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MASTER'S THESIS

**AN ANALYSIS AND THE IMPACT OF POWER SECTOR REFORM  
IN SOUTH-EASTERN EUROPE**

Sarajevo, October 2013

ANTONIJA BOŠNJAK

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## INTRODUCTION

Today's way of life in most countries in the world would probably not be possible without electricity. First usage of electricity in the second half of the nineteenth century helped the second industry revolution to happen and changed the course of history. Artificial light and first lightning bulbs were seen as miracle by common people back then, but very quickly they evolved into one of the primary needs of modern society and the growth of electricity consumption is not slowing down.

A very complex power industry that provides electricity to consumers, stands behind today's electricity. In most countries in the world power sector was organised as a vertically integrated industry which included generation of electricity in power plants, transmission of electricity through high voltage grid, distribution of electricity through medium or low voltage grid and supply to final customers. Since it is not convenient to have double or more parallel transmission or distribution networks across one region and due to the importance of having safe and quality electricity supply for industry and households, during most of the twentieth century power sector was seen as state owned (or at least state regulated) natural monopoly. Microeconomic theory teaches that monopoly, natural or not, is market distortion that causes deadweight loss, i.e. loss of economic efficiency. To minimise economic inefficiency power sector reform started by reconstructing the industry.

The purpose of this thesis is to examine possible implications and gains of power sector reform in selected countries of Southeast Europe by analysing past and current indicators of the power sector. It is very important to see whether the electricity reform model of European Union (hereinafter EU) is applicable to the region of Southeast Europe (hereinafter SEE). These countries are very different from the most EU countries and problems (economical, geopolitical) that these countries are facing with are very much different from those in the EU. The goals of this research are to:

- examine what is a real need of SEE countries for creating a regional power market in the SEE,
- explore the potential impact the reform of power markets could have on final electricity prices,
- explore the potential impact the reform could have on production capacities and investment in the power sector,
- explore the potential impact the reform process could have on cross – border electricity trading among member countries of the regional market.

The first chapter starts with presentation of general reasons, expected goals and steps of conducting the power sector reform. Then an overview of power sector reform in EU, Argentina and Chile follows. EU represents developed countries and Argentina and Chile represent developing countries.

In the second chapter an overview of economic development and the state of power sector prior to reform of selected countries, that are focus of the research, is given. The goal was to understand the starting point of the reform in the selected countries.

The third chapter is focused on the power sector reform in the selected countries: Albania, Bosnia and Herzegovina, Croatia, Montenegro and Serbia. The underlying reasons and the course of the power sector reform are presented as well as the state of power sector after the reform started.

The fourth chapter discusses potential obstacles to further reform. Since power sector reform is a very complex and long process, especially when it involves more than one country that differs in economic, social and political sense, there are many obstacles that can appear and slow down or jeopardize the whole process.

The main research method used in the thesis is comparative analysis of data from secondary sources. Descriptive method was also used to explain the facts regarding the topic, accompanied with inductive and deductive reasoning and statistical methods. Statistical data are obtained from the secondary sources, such as: World Bank (hereinafter WB), International Monetary Fund (hereinafter IMF), European Bank for Reconstruction and Development (hereinafter EBRD), International Energy Agency statistics (hereinafter IEA), Eurostat, Energy Information Administration (hereinafter EIA), Energy Community, national regulatory authorities, power companies reports and other competent authorities for energy issues, national bureau of statistics, etc. An extensive literature on electricity market and its reform was used for better understanding of power sector reform.

## **1 POWER SECTOR REFORM IN THE EU AND LATIN AMERICA**

Until the eighties of the last century, energy industry, including power sector, was organised and functioned as state owned monopoly in most countries in the world. It had a character of natural monopoly because of characteristics of decreasing production cost by supplying greater number of customers. During the twentieth century, demand for supplying industry and households was enormously growing and to ensure security of supply to all customers, the government took over running this sector. In addition to this, construction of power sector infrastructure demanded great investment with long period of return and private sector had less interest to invest in power sector, so the government assumed responsibility to insure these investments.

Besant-Jones (2006, p. 10) points out three main drivers of power sector reform:

- in terms of overall allocation of resources, making consumers pay at the margin what it costs to produce and supply them is expected to achieve a better economy-wide use of resources;

- the profit motive gives a stronger incentive for efficient use of inputs than any incentives offered by an enterprise controlled and managed by a bureaucracy; and
- competition, where it is possible, provides the most likely means to reduce supply costs and pass benefits on to consumers.

Economic theory says that monopolies are market distortions that decrease social benefit. Considering this with the globalisation of markets and technological progress, growing dissatisfaction with public enterprise performance, ever-tightening government budgets, and explosion of investment needs in utility and other network industries worldwide have caused policymakers to turn increasingly to private sector participation and demonopolisation of the sector (Kim & Horn, 1999, p. 1). Pioneer in reforming power sector is Chile, than New Zealand, England and Wales, Norway, Australia and many other countries follow (Majstorovic, 2008, p. 549).

Following steps are considered as general way in conducting reform (Pollitt & Jamasb, 2005, p. 2): restructuring, market opening and introducing competition, regulation, ownership. Since in most countries power sector was organised as vertically integrated industry, meaning that generation, transmission, distribution and supply were conducted by one single company; the reform was seeking to break these activities on competitive ones and non-competitive ones. Non-competitive activities are transmission and distribution, because of their specific characteristics and inconvenience of having two or more network lines in one region. On the other hand, in generation and supply the competition can be introduced, because it is possible to have more than one generator and supplier in the same market.

The most common types of unbundling are following (Hunt, 2002, p. 60; Harris, 2006, p. 124):

- unbundling of accounts of different power activities and pricing them separately. This is the least efficient form of separation,
- functional unbundling means separation of functions within the company and imposes restrictions on activities (for example, people employed in the power plant are forbidden to interfere in day to day businesses of transmission activities; restriction on information flows are imposed),
- operational unbundling is a continuation of the functional separation, meaning that higher level decision making is separated,
- functional separation into an affiliate (legal unbundling) means separation of functions by transforming them into subsidiaries that are control by a parent or leading company of the group of companies,
- corporate unbundling (ownership unbundling) means changing or selling power activity to another entity. The last one is complete separation from other activities.

Market opening and introducing competition refer to allowing new companies to enter the market. Competition is usually first introduced to the wholesale market, i.e. entering new generators and suppliers to the market and then in retail market, i.e. allowing every electricity customer to choose its electricity supplier.

To ensure that every participant of the market behaves fairly and in the non-monopolistic way, there is a need for independent regulatory institution that would monitor relations among participants and promote competition in the market. Regulator would also supervise the part of the market that must be regulated (transmission, distribution, public services).

The last, but not necessary step of the power sector reform is privatising public power companies. The main focus of the reform should be the first three steps, in order to achieve full competitive power market.

It should be noted that studies showed that there is no real need for privatisation of public utilities for achieving higher efficiency, i.e. privatisation does not lead to higher efficiency in monopolistic market, but is correlated just in competitive market. Vlahinic – Dizdarevic (2011, p. 2 and 3) states a number of studies, such as Zhang, Parker, & Kirkpatrick (2008), Newberry & Pollit (1996), Sheshinski & Lopez-Calva (1999) which showed that introducing competition in monopolistic markets is crucial for higher efficiency of utilities, rather than privatisation itself.

When considering power market and its reform, it should be kept in mind that electricity has specific characteristics as a commodity. Electricity cannot be stored as other commodities, and supply and demand must be balanced. In other words, generation and consumption must be balanced the whole time in the whole system. In the centre of balancing the system is transmission system and its operator. A question how to unbundle transmission operations caused a lot of discussion in the EU. Discussion was on the issue of the most efficient and desirable type of unbundling and organisation of transmission system operations that would minimise possibility of monopolistic behaviour. The next subchapter will describe solutions that were proposed by all three energy packages in the EU.

## **1.1 Three regulatory packages in the EU and their implementation**

Desire to reform and liberalise power market in the EU arose during the nineties of the last century. It represents a part of the ambitious plan from the eighties of the last century for achieving a single common market in the EU<sup>1</sup>.

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<sup>1</sup> Single Market Act was signed in 1986 and was first major revision of the Treaty of Rome from 1957. One of its purposes was to route the creation of the single market in the EU by the end of 1992.



The common power market in Europe can be seen as a result of the EU's effort to liberalise the power market and to suppress the natural monopoly in power engineering (Adamec, 2008, p. 22). The goal of liberalisation was to upgrade efficiency of power sector for achieving greater competence of the EU's economy and following results were expected: electricity prices decrease, better quality of services, reducing differences of prices among member states, possibility to choose electricity supplier and increase of efficiency through lower need to build and maintain reserve capacities (Tominov, 2008, p. 258). In most of the EU countries there were excess capacities for electricity generation, and one of the goals was to remove inefficient generators which cause the upward trend of prices and to maintain the most efficient which would use new technologies (Hrovatin & Zoric, 2011, p. 7).

In order to reform power sector the European Commission (hereinafter EC) adopted number of directives and regulations. They are commonly known as three energy packages. The second and the third package were adopted because of deficiencies in the previous one, i.e. the set goals have not been met or number of problems, not anticipated on time, have occurred.

So, the first step to reform the power sector was adoption of the first Directive concerning common rules for the internal market in electricity in 1996 that had to be incorporated in national laws and effective by 1999<sup>2</sup>. In short, first Directive prescribed: responsibilities of generation, transmission and distribution, necessary accounting separation of power activities if they are conducted by vertically integrated company (hereinafter VIC) and avoiding cross-subsidisation of different activities, imposition of public service obligation for general interest, authorisation and tendering procedure for building new generating capacities, possibility of negotiated and regulated third party access to the grid or single buyer procedures (Official Journal of the EU, no. 027). It also envisaged opening around 1/3 of the market by 2003 in the next order:

- from 1999 all customers that annually consume more than 40 GWh of electricity can obtain status of eligible customer and right to choose their supplier;
- from 2000 eligibility gain customers that annually consume more than 20 GWh;
- from 2003 eligibility gain customers that annually consume more than 9 GWh.

Eligibility did not refer only to inside of the borders of one member state. It also included the right to choose supplier from another member state if the threshold for gaining eligibility status is satisfied in that country as well.

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<sup>2</sup> The idea to create a single energy market actually dates back to 1951 when six European countries (Belgium, Netherlands, Luxembourg, France, West Germany and Italy) created the European Coal and Steel Community by signing the Paris Treaty, but this paper is focused on the last three energy packages which are the most serious and ambitious attempts in creating single power (energy) market in the EU since the Paris Treaty.

Transmission system operator (hereinafter TSO) and distribution system operator (hereinafter DSO) must be appointed by a company that owns transmission and/or distribution company and have to operate independently. Except accounting separation there is no other provision regarding unbundling TSO and DSO from other activities.

Also, first Directive does not cover issue of independent power regulator, but just points out that power companies must be authorised in their member states. Decision on what institution would have power of authorisation is left to member states and this led to different practices across the EU.

By 2002 all member states in that time managed to open their markets according to the Directive. But some countries succeeded to open more than required. Austria, Denmark, Germany, Spain, Sweden and United Kingdom fully opened their markets, so every customer, from big industrial company to household, could choose its supplier. On other side, just 34% of Greek market was opened for competition, just one point above required by the first Directive (European Commission, 2003, p. 4). The findings and opinions expressed in the European Commission's annual report for 2004 suggest that first Directive has not done enough to achieve competitive power market, because only 50% of large customers from 1999 to 2004 were able to change suppliers (European Commission, 2005, p. 3). Slow and non-harmonised reform process, different speed of liberalisation and market opening among member states led to adoption of a new Directive for internal power market in 2003 and was effective from 2004<sup>3</sup> (Official Journal of the EU, no. 176/37).

The second Directive introduced some changes in organisation of the power market. It was adopted to correct oversights of the first Directive. To ensure non-discriminatory access to the transmission and distribution network only regulated access was allowed. Second Directive goes further in unbundling of activities and prescribes that transmission and distribution must be legally independent from generation and supply. Legal unbundling of TSO and DSO from generation and supply is supposed to minimise monopolistic behaviour of companies that own transmission and/or distribution assets, make TSO and DSO independent from any other market participant and ensure non-discriminatory access to the network to other participants. Prohibition of cross-subsidising of activities and account separation remains in force.

Unlike the first Directive, the second Directive paid more attention to regulatory authorities for power sector. It prescribes that every member state has to have national regulatory authority (hereinafter NRA) and their responsibilities have to be similar or the

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<sup>3</sup> Energy package from 2003 included also regulations related to gas market. Regulations related to electricity market are Directive 2003/54/EC European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC and Regulation (EU) number 1228/2003 European Parliament and of Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity.

same, especially regarding setting regulated prices. The EC founded the European Regulators Group for Electricity and Gas for the purpose of coordination of NRA. It consisted of NRAs for energy sector and it had advisory role in making efforts of establishing internal energy market. Its main achievement was Regional Initiative as intermediate stage to energy market integration.

The second Directive also gave more attention to environment protection, public service obligation and introduced the right on universal service. Universal service refers to the right of customer to be supplied with electricity of standardised quality in one area under reasonable and comparable prices and to ensure this right member states can appoint a supplier of last resort (Official Journal of the EU, no. 176/37). Timeline for the market opening was defined as follows:

- from July 1, 2004 all non-households customers are eligible customers, and
- from July 1, 2007 all customer, including households are eligible customers.

The second energy package also included Regulation 1228/2003/EC on conditions for access to the network for cross-border exchanges in electricity and Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment. The aim of Regulation related to cross-border trading was to regulate mechanism and to harmonise principles regarding pricing of cross-border transmission and mechanism of allocation of interconnection capacities. Due to concerns regarding sufficiency of future power capacities and insufficiency of investments in power infrastructure, in 2005 the EC launched Directive regarding security of supply and investments. The purpose was to ensure that every member state defines in its energy policy the level of power capacities that ensures security of supply in the future and to have a regulatory framework that would facilitate necessary level of infrastructure investments and not prevent entry of new participants in the market.

Regarding the power market, the second energy package did not give expected results. It did not eliminate the differences among member states concerning the market design obtained, because different member states did not implement it in a sufficiently comprehensive way and thus did not achieve the ultimate goals (Domanico, n.d., p. 5). The major problem was insufficient level of cross-border trading and low investments. This is why the EC launched third energy package in 2009<sup>4</sup> and it was effective from March 2011 (Official Journal of the EU, no. 211/55).

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<sup>4</sup> Third energy package from 2009 consists of two directives and three regulations regarding gas and electricity market. For electricity market relevant are Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, Regulation no. 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) no. 1228/2003 Regulation (EC) no. 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.

Regarding power market, third Directive deals more with unbundling of TSO and transmission than previous two. Position of EC was that legal unbundling is not efficient enough to ensure full independency of TSO from other power activities (generation) and does not guarantee non-discriminatory access to the network. But some countries (e.g., France, Austria, etc.) were against this proposition. Their proposition was to organise TSO as a subsidiary that is independent in every aspect from parent company, except decisions regarding investments. At the end, three possibilities for unbundling TSO were adopted in the third Directive. First is full ownership unbundling of TSO from VIC. Second option is appointment of an independent system operator (hereinafter ISO). ISO option gives opportunity to VIC to be the owner of the transmission assets, but the role of system operator is transferred to another company. VIC must provide transmission assets available to company that is appointed as ISO and is completely independent and separated from VIC. VIC is obliged to finance investments decided by ISO. ISO can be licensed only by national regulatory authority. Third option is an independent transmission operator (hereinafter ITO) which is legally unbundled from other power activities, but remains under ownership of VIC. Special rules must be followed in this option that guarantee full independency of ITO (completely separated management board and other employees, etc.) and are subject of stronger supervision from national regulatory authority. Third Directive also stipulates the regulated TPA as the second Directive.

In regards to power market, third Directive pays more attention to customer protection, (prescribes that customer switching must be done in short time, specifies content of electricity bills), expands supervision of NRA over public service, universal service and protection of vulnerable customers and gives possibility to small companies to be supplied under public service obligation. This Directive also broadens responsibilities and powers of NRA. In order to harmonise power developments of national power markets and their integration into a single EU market, the EC established two new institutions under third energy package: Agency for the Cooperation of Energy Regulators (hereinafter ACER) and European Network of Transmission System Operators for Electricity (hereinafter ENTSO-E). As an independent European structure which fosters cooperation among European energy regulators, ACER ensures that market integration and harmonisation of regulatory frameworks are done in respect of the EU's energy policy objectives (Agency, 2013). ENTSO-E is an organisation that gathers all EU TSOs and wider. It is established by the Regulation on cross-border exchanges of electricity that emphasises the need for cooperation and coordination among TSOs, in order to create network codes for providing and managing effective and transparent access to the transmission networks across borders; and to ensure coordinated and sufficiently forward looking planning and sound technical evolution of the transmission system in the EU, including the creation of interconnection capacities respecting the environment (About ENTSO-e, 2013).

In time of writing the thesis, most of data for 2011 and 2012 for power market were not available. EC benchmarking report was not published and Eurostat published only data for

prices in the first half of 2012. For this reason, in the next part more attention is paid on the period before third energy package entered into force.

Efforts on creating single power market did not give significant results by 2006. Member states continued to differ in a degree of implementation of power reform and level of competition on the power markets. Due to this, policy makers in EU turned to idea of making regional markets. It was believed that it would be easier to manage power reform on smaller region and that regional segmentation is just one phase in achieving single internal market (Karan & Kazdagli, 2011, p. 14). In 2006 ERGEG launched Regional Initiative for power markets. According to Regional Initiative, seven regional markets were created: Baltic, Central East, Central West, Central South, Northern, South West and France-UK-Ireland. The goal was to speed up the process by respecting different level of development and organisation of the markets. It was left to regional markets to determine their priorities towards achieving a common goal (so called bottom-up approach).

*Figure 1. Seven regional markets in the EU*



Source: *Key player in the construction of an integrated European electricity market, 2012.*

Regional Initiative was focused on improvement of capacity allocation and congestion management by harmonising transparency and integrating market balancing (European Commission, 2011a, p. 6). The EC benchmarking report for 2009 – 2010 states that number of accomplishments was achieved. A number of memoranda of understanding were signed: between the EC and Baltic countries on development of interconnections between Baltic countries, between the EC and countries of Central-Eastern European Forum for electricity market integration<sup>5</sup>, between TSOs of Baltic countries on capacity allocation mechanism and many others.

But, as already noted, reform process does not go at the same pace in every member state and set goals have not been adequately achieved. One of the goals was correlation of

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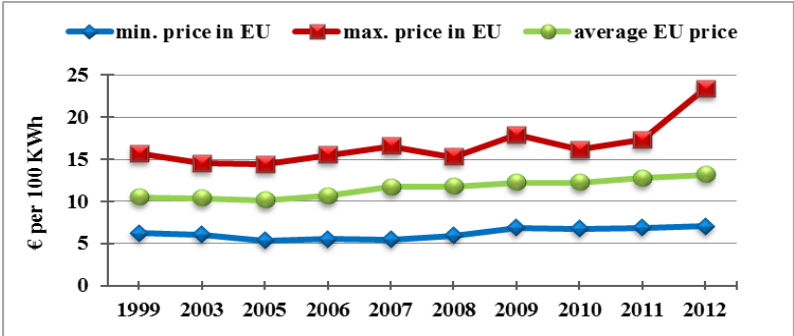
<sup>5</sup> It was signed in December 2009 by EC and Austria, Czech Republic, Germany, Hungary, Poland, Slovakia and Slovenia.

electricity prices with cost of production and supply and convergence of prices across the EU.

Average electricity price for households in EU 15 increased from 1999 to 2007 by 15%<sup>6</sup>. By 2005 the average electricity prices for households were decreasing, but then the upward trend was recorded, probably due to rising prices of oil, coal and gas, as well as the global financial crisis. The upward trend was also present in analysing the data for EU 27. From 2005 to 2012 the prices grew by 30% (Environment and energy, 2013).

