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STATE ELECTRICITY REGULATORY COMMISSION

REPORT ON ACTIVITIES OF THE STATE ELECTRICITY REGULATORY COMMISSION IN 2021

Tuzla, December 2021

Report on Activities of the State Electricity Regulatory Commission follows the reporting approach of regulatory authorities in the European Union and Energy Community requirements, with some adaptations reflecting the characteristics of the regulatory framework in Bosnia and Herzegovina.

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1. INTRODUCTION

In 2021, Bosnia and Herzegovina (BIH), the neighbouring countries, the European Union (EU), like many other regions in the world, faced sharp energy price hikes. It is a cause for great concern of citizens, economy, governments and other institutions. The price rise was driven by increased global demand for energy in the context of the economic recovery and the exit from the crisis caused by the COVID-19 pandemic. European households and companies face the prospect of increased energy costs at a time when many of them have been hit by loss of income due to the pandemic. This may have a negative impact on the recovery, its fairness and inclusiveness. It also risks undermining confidence and support in the energy transition which is required not just to prevent disastrous climate change but also to reduce the susceptibility to the volatility of fossil fuel prices, primarily of oil and gas.

Further sector reforms and energy transition grow in importance under these circumstances. In the forthcoming period, it is necessary to continue the alignment of energy legislation with the European Union *acquis*, integrated development of energy and climate policies and implementation of the energy sector reform in Bosnia and Herzegovina at all administrative levels in line with respective constitutional competences.

In 2021, the State Electricity Regulatory Commission (SERC) continued its regulatory mission in the sector creating the conditions for unhindered trade in electricity and reliable electricity supply in compliance with international treaties, national laws, the relevant European regulations and directives and other internal electricity market rules. In the past year SERC continued to cooperate with a high number of the institutions of Bosnia and Herzegovina, its Entities and District as well as numerous international institutions whose work has impact on or pertains to electricity market regulation. Under the circumstances as a result of the COVID-19 pandemic, SERC performed its jurisdictions and responsibilities with inevitable and required adaptation which did not affect SERC's efficiency.

The BIH electric power system operated steadily and without any bigger problems throughout 2021. All system users were able to operate functionally in line with the defined quality standards. All planned or additionally requested maintenance works in the transmission network were completed.

After the completion of the necessary works, at the beginning of June 2021, the former rigid connection (the so-called 'T' connection) was removed between the 110/x kilovolt (kV) substations (SS) Čapljina, Mostar 9 and Stolac, which formed two new transmission lines (TL) – TL 110 kV Čapljina – Mostar 9 and TL 110 kV Mostar 9 – Stolac. After reparation of a breakdown of a 220/110 kV, 150 megavolt-amperes (MVA)

transformer at the Mostar 4 substation and conducted functional testing and detailed examinations, at the end of January the transformer was loaded and put into operation, which increased the security of supply of electricity customers. In the middle of January 2021, at the wind power plant Podveležje with installed capacity of 48 megawatts (MW) the first synchronisation of generators to the power system was conducted, thus commencing the trial operation thereof. After the completion of all functional tests, this power plant, which is connected to the transmission network via the 110/30 kV Podveležje substation, obtained approval of the Independent System Operator (ISO BIH) for steady operation.

Electricity generation amounting to 17,055.44 gigawatt hours (GWh) was reached in the past year, which is 1,645 GWh, or 10.8%, more than generated in 2020. With the favourable hydrological conditions generation by hydropower plants increased even by 2,038 GWh, or 47.6%, amounting to 6,314 GWh. On the other hand, generation by thermal power plants decreased by 622 GWh, or 6%, due to reduced coal production and availability of thermal blocks, and amounted to 9,821 GWh. The wind power plants connected to the transmission system produced 382 GWh, or 120 GWh more than in the past year. Small-scale renewable generation (small hydropower plants, wind power plants connected to the distribution system, solar and biofuel plants) increased by 29.9% amounting to 518.67 GWh. Industrial power plants produced 19.98 GWh.

Total electricity consumption amounted to 12,170 GWh, or 7.4% more than in the previous year. Consumption of customers connected to the transmission system increased by 31.4% amounting to 1,170 GWh, while consumption of customers connected to the distribution network increased by 4.7% amounting to 10,468 GWh.

The maximum load of the power system in the past year amounting to 1,909 MW was reported on 23 December 2021 at the 18th hour, which is less than the historic maximum of 2,207 MW reported at the 18th hour on 31 December 2014. Minimum load of 685 MW was reported on 7 June 2021 at the 4th hour, which is 80 MWh more than the lowest value in the past several decades, which was reported at the 4th hour on 25 May 2020.

Total electricity in the transmission network amounted to 19,729.3 GWh, which is 8.83% more than in 2020. Transmission losses amounted to 369.2 GWh, or 1.87% of total energy in the transmission network. In 2021, distribution losses amounted to 956 GWh or 9.22% in relation to total consumption by customers connected to the distribution network.

In 2021, electricity exports amounted to 6,173 GWh, or 11.4% more than in the previous year while electricity imports decreased by 7.1% and amounted to 1,390 GWh.

The State Electricity Regulatory Commission was established by the Parliamentary Assembly of Bosnia and Herzegovina by adoption of the Law on Transmission of Electric Power, Regulator and System Operator of BIH, and by appointment of the Commissioners.

2. COMPOSITION AND ORGANISATION OF WORK OF THE COMMISSION

The Commissioners from the Federation of Bosnia and Herzegovina are:

- Mr. Suad Zeljković, with a five-year term (from 11 June 2016), and
- Mr. Nikola Pejić, with his second five-year term (from 11 June 2016).

The Commissioner from the Republika Srpska is

- Mrs. Branislava Milekić, with a five-year term (from 5 August 2020).

