas, should be the primary development objective, which can be achieved only by connection to the natural gas transport system in the neighboring Croatia. In order to achieve this objective, of key importance are the projects of the gas pipeline construction: Bosanski Brod - Zenica and Sarajevo - Ploče. Having in mind that in Croatia, for the last two years, construction of the transport gas pipelines has been accelerated and the gas pipeline to Slavonski Brod has already been constructed, the connection of these two systems in Bosanski Brod is considered priority. Another connection in the south in Ploče might enter the second phase of realization because, following the approval of a new investment cycle plan in Croatia, the construction of the gas pipeline Bosiljevo - Split has already started while the completion of the section Split - Ploče is expected by the end of 2011. The third connection in the Una-Sana Canton should be only for the needs of this canton with the prospect to connect it in the future to the gas pipeline Travnik - Jajce - Bihać. For this connection it is necessary to construct a new connection in Croatia only for the needs of BiH.

Development projects in the natural gas sector are related to the projects of extension of the transport network as the basic high-pressure supply system, development and construction of new distribution systems in towns, new industrial big capacities along the planned routes of the transport network as well as the project of natural gas storage. Below are given transport system extension projects. It is important to emphasize that all below mentioned projects have been included in the Strategy plan and program of development of the energy sector in BiH Federation. Development plans of "BH-Gas":

- Transport gas pipeline Bosanski Brod - Doboj - Maglaj - Zenica,
- Transport gas pipeline Sarajevo - Mostar - Ploče,
- Gas pipelines in the Central Bosnia Canton: Zenica - Travnik, Travnik - Gornji Vakuf, Travnik - Jajce,

- Gasification of the Una-Sana canton: The gas pipeline Tržačka Raštela/Štrulić (entry in Republika Srpska) - Cazin - Bosanska Krupa - Sanski Most - Ključ with the connecting gas pipelines towards Bihać, Velika Kladuša and Bosanski Petrovac
- Underground gas storage in the salt mine Tetima with the connecting gas pipeline Kladanj - Tuzla - Tetima

The gas transport network development in Republika Srpska is primarily based on the project of construction of the transport gas pipeline "Sava", that is, on the primary connection to the gas pipeline system in Serbia, and afterwards possible connection to the gas pipeline system in Croatia, as well as to the existing transport gas pipeline in BiH. The anticipated gas pipeline route "Sava" is Bijeljina - Brčko - Doboj - Derventa - Banja Luka - Prijedor - Novi Grad. The Republika Srpska Government has already granted the concession for construction of this gas pipeline. In 2009, there were not any major activities regarding realization of this project.

6 PUBLIC SERVICE

6.1 Public Service Obligation

Article 3, item 2 of Directive 2003/54/EC or Directive 2003/55/EC respectively, specifies that Member States may impose on undertakings operating in the electricity sector or natural gas sector, respectively, in the general economic interest, public service obligations. Such obligations shall be clearly defined, transparent, non discriminatory and may relate to security, including security of supply, regularity, quality and price of supplies, environmental protection etc.

In Bosnia and Herzegovina public service is considered as the service available to all customers and all power entities in a specified territory under prescribed prices and under regulated conditions of access and usage. Public service considers and includes security of supply, regularity and quality of service, efficient use of energy, environmental protection and climate changes prevention, and is performed pursuant to principles of transparency, with monitoring performed by bodies determined by law.

Although all customers, except households, have the right to be supplied with electricity as eligible customers, in 2009 all customers in RS were supplied as tariff ones, with regulated tariff rates, while in the Federation BIH only one customer was partially supplied as the eligible customer.

The Rule on Eligible Customer prescribes the obligation of supplier of last resort (SOLR) to suppliers of tariff customers and ERS (licensee for trade and supply of tariff customers) in case that eligible customer loses its supplier. In this case prices for this type of supply for small industrial and commercial customers (that are connected to the voltage level up to 1 kV, with connection capacity not exceeding 42kW) are regulated, while for other industrial and commercial customers the price of SOLR is formed and agreed in a fair and transparent manner, excluding any abuse of SOLR on the customer's expense and including a fair price for costs of SOLR.