The price convergence was also not achieved. Households on Cyprus were paying the most expensive electricity in 2012 – 23.38 €/KWh, which was 3.3 times more expensive than the lowest price of electricity that households in Bulgaria were paying – 7.06 €/KWh. Households of twelve member states were paying electricity prices higher than EU average (Environment and energy, 2013). According to Market Observatory and Energy Report (2012, p. 8), the majority of member states were regulating retail prices, especially for households, and only allowed appreciation that ranged in the level of general price increased.

Figure 2. Electricity price trends for households in the EU, 1999 - 2012



Source: Environment and energy, 2013.

Rise of electricity prices for industry after 2005 is even more apparent than for electricity prices for households. Average electricity price for industry customers in EU 15 in period 1999 – 2007 recorded a growth of 31.6%, while average electricity price in EU 27 from 2005 to 2012 recorded a growth of 45% (Environment and energy, 2013)<sup>7</sup>.

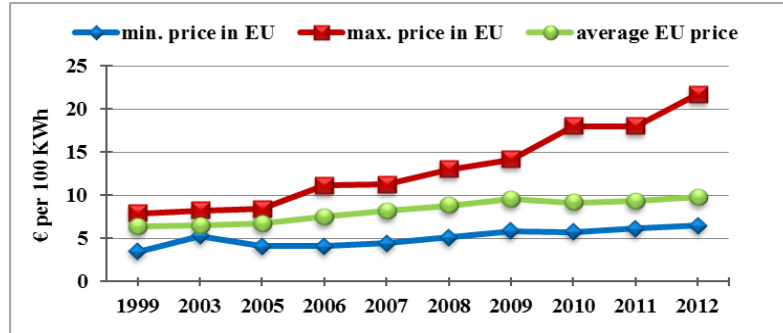
In the case of electricity prices for industry, the difference between countries is bigger than in the case of prices for households. The lowest prices in 2012 were paid by the industry

<sup>6</sup>Average price, excluding taxes for EU medium size household consumers. Medium size household consumers were defined as standard consumer Dc with annual consumption of 3500 kWh before 2007 and after 2007 as consumer with annual consumption between 2500 and 5000 kWh (consumption band Dc). Prices for household sector and all other sector are for the first half of each year (S1), unless otherwise indicated.

<sup>7</sup> Average price excluding taxes for EU medium size industrial consumers. Medium size industrial consumers were defined as standard consumer Ie with annual consumption of 2 000 MWh before 2007 and after 2007 as consumer with annual consumption between 500 and 2000 MWh (consumption band Ic).

customers in Germany, 6.47 €/KWh, and the highest were paid by the industry customers in Italy, 21.71 €/KWh. Fourteen member states had higher electricity prices for industry customers than the EU 27 average (Environment and energy, 2013).

Figure 3. Electricity price trends for medium size industry in the EU, 1999 - 2012



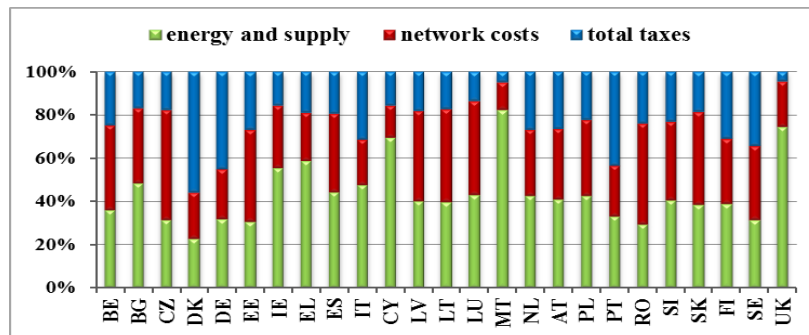
Source: Environment and energy, 2013.

Electricity prices for larger industry consumers also had increasing trend but not intense as for smaller industry consumers. The prices for this category of consumers also did not converge across the EU.

If the prices without taxes are observed, which naturally vary among countries, several reasons can be identify for the existence of significant differences in prices among countries. Different cost of electricity production due to different power sources, different generating capacities, different level of competition in the wholesale and in the retail market and regulation of the final prices in some countries are factors that lead to differences in electricity price for the same category of customers among different countries (Hrovatin & Zoric, 2011, p. 22).

Structure of final prices shows what was noted above. In thirteen member states prices of energy and supply had the biggest share in final prices for households, the network cost had the biggest share in eight states and taxes had the biggest share in four states (European Commission, 2013a).

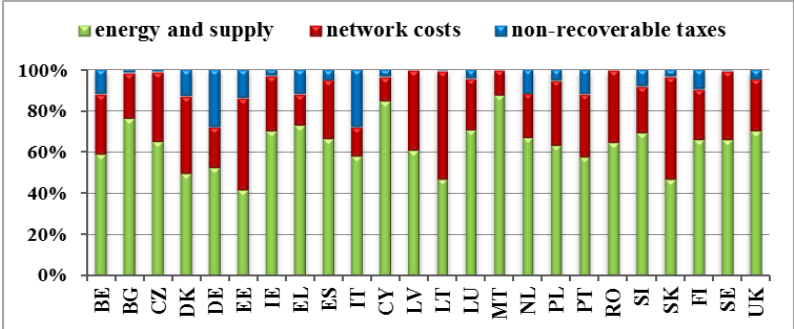
Figure 4. Composition of the final electricity prices for household consumers, 2011 S2



Source: European Commission, Energy price statistics, 2013a.

In most of the member states prices of energy and supply had the biggest share in electricity prices for industry. Network cost prevailed only in Estonia, Lithuania and Slovakia (European Commission, 2013a).

Figure 5. Composition of the final prices for medium size industry, 2011 S2



Source: European Commission, *Energy price statistics*, 2013a.

An important aspect of the reform and liberalisation of the power market is to allow consumers to choose their suppliers. Free choice of consumers should have a positive effect on the competition, so that the most efficient companies would exist in the market. On the other side, consumers would benefit from better service that would reflect cost of electricity production. However, the results showed that price does not motivate enough consumers with lower electricity consumption (households) to change supplier, while bigger consumers are more likely to decide in changing supplier (European Commission, 2011a, p. 10).

The data for 2011 show increase of total generation by 8.4% compared to 2000. In the same period, consumption of electricity increased by 9.9%. Increased consumption and generation were followed by increase in installed capacity by 33%. According to Eurelectric projection, till 2020 demand for electricity will increase by about 5.1%, which would have to be followed with increase in generating capacities. Although overcapacity existed in almost all member states, capacity decreasing is expected in the years that follow, especially since the most of the power plants were built 40 years ago (Hrovatin & Zorić, 2011, p. 28; Politt & Jamasb, 2005, p. 22).

Significant investments will have to be made in interconnection capacities to make import competition possible. Currently, interconnection capacities and cross-border trade is not at the satisfying level among member states, and it does not contribute to the development of competition in the market, but to monopolistic behaviour. In 2010 cross-border trade



constituted about 10.2% of final consumption of electricity (ENTSO-e, 2010, p. 16; Environment and energy, 2013)<sup>8</sup>.

Investing in new capacities and cross-border interconnections is also very important for security of supply. To harmonise member states regarding this issue, in 2005 the EC adopted a Directive whose focus were measures for security of supply and investments in infrastructure. In 2009 the EU launched European Energy Programme for Recovery, an assistance programme in amount of €4 billion, for cofinancing projects in EU intended for security of supply and diversification of resources, creation of functional internal market for energy and reduction of greenhouse gas emissions.

Liberalisation of power market is supposed to make entry of new participants in the power market (new generators, traders, suppliers) possible. However, characteristics of post liberalisation period in the EU are trend of acquisition and mergers of different energy sectors (e.g. power and gas companies) and trend of acquisition and mergers of power companies from different countries. Some authors have suggested that in a few years the electricity generation market will be transformed into an oligopolistic market with a small number of actors in this segment and with high degree of vertical integration upstreaming natural gas supply (Domanico, n.d., p. 12). In this way existing incumbent companies are trying to maintain the leading position in power/energy markets, expand their businesses across the borders and stop the entry of new companies. Some examples are (Domanico, n.d., p. 12; Our Milestones, 2013; Company Development, 2013):

- Gaz de France and Suez merged in 2008;
- Danish company Dansk Olie og Naturgas acquired and merged Elsam and Energi E2 and distribution companies Nesa, Kobenhavns Energi and Frederiksberg Forsyning in 2005 and 2006;
- German company Rheinisch-Westfälisches Elektrizitätswerk was quite active in mergers and acquisitions of different municipal and states utility companies for the last decade in and out of the country from 2000 to 2008;
- Energy On, a German energy company founded in 2000 by merger between two companies, Vereinigte Elektrizitäts und Bergwerks and Vereinigte Industrieunternehmungen, in 2003 took over Ruhrgas and entered into gas market.

Available data from period 2005 – 2010 show that in 17 member states the number of generating companies, that together constitute at least 95% of national net generation, has increased. In 15 member states a share of the largest generator in total generation has experienced a smaller decrease. However, there is still a number of countries where the largest generator has a very high share in total generation. Also, if the data on the number of main companies in the national markets are considered, i.e. companies that have more than 5% share in total national net generation, it is obvious that in most member states,

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<sup>8</sup> Data refers to 25 EU member states that were listed in ENTSO-e Statistical Yearbook for 2010.

exactly 18 countries, the number of these companies did not change in mentioned period (European Commission, 2013b).

The Herfindal – Hirschman index (hereinafter HHI), an index of market concentration, shows that great number of member states has very high or high concentration in the market which can be seen in the table 1. Last data of EC for 2009 show that average HHI for EU is somewhat lower compared to 2008 (European Commission, 2011a, p. 7).

Table 1. Degree of concentration in power market in EU countries<sup>9</sup>, 2007 - 2009

<b>Degree of concentration</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Very highly concentrated - HHI above 5000	BE, DK, EE, FR, GR, IE, LV, LX, ML, PT, SK, SL	BE, FR, GR, LV, LU, SK,	BE, FR, LU, LV, SK,GR
Highly concentrated - HHI 1800-5000	CZ, DE, ES, IT, LT	CZ, DE, LT, PT, SI, RO, HU, DK, NO	ES, LT, PT, RO, SI,
Moderately concentrated - HHI 750-1800	AT, CY, FI, HU, PL, UK, NL, SW	FI, PL, UK, ES, IT, NL, AT	DE, GB, HU, IT, NL, NO, PL

Source: European Commission, *Report on Progress in Creating the Internal Gas and Electricity Market. Technical Annex*, 2009, p. 13, Table 3.1; European Commission, *Report on Progress in Creating the Internal Gas and Electricity Market. Technical Annex*, 2010b, p. 12, Table 3.1; European Commission, *2009 - 2010 Report on Progress in Creating the Internal Gas and Electricity Market. Technical Annex*, 2011b, p. 12, Table 3.1.

A number of main companies in the retail market have not been changed in many member states from 2005 to 2010. High concentration is present in the retail market as well. In 2010 in 13 member states operated less than five companies, that together constitute 70% of the retail market.

By 2009, 15 member states unbundled ownership of TSO from other power activities (European Commission, 2011b, p. 36). It should be noted that directives on power market do not demand ownership unbundling of different power activities, but accounting and legal separation. Also, privatisation of power companies in the EU has not been imposed as part of the power sector reform. TSOs in UK and Germany are 100% under private ownership and in great number of member states TSOs are under full state or mixed ownership (European Commission, 2011b, p. 36).

For now it can be concluded that the European internal market for electricity is neither unified nor uniform, and there is no real convergence towards a single model (Glachant, 2004, p. 135 in Vlahinic - Dizdarevic, 2007, p. 358). Although some small improvements have been made in power market since the beginning of the reform, the ultimate goal of

<sup>9</sup> These three EC reports do not include all member states.

creating a single power/energy market in EU, where real competition exists and the prices are set in the way to give investor right signals, is still far away. There is still lack of investments, prices vary across the EU, the concentration in the market is still quite high and the speed of conducting reform differs across the EU.

## **1.2 Power sector reforms in Latin America - cases of Argentina and Chile**

The best examples of power sector reform in developing countries are reforms conducted in Chile and Argentina. Chile started the reform in the early eighties of the last century and was the first country in the world to start restructuring and privatising public utilities in electricity and liberalising electricity market. Argentina followed the example of its neighbour and began reforming power sector in the early nineties. In both countries power sector reforms were part of wider economic reforms. Many of public utilities in that time were not efficient in providing their services, their businesses were not productive and they represented a burden for the government budgets.

The reforms were conducted to overcome these problems. It was believed that by restructuring the power sector, setting new regulations and rules, privatising public firms and introducing the competition to the market would attract new investments of private participants in the capacity and network infrastructure and efficiency gains that everyone would benefit from.

### **1.2.1 Argentina**

In 1989 Argentinean parliament adopted a State Reform Act which set the base for privatising public utilities and in 1991 and 1992 the legal framework was set for power sector reform by adopting a Decree on conversion of power sector and new Electricity law<sup>10</sup>. Before the reform, power sector was dominated by state owned companies at federal level: Servicios Electricos del Gran Buenos Aires (hereinafter SEGBA), Agua y Energia Electrica (hereinafter AyE), Hidroelectrica Norpatagonica (hereinafter Hidronor), two binational generation facilities (Salto Grande and Yacireta) and one nuclear generation facility. The first three companies were restructured by vertically unbundling generation, transmission and distribution and by splitting generation units.

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<sup>10</sup> Decree 634/91 (Decreto de reconversion del sector electrico) was adopted on April 12, 1991 and the Law 24,065 (Ley de regimen de la energia electrica) was adopted on January 3, 1992.

Table 2. Restructuring and privatisation / concessioning of three largest federal power companies in Argentina (1992 – 1993)

<b>Before</b>		<b>Segba</b>	<b>AyE</b>	<b>Hidronor</b>
<b>After</b>	<b>Gener.</b>	6 Thermal Power Generation Companies	22 Thermal Power Generation Companies and 4 Hydroelectric Companies	5 Hydroelectric Companies
	<b>Transm.</b>	1 High-voltage Transmission Company - Transener (Compania de Transporte de Energia en Alta Tension Red)		
	<b>Distr.</b>	3 Distribution Companies - Edenor, Edesur, Edelap	-	-

Source: Energy Information Administration, *Electricity Reform Abroad and U.S. Investments*, 1997, p. 66 - 68; *Memoria de las Privatizaciones*, 2013.

After restructuring, generation units of each company were privatised during 1992 – 1993 and for managing transmission and distribution network concessions were given to private companies for the period of 95 years. Transener got the concession over national high voltage grid. Edenor, Edesur and Edelap got the concession over distribution network formerly owned by SEGBA, which was the largest power company in Argentina. Nuclear generation power plant and two binational generation power plants, Salto Grande which Argentina owns together with Uruguay and Yacireta which Argentina owns together with Paraguay, are still not privatised.

Besides unbundling electricity activities and privatisation of strategic companies, reform process also included establishment of wholesale electricity market which was opened to competition, establishment of national regulatory authority, Ente Nacional Regulador de la Electricidad (hereinafter ENRE), defining responsibilities of Secretary of Energy, regulation of market of non-eligible customers, regulation of monopolistic companies, free choice of electricity supplier for larger customers<sup>11</sup>, setting tariffs for access to the transmission network (regulated third party access) and setting tariffs for non-eligible customers<sup>12</sup>.

The wholesale electricity market, Mercado Eléctrico Mayorista (hereinafter MEM) was organised to introduce competition between generators. It is composed of term market and spot market. Compañía Administradora del Mercado Mayorista Eléctrico (hereinafter CAMMESA) was established to manage MEM. It is a non-profit company whose

<sup>11</sup> The first threshold to acquire status of eligible customer was demanding equal or larger than 100 KW, but in 1998 Secretary of Energy reduced it to equal or larger than 50 KW (Bouille, Dubrovsky and Mauer, 2002, p. 35).

<sup>12</sup> After reform and privatisation were complete at federal level, the process was expanded to provinces.

responsibilities include dispatch of electricity into the National interconnected system (hereinafter NIS), safety and quality of electricity supply, minimising the wholesale electricity prices in the spot market, planning energy capacity and optimising energy use, monitoring the operation of the term market, purchasing and selling electricity from and to abroad, billing and collecting payments for transactions between MEM agents, etc. (The Argentine Electricity Sector, 2013). CAMMESA is managed by a board formed by representatives of its shareholders – associations that represent generation companies, transmission companies, distribution companies, large users and Secretariat of Energy (The Argentine Electricity Sector, 2013).

Similar to Chile, since electricity was sold through the wholesale market sellers were paying a spot price which was determined as the marginal cost to provide the next MWh of electricity, demanded by the electricity system and adjusted through application of fixed charges (The Argentine Electricity Sector, 2013; U.S. Energy Information Administration, 1997, p. 74). CAMMESA determines fixed charges on the basis of coverage of the costs of ensuring some minimum level of reserve capacity and coverage of transmission and other losses (U.S. Energy Information Administration, 1997, p. 74).

Seasonal prices that distributors pay for electricity bought are set by CAMMESA every six months with possibility of revision by the Secretary of Energy every three months. For determining seasonal prices CAMMESA makes supply forecast according to information given from generators and demand forecast according to requirement of distributors and large users (The Argentine Electricity Sector, 2013). Final prices for non-eligible customers were a combination of the seasonal energy and capacity charge and transmission and distribution value added charges (Pollitt, 2008, p. 1453). Unlike in Chile, for using transmission and distribution network in Argentina, ENRE, a national regulatory authority, prescribes tariffs using a price cap regulation and these tariffs can be revised every five years (Bouille, Dubrovsky & Mauer, 2002, p. 33).

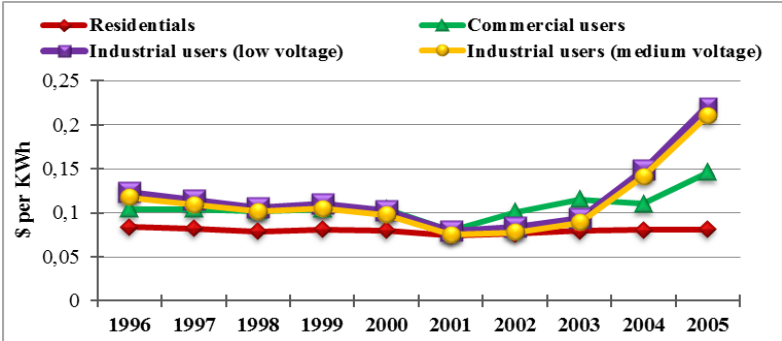
Until 2001, when economic crisis occurred in Argentina, reform process brought a series of achievements. Many private participants entered the power market. According to CAMMESA data in December 1995, there were 508 participants in the wholesale market (generators, distribution companies, large users, etc.) and in the next five years that number increased to 2067 which indicates that concentration in the market is not high. Unlike Chile, Argentina limited the cross-ownership among different power companies engaged in different power business and, by this, Argentina limited companies' power in the market.

Power sector also experienced a large amount of private investment during the nineties. From 1990 to 2002 total private power investments amounted to \$16.12 billions (World Bank data in Besant – Jones, 2006, p. 113). Performance improvements were also recorded in distribution sector. As in Chile, energy sale and customer per employee increased, energy losses and number of employees decreased (Bacon & Besant- Jones in Besant –

Jones, 2006, p. 34). There was significant increase in installed capacity, net generation and consumption between 1991 and 2001. Installed capacity increased by 58%, net generation by 78% and consumption by 90% in the mentioned period (International Energy Statistics, 2013).

Drop in electricity prices was also recorded, but not equally significant for every category of users. Large industrial users experienced the biggest decline in prices. Small residential users experienced decline in much lesser extent which can be seen on the graph below. This is the biggest objection and flaw of the power market reform, because it did not transfer efficiency gains through much lower prices to the low consumption users, among whom are the poorest people. For many of them electricity prices actually increased because of the loss of subsidies.