It is evident that the first five-year term of one Commissioner from the Federation of Bosnia and Herzegovina expired and that the second five-year term of the other Commissioner expired as well. Having in mind that the *Law on Transmission of Electric Power, Regulator and System Operator of BIH* sets forth that the Commission can only operate with all three commissioners and make decisions by a unanimous vote, and taking into consideration the existing practice, Mr. Suad Zeljković and Mr. Nikola Pejić continue to perform this function until the completion of the procedure for appointment of the Commissioners from the Federation of BIH.[1]

Since the establishment of the State Electricity Regulatory Commission, the Commissioners rotate in the position of the Chairman equally on an annual basis. Until 30 June 2021, this function was performed by Mr. Nikola Pejić. Mrs. Branislava Milekić is the current Chairwoman of the Commission until 30 June 2022.

In line with the Law, SERC was established as an independent institution of Bosnia and Herzegovina, with the obligation to act in accordance with the principles of objectivity, transparency and non-discrimination. These principles have been incorporated in all SERC legal documents and implemented in all procedures. This method of operation has been adjusted to the maximum extent possible to the *Policy Guidelines of the Energy Community Secretariat on the Independence of National Regulatory Authorities*. Incorporated in rules and continuously implemented in practice, the independence of the State Electricity Regulatory Commission has been shown and demonstrated in all areas including political, legal, social and financial dimensions.

The European Union (EU) energy *acquis*, which becomes mandatory for Bosnia and Herzegovina in line with the mechanisms

Report on Activities of the State Electricity Regulatory Commission in 2020 was considered at the sessions of both Houses of the Parliamentary Assembly of Bosnia and Herzegovina.

Without 'no' votes, the Report was adopted

- *at the 19th session of the House of Representatives held on 28 April 2021, and*
- *at the 18th session of the House of Peoples held on 27 May 2021.*

[1] At the time of the creation of this report, the process of selecting the two Commissioners from the Federation of BIH is in the procedure before the Government of this Entity. Following the confirmation of the Government's proposals by the Parliament of the Federation of BIH, the nominations are submitted to the BIH Council of Ministers, which propose the appointments to the Parliamentary Assembly of Bosnia and Herzegovina.

established under the Treaty establishing the Energy Community, especially highlights the correlation between the regulatory independence and reform implementation and introduces expanded powers and enhances regulatory independence, in particular with regard to market monitoring and imposing sanctions for anti-competitive behaviour.

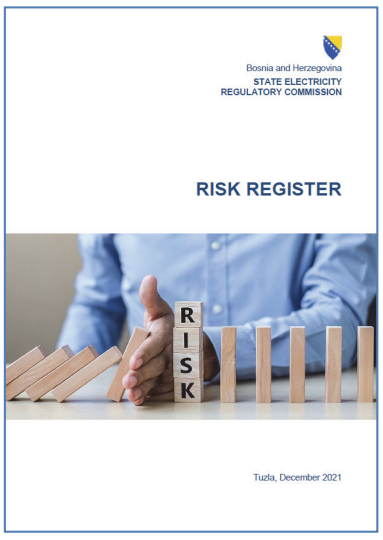
Pursuant to the Law, the basic provisions on competence, organisation and method of work, financing, transparency and the protection of confidential data are regulated by the *Statute of the State Electricity Regulatory Commission* adopted in 2003, immediately after the establishment of SERC followed by amendments in 2004 and 2009. In December 2017, the *Decision on amendments to the Statute* was adopted which clearly prescribed the exclusive organisational and formal role of the Chairman of the Commission without any additional powers in presenting, representing or decision-making of SERC in relation to the other two Commissioners. Consequently, any excessive formalism has been avoided with regard to registration of changes to data in statistical, tax and other registers on an annual basis when the Commissioners rotate in the position of the Chairman.

The work of SERC is organised within four departments:

- Tariff and Market Department,
- Licensing and Technical Affairs Department,
- Legal Department, and
- Financial and Administrative Department.

With the aim of performing its tasks in a more efficient manner, task forces are formed on a needs basis at SERC in the work of which employees from different departments participate.

The implementation of the risk-based financial management and control system is performed accordingly in SERC. The Central Harmonisation Unit of the Ministry of Finance and Treasury of Bosnia and Herzegovina organised thematic training sessions for the heads of SERC departments on the basics of financial management system and the use of specially developed software application (PIFC) for the implementation of financial management and control system. Having acquired necessary knowledge in this field, SERC adopted an *Action Plan for Establishment and Improvement of Internal Financial Control System*, which follows strategic and operational plans for the development of internal financial control systems in the institutions of Bosnia and Herzegovina. During the year all planned activities were successfully completed and, among them, the establishment of the *2021 Risk Register* should be emphasised in particular. The purpose of this document is to avoid, i.e. reduce, the impact of future events which may jeopardise the realisation of SERC goals and identify potentially missed opportunities for improvement of business operations and to adjust to changing circumstances.



In 2021, the work of the State Electricity Regulatory Commission was further adapted to the situation caused by the COVID-19 pandemic. The number of physical meetings and business trips continued to be reduced to a minimum while communications via various online communication platforms were dominant. All SERC activities were implemented in compliance with the epidemiological measures prescribed by the competent authorities due to the COVID-19 pandemic. In February 2021, SERC adopted an *Anti-Corruption Action Plan during the COVID-19 Pandemic*, and one month later the *Decision on the use of an online communication platform during the COVID-19 pandemic*.

The new work environment and intensified digital communication via internet stressed the importance of equipment reliability and the enhanced protection of information-communication systems. In compliance with the relevant standards and guidelines of the BIH Council of Ministers, in 2021 SERC replaced the functionally obsolete and written-off computer equipment with the new one.

In this process, energy characteristics of the equipment and good practice were taken into consideration as recommended by the Audit Office of the Institutions of Bosnia and Herzegovina in their performance audit reports. In addition to purchasing the new computer equipment, SERC completed the procurement of the missing purpose-specific equipment for hardware protection and software for prevention, detection and response in cyber space.