In the Federation BIH, all eligible customers have the right to SOLR (public service obligation holder in the territory where eligible customer is settled) in the limited time frame of 30 days. The price of this service equals submitted costs of electricity supplied and this price is supervised by FERK. Exceptionally, eligible customers in the category of commercials at 0.4 KV voltage level whose capacity is not measured have no time limitations for the SOLR services, and the service price is approved by FERK based on the application submitted by the SOLR.

As all customers in RS are still supplied as the tariff ones, there has been no supply of eligible customers by SOLR yet, while in the Federation BIH, the customer who was partially supplied as eligible customer had not used SOLR services yet.

It should be that regulatory practice in the natural gas sector has not been adopted yet on the state or Federation level, and that in RS, RERS approves tariff rates for supply of end customers with natural gas only for households. Also, there are no special means with which the default electricity supplier of tariff customers, or natural gas, respectively, is compensated for performing activities under regulated prices.

6.2 Protection of Vulnerable Customers

Customer protection is an important issue of regulatory policy in all countries where the process of deregulation and liberalization of the power sector is in progress. To this end, besides other state bodies, regulatory authorities are even more entrusted with the obligation to consider and achieve the main goals of customer protection, protection of

power entities and the environment through a transparent and impartial solution to the issues occurring in the regulatory field.

The subsidizing of the most vulnerable energy consumers has become a widely accepted practice in most European countries. The main problems here are the identification of subsidy beneficiaries, the level of subsidization, funds and the manner of implementation. Lack of initiative and coordination as the major shortcoming of up-to-date activities makes logical that the main stakeholders in the future should be the ministries competent for social protection with the support of other competent authorities, including the regulatory commissions.

In 2009, SERC continued to make efforts to protect electricity customers, especially vulnerable categories of the population, by active participation in all initiatives of the institutions at the state level within the authority vested in it by law. SERC gave a significant contribution to the development of the *Social Action Plan for BiH*, acting within the Working Group of the BiH Ministry of Civil Affairs which gathered representatives of the relevant ministries at the state and entity levels as well as representatives of employers, unions etc. At the beginning of 2010, the Plan which was approved by the governments, that is, the relevant ministries of the Federation of BiH, Republika Srpska and Brčko District BiH, will be forwarded to the BiH Council of Ministers for final approval.

Subsidization programs for most vulnerable electricity consumers are established in:

- Republika Srpska (electricity),
- Brčko District BiH, and
- Canton Sarajevo (during winter months).

Although issues of protection of vulnerable customers, related to electricity expenses and electricity affordability for vulnerable customers are not directly related to regulatory jurisdiction, RERS has actively participated in the definition and development of Programme for protection of vulnerable electricity customers in RS, where subsidies are defined for a specified purpose and earmarked for electricity.

In FBIH there is an applicable extensive system of assistance to vulnerable categories of citizens which is of general character. In addition, certain cantons have subsidies for energy products that users choose (electricity, district heating, coal, fuel wood) about which there are no precise statistics, but in accordance with some estimations it is a sum of about a few tens of millions BAM annually.

The RS Government social programme had a goal to prevent 'tariff shocks' for vulnerable categories of citizens that are not capable to bear increases in electricity prices.

The Programme has covered the following social categories of the society that are defined by law:

- Retirees with the lowest pensions,
- Users of permanent aid,
- Users of allowances for taking care of other person,
- Users of childbirth allowance and
- Users of child's allowance.

Tables 25. and 26. show the total number of subsidy users and realized amount of subsidies in 2009 per quarters and by power distribution areas.

Compared to 2008 when, 28,000 and 35,000 users applied on a quarterly basis, in 2009 the number of users was between 35,000 and 38,000, consequently, the amount of subsidies was significantly higher: 7,701,730.56 BAM in 2009 against 5,560,495 BAM spent in 2008 for subsidies.

Table 25. Number of users and amount of subsidies per quarters in 2009

<i>Period</i>	<i>Number of users</i>	<i>Unit subsidy amount (in BAM)</i>	<i>Total amount of subsidy (in BAM)</i>
<i>I quarter of 2009</i>	35,183	59.28	2,085,648.24
<i>II quarter of 2009</i>	36,648	45.60	1,671,148.80
<i>III quarter of 2009</i>	37,451	45.60	1,707,765.60
<i>IV quarter of 2009</i>	37,739	59.28	2,237,167.92
TOTAL			7,701,730.56