Figure 6. Average electricity prices without taxes in Argentina, 1996 – 2005



Source: Tarifas, 2013.

In 2001, serious economic crisis occurred in Argentina, which among others, harmed power sector achievements. Before the crisis, Argentinean peso was fixed to U.S. dollar. Fixed exchange regime was abandoned in 2001, due to high fiscal deficit, drop in GDP growth, increase in unemployment rate and inflation rate. Due to devaluation of peso, country’s foreign debt increased rapidly because it was denominated to dollar. To stop inflation growth, government decided to “freeze” electricity prices, which led to drop in power company’s revenue, stopping investment in new capacity and withdrawal of foreign investors<sup>13</sup>. This interfering of government in the market and deteriorating prices downgraded the results of reform. Electricity prices for large industrial and commercial users started to grow after 2004. Compared to 2005, electricity prices for industrial and commercial users were higher for 26% and 45.3%, respectively. Electricity prices for residential from 2005 to 2009 stayed at the same level. After the crisis, government initiated a number of programmes to initiate investments in new capacity to meet the growing demand, but results of these programmes are yet to be seen.

<sup>13</sup> Government changed calculating the spot prices according to prices of natural gas weather or not power plant uses natural gas in production and seasonal prices are set much below the spot prices (Pampa Energia, 2013, February 10).

### 1.2.2 Chile

The first country that decided to conduct major power sector reform was Chile. The legal act that enabled and introduced key determinants of the reform was Electricity Act from 1982. This law is a base for regulating power sector even today (with amendments from 1999 and 2004). It contains direction for separation of generation and transmission from distribution business, establishment of generators' pool, open third party access to the network, granting concession for generation, distribution and transmission assets, rules on setting tariffs, threshold consumption for eligible customers, regulation of captive market, nomination of responsible institution for supervising power sector and their obligations.

National Energy Commission (hereinafter CNE), Superintendence of Electricity and Fuels under the Ministry of Economy (hereinafter SEC) and Economic Load Dispatch Centres (hereinafter CDECs) are key institutions in supervising and regulating power sector. CNE is responsible for analysing and setting regulated prices and technical standards to which companies must adhere in production, transmission and distribution of energy, in order to have a sufficient, safe and quality service, compatible with the most economic operation (Quienes Somos, 2013,). It is also responsible for making Indicative plan for development of the power sector. SEC, among other things, insures that the quality of services provided to users is the one mentioned in the provisions and technical standards regarding power market (Acerca de SEC, 2013). According to the Electricity Act, it has also power to grant concession for generation<sup>14</sup>, transmission and distribution, but after getting positive answer from line Ministry.

Chile has two main interconnected systems: Central Interconnected System (hereinafter SIC) which covers central and southern territory and North Interconnected System (hereinafter SING) which covers northern territory. CDEC-SIC and CDEC-SING, as Economic Load Dispatch Centres, represent regional power markets (Pollitt, 2004, p. 4). They operate as cost-based pool. The economic dispatch is determined on the basis of operation planning models, run centrally by a dispatch centre which receives information about costs and operation conditions of agents participating in the pool (Dussan, 1996, p. 24). Marginal costs of generators are used to determine a spot price. Through this system generators sell available energy to distribution companies, large users and other generators. Electricity users whose consumption is larger than 0.5 MWh can freely choose their electricity supplier and be supplied under unregulated prices<sup>15</sup>.

Regulated prices are set for non-eligible customers. Regulated prices are comprised of node price and value added distribution charge. Node price is a price of energy that

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<sup>14</sup> Only hydro generators require concessions for using water potential.

<sup>15</sup> Before amendments on the Electricity Act from 1982 are adopted in 2004, eligible customers were those whose consumption was larger than 2 MW.

distributor pays to generator<sup>16</sup> and value added distribution charge is a flat charge that is recalculated every four years by determining the operating costs of an efficient firm and setting rates to provide a 10% real return on the replacement value of assets (Estache & Rodriguez – Pardina, 1999, p. 4). The operating costs of an efficient firm and the replacement value of assets are obtained as a weighted average of estimates, made by consultants hired by the industry and by the NEC, respectively, where the weight of the NEC estimate is two thirds (Estache & Rodriguez – Pardina, 1999, p. 4.).

Open third party access to the transmission and distribution grids is guaranteed by the law. It is based on the negotiated skills of generators and transmission/distribution companies. This would not present a problem in countries where legal framework demand vertical and horizontal ownership (or at least legal) unbundling and where the concentration ratio in the power market is low (like in Argentina). But in Chile, problem to open TPA to the network make integrated distribution – generation companies (ex. Chilectra and Endesa) and transmission-generation companies (used to be Endesa before selling Transelec). These companies could favourite their own generators that put other generators in unfavourable position. Result of this was lack of competition for the larger users. Amendment to the law from 2004, Ley Corta, recognised that third party access charges to the networks need to be regulated (Pollitt, 2004, p. 19).

Privatisation of state – owned companies began in the eighties. Although major privatisation was finished in a few years, some companies were sold to the private investors in the late nineties (ex. Colbun).

Table 3. Restructuring and privatisation of power companies in Chile

<b>Before</b>		<b>Endesa</b>	<b>Chilectra</b>
<b>After</b>	<b>Gener.</b>	6 generation companies	1 gener. company - Chilgener (renamed in AES Gener)
	<b>Transm.</b>	High voltage grid - SIC - running by Transelec (owned by Endesa till 2001)	-
	<b>Distr.</b>	6 distr. companies and 2 companies combining gener. and distr.	2 distribution companies - Chilquinta and Chilectra

Source: Asia Pacific Energy Research Centre, *Electricity Sector Deregulation in the APEC Region*, 2000, p. 87; Estache & M. Rodriguez – Pardina. *Light and lightning at the end of the public tunnel: The reform of the electricity sector in the Southern Cone*, 1999, p. 3; M. Pollitt. *Electricity Reform in Chile*, 2004, p. 7.

As it is shown in the table 3, two vertically integrated power companies, one state owned (Endesa) and one privately owned (Chilectra) were disintegrated into 17 power companies. However, Chile is the only South American country with no restrictions against vertical integration of transmission and generation (Fisher & Serra, 2000, p. 194). Because of this, market concentration is quite high. After initial restructuring, new mergers happened.

<sup>16</sup> Based on anticipated average spot price.



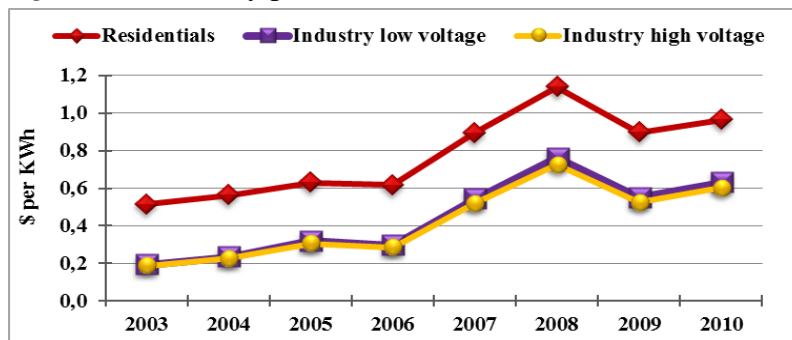
Endesa was bought by holding company Enersis in 1990 (Asia Pacific Energy Research Center, 2000, p. 87). Chilectra is also owned by Enersis. Endesa, as the largest power company in Chile, had 60% of total installed capacity, held 70% rights for exploiting water power and owned biggest transmission company (Fisher & Serra, 2000, p. 204). Endesa sold Transelec in October 2000 to Canadian company Hydro-Québec (Historical Summary, 2013). After entering new generation companies in the market, Endesa share decreased through years.

Power sector reform brought number of achievements. Installed capacities, generation and consumption grew at the average annual rate of 6% between 1983 and 2010. Electrification is one of the highest in Latin America. This refers to mainly urban area, but according to World Bank, ten years ago access to electricity in rural area was around 70%.

Efficiency improvements were recorded in distribution sector. Energy sale and customer per employee increased, energy losses and number of employees decreased (Bacon & Besant- Jones in Besant – Jones, 2006, p. 34). Private power investments amounted to \$8.5 billion between 1990 and 2002 (Bacon & Besant- Jones in Besant – Jones, 2006, p. 113).

According to findings of other authors, final prices during the nineties did fall, but not to the extent which would reflect efficiency gains. Distribution companies kept it for themselves in the form of very high yields. Between 1987 and 1998 the regulated price to consumers fell by only 17 percent (Besant – Jones, 2006, p. 32). According to available data of Chilectra, electricity prices are constantly rising from 2003 to 2010. One of the possible explanations is lower import of Argentinean gas after 2004.

Figure 7. Electricity prices without taxes in Chile, 2003 – 2010



Source: *Todo Sobre Tarifas*, 2013.

## 2 THE POWER SECTOR IN THE SOUTHEAST EUROPE BEFORE THE REFORM

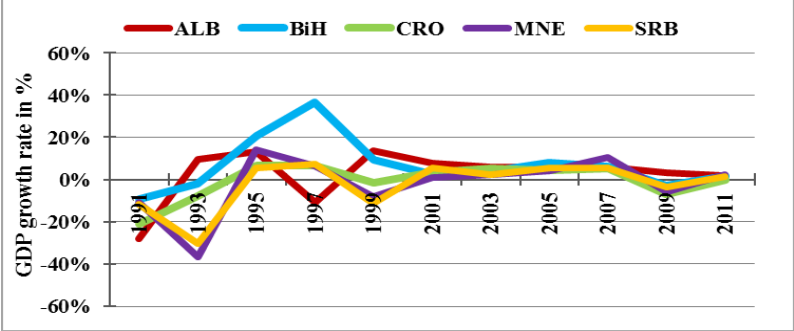
The countries of the SEE that are analysed in this paper are former socialist republics: Albania, Bosnia and Herzegovina (hereinafter BiH), Croatia, Serbia and Montenegro. The last four used to be a part of Socialist Federal Republic of Yugoslavia (hereinafter SFRY),

which fell apart in the early nineties of the last century. The breakup of SFRY and abandoning communism as social and political ideology were followed up with high tensions and war conflicts between these countries. These events downgraded economic development in these countries and made transition from planned economy to market-oriented economy more difficult. Even without these conflicts, transition process was very painful because of social, political and economic changes. Great number of transition countries in the world experienced recession in the beginning of the process with their output going below the level of pre-transition period. For many transition countries it took more than a decade to achieve pre-transition level of gross domestic product (hereinafter GDP) and some did not succeed in it even twenty years later<sup>17</sup>. Economic and structural reforms that were undertaken by governments, with help of foreign donors, are still ongoing.

### 2.1 Overall economic indicators of the SEE countries

As already noted, observed countries of the SEE in this paper experienced rough times in the past twenty years. Low or decreasing output, high unemployment, low wages, high inflation, overdebt economies, deteriorated external position were main economic characteristics of these countries in the nineties of the last century and even today it is hard to cope with these problems. As it is shown on the figure below, all observed countries experienced sharp fall in GDP in the beginning of the nineties of the last century.

Figure 8. Real GDP growth rate year on year<sup>18</sup> in selected countries, 1991 – 2011



Source: National Accounts Main Aggregates Database, 2013.

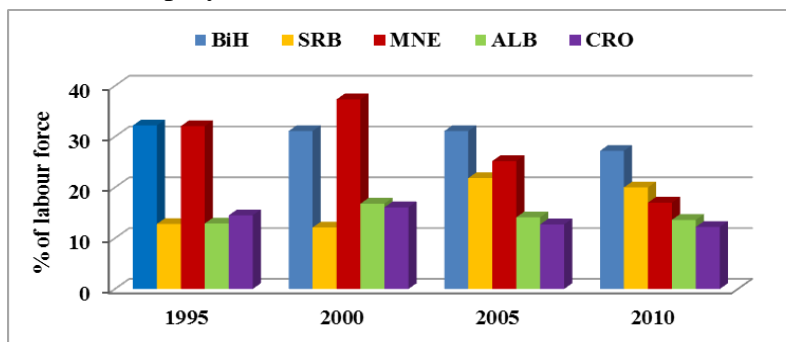
By 1995, all countries turned their growth on positive track, but it took years to achieve the level from 1990 because the positive growth path was not stable. In 1997 Albania hit another recession because of the pyramid scheme collapse, in 1998/1999 banking crisis occurred in Croatia and in 1999 Serbia was bombed by NATO which had negative consequence for economy and society. From 2000 to 2008, the growth was moderate, but

<sup>17</sup> According to the UN data, it took more than a decade for Romania, Latvia, Hungary, Bulgaria, Croatia, Montenegro etc. to achieve pre-transition level of GDP. Some countries, like Ukraine, did not succeed even twenty years after to achieve it (UNSD Statistical Database, March 1, 2013).

<sup>18</sup> Abbreviations of countries used in tables and figures indicate: ALB for Albania, BiH for Bosnia and Herzegovina, CRO for Croatia, MNE for Montenegro, SRB for Serbia.

stable, reflecting positive growth in industry production, foreign trade, investments and positive attempts to stabilise neighbouring relations by greater EU involvement in this region. In 2009, negative effects of global financial crisis spilt over these countries causing recession; except in Albania, which experienced only slowdown in GDP growth, but managed to avoid the negative impact on its economy like other countries.

Figure 9. Unemployment rate in % in selected countries, 1995 - 2010



Source: *World Economic Database*, 2013; International Monetary Fund, *Montenegro: 2011 Article IV Consultation – Staff Report*, 2011, p. 36.

High unemployment rate was and still is a big problem for most countries, especially for BiH where it has extremely high value for the last twenty years. Montenegro and Croatia managed to decrease unemployment rate after 2000, but global financial and economic crisis caused an upward trend again.

Measuring the size of public administration by government expenditures to GDP ratio, the rising trend is very clear, except in Albania. Although in 2010 it was at the same average level of the new EU member states and below the EU 27 average, the uprising trend in the last few years is troublesome. One of the reasons of growing expenditures/GDP ratio is that in 2009 all countries, except Albania, experienced negative growth rate of GDP. Recession also caused drop in government revenues, but governments did not adapt to this trend immediately, which caused higher deficits in these countries. High deficits in 2009 led to cut in expenditures and public investments in the years that followed, but fiscal deficits remained at the higher level in 2010 than in 2005. In the line of these events, public borrowings also recorded rising trend which resulted in higher general government debt/GDP ratio<sup>19</sup>. If we consider Maastricht criteria, general government debt/GDP ratio is below the 60% threshold in all countries, but Albania is very close to it. Lower levels of general government debt/GDP ratio do not necessarily mean that the public debt is sustainable. Actually, all the governments of the mentioned countries need fiscal consolidation and adjustment to keep public debt sustainable in the following years.

<sup>19</sup> Only few years are presented in the table and, although Serbia and Albania decreased their general government debt/GDP ratio comparing 2005 and 2010, from 2007 the uprising trend is recorded (IMF, March 1, 2013).

Table 4. Fiscal position indicators for selected countries, 1995 - 2010

<b>General government balance (in % of GDP)</b>				
	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
ALB	-10.1	-7.6	-3.5	-3.7
BiH	-3.3	-4.7	2.0	-4.2
CRO	-0.6	-7.5	-3.5	-5.1
MNE		-4.0	2.1	-3.9
SRB		-0.9	1.0	-4.1
<b>Ratio of government expenditures/GDP (in %)</b>				
ALB	33.4	32.6	28.5	29.6
BiH	36.4	54.4	36.8	50.9
CRO	41.6	45.5	42.5	42.9
MNE		33.6	39.1	46.0
SRB		37.4	41.9	42.5
<b>Ration of general government debt/GDP (in %)</b>				
ALB	57.5	73.1	58.2	57.8
BiH		75.3	27.5	39.6
CRO	16.4	39.7	37.8	42.2
MNE*		51.8	41.6	44.1
SRB**		77.4	54.1	36.0

Note. \* data for 2003; \*\* data for 2002.

Source: *Economic Data*, 2012; IMF, *Albania: 2012 Article IV Consultation*, 2013, p. 27, Table 1; IMF, *BiH: 2012 Article IV Consultation and Request for Stand – By Arrangement– Staff Report*, 2012, p. 33 and 36, Table 4; IMF, *The Republic of Croatia: 2012 Article IV Consultation*, 2012, p. 29, Table 1; IMF, *Montenegro: 2011 Article IV Consultation – Staff Report*, 2011, p. 20, Table 1; IMF, *Republic of Serbia: Staff Report for the 2010 Article IV Consultation, Third Review Under the Stand-By Arrangement, and Financing Assurances Review*, 2010, p. 28, Table 4; IMF, *BiH: 2002 Article IV Consultation – Staff Report*, 2002, p. 26, Table 2; IMF, *BiH: 2007 Article IV Consultation – Staff Report*, 2007, p. 21, Table 1; IMF, *Montenegro: 2007 Article IV Consultation – Staff Report*, 2008, p. 27, Table 1; IMF, *Republic of Serbia: 2007 Article IV Consultation – Staff Report*, 2008, p. 30, Table 2.

All observed countries are small open countries, vulnerable to shocks from abroad (especially from the EU that is the main foreign trade partner), with low competitiveness and weak external position. Due to higher rising import demand than export, they are faced with high level of current account deficit and depend on capital inflows from abroad. By 2007 or 2008, depending on a country, all countries recorded rising trend of foreign direct investments. After that, due to the global financial crisis, all the countries recorded sharp decline of foreign direct investments. Because they were unable to finance current account deficit, Serbia and BiH entered with IMF in Stand-by arrangement to overcome financing problems in 2009.

Table 5. External sector indicators for selected countries, 1995 - 2010<sup>20</sup>

Country	Ratio of current account balance in GDP				Ratio of external debt in GDP			
	1995	2000	2005	2010	1995	2000	2005	2010
ALB	-7.1	-4.7	-8.7	-9.2	19	30	25	41
BiH	-10.3	-16.4	-15.6	-5.5	159	51	58	66
CRO	-6.5	-2.5	-5.5	-3.8	17	54	69	102
MNE		-4.5	-8.6	-17.0			37	39
SRB	-9.6	-2.2	-8.7	-9.6	50	190	64	86
	Ratio of export of goods and services in GDP				Ratio of import of goods and services in GDP			
ALB	12.5	19.1	22.3	32.4	34.5	37.5	46.3	53.9
BiH	20.4	28.7	32.1	35.8	71.5	75.5	71.7	56.5
CRO	33.1	41.7	42.3	39.4	41.5	44.8	48.6	39.9
MNE		36.8	46.8	34.7		51.1	64.3	63.1
SRB	16.7	23.9	26.2	34.9	24.1	40.5	47.2	51.4

Source: *Economic Data*, 2012; World Bank, *Economic Policy & External Debt*, 2013.

After 2009, these five economies, like others in the world, found it difficult to overcome problems that recession or declining output brought. This had negative impact on structural reforms that are stagnating or being postponed for better times.

## 2.2 Characteristics and performance of power sector before the reform in the SEE

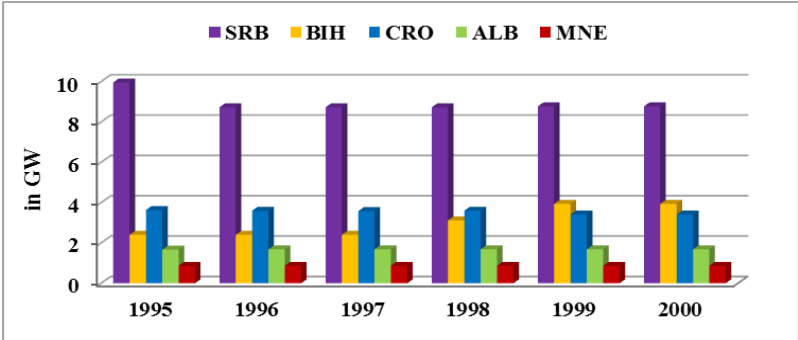
Before starting discussion on power sector reform in these five countries, a brief overview on power sector condition before reform is given. Power sector of these five countries in the SEE, like many in the world, was dominated by one vertically integrated company owned by government. Exception is BiH, where in the nineties of the last century one state owned power company was split into three power companies according to ethnic lines in BiH<sup>21</sup>.