Electronic communication technologies were also used in improving knowledge and experience, that is, strengthening SERC professional capacities. The improvement of knowledge is achieved by participation in different professional symposiums, conferences and thematic seminars. In addition, systematic training aimed at continuous harmonisation of knowledge, skills and practice with the needs and expectations of the institution is provided by specialised workshops of the Energy Community Secretariat, training programs of the Energy Regulators Regional Association (ERRA), the Mediterranean Energy Regulators (MEDREG) and the Council of European Energy Regulators (CEER), and seminars of the Directorate for European Integration aimed at the process of accession and integration of BIH into the EU.

A particular contribution to professional training in 2021 was provided by the United States Agency for International Development (USAID) and National Association of Regulatory Utility Commissions (NARUC) through regional initiatives and *USAID Energy Policy Activity*, and the Italian Regulatory Authority for Energy, Networks and Environment (ARERA) and the Central European Initiative (CEI) through the *Know-How Exchange Program* (KEP) – *Support for Strengthening Energy Regulatory Authorities in the Western* Balkans, under which several educational workshops were organised covering different topics.

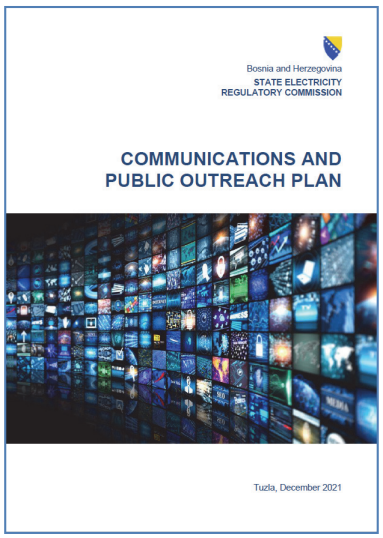
SERC will remain dedicated to ensuring continuous professionalism of human resources through the well-established as well as new training methods and the use of modern communication tools. The justification of this approach is confirmed by information, communication and presentation competence of a high number of individual employees to successfully present their knowledge and experience at national and international professional gatherings.

In addition to professional training of its employees, the State Electricity Regulatory Commission informed and shared its experiences on regulatory practice in a proper manner with regulated companies' employees, and participated in professional training of staff of other regulatory authorities in the region. Furthermore, SERC provided quality professional information on the energy sector and its reform not only to specialists in the sector but also to the wider public.

Acknowledging the importance of free access to information as a fundamental characteristic of transparent and accountable action by any public authority, and remaining committed to acting along these lines on a permanent basis, SERC allows the wider public to have an insight into its work and decision-making processes, going beyond the mandatory framework in this field stipulated by the *Law on Freedom of Access to Information in Bosnia and Herzegovina*. SERC fulfils these commitments by publishing all relevant information on its official website in a timely manner, including also print media, through the presentation of SERC drafts documents, and notices and invitations to the public to participate in the creation thereof.

In addition to a proactive approach as the generally accepted standard in its activities, SERC also acts reactively, handling submitted requests for access to information in a timely manner, starting from the position that in any concrete case the public interest must prevail over the constraints stipulated by the mentioned Law and any private interest. Two requests of this kind were received in 2021, and in both cases administrative acts were issued within the legally prescribed deadline fully approving access to the requested data, while a copy thereof was given to the applicants free of charge. SERC also meets other obligations stipulated by the *Law on Freedom of Access to Information in Bosnia and Herzegovina* and submits required reports to the Institution of Human Rights Ombudsmen of BIH.

Communication with the public plays a key role in creating perceptions, that is, the ways for the public to understand how institutions function. Communication is of particular importance in the period of reforms and structural changes. In the process of sector liberalisation, deregulation and market opening it is necessary both to inform the public in a timely manner of the major phases and to continuously communicate with all key stakeholders about the reform and educate them about the way the sector as a whole functions.



It is good practice of regulatory commissions in the energy sector to implement public outreach activities to explain and clarify the changes brought by the liberalisation of the sector and market opening. In line with this, in BIH as well, the State Electricity Regulatory Commission (SERC), the Regulatory Commission for Energy in the Federation of BIH (FERK) and the Regulatory Commission for Energy of Republika Srpska (RERS), which as unbiased organisations protect the interests of customers by regulating relationships in the sector and electricity market, have a key role in raising awareness of the changes in the sector and regulators' activities in the liberalisation process.

In this context, the State Electricity Regulatory Commission adopted its *Communications and Public Outreach Plan* in the middle of December 2021, thus making an additional step forward in order to explain very complex energy sector topics in a simple and comprehensible way to all interested parties.

Large volumes of different documents are created as a result of SERC activities. The number of documents and information has been constantly increasing. SERC, as the creator, organises the keeping, evaluation, extraction and protection of the registry office material under the professional supervision of the Archive of Bosnia and Herzegovina. This cooperation enables these processes to develop in line with professional principles, experiences and recommendations and through mutual familiarisation of the two institutions.

In the reporting period, SERC used the possibility of applying a modern method of organising records management in its work, and in compliance with the prescribed standards and rules of the BIH Council of Minister, continued using an electronic records management system. In addition to the efficient entry and search of data as well as archiving a large number of documents in the digital form, the introduced system created the prerequisites for modern business process management and the integration with other business systems. In this process, good practice as recommended by the Audit Office of the Institutions of Bosnia and Herzegovina in their performance audit reports was taken into consideration.

3. KEY ACTIVITIES

In 2021, the State Electricity Regulatory Commission held 17 regular sessions, 29 internal meetings and organised eight public hearings, of which five were of general and three of formal nature.

In the reporting period, in a transparent manner and by holding relevant public hearings in which interested members of the public were allowed to give their comments along with power sector stakeholders, the Commission conducted the activities with regard to adoption and approval of a range of documents, tariff setting, granting of licences, and carried out other activities of which the most important ones are grouped in the clusters provided below.