Table 26. Number of subsidy users by power distribution areas

<i>Power Distribution Area</i>	<i>Number of users to whom subsidy is remitted</i>			
	<i>I quarter</i>	<i>II quarter</i>	<i>III quarter</i>	<i>IV quarter</i>
<i>Elektrokraina</i>	13,819	14,404	14,691	14,689
<i>Elektro Doboj</i>	6,060	6,308	6,480	6,587
<i>Elektro-Bijeljina</i>	7,479	7,882	8,137	8,351
<i>Elektrodistribucija Pale</i>	4,595	4,749	4,786	4,730
<i>Elektro-Hercegovina</i>	3,230	3,305	3,357	3,382
TOTAL	35,183	36,648	37,451	37,739

Taking into account the fact that average monthly electricity consumption in household in RS is about 300 kWh, it may be assessed that subsidizing of more than 35,000 vulnerable customers with 150 kWh of electricity per month during 2009 produced more than positive effect and contributed to the prevention of 'tariff shock' due to increase in electricity prices.

Attachment A – List of Abbreviations

<i>BiH</i>	<i>Bosnia and Herzegovina</i>
<i>F BiH</i>	<i>Federation of Bosnia and Herzegovina</i>
<i>RS</i>	<i>Republika Srpska</i>
<i>Brčko DBiH</i>	<i>Brčko District of Bosnia and Herzegovina</i>
<i>MoFTER</i>	<i>Ministry of Foreign Trade and Economic Relations, Sarajevo</i>
<i>FMEMI</i>	<i>Federal Ministry of Energy, Mining and Industry, Mostar</i>
<i>RS MIEM</i>	<i>Ministry of Industry, Energy and Mining of Republika Srpska, Banja Luka</i>
<i>SERC</i>	<i>State Electricity Regulatory Commission, Tuzla</i>
<i>FERK</i>	<i>Regulatory Commission for Electricity in Federation BiH, Mostar</i>
<i>RERS</i>	<i>Regulatory Commission for Energy of Republika Srpska, Trebinje</i>
<i>ISO BiH</i>	<i>"Independent System Operator in Bosnia and Herzegovina", Sarajevo</i>
<i>Elektroprenos BiH</i>	<i>"Elektroprenos Bosne i Hercegovine" a.d., Banja Luka</i>
<i>EP BiH</i>	<i>Public Utility Elektroprivreda Bosne i Hercegovine d.d. - Sarajevo</i>
<i>ERS</i>	<i>Mixed Holding "Elektroprivreda Republike Srpske" a.d., Trebinje</i>
<i>EP HZHB</i>	<i>Public Utility "Elektroprivreda Hrvatske zajednice Herceg Bosne" d.d., Mostar</i>
<i>Komunalno Brčko</i>	<i>Public Utility "Komunalno Brčko" d.o.o., Brčko</i>
<i>BH-Gas</i>	<i>"BH-Gas" d.o.o., Sarajevo</i>
<i>Gas promet</i>	<i>"Gas promet" a.d., Istočno Sarajevo - Pale</i>
<i>Sarajevogas</i>	<i>KJKP "Sarajevogas" d.o.o., Sarajevo</i>
<i>Sarajevo-gas</i>	<i>"Sarajevo-gas" a.d., Istočno Sarajevo</i>
<i>Zvornik stan</i>	<i>"Zvornik stan" a.d., Zvornik</i>
<i>Visokogas</i>	<i>"Visokogas" d.o.o., Visoko</i>
<i>K.F.K. - Plin</i>	<i>"K.F.K. - Plin" d.o.o., Kreševo</i>
<i>SAIDI</i>	<i>System Average Interruption Duration Index</i>
<i>SAIFI</i>	<i>System Average Interruption Frequency Index</i>
<i>ENS</i>	<i>Energy-Not-Supplied</i>
<i>EEX</i>	<i>European Energy Exchange, Leipzig</i>
<i>GDP</i>	<i>Gross Domestic Product</i>
<i>BAM</i>	<i>International Banking Code (ISO CODE) for the BiH Currency</i>
<i>HHI</i>	<i>Herfindahl-Hirschman Index</i>
<i>TPP</i>	<i>Thermal Power Plant</i>
<i>HPP</i>	<i>Hydro Power Plant</i>
<i>SPP</i>	<i>Small Power Plant</i>
<i>WPP</i>	<i>Wind Power Plant</i>

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