<sup>20</sup> External sector indicators show economic relationship of one country with the rest of the world (External sector, 2013).

<sup>21</sup> These three companies operate and provide electricity in areas where one ethnic group has majority over another. They have monopoly in their respective areas, and do not compete with each other. They are owned by their respective governments: the Federation of BiH is owner of Elektroprivreda BiH and Eelektroprivreda HZHB and the Republic of Srpska is owner of Elektroprivreda RS. The Federation of BiH and the Republic of Srpska are two entities that, together with Brcko District, comprise state of BiH. At the head of the state there are government and institutions of BiH, but they are not the owner of public utilities. Public utilities are usually owned by entity governments, cantonal governments or municipalities.

All countries together had installed capacity around 18.68 GW at the end of nineties. Serbia had the biggest power system in terms of installed capacity and Montenegro the smallest. This is logical because all countries differ in terms of territory size, number of customers and economy size.

Figure 10. Installed capacity in selected countries, 1995 - 2000

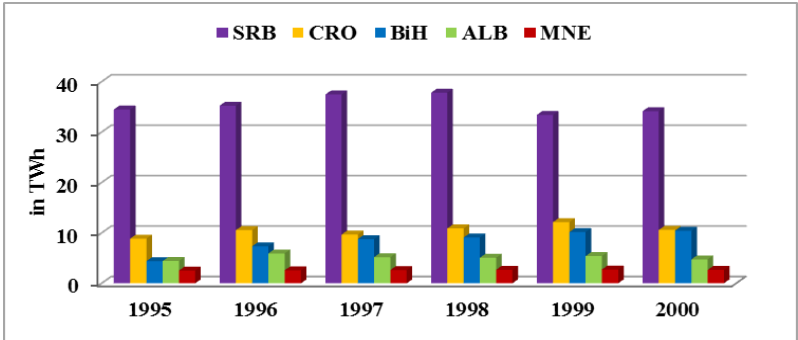


Source: *International Energy Statistics*, 2013.

The countries also differ in sources. On one side, in Albania and Montenegro hydro power sources prevailed and on the other side fossil fuels prevailed in Serbia. Hydropower and fossil fuels were almost equally important for electricity production in BiH and Croatia. Croatia also had small share of nuclear power in installed capacity because it is one of the owners of nuclear power plant Krsko in Slovenia. Renewable power source other than hydro were not used at that time.

The whole region had average annual growth rate of electricity generation of 6% from 1995 to 2000, but comparing countries among themselves, BiH recorded the highest average growth at annual level (19%), while other countries experienced growth between 2 and 6%. The reason of such high growth rate of generation in BiH is that the country was in phase of rebound after war when economic growth was accelerating and when a lot of foreign donated funds were coming into the country to help reconstruction of infrastructure.

Figure 11. Electricity generation by country, 1995 – 2000



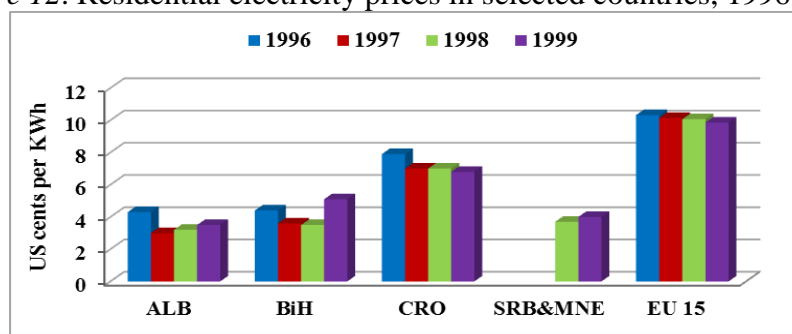
Source: *Indicators*, 2013; Statistical office of Montenegro, *Balance of Electricity*, 2013.

The electricity consumption had faster growth than electricity generation in the period 1995 - 2000. The region recorded average annual growth of 9% and it was driven by high growth in Albania and BiH.

Comparing total electricity generation to consumption, only Serbia and BiH produced electricity surplus which could be exported to electricity deficient countries because of excessive power infrastructure. On the other side are Albania, Croatia and Montenegro which were import dependent countries regarding electricity. As already noted, Albania and Montenegro power sources are mostly based on hydro power which highly depends on weather condition.

One of the main characteristics of state owned vertically integrated companies, especially in former planned economies, is that electricity prices do not reflect costs of production and existence of cross-subsidation of different customers. Usually residential prices were subsidised by industrial and commercial prices and this is the reason why residential prices are much lower than for commercial and industrial customers. This would not have happened if prices were cost reflective. According to the available data, in the period 1996 – 1999 residential prices were much lower than those recorded in the EU 15<sup>22</sup>.

Figure 12. Residential electricity prices in selected countries, 1996 - 1999



Source: *Economic Data*, 2012; *Environment and energy*, 2013.

Payment discipline was also quite low in this period. Average collecting rate for 2000 in Albania was 60%, in BiH 75% (Economic data, 2012). In Croatia situation was somewhat better and average collecting rate was around 93% (Economic data, 2012)<sup>23</sup>.

Taking into account situation and performances of power sector together with existing legislative in that time, EBRD constructed reform index to show development of structural reforms in transition countries regarding this sector. The lowest index was 1 which

<sup>22</sup> No available data for commercial and industrial customers in Albania, BiH, Croatia, Serbia and Montenegro for period 1996 - 1999 and residential prices for Serbia and Montenegro in 1996 and 1997. Serbia and Montenegro were still one country in the nineties of the last century.

<sup>23</sup> No available data for Serbia and Montenegro.

represented no reforms and 4 was the highest and represented full implementation of reforms and operating under market conditions<sup>24</sup>.

Table 6. EBRD reform indicators for selected countries, 1998 - 2000

<b>EBRD index of overall infrastructure reform</b>			
<b>Country</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
ALB	1.3	1.3	2.0
BiH	1.3	1.3	2.0
CRO	2.0	2.3	2.3
SRB and MNE	1.7	1.7	2.0
<b>Electric power reform index</b>			
<b>Country</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
ALB	2.0	2.0	2.3
BiH	2.0	2.0	2.3
CRO	2.3	2.3	2.3
SRB and MNE	2.0	2.0	2.0

Source: European Bank for Reconstruction and Development, *Transition Report 2004 – Infrastructure*, 2004, p. 92, 108, 116 and 172.

As it is shown in the table, the overall index of infrastructure reform was quite low at the end of the nineties. The electric power reform index was a little bit higher reflecting that some small steps to reform have been taken.

### **3 POWER SECTOR REFORM IN THE SOUTHEAST EUROPE**

Process of integration of energy market, and therefore power markets in the SEE is part of wider process of regionalisation in the SEE which started in mid nineties of the last century. The number of initiatives and projects has been agreed between the SEE countries that represent strong will of cooperation between the SEE countries for economic, social and political development of the region. Also, a number of projects were launched by the EU to help transition countries of the SEE on their way to market economies and the EU integration. In 1997, the SEE countries launched the South-East European Cooperation Process (hereinafter SEECP), whose purpose was to strengthen cooperation that covers the issues of security and stability, the development of economic and environmental cooperation, promotion of humanitarian, social and cultural cooperation and cooperation in the areas of justice and fight against crime and terrorism (Tsardanidis, n.d., p. 4).

The most important attempt in stabilising the region is Stability Pact signed in 1999 between international community led by the EU on one side and the SEE countries on the other side. The significance of this Pact is that this is the first and new approach in the post

<sup>24</sup> For detailed explanation look older EBRD Transition reports, from 1998 to 2010.



conflict region and its main aim was to achieve stability and co-operation between countries which will foster development. Key activity under Stability Pact was focused on democratisation and human rights, economic reconstruction, co-operation and development and security issues (About the Stability Pact, 2013). The issue of energy sector development is under economic reconstruction, co-operation and development task. According to Tsachevsky (2013, p. 92), over one billion euros has been granted for energy projects in the SEE, of total €5.4 billion that were granted for projects in the SEE in 2000/2001 by donors. In 2008, Stability Pact was transformed into Regional Cooperation Council, as a body that assists and coordinates development projects in the region.

The EU started Stabilisation and Association Process (hereinafter SAP) with Western Balkan countries in the beginning of the 2000s. The first agreement under SAP was signed with Croatia in 2001, and the last one with BiH in 2008. These agreements represent rights and obligations of the countries that started the accession process to the EU. Signing this agreement provided access to the EU financial funds that were used for many development projects in these countries, including energy sector.

Willingness to cooperate in the development of energy sector in the SEE countries was shown by signing Memoranda of Understanding in Athens in 2002 and 2003, which then led to signing of the Treaty Establishing the Energy Community in 2005. It is believed that establishing an efficient regional energy market would improve the reliability and stability of electricity supply across the region, encourage private investment, facilitate meeting peak demand in individual countries and match the growing demand for electricity in the long run (Hooper & Medvedev, 2008, p. 22).

### **3.1 The features of Athens Memorandum of Understanding and the Treaty establishing the Energy Community**

Cooperation between the SEE countries transferred to energy cooperation in form of two Memoranda of Understanding that were signed in 2002 and 2003 (known as Athens memoranda), regarding establishment of Regional Energy Market in the SEE. The first Athens memorandum included only establishment of power market, but the second one was expanded to gas market as well. The aim was to build one regulatory and market framework for energy sector in the SEE which would be based on the EU model for energy market and would become a part of integral energy market of the EU. The two Memoranda were not binding for signatory countries, but paved the way to a binding contract, the Treaty Establishing the Energy Community, that was signed in 2005. The Treaty was signed by the EU on one side and nine countries of the SEE<sup>25</sup> on the other side and entered into force on July 1, 2006.

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<sup>25</sup> Countries of the SEE that signed the Treaty: Albania, Bulgaria, BiH, Croatia, Former Yugoslav Republic of Macedonia, Montenegro, Romania, Serbia and United Nations Interim Administration Mission in Kosovo.

By signing the Treaty these SEE countries obliged to incorporate the EU legislation on energy, environment, competition and renewable sources into their national legislation. They were obliged to establish institutions necessary for conducting the energy reform process and to organise energy market on principles of the EU model. The objective of the Treaty is to establish a single energy market that would foster and facilitate cross-border trading. To achieve this it is necessary to harmonise regulatory framework across the region.

Common goals of the Treaty can be summarised as follows (Softic & Glamocic, 2012, p. 14): provision of open energy markets, ensuring a diversified energy reserves; stimulating cross-border investment and trade in the energy sector; providing assistance to countries in transition in developing energy strategies, relevant institutional and legal frameworks for energy and the improvement and modernisation of domestic industry; attracting foreign investment, aimed at promoting energy production in a sustainable manner, and the development of diversified sources of energy imports.

Today, member states are 10 contracting parties, 15 participants, 4 observers and one candidate country (Members, 2013)<sup>26</sup>. Observers can attend meetings organised by Energy Community institutions, but cannot participate in discussions. Institutions of Energy Community are Ministerial Council, Permanent High Level Group, Regulatory Board, Fora and Secretariat. Their responsibilities are defined in the Treaty under Title V.

So far, some progress has been made in the sense that countries are trying to harmonise their laws and bylaws, but the process is very slow and still incomplete. Only Croatia, because it became a new EU member state in July 2013, fully incorporated third EU energy package regarding power sector.

### **3.2 The course of restructuring and reorganisation process**

Many authors stated that power sector reform process, as a part of energy reform, started around 2000 – 2001 when observed SEE countries started to change existing or adopt new energy laws and energy development strategies. New energy laws were supposed to set grounds on restructuring and reorganisation of the power sector, defining participants and their relations and establishment of independent regulatory institutions. National energy

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<sup>26</sup> Contracting parties are eight countries that originally signed the Treaty with the EU. Romania became the EU member state in the meantime so it automatically changed its status to Participant. Participant countries can only be the EU member state. Observers are Armenia, Georgia, Norway and Turkey. Observers can attend meetings of Ministerial Council, Permanent High Level Group, Regulatory Board and Fora but cannot participate in discussions. Candidate country is Georgia.

development strategies identify weaknesses and opportunities and set courses for future energy developments.

Setting thresholds for market opening, defining public service obligation, separating regulated and unregulated power activities, forbidding cross-subsidizing of regulated and unregulated activities, third party access, defining responsibilities of regulatory institutions and other provisions for organising power market are main components of the power laws and will be discussed in subchapters that follow. The following table gives a chronological sequence of laws adopted since the beginning of the 2000s in observed SEE countries.

Table 7. Primary laws regarding power sector in selected countries

<b>Country</b>	<b>Laws regarding power sector</b>	<b>Year of adoption</b>
ALB	Law on Power Sector	2003
BiH	Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina	2002
	Law on Electricity in Federation of BiH	2002
	Law on Electricity in Republic of Srpska	2002
	Law on Electricity in Brcko District	2004
	Law Establishing the Company for the Transmission of Electric Power in Bosnia and Herzegovina	2004
	Law Establishing an Independent System Operator for the Transmission System of Bosnia and Herzegovina	2004
	Law on Energetics in Republic of Srpska	2009
CRO	The Act on the Regulation of Energy Activities	2004
	The Energy Act	2012
	The Electricity Market Act	2013
MNE	Energy Law	2010
SRB	Energy Law	2011

Source: The author

Albania, Croatia and BiH have laws that specifically address power market, while Montenegro and Serbia have energy laws that define and regulate power sector, gas sector, cogeneration, oil sector and thermal energy sector all together. It should be noted that complicated state structure in BiH follows legislation and regulation of power sector. While power sector in other observed SEE countries is regulated primary at the state level, in BiH the state level of government is responsible for regulating transmission, international and cross-border trade. Generation, distribution and supply are regulated at entity levels of government (the Federation of BiH and the Republic of Srpska) and District Brcko government.

The reform steps after adoption of energy laws included restructuring incumbent power companies, unbundling generation, transmission, distribution and supply, establishment of TSO, DSO and market operator necessary for establishment of power market, defining relations between market participants and cross-border trade and price setting for regulated activities by adopting secondary legislation.

### **3.2.1 Restructuring and privatisation of public power companies**

Prior to power reform, all observed SEE countries had one vertically integrated public power company. Power laws in selected SEE countries do not require ownership unbundling of different power activities, i.e. there is no provision regarding privatisation of the state owned companies in the power sector. This is also not mandatory by the EU regulations. But still, some countries like Albania, BiH and Montenegro did partially conduct privatisation of their public power companies. On the other side, Croatia and Serbia still did not privatise any part of their public power companies.

The major issues in reforming process regarding power sector in Croatia were how to restructure Croatian Power Company, known as Hrvatska elektroprivreda (hereinafter HEP) and its privatization. In 2002 Croatian Parliament adopted Law on privatisation of HEP, but in 2009 this Law was withdrawn because of the deteriorated market conditions due to global financial crisis. The real reason was that the great part of the public, labour unions and academics were against the privatisation of one of the most important and the biggest national companies. There is a fear that small markets, such as Croatian, cannot support a strong competitive structure and could become an easy prey to multinational energy companies that have the power to force governments and regulating authorities to give them special conditions that would reduce the risks and maximise their own profits (Matutinovic and Stanic, 2002, p. 1043).

In order to meet requirement set by Law on Power Market from 2001, from 2002 HEP has been reorganised from one public company to a concern where the main businesses (production, transmission, distribution and supply) were split into separate subsidiaries and were managed by parent company HEP d.d. Restructuring continued after adoption of a new Law on Power Market in 2004. The new structure of the HEP Group separated more clearly subsidiaries engaged in regulated activities (transmission and distribution of electricity) from those engaged in unregulated activities; that is production and supply (Buksa, 2010, p. 772). Today, HEP Group consists of HEP d.d. as parent company of the Group and its 17 subsidiaries, of which 14 are under 100% ownership of HEP d.d. and 3 are under 50% ownership of HEP d.d. The Republic of Croatia is owner of HEP d.d.

Restructuring of the Serbian power company called Elektroprivreda Srbije (hereinafter EPS) started in 2005 when company was split into two separate companies: EPS and Elektromreža Srbije (hereinafter EMS). Restructuring continued in 2006 when distribution

and generation were legally unbundled. Eleven subsidiaries of EPS were established in 2006: five distribution companies, five generating companies (two TPPs and three HPPs) and one company with combined heat and power plant. EPS stayed under complete ownership of the Republic of Serbia. EMS is a transmission company also under state ownership. Distribution is going to be unbundled from supply in 2013. The deadline was October 1, 2012, but it was rescheduled for 2013.

The Montenegrin state owned power company, Elektroprivreda Crne Gore (hereinafter EPCG), separated accounts and decision making of different businesses in 2005. In 2009, in order to meet requirement for liberalisation and competition in the market, EPCG founded new company for transmission, Montenegrin Electrical Transmission System (hereinafter CGES); and in this way legally separated transmission activity. The Republic of Montenegro has 55% shares of EPCG and CGES (Energy Community Secretariat, 2012b, p 55). Italian company A2A has 43.7% of EPCG, Italian company TERNA has 22% of CGES and the rest are minor shareholders (Energy Community, 2012b, p. 55). The deadline for legal unbundling of distribution was one year after the Law entered into force, which was in 2011, but until 2013 this has not yet been done.

The question about privatisation of the Albanian power company (hereinafter KESH) is not really clear. It is mentioned as one of the objects in the Article 2 of the Law on Power Sector, but it does not stipulate anything else. The Albanian government is still the only owner of KESH but this company experienced structural changes over the past decade (Corporate History, 2013). The transmission has been legally separated in 2004, forming a new transmission company in Albania (hereinafter OST) that operates as subsidiary of KESH. Distribution was separated in 2008 and privatised in 2009. CEZ Group from Czech Republic acquired 76% of the Albanian distribution company.

Three public power companies, that are under complete or partial ownership of entity governments, operate in BiH. Elektroprivreda Republike Srpske (hereinafter ERS) was restructured in 2006 when it was transformed into a holding company with 11 subsidiaries (five generating companies, five distribution companies and one Research and Development Centre) and a parent company. Parent company of ERS Holding has 65% of ownership of generating and distribution companies. In Research and Development Centre parent company has 51% of ownership. The rest are minor owners (public pension fund, restitution fund and other investment funds). Parent company is completely owned by the Republic of Srpska. Distribution is not legally separated from supply, only accounting separation is conducted. There are no publicly available plans for privatisation.

Public power companies Elektroprivreda Bosne i Hercegovine (hereinafter EP BiH) and Elektroprivreda Hrvatske Zajednice Herceg Bosne (hereinafter EP HZHB) are under 90% ownership of the Federation of BiH. The rest are minor shareholders. EP BiH is vertically integrated power company and a parent company of EP BiH Concern that was established

in 2009. This is the biggest power company/group in BiH. Besides generation, distribution and supply (which are not legally unbundled), it controls seven coal mines as subsidiaries and four other subsidiaries not related to power businesses. EP HZHB is also vertically integrated company and the smallest of three public power companies in BiH. As in EP BiH, generation, distribution and supply of EP HZHB are still legally bundled. Power laws in the Federation of BiH and the Republic of Srpska prescribe only accounting separation of different power activities as mandatory. There were plans for partial privatisation of both power companies in the Federation of BiH, but for now these plans are on hold, due to deteriorated conditions in the market and political instability. Transmission was unbundled from all three power companies in 2005 and 2006 by founding Independent System Operator (hereinafter NOS BiH) and Elektroprijenos BiH.