Documents under regulatory competences are reviewed and defined in regular sessions, in accordance with the authorities prescribed by the law; issues and documents of an organisational and administrative nature are reviewed and adopted in internal meetings.

With a view to soliciting comments of interested parties and members of the public on rules and regulations, or on any other document, SERC organises general public hearings. With a view to resolving technical issues during the proceedings and processing of procedural or essential issues, technical public hearings are held. With a view to establishing decisive facts, based on which SERC may resolve certain applications or disputes, formal public hearings are held.

Regular sessions and all public hearings are open to the public.

Transparency towards the public through consultation and communication with all interested professionals, as well as the wider public, is the fundamental orientation of the Commission, which is conducive to checking the suitability of proposed solutions before their final adoption. The practice of the mutual exchange of collected public comments in the same or similar procedures is applied by all three regulatory authorities in the energy sector of Bosnia and Herzegovina.

3.1 SERC Rules and Documents

Rules of Ancillary and System Services and Balancing of the BIH Power System

Within its activities the State Electricity Regulatory Commission (SERC) continuously monitors and supports the process of electricity market development in Bosnia and Herzegovina. Safe and reliable operation of the power system with a functional method of providing ancillary services is the main prerequisite for further market development and high-quality electricity supply of customers. An efficient balancing market has to be based on transparent relationships between all participants in the electricity market.

In cooperation with the Independent System Operator in BIH and other electric power companies, SERC established a market-based method of providing ancillary services and balancing of the power system of BIH using the fundamental solutions defined in March 2014 by establishing *A Concept of Ancillary Services for the balancing of the power system of Bosnia and Herzegovina*.

A number of activities of SERC and the ISO BIH, which were described in detail in the previous Reports on Activities of the Regulatory Commission, resulted in a set of rules and decisions whereby on 1 January 2016 the market principles had been introduced into the formerly fully regulated method of providing ancillary services and the BIH power system balancing. In this manner, the functionality of open wholesale and retail electricity markets in Bosnia and Herzegovina was enhanced (please see Section 3.7).

In the past six years, the electricity balancing market in Bosnia and Herzegovina operated successfully and it sets an example of a successful model in South East Europe. However, having analysed the present operation of the balancing market and the development of the European Union's energy *acquis* which becomes obligatory for BIH as well under the Energy Community mechanisms, SERC estimated that there were justified reasons for the improvement thereof. To this end, SERC initiated updating of the text of the *Tariff Pricing Methodology for services of electricity transmission, operation of ISO and ancillary services*, coordinating its action with the ISO BIH, that acts in accordance with the activities of the European Network of Transmission System Operators for Electricity (ENTSO-E) when developing its documents.

Namely, in 2021, the ISO BIH prepared the new Market Rules (please see Section 3.2), thus acting, as an ENTSO-E member, in accordance with the activities of this organisation with regard to operational work in the synchronous area of Continental Europe, as defined in *Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation,* as well as the balancing mechanism and balancing market operations as defined in *Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing*.

In the forthcoming period, it is necessary to continue the alignment of energy legislation with the European Union (EU) *acquis*, integrated development of energy and climate policies and implementation of the energy sector reform in Bosnia and Herzegovina at all administrative levels in line with respective constitutional competences. The European Union requirements in the field of the energy sector are mostly contained in the provisions of the *Treaty establishing the Energy Community* (Official Gazette of BIH – International Treaties, 9/06).

At the end of July 2021, SERC defined a Draft decision on amendments to the Methodology, fully aware not only of the ISO BIH obligations stemming from its membership in ENTSO-E but also of international obligations of Bosnia and Herzegovina and all energy sector institutions accordingly to create a stable and single normative framework through gradual transposition of the European Union *acquis*, as well as of the inclusion of other network codes in the legal system of the Energy Community which will certainly continue, including the aforementioned regulations, and, consequently, of the obligation to transpose them into the legal system of Bosnia and Herzegovina.

A general public hearing on the draft of the document was held at the beginning of September via an internet communication platform, in which the representatives of the ISO BIH and power utilities participated. Having processed the provided comments and received a positive opinion of the BIH Competition Council, on 13 October 2021 SERC passed the *Decision on amendments to the*

Tariff Pricing Methodology for services of electricity transmission, operation of ISO and ancillary services.

Taking into consideration that a significant part of the amendments to the Methodology pertains to the terminology of balancing services, with the changes made the terms used in practice up to now were kept (e.g. primary, secondary and tertiary control) alongside the new terms. In this manner, potential misunderstandings between balancing market participants are avoided, which enables the unambiguous implementation of the rules as well as an interim period until the adoption of some new amendments to the Methodology when the previously used terms would be removed. At the beginning to November 2021, the Second consolidated version of the Methodology was published with the aim of the easier implementation thereof.

For all its obligations specified in the Methodology, the ISO BIH develops procedures in order to ensure unhindered and timely performance of the activities pertaining to the provision of ancillary services. In the previous period, the ISO BIH made some improvements to its documents on several occasions, including *Procedures for Ancillary Services* and *Rules on Daily Balancing Energy Market Operations*, which further encouraged ancillary services providers to nominate their bids.

Pursuant to the Methodology, SERC sets the coefficients and price caps for ancillary services. During the implementation of the market model of the BIH power system balancing up to date, some tendencies had been notices, so there was a need to innovate coefficients and price caps for ancillary services in line with the conduct of participants and trends present on the market. SERC passed the *Decision of determination of price caps and coefficients for ancillary services* at the beginning of December 2021.

Having regard to the commitment to permanently improve rules and procedures under its competence, SERC continues activities on the development of organised functioning of the balancing market, and further improvement, efficiency, cost-effectiveness and stability of the BIH power system operation. In doing so, SERC will closely cooperate with the ISO BIH to make in a coordinated manner the required amendments to the acts under competences of both institutions which define the balancing mechanism.