### 3.2.2 National regulating authorities and the regulation of prices

For achieving full liberalised and functional power market it is important to have independent energy regulator, whose responsibilities are adequate law enforcement, ensuring non-discriminatory involvement to all engaged parties in the power market (domestic and foreign) and development of competitive energy, including power market.

In the next table the NRAs from observed SEE countries are presented, as well as the years of foundation and the way they are financed. Their work is financed by their own activities, i.e. fees from one-off licenses issued to power companies and regulatory fees which are paid annually by power companies. Regulatory authorities are obliged to submit annual reports about their work and condition of the power sector and proposition for annual budget to their respective parliaments for approval. This is in line with the EU Directive from 2009 on internal market.

Table 8. Energy regulators in selected countries, the year of foundation and source of financing

Country	Name of independent regulatory institution	Foundation	Financing
ALB	Albanian Energy Regulator (ERE)	1995	from license application and regulatory fees
BiH	State Electricity Regulatory Commission (DERK)	2003	from regulatory fees
	Regulatory Commission for Electricity in FBiH (FERK)	2002	from license application one-off fees and regulatory fees
	Regulatory Commission for Energy of RS (RERS)	2004	from license application one-off fees and regulatory fees

table continues

continued

Country	Name of independent regulatory institution	Foundation	Financing
CRO	Croatian Energy Regulatory Agency (HERA)	2002	from license applications and other one-off fees and regulatory fees
MNE	Energy Regulatory Agency (RAE)	2004	from license fees and regulatory fees
SRB	Energy Agency (AERS)	2005	from license fees and use-of-system charges

Source: Energy regulators regional association, *Member profiles*, 2013, p. 4, 11, 18, 53, 65, 80 and 82.

All national authorities are founded by national parliaments according to national energy or power market laws. According to their national laws, NRAs are independent in execution of their duties. They are governed by Board of Commissioners that are appointed by their respective parliaments. Decision on hiring other professional staff is under authority of NRAs.

Table 9. Number of Commissioners and employees in independent regulatory institutions in selected countries in 2012

Country	Regulatory institution	No. of Commissioners	Appointment of Commissioners	No. of employees	Status of employees
ALB	ERE	5	Parliament	32	Public servants
BiH	DERK	3	Parliament of BiH	15	Public servants
	FERK	3	Parliament of FBiH	27	Public servants
	RERS	5	National Assembly of RS	28	Public servants
CRO	HERA	5	Parliament	58	Public servants
MNE	RAE	3	Parliament	22	Public servants
SRB	AERS	5	National Assembly	32	Public servants

Sources: Energy regulators regional association, *Member profiles*, 2013, p. 4, 11, 18, 53, 65, 80 and 82; Law on Power Sector, *Official Gazette of Albania*, no. 53/2003, article 11; *Law on the Regulation of Energy Activities*. *Official Gazette of the Republic of Croatia*, no. 177/04, article 15.

Regarding power sector, responsibilities of NRAs from observed SEE countries include adoption of bylaws which, in more detailed way, regulate power market participants' activities and monitoring of compliance of power market participants with the regulations:

- setting rules and procedures for acquiring authorisation for power activities and authorisation of power companies, as well as withdrawal of authorisations;
- appointment of public service providers;
- setting methodologies for tariffs for regulated activities like transmission and distribution, retail prices under public service obligation, public generation and incentives for using RES in generation;
- approving transmission and distribution grid codes and market codes;
- approving investment plans of TSO, DSO and other market participants together with competent ministry or solely and monitoring its implementation;
- setting or approving rules for allocation of cross-border transmission capacities;
- monitoring activities of power market participants;
- promoting competition in the power market;
- promoting energy efficiency in generation and consumption;
- dispute settlements between parties and customer protection;
- cooperation with domestic and foreign institutions and other responsibilities.

Decisions adopted by national regulatory authorities are binding for market participants and can be reviewed only by court.

There are some minor differences in duties or organisation of the NRAs. For example, difference in duties between Croatian HERA and other regulators from observed SEE countries is that HERA is now obliged to cooperate with ACER, since it is becoming a new EU member state. Only BiH has three regulators for power market and it is important to explain who does what. They are established according to a complex state structure. State regulatory authority, DERK, is responsible for regulation of transmission system in BiH and all operations related to the transmission activities and international trade. It is also responsible for regulation of generation, distribution and supply in Brčko District. Entity regulators, FERK and RERS, are responsible for regulation and supervision of generation, distribution and supply in their respective territories. Considering their duties altogether, they are the same as for other NRAs listed above. It should be noted that licenses issued by any of three authorities are valid for the entire territory of BiH.

The EU Directive from 2009 on internal market states that NRAs should be responsible for power and gas market. This is not the case with DERK and FERK in BiH, which are responsible only for power market. All other regulators are responsible for gas sector too. Also, the same Directive states that there should be one national energy regulator and that there could be another regulator just for small systems in geographically separated region. As already discussed, BiH has more than one regulator and this is not because of small systems in geographically separated region.



All regulators in observed SEE countries use cost plus regulation to set distribution and transmission tariffs and regulated prices for tariff customers. This method should enable producers to cover cost of production and achieve sufficient rate of return in capital that is sufficient to maintain investments in the company's assets (Baldwin & Cane, 1999, p. 224). Prescribed methodologies encourage economic and energy efficiency and prevent cross-subsidisation of different activities or among different group of activities. This is in line with the EU Directive from 2009 on internal market which states that tariffs should be cost-reflective.

If the level of electricity prices for tariff customers in observed countries is considered and compared to other countries in the EU, it is clear that the prices are quite lower than in the most EU member states. Probable reason is that costs are not estimated properly. Development of end-users prices for tariff customers is given in the subchapter 3.2.4.3.

### 3.2.3 The role of TSO, DSO and market operator

For fully functional power market it is necessary to establish TSO, DSO and market operator and to allow third party access to transmission and distribution grid. Grid codes that define technical requirements for the connection to the grid, market codes that define rules on the power market and relations among the participants and rules for allocation of cross-border capacities are approved by NRAs in the last couple of years in all countries.

In the process of restructuring state owned vertically integrated power companies, all countries conducted legal or ownership unbundling, so every country has one TSO. The list of companies is given in the table 10.

Table 10. The form of unbundling TSOs and ownership in selected countries by 2012

Country	TSO	Form of unbundling	Public ownership in %	Private ownership in %
ALB	Operatori i Sistemit të Transmetimit - OST	legal	100	0
BiH	Nezavisni operator sustava BiH – NOS BiH	ownership	100	0
CRO	HEP Operator prijenosnog sustava – HEP – OPS	legal	100	0
MNE	Crnogorski elektroprenosni sistem – CGES	ownership	55	45
SRB	Elektromreža Srbije – EMS	ownership	100	0

Source: *About us*, 2013; G. Granic, M. Zeljko, I. Moranjkic, J. A. Martinez, M. Olano, & Z. Juric, *BiH Energy Sector Study – Modul 6*, 2007, p. 48; Croatian Energy Regulatory Agency, *HERA Annual Report 2005*, 2006, p. 40; Regulatory Agency for Energy of Montenegro, *RAE Report on Power Sector for 2009*, 2010, p. 12; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, 10.

Responsibilities of TSOs include: transmission of electricity and management of power flows, maintenance of the transmission system and transmission network, development of transmission network, contributing to security of supply, balancing market, providing auxiliary services, congestion management, load management, coordination with neighbouring systems, setting Transmission Grid Code (after approval of NRA), providing grid access according to regulated, transparent and non-discriminatory principles, allocation of cross-border transmission capacities on daily, monthly and annual basis.

Although transmission activity in all observed SEE countries includes mentioned responsibilities, there are some differences in conducting transmission activity and roles that TSOs have in some countries. This applies in particular to BiH where transmission activity is split among two companies: NOS BiH and Elektroprijenos BiH. First company, as independent system operator in BiH, is responsible for management and coordination of power flows, congestions, cross-border capacities, market balancing and provision of auxiliary services, setting market code and grid code. Elektroprijenos BiH is responsible for transmission of electricity, maintenance and development of transmission network. This form of organisation of transmission activity and TSO is allowed according to the Directive from 2009 on internal market (Directive 2009/72/EC, OJ, L 211/55). However, this Directive also requires that TSO, organised as ISO, must be responsible for development of infrastructure and this is not the case in BiH, where Elektroprijenos BiH, owner of transmission network, is responsible for development. NOS BiH is also market operator, but these operations are still not fully functional.

In Albania, Montenegro and Serbia TSOs are the owners of transmission network and are legally or by ownership separated from generation, distribution and supply, and this is in line with the Directive from 2009 on internal market. The Croatian transmission network is owned by HEP d.d. and TSO is subsidiary of HEP d.d. During 2013 it is expected that Croatian TSO will be certified as an independent transmission operator, which is one of three forms discussed in the first chapter.

Serbian EMS and Albanian OST are also market operators in their power markets. As market operators, they are responsible for organising power market (for now just bilateral market, because there are no power exchanges in any of these countries). Croatian HEP – OPS and Montenegrin CGES are only TSOs. Companies responsible for market operation are Croatian Energy Market Operator (hereinafter HROTE) and Montenegrin Power Market Operator. Again, there are differences in responsibilities regarding energy sector. Only in Croatia, market operator is responsible for organising power and gas market, while in other countries they are responsible only for power markets.

Except Albania, all TSOs from observed countries are members of Union for the Co-ordination and Transmission of Electricity (hereinafter UCTE). It is expected that Albanian transmission system will soon become a member of ENTSO-E. The

Memorandum of Understanding from 2002 envisaged that all signatory countries should be a member of the European Transmission System Operators, i.e. ENTSO-E, and to adapt ENTSO-E guidelines for inter-country trade and commercial codes, cross-border tariffs and congestion management to national circumstances.

According to the national laws, duties of DSOs are: safe, reliable and efficient functioning of distribution system and distribution network, providing regulated third party access, investment planning and development of distribution network, setting distribution grid code (after approval by NRAs), managing network losses and minimising losses.

Table 11. The number of DSOs, the form of distribution unbundling and ownership in selected countries in 2012

Country	Number of DSOs	Form of unbundling from generation	Form of unbundling from supply	Public ownership in %	Private ownership in %
ALB	1	ownership	accounting	24	76
BiH	5 in RS	legal	accounting	at least 75	most 25
	2 in FBiH	accounting	accounting	90	10
CRO	1	legal	legal	100	0
MNE	1	functional	functional	55	45
SRB	5	legal	accounting	100	0

Source: *Corporate History*, 2013; Croatian Energy Regulatory Agency, *HERA Annual Report 2005*, 2006, p. 45; Regulatory Agency for Energy of Montenegro, *RAE Report on Power Sector for 2011*, 2012, p. 17; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, p. 10.

While for transmission all countries conducted legal or ownership unbundling from other power activities, distribution unbundling is still not finished in most countries. The Directive from 2009 on internal market requires legal or functional unbundling distribution from other activities, but in most countries this has not yet been done. Serbian and Montenegrin energy laws also require legal unbundling of DSO from other power activities, but for now this has not been done. Only Croatia legally separated distribution from all other activities. A number of DSOs, form of ownership and unbundling are given in the previous table.

### 3.2.4 Power market opening and developments

The laws and bylaws regarding power market in Albania, BiH, Croatia, MNE and Serbia prescribe the model of the wholesale market which includes bilateral market (long-term market), balancing market (short-term market) and power exchanges (mid-term market, day ahead market). The last form still does not exist in these countries. There are plans for organisation for Serbian power exchange, SERPEX, in the near future.

Some precondition for functioning of the power market are met: unbundled transmission activity from other power activities, established market operator and independent TSO, adopted regulated third party access to the grid, national regulatory authorities adopted Market and Grid Codes and methodologies for setting tariffs for the use of transmission and distribution networks. But ownership or legal unbundling distribution from supply was not conducted by any observed country, except Croatia. Market opening schedule is set either by national power laws or by NRAs. Currently, only Croatian power market is fully opened for competition. Other countries will fully open their market by 2015. Other countries, except Croatia and Albania, were late with opening power market for non-household customers, which was set in the Treaty Establishing the Energy Community, i.e. January 1, 2008, and opened their market for this customer category from 2009. Table 12 shows openness of power market according to valid national legislation.

Table 12. Market opening schedule for selected SEE countries

Country	Threshold for acquiring the status of eligible customer according to annual electricity consumption	Openness in 2011 in %
ALB	January 1, 2008 - all non-household customers	48.5
	in 2011 the Law on Power Sector was amended and prescribed that customers connected to the 110 kV grid or with consumption above 50 GWh/annual are automatically considered as eligible customer; other non-household customers must submit request to ERE	
	January 1, 2015 - all customers are eligible customers	
BiH	January 1, 2009 - all customers except households	41.3
	January 1, 2015 - all customers are eligible customers	
CRO	July 1, 2008 - all customers are eligible customers	100.0
MNE	January 1, 2009 - all non - household customers	65.2
	January 1, 2015 - all customers are eligible customers	
SRB	January 1, 2008 - all non - household customers	49.6

Source: Energy Community Secretariat, *Regulated Energy Prices in the Energy Community – State of Play and Recommendations for Reform*, 2012a, p. 10, 12, 19 and 20; Law on Power Market, *Official Gazette of the Republic of Croatia*, no. 177/04; Law on Energy, *Official Gazette of Montenegro*, no. 28/10; Energy Agency in Republic of Serbia, *Energy Market in Serbia 2005 - 2011*, 2011, p. 20.

Although in Albania, BiH, Montenegro and Serbia market is opened for all non-household customers, in practice nothing changed much. This is probably because it is allowed to eligible customers to be supplied under public service obligation under regulated prices. Jednak, Kragulj, Bulajic & Pittman (2009, p. 130) stated that the prices of electricity in Serbia are much lower under public service than in the free market, so eligible customer did not bother to switch their supplier. The possibility for large users and other eligible users to remain under regulated price regime was the biggest obstacle for market opening,

as recognised by the EU Regulatory Board and the World Bank (Muslibegovic, 2013, p. 7). This can be assumed for Albania, BiH and Montenegro since eligible customers are not switching suppliers in these countries as well. But the situation will be changed in Serbia in 2013. From January 1, 2013 large consumers which are connected to transmission network must buy electricity in the free market under unregulated prices. A number of customers in observed countries that are supplied under unregulated prices in 2011 are given in the table 13.

Table 13. Number of electricity customers in selected countries in 2011

<b>2011</b>	<b>ALB</b>	<b>BIH</b>	<b>CRO</b>	<b>MNE</b>	<b>SRB</b>
Total customers	1,108,000	1,459,624	2,344,908	368,411	3,535,645
Non-households customers	194,440	119,436	214,661	32,320	414,677
Active eligible customers	1	1	124,890	-	0

Source: Energy Community Secretariat, *Annual report on the implementation of the Acquis under the Treaty Establishing the Energy Community*, 2012b, p. 26, 31, 40, and 59.

The Croatian power market is different because only households have a choice to be supplied by public service provider under universal service or can choose other suppliers in the power market. Other customers must be supplied under unregulated electricity prices.

The Albanian power market differs from other mentioned power markets in terms of existence of the Wholesale Public Supplier (hereinafter WPS). KESH is licensed for the WPS and it purchases electricity from KESH Gen, its own division, and other generators in the country and outside the country and sells it to the Retail Public Supplier (distribution company in Albania, privatised by CEZ Group). The role of WPS is to ensure enough power for tariff customers. Obligation of supplier under public service to purchase electricity from one player in the market is not in line with the EU directives and with the Treaty Establishing the Energy Community. This model is not encouraging for entry of new market participants. This will probably be changed under new law that has been drafted but not yet adopted. Other participants in the market are the same as in other countries: generators, TSO, DSO, traders, suppliers and public suppliers. In the next two subchapters the state of the wholesale and retail market in selected SEE countries is presented. Number of participants and their market share are good indicators of development of the power markets.

#### 3.2.4.1 Generators

The power company for generation of electricity has to have authorisation of competent regulatory institution for doing business in each country. This applies to all generators, private or public, domestic or foreign owned. Only companies with small installed capacity (1 MW or so) and generation for their own consumption do not have to have authorisation. All energy/power laws recognise three main types of generators: eligible generators (the

ones that produce electricity from RES or cogeneration), independent generators and generators under public service obligation.

In all observed countries, state owned power companies that run generation and are also public service providers have dominant position in the market, which leads to very high (Albania, Croatia, Montenegro and Serbia) or high concentration (BiH) in the market, measured by HHI. Table 14 shows market concentration by installed capacity in observed countries.

Table 14. Concentration in the power market by capacity of generators in 2011

Country	Total number of registered generating companies	Number of companies with more than 5 % share of generation capacity	Share of three biggest companies by capacity in %	HHI
ALB	28	2	97.8	8334
BiH	29	3	97.4	4219
CRO	20	2	94.4	7995
MNE	2	1	100.0	9927
SRB	11	5	85.6	8923

Source: Author's calculations based on data from Energy Regulatory Authority of Albania, *ERE Annual Report for 2011*, 2011, p. 21 and 29; Federal Electricity Regulatory Commission, *FERK Annual Report for 2011*, 2012, p. 33, 35, and 48; Regulatory Commission for Energy of Republic Srpska, *RERS Annual Report for 2011*, 2012, p. 42; *HERA Annual Report 2011*, 2012, p. 37 and 38; *RAE Report on Power Sector for 2011*, 2012, p. 8; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, p. 10 i 11.

Albanian KESH Gen and KESH's subsidiary TPP Vlora constitute 97.3% of the total installed capacity in Albania, which gives the share of the next generator of just 0.5%. In BiH, three incumbents (EP BiH, ERS and EP HZHB) have 97.4% of the market. They supply regions according to “ethnic lines” of BiH and this kind of allocation of electricity customers is not something that is stipulated in any law regarding power sector. If their respective area of service would be considered, the share of each company for its area would be even higher and concentration measured by HHI as well. Croatian HEP Proizvodnja and TP Plomin, subsidiaries of HEP d.d., constitute 93% of installed capacity in Croatia. Next generator has just 1% of total installed capacity. Two companies in Montenegro own all generating capacities: EP CG (99.6%) and its subsidiary Zeta Energy (0.6%). There are five generating companies in Serbia with more than 5% share of generation capacity, and three of them (TPP Nikola Tesla, HPP Djerdap and HPPs and Drinsko- Limske HPP) represent 85.6% of the total installed capacities. They are all subsidiaries of EPS.

As mentioned in the first chapter, the EU market is also highly concentrated (see table 1). Last EC Benchmarking Report states that concentration in the market measured by HHI

was 4177, which indicates a highly concentrated market (European Commission, 2011a, p. 7).

### 3.2.4.2 Suppliers

The still ongoing power sector reform brought increased number of new participants in the power market. For now, most of private companies that hold licenses for supply and trade of electricity are in the markets of observed countries for buying and selling electricity from and to abroad. This is because in most countries a great number of eligible customers can still be supplied under public service obligation.

Table 15 shows concentration in the retail market in observed countries. As in the wholesale market, concentration is very high in the retail market as well.

Table 15. Concentration in the retail market in 2011

Country	Total number of registered suppliers	Number of suppliers under public service obligation	Suppliers with market share over 5% in the retail market	Market share of three largest suppliers in the retail market in %
ALB	6	2	1	na
BiH	22	7	5	79.3
CRO	9	1	2	na
MNE	2	1	1	na
SRB	59	5	5	75.2

Source: Author's calculations based on data from Energy Regulatory Authority of Albania, *ERE Annual Report for 2011*, 2011, p. 81 and 83; Federal Electricity Regulatory Commission, *FERK Annual Report for 2011, 2012*, p. 63 and 67; *RERS register of licenses*, 2013; State Electricity Regulatory Commission, *DERK Annual report for 2011*, 2011, p. 21; *Registar licenci*, 2013; Elektrovojvodina, *Elektrovojvodina Information Booklet 2006 - 2013*, 2013, p. 41; *O nama*, 2013; *Energetski Pokazatelji*, 2013; Energy Community Secretariat, *Annual report on the implementation of the Acquis under the Treaty Establishing the Energy Community 2012*, 2012b, p. 26, 31, 40, 59 and 60.

Albanian OSSH, a public service supplier, supplied all customers in Albania in 2011, because eligible customers did not exercise the right to choose other supplier. Under existing Law on Power Sector they can be supplied under public service obligation. The same is in Montenegro, where EPCG supplies the whole retail market. The difference is that in 2011 there was only one supplier besides EPCG in Montenegro. Although there are no available data for calculating market share of all suppliers in Croatia, the concentration is very high, because Croatian HEP – ODS, public service provider, and HEP Opskrba, supplier of qualified customers, supply 95.7% of all customers in Croatia. Both companies are subsidiaries of HEP d.d. According to number of registered suppliers in BiH and Serbia, it could be concluded that concentration in the retail market is lower than in other observed countries, but the situation is the same. In BiH, seven public suppliers are the

main players in the retail market. Five of them are subsidiaries of ERS Holding, so they operate under the same roof in the Republic of Srpska. Other two are EP BiH and EP HZHB, power companies in the Federation of BiH. In Serbia five public service providers, which are subsidiaries of EPS, supply the whole retail market.

The EU retail power market also has problem with high concentration. In 2009, 15 member states had high concentration in the retail market, i.e. market share of three largest companies was over 80%. Five member states reported medium concentration, i.e. 50% - 80% and four had low concentration in the market, i.e. below 50% (European Commission, 2011b, p. 15).

#### 3.2.4.3 End-user electricity prices

End-user electricity prices can be formed in the free power market (free electricity prices) or they can be set by NRA (tariffs). The first are paid by eligible customers and the second by tariff (non-eligible) customers, that is customers supplied under public service obligation. End user electricity prices for eligible customers consist of regulated part (network costs and taxes) and unregulated part (energy and supply costs).

Electricity tariffs in observed countries are presented in the table 16. As it could be expected, in almost all considered countries of the SEE in this paper, prices increased during last decade, but are still lower than the average prices of electricity in the EU. Differences among prices in observed SEE countries are quite high. Serbia, and then BiH follows, had the lowest electricity prices for households in 2012, not only among selected countries of the SEE, but also in comparison with the EU member states, where Bulgaria has the lowest prices. Probable explanation is that Serbia and BiH are net exporters. Also, BiH has low costs of electricity generation in HPPs and substantial part of generated electricity comes from HPPs. Croatia, Albania and Montenegro are net importers and buy electricity in the international market, where the prices are probably higher than in the domestic market. When it comes to electricity prices for industry, Serbia again has the lowest prices and Croatia the highest. Electricity prices for industry in Albania, BiH and Montenegro are around the lowest prices in the EU. The lowest electricity price for medium size industry customers in 2012 was recorded in Germany, 6.48 €/KWh (Environment and energy, 2013).



Table 16. Electricity prices without taxes for households and industry in selected countries, 2004 - 2012 (in €/KWh)

Year	ALB <sup>27</sup>	BiH	CRO	MNE	SRB
<b>Electricity prices for households in €/KWh</b>					
2004	4.6	5.4	7.2	4.2	3.3
2012	9.7	6.8	9.7	7.8	5.2
<b>Electricity prices for industry in €/KWh</b>					
2004	7.4	4.6	5.4	5.3	2.5
2012	6.8	6.5	8.9	6.5	5.3

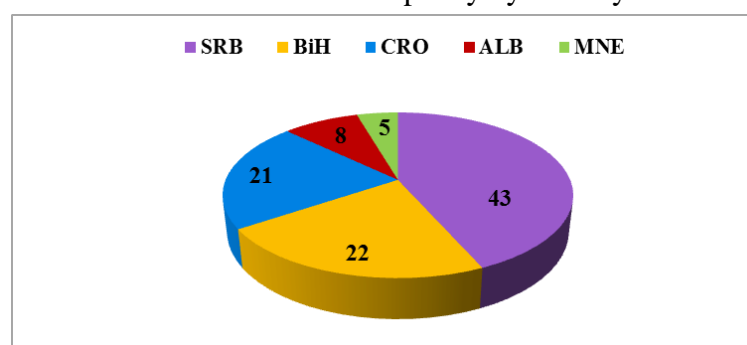
Source: Energy Regulatory Authority of Albania, *ERE Annual Report for 2010*, 2011, p. 76; State Electricity Regulatory Commission, *DERK Annual Report for 2011*, 2011, p. 20; State Electricity Regulatory Commission, *DERK Annual Report for 2012*, 2012, p. 23; Council for Regulation of Energy Businesses, *Report on power market and public services in 2004*, 2005, p. 13; Croatian Energy Regulatory Agency, *HERA Annual Report for 2011, 2012*, p. 50; Regulatory Agency for Energy of Montenegro, *RAE Report on Power Sector for 2011*, 2012, p. 59 and 67; Energy Agency in Republic of Serbia, *Energy Market in Serbia 2005 – 2010*, 2011, p. 45; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, p. 25 and 26; *Environment and energy*, 2013.

### 3.2.5 Sufficiency of installed capacities

Since the beginning of the reform, things have not changed much regarding installed capacities and resources of production. Serbia and BiH are still the biggest producers.

Total generation capacity in observed SEE countries in 2010 amounted to 19.3 GW. Serbia, as the biggest of all observed countries, had the biggest share in total capacity, 43.3%. Then BiH, Croatia, Albania and MNE follow. These relations are more or less the same for the last ten years.

Figure 13. Share in total installed capacity by country for 2010 (in %)



Source: *International Energy Statistics*, 2013.

Average annual growth rate of generation capacity from 2001 to 2010 was quite low, 0.33%. On one side, there are countries like Croatia and BiH, which have positive average annual growth rate of installed capacity (1.98% and 0.97%, respectively); on the other side

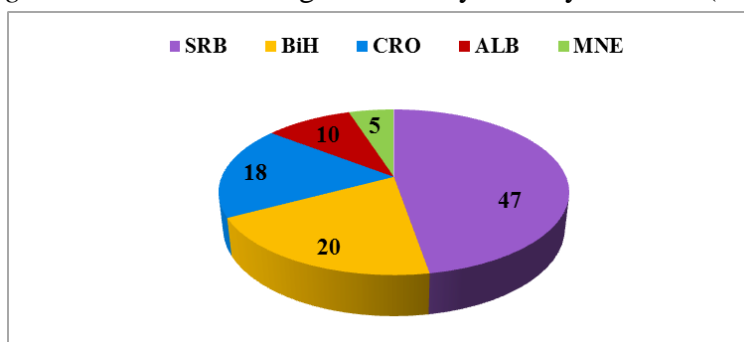
<sup>27</sup> For Albania non – household prices are given as industry prices, because other data were not available to author.

there are Serbia and Albania, which have negative average annual growth rate (-0.48% and -0.33%, respectively). Comparing 2010 and 2001, Croatia recorded the highest growth of capacity, 14.9%. But this increase in generation capacity mostly comes from reconstruction, upgrades and repairs of existing power plants.

In the last twenty years only one HPP was built in Croatia with installed capacity of 42.3 MW and in 2011 wind power plant of installed capacity of 42 MW also started to operate. Other wind power plants are much smaller. In 2009 new and, for now, only TPP in Albania started to operate with installed capacity of 98 MW. In other countries there are no new power plants with significant generating capacity. There are new small HPPs, solar and wind power stations that were built in the last ten years or so, but their generating capacity is very small.

Total generation in observed SEE countries in 2010 was 70.6 TWh. The share of individual country in total generation corresponds to shares in installed capacity.

Figure 14. Share in total generation by country for 2010 (in %)



Source: Energy Regulatory Authority of Albania, *ERE Annual Report for 2011*, 2012, p. 21; State Electricity Regulatory Commission, *DERK Annual Report for 2011*, 2011, p. 46; Croatian Energy Regulatory Agency, *HERA Annual Report for 2011*, 2012, p. 38; Regulatory Agency for Energy of Montenegro, *RAE Report on Power Sector for 2011*, 2011, p. 8; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, p. 13.

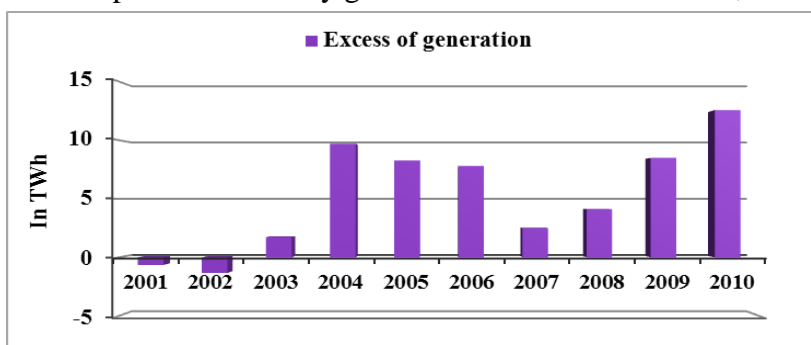
Average annual growth rate of generation from 2001 to 2010 was 1.3%. Croatia had the lowest average growth rate and Albania the highest one.

Hydropower is the important source of electricity for the region and the most common RES. Hydrology conditions are extremely important. There are big differences between dry years and rainy years. For example, 2007 was quite dry year and the whole region recorded 7.6% less generation than in the previous years. Very good hydrological conditions were in 2010 when the region recorded 10.3% higher generation comparing to 2009. Electricity generated from hydropower constitutes about 55% of total generation. The Albanian electricity generation is almost exclusively based on hydro sources, Montenegrin power system is 75% based on hydropower. Combustible fuels used in thermal power plants are the second most important source of electricity. Serbia is the only

of observed countries in which combustible fuels (coal) conceivably predominate over hydro sources.

If the five countries are observed all together, the entire region produces more electricity than it consumes. Comparing total generation to total consumption from 2001 to 2010, excess generation of electricity is achieved almost in every year, except in 2001 and 2002.

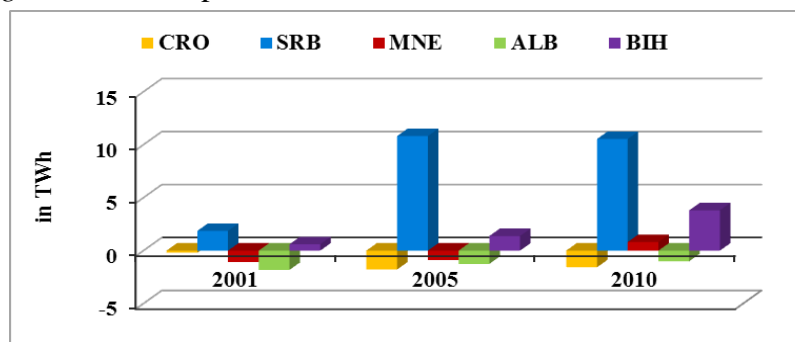
Figure 15. Surplus of electricity generation in all five countries, 2001 - 2010



Source: Energy Regulatory Authority of Albania, *ERE Annual Report for 2011*, 2012, p. 40; State Electricity Regulatory Commission, *DERK Annual Report for 2011*, 2011, p. 46; Croatian Energy Regulatory Agency, *HERA Annual Report for 2011*, 2012, p. 33; Regulatory Agency for Energy of Montenegro, *RAE Report on Power Sector for 2011*, 2011, p. 8 and 37; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, p. 13.

But the picture is quite different if individual countries are observed. Generation in domestic power plants in Croatia, Albania and MNE does not meet demand for electricity. Only Serbia and BiH generate surplus of electricity.

Figure 16. Net export in selected countries for 2001, 2005 and 2010



Source: Energy Regulatory Authority of Albania, *ERE Annual Report for 2011*, 2012, p. 46; State Electricity Regulatory Commission, *DERK Annual Report for 2011*, 2011, p. 25; Croatian Energy Regulatory Agency, *HERA Annual Report for 2011*, 2012, p. 33; Regulatory Agency for Energy of Montenegro, *RAE Report on Power Sector for 2011*, 2011, p. 8 and 40; Energy Agency in Republic of Serbia, *AERS Annual Report for 2011*, 2012, p. 13.

Total electricity consumption in observed SEE countries was 68 TWh in 2010 and the average annual growth rate was 0.9% from 2001 to 2010. All countries in the next five to ten years are forecasting considerable growth of consumption in their national energy

strategy. If the age of the existing power infrastructure in the region (most generating capacities are older than 30 years) is considered together with the level of current and projected future consumption, need to maintain and improve security of supply and energy efficiency and with efforts to increase the share of RES in electricity generation, it is obvious that current capacity and infrastructure is not sufficient to achieve these goals in the future. If the goal is to establish functional regional market which can ensure security of supply to all customers, a quite amount of investments must be made in all countries.

### 3.2.5.1 Cross-border trading and cross-border transmission capacities

Cross-border trading is important part of establishing regional market. Countries differ regarding generating capacities, power sources, electricity prices and consumption. On one side there are net exporters (Serbia and BiH) and on the other side there are net importers (Albania, Croatia and Montenegro). Diversity of these systems should be used to underpin cross-border trading. In the last few years cross-border trading constitutes about 20% of total consumption in the observed countries.

Table 17. Power exchange between selected countries in 2007 and 2011

		<b>Import in GWh</b>				
<b>Export in GWh</b>	<b>in 2007</b>	<b>ALB</b>	<b>BiH</b>	<b>CRO</b>	<b>MNE</b>	<b>SRB</b>
	<b>ALB</b>				2	48
	<b>BiH</b>			1,702	2,276	366
	<b>CRO</b>		1,175			
	<b>MNE</b>	827	163			253
	<b>SRB</b>	279	2,405	1,791	1,615	
		<b>Import in GWh</b>				
<b>Export in GWh</b>	<b>in 2011</b>	<b>ALB</b>	<b>BiH</b>	<b>CRO</b>	<b>MNE</b>	<b>SRB</b>
	<b>ALB</b>				225	209
	<b>BiH</b>			3,539	1,821	316
	<b>CRO</b>		1,622			96
	<b>MNE</b>	305	407			493
	<b>SRB</b>	315	2,158	1,176	1,595	

Source: *European Network of Transmission System Operators for Electricity*, 2013.

For cross-border trading it is important to have harmonised and complementary transmission and interconnection systems and efficient congestion management. For now, allocations of interconnection capacities are done by auctions (daily, monthly or annually) organised by TSOs or market operators. To improve cross-border trading in 2008 ministers of the Energy Community agreed to establish the 8th Region and implement a common procedure for electricity congestion management and transmission capacity allocation at regional level (Energy Community, 2013, March 5). In mid 2012 improvement has been made regarding harmonisation of congestion management and allocation of cross-border capacities. Ten SEE power network operators established the South East European

Coordinated Auction Office (hereinafter SEE CAO) Project Team Company that will prepare the establishment of the SEE CAO company in the next 12 months (News, 2013).

To support cross-border trading, investments are going to be made in construction of new interconnection capacities. Planned investments are presented in the next subchapter. Serbia and BiH have interconnection lines with all neighbouring countries. Croatia still does not have interconnection lines with Montenegro and Italy, and Albania does not have interconnection line with Macedonia.

Table 18. Number of cross-border lines in selected countries in 2011

Capacity in kV	ALB	BiH	CRO	MNE	SRB
400 - 440	1	4	7	3	7
220	3	10	8	3	6

Source: Energy Regulatory Authority of Albania, *ERE Annual Report for 2011*, 2012, p. 55; State Electricity Regulatory Commission, *DERK Annual Report for 2012*, 2012, p. 61; *Present Power system Map*, 2013; *Power Market Review*, 2013.

### 3.2.5.2 Planned investments in the power sector

National energy development strategies<sup>28</sup> envisaged necessary investments in new generation capacities, reconstruction and revitalisation of the existing capacities and development of network infrastructure to ensure security of supply in the future. The most important factors that influenced planning investments are age of existing plants, environmental requirements, forecasted economic development and growth of electricity consumption.

Table 19. Planned investment in generation capacities and network infrastructure in selected countries according to national strategies

Country	Period	Planned investments in generating capacities		Planned investments in network infrastructure
		in MW	in millions €	in millions €
ALB	2003 - 2015	823	460	559
BiH	2007 - 2020	3017	2877	1180
CRO	2009 - 2020	4300	9000 (total estimated value of investments in generation and network infrastructure)	
MNE	2007 - 2025	881.9	1125	690

table continues

<sup>28</sup> Currently BiH does not have a unique adopted Energy Strategy for entire state, there are only entities' strategies. However, a very comprehensive Study of Energy Sector in BiH was published in 2008, which can provide guidance for preparation of the state Energy Strategy.

continued

Country	Period	Planned investments in generating capacities		Planned investments in network infrastructure
		in MW	in millions €	in millions €
SRB	2005 - 2015	9.5 TWh increase of electricity generation	2721	534

Source: Ministry of Industry and Energy & National Agency of Energy, *Albanian National Strategy of Energy*, 2003, p. 154, 161, 165; L. Stanicic, *Study of Energy Sector in BiH - Modul 14*, 2008, p. 30, 56 and 69; Croatian Energy Regulatory Agency, *HERA Annual Report for 2011, 2012*, p. 106 and 107; *Croatian Energy Development Strategy*, 2009, p. 56; Ministry of Economy of Montenegro, *Strategy for energy development in MNE*, 2007, p. 24 and 39; Ministry of Mining and Energy of Serbia, *Serbian Energy Development Strategy*, 2004, p. 50.

As it can be seen in the table 19, quite an amount of investments are planned in the region. Current strategies are done before world economic crisis (except Croatian energy strategy) and did not anticipate persistent economic recession or stagnation from 2008 onwards (for example, in Croatia or BiH). Estimated values of investments are in accordance with prices from the period of strategies adoption, but are still very high for carrying them out by individual countries.

To ensure security of supply in the whole region, there are plans of constructing new interconnection capacities. Some of the investments in interconnection capacities under consideration are given in ENTSO-E's Outlooks (2011, p. 140, and 2012, p. 146):

- new overhead line of 400kV between Croatia and BiH (Lika – Banja Luka) and precondition for this investment is construction of new substation 400/110 kV Lika;
- construction of a 400 kV high voltage direct current submarine cable with a 500 – 1,000 MW capacity between Croatia and Italy is under consideration on the long-term horizon;
- construction of high voltage direct current underwater cable between Montenegro and Italy;
- new overhead line of 400 kV is planned between Montenegro and Albania (Podgorica – Tirana);
- new overhead line of 400 kV between Montenegro – Serbia – BiH is to be planned.

If the current economic development is taken into consideration, all planned investments in power sector are going to be impossible to realise by individual countries. These countries are too small in financial and economic sense, with high level of public and/or foreign debt. It is hard to expect that individual governments will have significant funds to support these projects. Cooperation and joint partnership between these countries would decrease necessary funds that individual country has to ensure. In addition to this, and as

emphasised in the Energy Strategy for the Energy Community, it would be easier to attract foreign investors for bigger projects than for smaller ones, due to economies of scale (Energy Community Secretariat, 2012c, p. 19).

#### **4 OBSTACLES FOR THE FUTURE IMPLEMENTATION OF THE REFORM**

Sound regulatory framework, regulatory institutions and law enforcement are ones of the most important elements for successful power reform. By signing the Treaty Establishing the Energy Community, Albania, BiH, Croatia, Montenegro and Serbia obliged to implement the EU directives on energy, environment and competition. But adjustment of national legislation to the EU legislation is just the first step in constructing sound regulatory framework. Without consistent enforcement of legislation, the laws and bylaws are just empty words. Here comes the need for strong regulatory institutions that have to have jurisdiction on power law enforcement and putting sanctions on the power market participants that do not “play under rules”. Regulatory institutions in their work must be independent from other power market participants and political influence. The issue of regulating power market should be left to professionals and experts in required field, not to politicians and power companies. However, in order to build such independent institutions that promote competition, there are some political preconditions that are needed, such as political desirability (political benefits must outweigh costs), political feasibility (leadership must be strong enough to overcome opposition) and political credibility (Pollitt, 2009, p. 21). Although all observed countries have established energy regulators, the question is how well they are able to cope with incumbent power companies that usually have good influence on politicians and government that is their owner. Incumbent power companies were presented in third chapter, and their market share is huge. Failing to establish strong and independent institutions would be a great obstacle for power sector reform. Further steps would be probably just useless.