With the successful balancing market development, the offer of services increased significantly and the needs for ancillary services in 2022 had already been met to a significant extent through annual bids organised by the ISO BIH in December 2021. Upward and downward manual frequency restoration reserves mFRR (the previously used term: tertiary control) are fully provided. Automatic frequency restoration reserve aFRR (the previously used term: secondary control) in the peak period is also provided in full while aFRR in the off-peak period is not provided for July, August and September 2022. The missing volumes of secondary

control reserve capacity in the off-peak period will be purchased on a monthly basis.

The upward trend in electricity prices, which was present in wholesale markets in the region in 2021, reflected on the balancing market in BIH, and an increase in average purchase prices of most services was noted. The price of automatic frequency restoration reserves remained at approximately the same level, while the average price of upward and downward manual frequency restoration reserves increased by 67.7% (from 1.48 EUR/MW/h to 2.48 EUR/MW/h) and 9.1% (from 0.75 EUR/MW/h to 0.82 EUR/MW/h) respectively.

The results of procurement of energy for covering of losses in the transmission system indicated an extremely high increase in price which considerably surpassed the price set by the ISO BIH in the public procurement procedure. Accepting the offered price would have caused an approximately five times higher tariff for system service, which in turn would cause a tariff shock for the end customers. Under such circumstances, a reasonable approach was to set the price of energy for covering of losses in the transmission system at the level of the last accepted bid (the public procurement procedure for 2021 from December 2020) when the weighted average price amounted to 56.21 EUR/MWh.

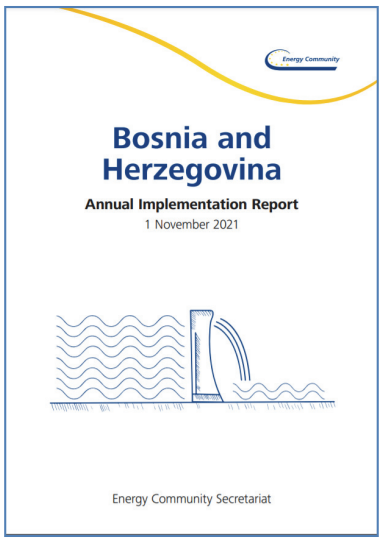
Wholesale Market Integrity and Transparency

Electricity produced by power plants is often bought and sold several times on the wholesale market before delivery to the end customer. These transactions in electricity normally take place in large quantities and include electricity producers, traders, suppliers, large customers and even investment banks. Gas is traded in a similar manner. In Europe, several hundreds of companies are included in wholesale trading in electricity and gas conducting tens of thousands of transactions on the market on a daily basis.

Wholesale prices are very sensitive to the availability of production and transmission because energy has to be generated when needed. Prices may be affected by spreading false information on availability or reduced generation.

Given that large quantities of energy are traded across borders, traditionally it is difficult to discover possible price manipulations of this kind as national regulators did not have access to cross-border data. As a response to these facts, *Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency* (REMIT) was adopted in the European Union. This Regulation introduces a common European framework on wholesale markets for:

- Definition of market abuse with regard to market manipulation, attempts to manipulate the market and insider trading,



"In the reporting period, the State Electricity Regulatory Commission (SERC) continued efforts to implement the acquis within the limits of the powers granted to the regulator by state-level legislation. This proves its commitment to actively design the market… SERC was the first Energy Community regulator that transposed and implemented the REMIT Regulation in the electricity sector and published criteria based on which derogations from electricity Network Codes can be granted."

(From Annual Implementation Report of the Energy Community Secretariat, Vienna, 1 November 2021)

- Introduction of the explicit prohibition of market abuse,
- Establishment of a new framework for the registration of market participants and wholesale market monitoring with the aim of detecting and preventing market manipulation and insider trading, and
- Definitions of prohibitions and the application of penalties at national level if market abuse is detected.

REMIT is applied to all market participants whose activities affect wholesale energy markets, that is, all natural or legal persons (including transmission system operators) carrying out or conducting transactions on one or several wholesale energy markets. All market participants with the seat in any EU country as well as those with the seat outside the EU if trading or placing orders on one or several EU markets are subject to this Regulation.

The Ministerial Council Decision of 29 November 2018 expanded the Energy Community *acquis* to include *Regulation (EU) on wholesale energy market integrity and transparency* with required adaptations to the Energy Community legal framework and defining the obligation to implement it by 29 May 2020.

With regard to the obligations under REMIT specified for national regulatory authorities, it should be pointed out that pursuant to Article 4.2 point k) of the Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina, SERC competences include creation and maintenance of competitive markets, and prevention and punishment of any predatory or anti-competitive conduct. Starting from the obligations of national regulatory authorities defined in this Regulation, and, on the basis of the aforementioned SERC competences, in 2020 SERC carried out a number of activities on transposition and implementation of REMIT in the electricity sector. In this context, SERC adopted *Decision on transposition of the Regulation on wholesale energy market integrity and transparency, Rules on wholesale electricity market integrity and transparency* and *Decision on the Register of participants in the wholesale electricity market* with the corresponding forms which are available on the SERC website.

In the area of REMIT implementation, special attention is paid to training of representatives of all relevant institutions and market players.

SERC was the first Energy Community regulator that successfully completed its activities on transposition and implementation of the adapted REMIT Regulation in the electricity sector by the establishment of the *Register of participants in the wholesale electricity market*. In 2021, this Register was updated on a regular basis, and at the end of 2021, it included all required data on 20 participants in the wholesale electricity market in Bosnia and Herzegovina.

An additional step forward in the development of market transparency was made by the implementation of *Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council* (Transparency Regulation). SERC monitored the activities of the Independent System Operator in Bosnia and Herzegovina in this area with particular attention.

At the end of 2021, SERC was pleased to inform the Energy Community Secretariat that the ISO BIH had reached a high level of compliance with the requirements for submission and publication of data under the Transparency Regulation and that all the activities for publication of data identified by the Energy Community Secretariat had been completed. Further digitalisation of business processes and the development of appropriate software solutions still remain to be done in the forthcoming period. Furthermore, it is necessary to establish certain procedures pertaining to weekly and monthly load forecast and re-dispatching to mitigate physical congestion, and, subsequently, publish generated data.