Protection of property rights is also an issue that must be addressed. In the last Global Competitiveness Report (World Economic Forum, 2012, p. 388) four of five observed SEE countries were ranked from 100 to 130 of total 144 countries that were included in the survey. These are quite low ranks which point out that the laws on protecting property right should be strengthened. Otherwise, this could potentially be an obstacle for entering of new participants in the market, especially from abroad due to lack of will to take the risk of doing business in these countries. According to overall Global Competitiveness Index, Montenegro has the highest rank (72) and Serbia the lowest (95).

Another issue is setting the right level of electricity prices that would reflect cost. The level of prices that do not cover cost of production and supply would lead to financial loss of power companies and definitely lack of investments, especially from private sector.

Insufficient level of investment in power infrastructure would threaten the security of supply. The need to increase prices, especially for households to cost-recovery level is one of the most sensitive and difficult parts of reform. Due to hard social consequences that price increase can cause, national policy maker could try to undermine implementation of regional liberalising policies or try to put their own country's energy interests ahead of a regional approach to security of supply (Deitz, Stirton, & Wright, 2009, p. 10). This would downgrade power sector reform in the region.

Observed SEE countries in this paper have old power plants which are expected to be reconstructed, revitalised or shut down in the next ten years. New cross-border infrastructure must be built to support cross-border trading between these countries and other countries of Energy Community. Public sector does not have resources to finance big projects. To attract private investors, adequate regulatory framework must be set with strong regulatory institutions in power sector and electricity prices must ensure efficient cost recovery. Otherwise, lack of investment would jeopardise security of supply at national and regional level.

## **CONCLUSION**

Countries presented in this paper show that the power sector reform is an ongoing process. The EU started the reform sixteen years ago, but internal energy market is still not complete and it seems that it will not be in the near future.

Although being at the different stage of economic development than most of the EU countries, cases of reform in Argentina and Chile show that reform resulted in new entrants in the market, providing new investments and ensuring security of supply, but when it comes to prices, household sector did not benefit to the extent to which larger users did.

Besides the EU power market reform, which is considered as the most comprehensive reform in the world, the power market reform in the SEE countries is probably more intriguing because of the question whether the EU model is transferable and suitable for other countries or not. The answer is still not clear. On one side energy reform is still not complete in the EU. On the other side, reform is in the early stage in most observed SEE countries in this paper. So, the final results are yet to come.

All observed countries are trying to respect the EU legislation and incorporate it in their national legislation. Some are faster and more successful than others. Independent national regulatory authorities exist in all countries, but their work should be further strengthened due to the existence of incumbent power companies that still have by far the largest share in the power market and are strong enough to influence the government and broader public. Incumbent power companies, mainly state owned, have gone through restructuring



process, but the issue of privatisation is not very popular among public and for now it is on hold. All observed SEE countries have unbundled their transmission activities from other power activities, in legal or ownership sense, but unbundling in other areas is still not complete, especially unbundling the distribution activities. Market is open at least to all non-household sectors, except in Croatia which opened its market to all customers in 2008. Still, there is no real retail competition in any country, because in most countries eligible customers were supplied by public service supplier under regulated prices, except in Croatia. Also, from January 1, 2013, eligible customers in Serbia cannot be supplied under regulated electricity prices anymore.

Most of the trade between private power companies, which is based primarily on bilateral contracts between participants, actually serves just for buying and selling electricity from or to abroad, not for consumption in the domestic market. Besides bilateral contracts, balancing power market is established and power participants must bear responsibility for balancing energy (day ahead market or spot market). Power exchanges have not yet been established. Cross-border allocation is done according to organised auctions that are done by TSOs. Cross-border trade has potential to expand in the future due to difference in energy sources, consumption needs and prices.

These countries are small countries with small power markets and it is hard to expect to have many participants in the market that would be focused on domestic trade for domestic customers. This is why more effort should be put in establishing competitive regional market, so power companies from different countries in the region could compete with each other, providing quality service at affordable prices.

Setting prices on cost-recovery level to one side, and affordability of prices to the other side is a problem, because it raises social problems to households and small customers. Electricity prices recorded increase since the beginning of the power reform, but are still lower than the EU 27 average. Increase is expected to continue in the next years because of the requirement of power reform that prices must be cost related and different sectors cannot be subsidised. On the other side, it is hard to expect that level of household income is going to follow the trend of electricity prices. To ease the burden of customers, policy makers and regulatory institutions should work on protection of vulnerable customers by adopting the measures and rules for this category of customers. Some countries have already adopted regulation on protection of vulnerable customers (e.g. Serbia), but some still have not.

Due to the expected increase of electricity consumption in the future, current power capacity will not be sufficient to supply the customers in the region. New investments in power sector are needed. In the last twenty years there were just two significant projects of building new capacities, one HPP in Croatia and one TPP in Albania. There were some other projects in construction of small HPPs, solar and wind power plants, but their

capacities are quite small. Individual countries do not have financial capacity to meet a growing demand for investments and they are small for foreign investments in big power sector projects. This is why it is important to act together at a regional level, to have harmonised plans for necessary investments. This way is more attractive to potential investors. Also, it is easier for two or more countries to bear the cost of construction of power plants and cross-border infrastructure together, than for an individual country.

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## **APPENDIXES**



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## Appendix A: Summary

Namen magistrskega dela je, da se analizira reforma elektroenergetskega sektorja (reforma elektro gospodarstva) izbranih držav Jugovzhodne Evrope. Cilj je, da se raziščejo realne potrebe držav Jugovzhodne Evrope za ustvarjanjem regionalnega energetskega tržišča, kakšen bo imel vpliv proces reforme in liberalizacije tržišča na končne cene električne energije, kakšen vpliv bi imelo na proizvodne zmogljivosti in investicije v elektroenergetskem sektorju, ter kakšen vpliv bo imelo na čezmejno trgovanje med državami članic regionalnega tržišča Jugovshodne Evrope. Analizirano je pet držav Jugovzhodne Evrope: Albanija, Bosna in Hercegovina, Črna Gora, Hrvaška in Srbija.

Pred analizo reforme elektroenergetskega sektorja ter ustvarjanje Energetske skupnosti v Jugovzhodni Evropi, predstavljena je reforma v Evropski Uniji (EU) katera služi kot model za reformo v Jugovzhodni Evropi. Prav tako, večina držav EU je sestavljena od razvitih držav pa je tako reforma EU poslužila kot model reforme v razvitih državah o do sedaj doseženih rezultatih. Glede na to da so izbrane države Jugovzhode Evrope tranzicijske države, in zato države v razvoju, so predstavljene tudi reforme elektroenergetskega sektorja ter rezultati v dveh državah Latinske Amerike, Argentine in Čile.

Vse do osemdesetih let prejšnjega stoletja, v večini držav sveta so elektroenergetskim sektorjem dominirala državna vertikalno integrirana podjetja, oziroma podjetja ki so se ukvarjala z proizvodnjo, prenosom distribucijo in dobavo električne energije. Razume se da elektroenergetski sektor ima značilnosti naravnega monopola zaradi dejstva, da ni prikladno, niti ekonomično graditi več paralelnih prenosnih in distribucijskih omrežji na enem področju, kakor tudi zaradi dejstva, da z oskrbo večjega števila kupcev, oziroma z večjo porabo električne energije proizvodni stroški padajo. Vendar, glede na teorijo mikroekonomije monopol predstavlja motnjo na tržišču, ki vodi do izgube ekonomske učinkovitosti, se je začelo z reformo elektroenergetskega sektorja.

Prvi korak k reformi elektroenergetskega sektorja je prestrukturiranje vertikalno integriranih podjetij, oziroma ločevanje tržnih in ne tržnih dejavnosti. Tržnim dejavnostim se razumejo dejavnosti proizvodnje in oskrbe, ker je možna tržna tekma med več proizvajalcev, kot tudi med več dobavitelji. Med netržne dejavnosti se podrazumevajo dejavnosti prenosa in distribucije, če obstaja več kot ena mreža infrastrukture na enem področju ne bi bilo ekonomsko opravičeno. Dokler se cene uslug in proizvoda tržnih dejavnosti formirajo prosto na tržišču, cene uslug in proizvodov netržnih dejavnosti se morajo urediti od strani nadležnih regulativnih institucij. Najpogostejše oblike ločevanja dejavnosti so:

- Računovodsko ločevanje kot najenostavnejši in najmanj učinkovit način ločevanja,
- Funkcionalno ločevanje kjer se ob ločevanju računa pomeni tudi ločitev upravljanja in poslovnih informacij,
- Pravno ločevanje v obliki podružnic, ali neodvisnih pravnih oseb in,

- Lastniško ločevanje katero podrazumeva najbolj učinkovit način ločevanja.

Drugi korak reforme je odpiranje tržišča in razvoj konkurence, obenem pa pomeni svoboden pristop novih podjetji na elektroenergetsko tržišče. Najprej se uvaja konkurenca na veleprodajnem tržišču, šele na to na maloprodajnem tržišču katero pomeni svoboden izbor dobaviteljev od strani končnih koristnikov. Pogosta je praksa da se tržišče postopoma odpira tako da se najprej dovoli svoboden izbor dobavitelja največjim potrošnikom priključenih na prenosno omrežje, tako se zahtevna raven letne porabe električne energije postopoma zmanjšuje do gospodinjstev kateri si najmanjši potrošniki. Tržišče je formalno odprto ko imajo vsi potrošniki status pooblaščenega kupca, oziroma imajo pravico izbora svojega dobavitelja.

Da bi se omogočilo monopolistično obnašanje in spoštovanje pravnih predpisov je treba zasnovati neodvisno regulatorno agencijo katere telo implicira nadzor med tržnim udeležencem ter promoviranje konkurence. Ob tem, naloga regulatorne agencije je tudi regulacija netržnih dejavnosti (prenos, distribucija, zagotavljanje javnih uslug).

Zadnji korak reforme je privatizacija javnih podjetji. Vendar ta korak ni nujen ker so stuije pokazale, da za učinkovito poslovanje podjetja je nujno uvajanje konkurence na tržišče, ne pa zamenjava lastnika.

Danes se za najobširnejšo reformo elektroenergetskega sektorja podrazumeva reforma v EU, katera je začela 1996. leta in še vedno traja. Končni cilj reforme je ustvarjanje skupnega tržišča električne energije na katerem bi obstala samo najbolj učinkovita podjetja. Pričakovani rezultati reforme so povečanje učinkovitosti katero bi pripeljalo do padca cen električne energije kakor tudi konvergence cen med državam članicami. Poleg tega, omogočanje izbora dobaviteljev od strani končnih kupcev, bi pripeljalo do poboljšanja kvalitete uslug. Do 2009. Leta EU je sprejela tri energetska paketa direktiv. Vsaki paket naj bi popravil napake in propuste predhodnega paketa.

Prva direktiva o skupnih pravilih za notranje tržišče električne energije, sprejeta 1996. Leta, učinkovita od 1999. Leta, je definirala posamezne dejavnosti elektroenergetskih sektorjev (proizvodnja, prenos, distribucija), naložila računovodsko ločevanje dejavnosti in izogibanje medsebojnih subvencijskih dejavnosti, predstavila obvezo javne storitve, dovolila procedure avtorizacije in javnega razpisa za izgradnjo novih zmogljivosti, dovolila pogajalski in regulirani vstop tretje strani kot tudi model enega kupca, ter naložila odpiranje 1/3 tržišča do 2003. Leta. Računovodsko ločevanje dejavnosti, kot edini obvezni oblik ločevanja, nanaša se tudi na operaterja prenosnega omrežja (sistemski operater prenosnega omrežja) in operaterja distribucijskega omrežja (sistemski operater distribucijskega omrežja). Glede na to da prva direktiva ni dala željnih rezultatov, oziroma reforma se ni odvijala enakim tempom vseh državah članicah, 2003. leta je sprejet drugi energetska paket ki je ob elektroenergetskem sektorju vključil tudi sektor plina.



Da bi se zmanjšalo monopolistično obnašanje je druga direktiva naložila obvezno pravno ločevanje operaterja prenosnega omrežja in operaterja distribucijskega omrežja, kot tudi funkcionalno ločevanje oskrbe od prenosa in distribucije. Prav tako je druga direktiva dovolila izključno regulirani vstop tretje strani, ter proceduro avtorizacije za izgradnjo novih proizvodnih zmogljivosti, naložila ustanovitev nacionalnih regulatornih institucij in osnutek skupnih nacionalnih regulatornih institucij (angl. *European Regulators Group for Electricity and Gas*) je definirala univerzalno storitev in naložila popolno odpiranje tržišča do 2007. leta.

Glede na to da tudi drugi energetskega paketa ni dal zelenih rezultatov je 2009. leta sprejet tretji paket direktiv ki je v veljavi od 2011. leta. Eno od najvažnejših vprašanj ki ga je bilo treba rešiti je najti najučinkovitejši način delitve operaterja prenosnega omrežja, da bi se preprečilo monopolistično delovanje še vedno vertikalno integriranih elektroenergetskih podjetji. Tretja direktiva je dala možnost izbora med tremi modeli: popolna lastninska delitev, imenovanje neodvisnega operaterja omrežja (samostojni operaterji omrežji) in neodvisnega operaterja prenosa (neodvisni operater prenosnega omrežja). Med ostalim, tretja je direktiva posvetila več pozornosti zaščiti porabnika, razširila je pooblastila nacionalnih regulatornih institucij, zasnovala Agencija za sodelovanje energetskih regulatorjev (angl. *Agency for the Cooperation of Energy Regulators in European Network of Transmission System Operators for Electricity*).

Glede na to da za časa izdelave magistrske teze ni bilo zadosti objavljenih podatkov za 2011. In 2012. Leto o elektroenergetskem sektorju EU, se je več pozornosti posvetilo rezultatom reforme pred začetkom veljavnosti tretjega energetskega paketa.

Dostopni podatki so pokazali da cene električne energije ne konvergirajo med državami članicami EU, kakor tudi da od 2005. leta imajo trend naraščanja. Ravno tako se je cena električne energije značilno razlikovala od države do države. Če tudi je od 2007. leta tržišče električne energije popolnoma odprto ni registriran značajan trend sprememb dobavitelja od strani gospodinjstva, do čim so večji potrošniki pogosteje menjali dobavitelje.

Ravno tako, tudi investicije niso na zadovoljivi ravni, kakor tudi ne čezmejna trgovina med državami članicami. Od začetka reforme se beleži trend akvizicije in pridruževanje med elektroenergetskimi podjetji iz različnih držav. Če ravno je registriran trend povečanja podjetji na elektroenergetskem tržišču konkurenca ni na zadovoljivi ravni, oziroma Herfindahl-Hirschman indeks kaže da je elektroenergetsko tržišče v EU visoko koncentrirano zaradi obstoja proizvajalca in dobavitelja z velikim tržnim delom v gotovo vseh državah članicah. Z ozirom na to da še vedno niso doseženi končni cilji reforme elektroenergetskega sektorja je reforma v EU še vedno v teku.

Reforme električnega sektorja v Čile in Argentini ravno kar kažejo, da je proces reforme stalen in neprekinjen proces. Reforma elektroenergetskega sektorja se je začela že koncem 70 tih let prejšnjega stoletja, v Argentini pa začetkom 90 tih. Po začetku reforme sta obe zemlji zabeležili značilno povečanje tujih naložb v elektroenergetskem sektorju, vstop večjega števila podjetji na tržišče, povečanje proizvodnih zmogljivosti ter povečanje učinkovitosti elektroenergetskih podjetji. Vendar se povečanje učinkovitosti ni odražalo v enaki meri na zmanjšanje cen električne energije, zlasti ne za kategorijo gospodinjstva. Med 90 tih let prejšnjega stoletja je trend zmanjšanja cen registriran v obeh državah zlasti v kategoriji večjih porabnikov. Vendar od začetka 21. stoletja je trend naraščanja prisoten v obeh državah, vtem da je vlada Argentine zaustavila rast cen električne energije za gospodinjstva od 2004. leta zaradi ekonomske krize v kateri se je Argentina znašla v začetku 2000.

Pred analizo reforme elektroenergetskega sektorja v zemljah Jugovzhodne Evrope, je bilo treba analizirati ekonomske uspešnosti teh držav pred začetkom reforme, kakor tudi stanje v elektroenergetskem sektorju, da bi se lažje razumela začetna osnova s katero se je vstopilo v reformo. Reforma elektroenergetskega sektorja je samo del splošne transformacije negdanjih planskih ekonomij v tržni ekonomiji.

Začetkom devetdesetih let 20. Stoletja, je vseh pet analiziranih držav Jugovzhodne Evrope zabeležilo negativen ekonomski rast kateri je do sredine 90 tih let ponovno prešel v pozitiven, ali nestabilen rast. Za večino držav so bila potrebna leta da bi se dosegla raven bruto domačega proizvoda od že prej začete tranzicije. Visoka stopnja brezposelnosti, velika javna administracija in javna poraba, visok notranji in zunanji dolg, kakor tudi zunanjetrgovinsko neravnovesje so glavne značilnosti opazovanih ekonomij. Če ravno so ekonomske prilike imele pozitiven karakter v prvih letih 21. stoletja, je svetovna finančna kriza iz 2007. leta povzročila ali slabljenje ali pad ekonomske aktivnosti v opazovanih državah, kar se je negativno odrazilo tudi na strukturalne reforme.

Pred začetkom elektroenergetske reforme v opazovanih državah Jugovzhodne Evrope so elektroenergetskim sektorjem prevladovale po ena nacionalna vertikalno integrirano podjetje v državnem lastništvu. Izjema je Bosna in Hercegovina kjer so zaradi kompleksnosti organizacije države obstajale tri vertikalno integrirana podjetja v lasti entitetskih vlad.

Instalirane proizvodne zmogljivosti so koncem devetdesetih let iznašale 18.68 GW. Največji delež v instaliranih zmogljivosti je imela Srbija, najmanjše Črna Gora. Države so se značilno razlikovale glede na izvor električne energije. Med tem ko so fosilna goriva prepričljivo prevladovala kot elektroenergetski izvor v Srbiji se je proizvodnja v Albaniji in Črni Gori večinskim delom zasnova na hidroenergiji. Bosna in Hercegovina je imela gotovo enak delež in hidroenergije in fosilnih goriv v proizvodnji, dokler je Hrvaška imela nekaj več udeležbe fosilnih goriv od hidroenergije. Primerjava proizvodnje in porabe

električne energije so bile Srbija in Bosna in Hercegovina suficitarne države in neto izvozniki električne energije. Z druge strani so bile Albanija, Črna Gora in Hrvaška katere so zaradi pomanjkanja proizvodnje v odnosu na porabo bili neto uvozniki. S primerjavo dostopnih podatkov za konec devetdesetih let, Srbija in Črna Gora katere so bile v skupni državi, so imele najnižje povprečne cene za gospodinjstvo, pri čem je hrvaška imela največje povprečne cene. Vse države so imele nižje cene od povprečja EU 15.

Vse analizirane države Jugovzhodne Evrope so pristopile procesu integracij energetskih tržišč, kateri je del širšega procesa regionalizacije v Jugovzhodni Evropi. Najpomembnejši korak v ustvarjanju regionalnega energetskega tržišča je podpisovanje prvega Memoranduma od razumevanju 2002. leta v Ateni, kateri se je obnašal na razvoj regionalnega elektroenergetskega tržišča v Jugovshodni Evropi. V 2003. letu sledilo je podpisovanje drugega memoranduma o razumevanju, v katerem je bil vključen sektor plina. Cilj obeh memorandumom je bil ustanovitev regulatornega in tržnega okvirja za energetski sektor v Jugovshodni Evropi kateri naj bi se zasnoval na modelu energetskega tržišča EU. Memorandumi niso bili obvezni za države podpisnice, vendar so privedli memorandum do podpisa ugovora o ustanovitvi Energetske skupnosti 2005. leta kateri ima obvezni karakter. Podpisne strani ugovora ugovora so bile EU z ene strani in devet držav Jugovzhodne Evrope med katerimi so tudi države analizirane v magistrarskem delu. Države podpisnice so se obvezale da bojo v svojo nacionalno zakonodajo vključile zakonodajo EU, katere se obnašajo na energetski sektor, okolje, konkurenčnost in obnovljive vire energije.

Prvi korak reforme v opazovanih državah Jugovzhodne Evrope je bila uzakonitev za elektroenergetski ali vsplošni energetski sektor v začetku 2000 tih kateri so se prizadevali spremljati smernice EU. Novi zakoni so predstavljali osnovo za prestrukturiranje in reorganizacijo elektroenergetskega tržišča, naložili so ustanovitev regulatornih organov ter definirali odnose udeležencev na tržišču. Najpomembnejše določbe elektroenergetskih zakonov so določanje mejne vrednosti porabe električne energije za pridobitev upravičenega odjemalca in odpiranje tržišč, ločevanje reguliranih dejavnosti, prepoved medsebojnega subvencioniranja različnih elektroenergetskih dejavnosti, regulirani pristop tretje strani prenosnega in distribucijskega omrežja, osnivanje odgovornosti regulatornih organov in ostale predpise. Ob obvezujočih predpisih o osnivanju energetske skupnosti je Hrvaška morala usvojiti zakonodajo EU zaradi pristopa v 2013. letu. Zakoni in predpisi vezani za elektroenergetski sektor ostalih držav, v nekateri meri odstopajo od trenutno veljavnih predpisov v EU pred vsem pa glede na vprašanje obvezne forme ločitve dejavnosti (BiH) in raven odprtosti tržišča (Albanija, BiH, Črna Gora in Srbija).

Reforma elektroenergetskega sektorja je pripeljala do ustanovitve regulatornih institucij v vseh analiziranih državah čigar glavne naloge so nadzor nad elektroenergetskimi podjetji in ostalimi udeleženci na tržišču, sprejetja sekundarnih predpisov s katerimi se bližje urejajo odnosi na tržišču, promocija konkurence, zaščita uporabnika. Ena od

najpomembnejših nalog nacionalnih regulativnih institucij je tudi prinašanje metodologije za cenitev regulatornih dejavnosti. Vse regulirane cene določajo se na osnovi angl. *rate of return* principa odnosno določajo se tako da se določi stopnja stroškov proizvodnje ali ponujanje uslug in poveča za določeni povrat na angažirana sredstva, da bi se lahko vlagalo v nova sredstva ter spodbudila podjetja na efikasnejše poslovanje. Vse analizirane regulatorne institucije so neodvisne v svojem delu od drugih javnih institucij, kakor tudi od tržnih udeležencev, financirajo pa se od zbranih regulativnih pristojb.

Sprejetje potrebnih zakonov in sekundarnih predpisov je sledilo restrukturiranju obstoječih državnih elektroenergetskih podjetji in je tako v večini analiziranih držav od enega podjetja formirano več podjetji kot zasebnih pravnih oseb, ali v formi podružnic. Vendar je večina formiranih podjetji ostalo v lasti matičnega podjetja (katera je v večinski lasti države) ali je lasništvo prenešeno direktno na državo. Na hrvaškem in v Srbiji ni niti noben del državnega lasništva v elektroenergetskem sektorju privatiziran, medtem ko so v Albaniji, BiH in Črni Gori deloma privatizirani. Najdlje od analiziranih držav je odšla Albanija, katera je po razdelitvi distribucij od proizvodnje in prenosa prodala 76% delnic novega distribucijskega podjetja tujim investitorjem. Črna Gora je po ločevanju prenosa od elektroprivrede Črne Gore in formiranja novega prenosnega podjetja prodala manj kot 50% udeležbe enega in drugega podjetja tujim investitorjem. Privatna lasnina v elektroenergetskem podjetju v BiH je daleč manjša, pa je tako v dveh elektroenergetskih podjetji v Federaciji Bosne in Hercegovine udeležba lasnine Federalne vlade 90%. V Republiki Srpski udeležba v matičnem podjetju je 100%, medtem ko je udeležba matičnega podjetja v odvisnih družbah za proizvodnjo in distribucijo 65%.

Med razdelitvijo elektroenergetskih dejavnosti so vse države ločile prenos v pravnem (Albanija in Hrvaška) ali v lastninskem smislu (Bosna in Hercegovina, Črna Gora in Srbija) od drugih reguliranih in nereguliranih dejavnosti. Pri lastninskem ločevanju ni prišlo do privatizacije razen manjšega dela v Črni Gori, temveč je lasništvo nad prenešenim podjetjem prenešeno z obstoječih elektroenergetskih podjetji v državnem lasništvu direktno na državo.

V Albaniji, BiH in Srbiji operaterji prenosnega omrežja so tudi operaterji tržišča električne energije, medtem ko so v Črni Gori in Hrvaški operaterji tržišča ločena podjetja od operaterja prenosnega omrežja. Operater tržišča na Hrvaškem je operater za celo energetska tržišča medtem ko so v ostalih državah zadolženi samo za organizacijo elektroenergetskega tržišča.

Dokler je razdelitev in organizacija prenosne dejavnosti v analiziranih državah v skladu z predpisi EU, delitev dejavnosti omrežji ni popolnoma končano, razen na Hrvaškem kjer je distribucija pravno ločena od ostalih dejavnosti. Niti v eni od analiziranih držav ločitev distribucije od oskrbe ni končano, s tem da v Federaciji BiH distribucija ni ločena niti od proizvodnje, kar seveda ni v skladu z EU predpisi kateri zahtevajo pravno ali funkcionalno

ločitev distribucij. Albanski zakon o elektroenergetskem sektoriju, je ravno tako predvidel edino računovodstveno ločitev, medtem kot je že navedeno, distribucija je lasniško ločena od prenosa in proizvodnje, ali samo računovodstveno od obskrbe. V Črni Gori in Srbiji v 2013. letu se pričakuje da bo distribucija tudi pravno ločena od obskrbe kakor je tudi zakonom predpisano.

Popolno odpiranje tržišča električne energije v Albaniji, BiH, ter Črni Gori in Srbiji je predvideno leta 2015., ko bo tudi gospodinjstvo postalo pooblaščen kupec. Trenutno v omenjenih državah status pooblaščenega kupca lahko dobijo vsi kupci razen gospodinjstva. Če tudi je tržišče delno odprto se nič pomembnega ni zgodilo, ker so pooblašчени kupci še vedno imeli možnost dobave električne energije prek javne usluge, oziroma niso uporabili pravico na zamenjavo dobavitelja in dobavo po tržnih cenah. Od začetka leta 2013. pooblašчени kupci v Srbiji, priključeni na visokonapetostna omrežja, nimajo več pravice na to možnost, tamveč morajo dobavljati po tržnim, ne pa po regularnih cenah. V Albaniji, BiH in Črni Gori še vedno traje prehodno razdoblje. Na Hrvaškem je tržišče popolnoma odprto od 1.7. 2008. leta in prek obvez javne uslug lahko dobavljajo samo gospodinjstva če tako izberejo.

Če ravno je tržišče v celoti ali delno odprto v analiziranih državah, ter je dovoljen vhod novim elektroenergetskim podjetjem na tržišče, značilnih sprememb še vedno ni. Registriran je porast števila privatnih proizvajalcev in dobaviteljev na tržišču, vendar zaradi tako imenovanih angl. *incumbent* podjetji, oziroma državnih elektroenergetskih podjetji katera imajo popolno ali največjo udeležbo na tržišču, koncentracija nad veleprodajnim ali maloprodajnim tržiščem je izjemno visoka. Podobna situacija je tudi na EU tržišču. Čeprav je proces reforme začel prej kot v analiziranih državah Jugovzhodne Evrope je koncentracija na tržišču še naprej visoka.

Cene električne energije od začetka reforme imajo rastoči trend. Razlog je v dejstvu da se z reformo zahteva, da cene odražajo stroški proizvodnje, pa se prizadeva prepovedati medsebojno subvencioniranje različnih kategorij kupcev. Praksa je bila, da so večji kupci subvencionirali manjše kupce, oziroma gospodinjstva, kar se ne bi zgodilo da so cene postavljenje na ravni, katere pokrivajo proizvodne stroške. Raven cen pod stroški proizvodnje ogroža investicije v elektroenergetskem sektorju, kar v nadaljevanju vodi v vprašanje varnosti obskrbe.

Čeprav so vse nacionalne regulatorne agencije sprejele sekundarne predpise vezane za določanje regularnih cen električne energije, po metodologiji angl. *rate of return*, še naprej so cene nižje od EU povprečja. Cene električne energije za gospodinjstva in industrijske kupce, nižje so od najnižje cene zabeležene v EU od leta 2012. Cene električne energije se značilno razlikujejo med petimi analiziranimi državami, ter so tako v letu 2012. najcenejšo električno energijo plačala gospodinjstva in industrijski kupci v Srbiji, najdražjo pa kupci na Hrvaškem.

Značilne spremembe v instaliranih zmogljivosti, proizvodnje električne energije, kakor tudi viri električne energije niso zabeležene od začetka elektroenergetske reforme. V letu 2010. skupno instalirane proizvodne zmogljivosti iznašale so 19.3 GW, kar kaže da je v zadnjih 10 tih letih dosežen porast od vsega 0.3%. Porast instalirane moči rezultat je rekonstrukcije in remonta več obstoječih elektrarn. Od novih elektrarn je pomembno omeniti termoelektrarno v Albaniji, moči 98 MW, kakor tudi hidroelektrarno moči 42.3 MW in vetrno elektrarno 44 MW zgrajene na Hrvaški. Ob teh je zgrajeno število majhnih hidroelektrarn in drugih elektrarn za proizvodnjo iz obnovljivih virov energije v vseh analiziranih državah Juhovzhodne Evrope. Vendar moč novih elektrarn je zelo majhna. Srbija in BiH so še naprej neto izvozniki električne energije, medtem ko so Albanija, Črna Gora in Hrvaška neto uvozniki.

Različni izviri energije, stroški proizvodnje električne energije, ter s tem tudi cene, dajo zelo dobro osnovo za razvoj trgovine med državami Jugovzhodne Evrope. BiH in Srbija imajo čezmejno prenosno omrežje z vsemi svojimi sosednimi državami, Hrvaška pa še vedno nima z Črno Goro in Italijo, Albanija in ne z Makedonijo.

Da bi se zagotovila trgovina z električno energijo, kakor tudi tranzit električne energije skozi različne države, treba uskladiti čezmejni prenosni sistem držav, učinkovito upravljati z zastoji, kakor tudi zgraditi dodatne čezmejne prenosne zmogljivosti v naslednjih letih. Tako so planirane gradnje novih visokonapetostnih čezmejnih prenosnih zmogljivosti med Hrvaško in BiH, Hrvaško in Italijo, Srbijo in BiH, Srbijo in Črno Goro, Črno Goro in Albanijo, Črno Goro in Italijo in Albanijo in Italijo.

Trenutno alokacija čezmejnih zmogljivosti poteka prek dražb katere organizirajo operaterji prenosnih omrežji. Da bi se izboljšala čezmejna trgovina v energetske skupnosti 2008. leta

je dogovorjena ustanovitev skupnih podjetji za dodelitev čezmejnih zmogljivosti. V letu 2012.

je dosežen napredek tako, da so operaterji prenosnih omrežji iz desetih držav ustanovili projektni tim, kateri bo pripravil ustanovitev skupnih podjetji, Usklajeno avkcijska pisarna Jugovzhodna Evropa (angl. *South East European Coordinated Auction Office*).

Ob planiranih investicijah v visokonapetostnih omrežji med državami, zaradi načrtovanega rasti porabe v naslednjih letih v nacionalnih energetske strategijah se planirajo tudi investicije znotraj držav, kakor v proizvodne zmogljivosti tako tudi v prenosu in distribucijskih omrežjih. Ker pa vse analizirane države beležijo slabo ekonomsko situacijo v zadnjih nekaj let planirane investicije se bojo težko realizirale če ih bodo države same sprejemale. Upoštevati je treba da se govori o majhnih državah, oziroma majhnem tržišču, katere bojo težko posamično pritegnile tuje investitorje za velike projekte. Iz teh razlogov je potrebno še nadalje izboljšati sodelovanje med državami podpisnicami pogodbe o

ustanovitvi energetske skupnosti, da bi se z skupnimi močmi investiralo in privlačilo tuje vlagatelje.

Da bi reforma elektroenergetskega sektorja dala pozitivne rezultate in pripeljala do ustanovitve funkcionalnega skupnega energetskega tržišča držav Jugovzhodne Evrope, je treba identificirati možne ovire. Močan regulatorni okvir in močne in preverjene regulatorne institucije, so ključni element uspešne reforme. Albanija, BiH, Črna Gora, Hrvaška in Srbija so se z potpisom pogodbe o Energetski Skupnosti obvezale na sprejetje EU direktiv povezanih z energetskim sektorjem, okoljem, konkurenco in z obnovljivimi izvori energije. Ob prilagoditvi nacionalnih zakonov z EU zakoni pomembna je primerna in učinkovita uveljavitev istih. Bez primerne uveljavitve, zakoni predstavljajo samo mrvo črko na papirju. Iz tega razloga je treba okrepiti regulatorne institucije v izvajanju njihovih nalog, ter zagotoviti njihovo neodvisnost. V nasprotju z navedenim, bi pripeljalo pod vrpašanje rezultate in namen reforme.

Še ena možna ovira k uspešni reformi je nedoločitev ustrezne ravni cen električne energije. Cene pod stroški proizvodnje in nerealizacija povrata, pripeljalo bi do finančnih izgub elektroenergetskih podjetji, kar bi kasneje pripeljalo do neinvestiranja in slabšanja kvalitet uslug. Na koncu bi pripeljalo pod vprašanje varnost dobave elektirčne energije. Z druge strani, pa ima dvigovanje cen negativen socialno ekonomski vpliv, predvsem na prebivalstvo, kasneje pa na večje kupce. Obstaja upravičen strah od namerne subverzije in obstrukcije procesa reforme in liberalizacije elektroenergetskega tržišča od strani politikov kateri bi interese svojih držav postavljali pred regionalne skupne interese, kar bi degradiralo vse reformske rezultate.

Glede na to da je za vse analizirane države pomembno pritegniti investicije v elektroenergetski sektor, da varnost dobave ne bi prišla pod vprašanje v naslednjem obdobju, inštitut zaščite lasništva ima veliko vlogo. V zadnjem Poročilu o konkurenčnosti svetovnega ekonomskega foruma so vse države bile na nezavidni ravni ko se gre o zaščiti pravic lasništva, kar se pravi da se vse države morajo resno posvetiti tudi temu vprašanju.

Pri analizi dosedanjih rezultatov reforme in liberalizacije tržišča električne energije v izbranih državah Jugovzhodne Evrope, potreben je regionalni pristop in gradnja regionalnega energetskega tržišča. V nasprotnem, takšna tržišča niso privlačna velikim in tujim podjetjem in tako tudi ne zadovoljujejo razvoju konkurence. Pomanjkanje konkurence podpira obstoj neefikasnih energetskih podjetji. Glede na to da cene elektrčne energije niso pokrivalo stroške proizvodnje, ker so umetno držane na niski ravni in so predstavljale več socialno kakor ekonomsko kategorijo, je reforma pripreljala do rasti cen električne energije. Pričakovati je da se bo rast nadaljevala tudi v naslednjih letih. Kot je že navedeno, bo rast cen električne energije pripeljala do degradacije socialnoekonomskega statusa dela prebivalstva, tako je na javnih institucijah da spremejo ustrezen mehanizem zaščite ranljivih kategorij porabnikov, kakor nalaga EU direktiva. Dosedaj ni zabeležena

višja rast proizvodnih zmogljivosti, čeprav z opazovanjem vseh petih držav, se še naprej proizvaja presežek električne energije kateri je lahko plasiran v druge države. Čezmejna trgovina med pomembnimi državami beleži trend rasti. Glede na to da se države razlikujejo kakor po proizvodnih zmogljivosti in energetskih virih, tako tudi po cenah električne energije obstaja velik potencial za daljni razvoj čezmejne trgovine.



## **Appendix B: List of Abbreviations**

ACER - Agency for the Cooperation of Energy Regulators  
AERS - Energy Agency in republic of Serbia  
ALB - Albania  
AyE - Agua y Energia Electrica  
BiH - Bosnia and Herzegovina  
BD - District Brcko in BiH  
CAMMESA - Compañía Administradora del Mercado Mayorista Eléctrico  
CDECs - Economic Load Dispatch Centres  
CGES - Crnogorski elektroprenosni sistem (Montenegrin Transmission Company)  
CNE - National Energy Commission  
CRO - Croatia  
DERK - State Electricity Regulatory Commission in BiH  
DSO - distribution system operator  
EC - European Commission  
EBRD - European Bank for Reconstruction and Development  
EIA- Energy Information Administration  
ENRE - Ente Nacional Regulador de la Electricidad  
ENTSO-E - European Network of Transmission System Operators for Electricity  
EMS - Elektromreze Srbije (Serbian Transmission Company)  
EP BiH - Elektroprivreda BiH (BiH Power Company)  
EPCG - Elektroprivreda Crne Gore (Montenegrin Power Company)  
EP HZHB - Elektroprivreda Hrvatske zajednice Herceg Bosna (Power Company of Croatian Community Herzeg Bosnia)  
EPS - Elektroprivreda Srbije (Serbian Power Company)  
ERE - Albanian Energy Regulator  
ERS - Elektroprivreda Republike Srpske (Power Company of Republic Srpska)  
EU - European Union  
FBiH - Federation of Bosnia and Herzegovina  
FERK - Regulatory Commission for Electricity in FBiH  
GDP - Gross Domestic Product  
HEP - Hrvatska elektroprivreda (Croatian Power Company)  
HEP - OPS - Hrvatska elektroprivreda - operator sustava (Croatian Transmission Company)  
HERA - Croatian Energy Regulatory Agency  
HHI - Herfindal – Hirschman index  
Hidronor - Hidroelectrica Norpatagonica  
HPP - hydropower plant  
IMF - International Monetary Fund  
ISO - Independent System Operator  
ITO - Independent Transmission Operator  
KESH - Korporata Elektroenergjitike Shqiptare (Albanian Power Company)  
NATO - North Atlantic Treaty Organisation

NIS - National interconnected system  
NOS BiH - Nezavisni operator sustava BiH (Independent System Operator in BiH)  
NRA - National regulatory authority  
MEM - Mercado Eléctrico Mayorista  
MNE - Montenegro  
OST - Operatori i Sistemit të Transmetimit (Albanian Transmission Company)  
RAE - Energy Regulatory Agency in Montenegro  
RERS - Regulatory Commission for Energy of Republic Srpska  
RS - Republic Srpska  
SAP - Stabilisation and Association Process  
SEC - Superintendence of Electricity and Fuels under the Ministry of Economy  
SEGBA - Servicios Electricos del Gran Buenos Aires  
SEE - Southeast Europe  
SEECF - South-East European Cooperation Process  
SERPEX - Serbian power exchange  
SFRY - Socialist Federal Republic of Yugoslavia  
SIC - Central Interconnected System  
SING - North Interconnected System  
SRB - Serbia  
TPP - Thermal power plant  
TSO - Transmission System Operator  
UCTE - Union for the Coordination and Transmission of Electricity  
VIC - vertically integrated company  
WB - World Bank  
WPS - Wholesale Public Supplier