Connection Network Codes

Harmonisation, that is, unambiguous regulation of a whole set of rules for network operation was recognised in the Third Energy Package of the EU.[2] In line with this, the EU Member States, with full participation of the European Network of Transmission System Operators for Electricity (ENTSO-E), the European Network of Transmission System Operators for Gas (ENTSO-G) and the Agency for the Cooperation of Energy Regulators (ACER) conducted a complex activity of developing codes and guidelines for operation of networks (*Network Codes*). The set of these codes in the electricity sector includes codes on market, system operation and connection:

Market Codes

- Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management (CACM),
- Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation (FCA), and
- Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (EB).

System Operation Codes

- Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (SO), and

[2] Establishment of network codes is defined in Article 6 of Regulation (EC) 714/2009, that is, of Regulation (EC) 715/2009.

- Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration (ER).

Connection Codes

- Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators (RfG),
- Commission Regulation (EU) 2016/1388 of 17 August 2016 establishing a Network Code on Demand Connection (DCC), and
- Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (HVDC).

Network codes and guidelines are technical rules adopted with the aim of establishing joint rules for the reliable system operation, and market functioning and integration. These legal acts supplement the existing *acquis* of the European Union and are directly applicable in the EU Member States. They are the key element for efficient functioning of a pan-European market which puts electricity customers at the forefront.

In the Energy Community, activities on adopting decisions by the Permanent High Level Group (PHLG) for transposition of these codes into the *acquis* were carried out in the previous years. On 12 January 2018, PHLG adopted the decisions transposing the connection codes into the Energy Community *acquis*, that is, Commission Regulation (EU) 2016/631, Commission Regulation (EU) 2016/1388 and Commission Regulation (EU) 2016/1447. For this reason, the issue of transposition and implementation of the network codes and guidelines was imposed as one of the key activities in the work of the relevant institutions in BIH, including SERC and the ISO BIH.

In this context, in June 2018, the State Electricity Regulatory Commission adopted the *Decision on transposition of network codes on connection*, which defined the terms and conditions for transposition of the three aforementioned European Commission Regulations as adapted to the Energy Community legal framework by the PHLG decisions in the electricity sector of Bosnia and Herzegovina. On that occasion, these Regulations were published in the languages officially used in Bosnia and Herzegovina on the SERC website (www.derk.ba).

In this Decision, the ISO BIH was called upon to update the Grid Code and other rules which ensure the application of the provisions of these Regulations with shorter deadlines for implementation, and, subsequently, to ensure the compliance of its rules with all requirements of these Regulations. In its Decision SERC called upon the Regulatory Commission for Energy in the Federation of Bosnia and Herzegovina, the Regulatory Commission for Energy of the Republika Srpska and other relevant authorities to ensure the

compliance of their relevant acts with the requirements of the connection codes.

Respecting the Energy Community requirements regarding the deadlines for transposition and implementation of the provisions of the regulations which have been prioritised by the Permanent High Level Group decisions and required the implementation without delay, following a general public hearing, in coordination with the ISO BIH in February 2019 SERC adopted the *Rules on Connection Network Codes*. In line with the competences of the State Electricity Regulatory Commission defined pursuant to Article 4.2 of the Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina, by these Rules one part of the Energy Community network codes was transposed into the legal system of Bosnia and Herzegovina. This pertains to the provisions which, pursuant to the relevant Permanent High Level Group decisions, should be implemented without delay. At the same session, a new *Grid Code* was approved by which a part of the connection network codes under ISO BIH competence, which also should be implemented without delay, had been transposed.

The provisions to be implemented without delay include, *inter alia*, Article 61(1) of Commission Regulation (EU) 2016/63151, Article 51(1) of Commission Regulation (EU) 2016/1388 and Article 78(1) of Commission Regulation (EU) 2016/1447. In accordance with the aforementioned Articles of the adapted Regulations, each regulatory authority will specify, after consulting relevant system operators, power-generating facility owners, demand facility owners and other stakeholders, the criteria for granting derogations in accordance with the relevant provisions of the Regulations. Subsequently, pursuant to the *Rules on Connection Network Codes*, at the SERC session held on 27 March 2019 the following decisions were passed:

- *Decision specifying Criteria for granting derogations from application of rules for connection of generating modules*,
- *Decision specifying Criteria for granting derogations from application of rules for connection of demand facilities*, and
- *Decision specifying Criteria for granting derogations from application of rules for connection of new and existing high voltage direct current systems and direct current-connected power park modules*.

SERC published the specified criteria on the its official website and notified the Ministry of Foreign Trade and Economic Relations of BIH and the Energy Community Secretariat on 10 April 2019 thereof, as the only regulatory authority in the region which fulfilled its part of the obligations within the defined timeframe. With this, transposition of the provisions which are under SERC competence and which should be implemented without delay was completed.

Taking into consideration that the mentioned rules regulate the substance which is also under competence of other authorities, it was necessary to ensure the coordination of activities of all competent

institutions, including the Entity Regulatory Commissions and all distribution system operators, besides the Independent System Operator in Bosnia and Herzegovina (ISO BIH) and Elektroprenos Bosne i Hercegovine (Company for the Transmission of Electric Power in BIH). Furthermore, the complexity of the content of connection network codes as well as the complex administrative structure in the BIH energy sector imposed the need for an active role and concrete support of the state and entity line ministries and the Directorate for European Integration of the BIH Council of Ministers in further activities on the complete and efficient fulfilment of obligations of Bosnia and Herzegovina before 12 July 2021, that is, the date by which full implementation of the connection network codes should be ensured.

In this context, of particular importance is technical assistance provided within the *USAID Energy Policy Activity*, through activities of the *Working Group on Connection Network Codes* which comprises representatives of the regulatory commissions and power utilities. As a part of the activities, in July 2021, *Gap analysis with the recommendations for amending distribution network codes and relevant rulebooks – A Summary Overview* was completed, thus finalising the development of guidelines for amendments to the network codes.

In the middle of December 2021, while approving a new Grid Code which was prepared by the ISO BIH using the aforementioned Analysis, the State Electricity Regulatory Commission was informed that with the updated text all requirements of the connection network codes as adapted to the Energy Community legal framework were implemented, that is, adapted Commission Regulation (EU) establishing a network code on requirements for grid connection of generators, Commission Regulation (EU) establishing a Network Code on Demand Connection and Commission Regulation (EU) 2016/1447 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules. SERC passed the *Decision on approval and application of the Grid Code* on 15 December 2021 (please see Section 3.2).

Cyber Security

The security of supply is one of the key tasks of regulatory authorities in the electricity sector and a must when developing, adopting and implementing regulatory rules and regulations. There is a causal link between cyber security with the security of supply, and any cyber threat or risk is an important influential factor for the security of supply. It is of paramount importance for the reliable system operation and the protection of data in the electricity sector to acknowledge the need for proper measures for prevention, detection and response to all security challenges in the cyber space in a timely manner. Lack of a strategic framework and systemic rules regulating this issue does not relieve the regulatory authorities of the obligation to work on the protection of the electricity

infrastructure and, consequently, the security of supply, by adopting their rules and taking appropriate measures.

In the previous period, the State Electricity Regulatory Commission contributed significantly to the preparation of several documents in this field, including *Cybersecurity Capacity Review* and *Guidelines for a Strategic Cybersecurity Framework in Bosnia and Herzegovina*.

From 2019 SERC actively participated in the regional projects of the United States Agency for International Development (USAID) and the National Association of Regulatory Utility Commissioners (NARUC) *Effective Regulation of Cybersecurity* and *Digitalisation and Cybersecurity,* activities of the Working Group on Cyber Security under the USAID EPA, activities of the Energy Community Working Group on Cyber Security and supported the work of the Computer Emergency Response Team for the institutions of BIH (CERT).

The participation in these activities and several workshops dealing with various cyber security aspects created the preconditions for the regulator to define a strategic approach to cyber security in the electricity sector. Consequently, SERC developed *Guidelines for a Strategic Framework on Cyber Security in Bosnia and Herzegovina Electricity Sector from Regulatory Perspective*.

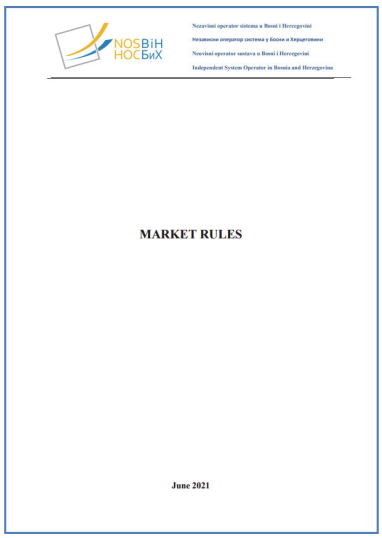
Taking into consideration a complex structure of the electricity sector and a specific regulatory framework in Bosnia and Herzegovina, it is found necessary to have coordinated action of the State and Entity Regulatory Commissions to establish an efficient regulatory approach to the field of cyber security in the BIH electricity sector. The goal is to protect information and communication systems of the entities in the BIH power sector and ensure cyber security of the regulatory authorities.

3.2 Documents Approved by SERC

Market Rules

The *Market Rules* regulate relationships between the ISO BIH and licensed participants on the electricity market. The purpose of the Rules is to create conditions for safe operation of the BIH power system, including efficient procurement of ancillary services and provision of system service, balancing of the BIH system at the lowest possible costs, and efficient functioning and further development of the wholesale and retail electricity markets in BIH.

The Market Rules are an exceptionally demanding technical document which includes the basic concept of market design, normative and regulatory framework for market design, technical preconditions for market functioning and provides a number of procedures regulating technical and commercial relationships among market participants.



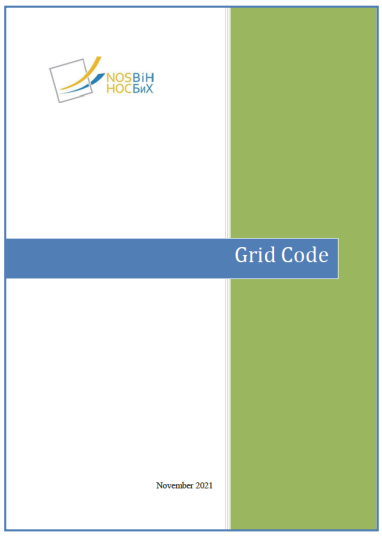
The first Market Rules were prepared and approved in 2006. From January 2016, when a market-based method for provision of ancillary services and balancing of the electric power system of Bosnia and Herzegovina was established, the Market Rules approved in May 2015 were applied. In 2021, the ISO BIH initiated the procedure for development of new Market Rules, in which comments of market participants were also obtained through the relevant Technical Committee. During its development the ISO BIH, as an ENSTO-E member, acted in accordance with activities of this organisation with regard to the operational work in the synchronous area Continental Europe (please see Section 3.1).

The Market Rules submitted to SERC in July 2021, were approved on 13 October 2021, after the adoption of the *Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services*. The new Market Rules will come into effect on 1 January 2022, while the ISO BIH will make required amendments to its acts related to the Market Rules and prepare necessary software tools until then.

Grid Code

The *Grid Code* is one of the key documents for functioning of the power system and electricity market in Bosnia and Herzegovina. It regulates the method of planning and developing the transmission system, connection requirements (procedures, contracts, criteria), the method of operational planning (demand forecast, network constraints management) and operational activities (dispatching, procedures, communications), measures in unexpected situations (demand management, operational restoration of the system after total or partial breakdown), metering code in the power system and other necessary technical measures for quality and reliable transmission system operation.

The purpose of the Grid Code is to define elements relevant for secure and reliable functioning of the BIH power system, enable development, maintenance and operation of the transmission network in compliance with the applicable rules and good European practice.



The final text of a new Grid Code, which was prepared in 2021 by the ISO BIH, with comments obtained from market participants through the relevant Technical Committee, was submitted to SERC for approval on 23 November 2021. On 15 December 2021, SERC passed the *Decision of approval and application of the Grid Code*.

The new Grid Code will come into effect on 1 January 2022. The new Grid Code represents a quality step forward in structural and normative terms, and it defines the preparation of planning documentation and connection procedures. While approving the new Grid Code the State Electricity Regulatory Commission was

informed that with the updated text all requirements of the connection network codes as adapted to the Energy Community legal framework were implemented, that is, Commission Regulations (EU) 2016/631, 2016/1388 and 2016/1447 as adapted by decisions of the Permanent High Level Group (please see Section 3.1).

Indicative Generation Development Plan

An *Indicative Generation Development Plan* is developed for a ten-year period every year. The purpose of the plan is to inform the current and future users of the needs and existing projects for construction of new generation capacities. At the same time, this plan is used as one of the bases for the development of a *Long-Term Transmission Network Development Plan in Bosnia and Herzegovina*, which is also developed every year covering a ten-year period including the issue of new cross-border lines.

The main objective of the Indicative Generation Development Plan is to analyse the balance of capacity and energy in the transmission network for the following ten years. The development of this document is also in the function of fulfilling obligations towards the European Network of Transmission System Operators for Electricity (ENTSO-E).

The Independent System Operator in BIH, as all other system operators within ENTSO-E, is obligated to provide its contribution to the development of the *European Ten-Year Network Development Plan* (TYNDP), which is prepared on a biannual basis pursuant to Regulation (EC) No 714/2009 on conditions for access to the network for cross-border exchanges in electricity.[3] In this context, the ISO BIH is obligated to submit BIH power system development plans, which are based on consumption and generation, including new sources, and planned reinforcements of the internal transmission network and interconnections. These activities presume and imply full coordination at the regional level with the analysis of potential congestion in the internal network and cross-border lines.

The consumption forecast in the *Indicative Generation Development Plan for the Period 2022 – 2031* was prepared on the basis of data provided by the transmission system users and ISO BIH own analyses (forecast in accordance with the gross domestic product and extrapolation through the characteristic function of consumption). In accordance with the Grid Code, the new generating facilities were balanced in line with the applicable Connection Conditions, while certificates of the competent Entity institutions were required for wind power plants confirming that a power plant complies with the maximum permissible integration capacity from the aspect of the possibility to control the system. The conducted analyses lead to the conclusion that the power balance was reached for all consumption scenarios and the planned

[3] TYNDP 2020, that is, the latest *European Ten-Year Transmission Network Development Plan* was published at the beginning of September 2021.

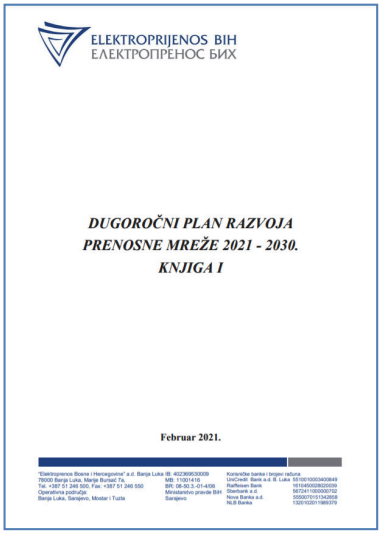
generation of the existing and new balanced generation capacities with the construction of new thermal power plants.

The ISO BIH organised a public hearing on the Draft document on 19 April 2021 via an on-line communication platform due to the COVID-19 pandemic, after which, on 28 April 2021, the ISO BIH submitted the *Indicative Generation Development Plan for the Period 2022 – 2031* to SERC for approval.

SERC passed the *Decision on approval of the Indicative Generation Development Plan for the Period 2022 – 2031* on 18 May 2021. On that occasion, a Conclusion was adopted calling upon all institutions and other entities in the electricity sector in Bosnia and Herzegovina to undertake activities, in line with their respective competences, aimed at increasing generation of electricity from renewables. Taking into consideration the structure of generation units in Bosnia and Herzegovina, and having regard to the certain inclusion of the new package of European Union energy rules (*Clean Energy for All Europeans*) in the *acquis*, that is, the Energy Community legal framework in 2021, as well as all international obligations taken before and the acts signed, in the same Conclusion all relevant institutions in BIH were called upon to undertake necessary preliminary and other activities, in line with their respective competences, aimed at increasing the readiness to implement all measures for the prevention of pollution and climate change.

SERC expects that the next Indicative Plan, whose development started in November 2021, would be updated with all latest and relevant data and information available during its development.

Long-Term Transmission Network Development Plan


ELEKTROPRIJENOS BIH
ЕЛЕКТРОПРЕНОС БИХ

DUGOROČNI PLAN RAZVOJA
PRENOSNE MREŽE 2021 - 2030.
KNJIGA I

Februar 2021.

Pursuant to applicable legal provisions, a long-term transmission network development plan is developed on an annual basis and covers the forthcoming ten-year period. The Long-Term Plan for the forthcoming ten-year period should be submitted to SERC for approval by the end of October. The relevance of the Long-Term Plan is reflected in the fact that based on this plan Elektroprenos BIH prepares its annual investment plan and submits it to SERC for approval by the end of November for the following year. The development of the Long-Term Plan also ensures that obligations towards the European Network of Transmission System Operators for Electricity (ENTSO-E) concerning contributions to the development of the European Ten-Year Network Development Plan are met more suitable manner.

The Long-Term Transmission Network Development Plan should define the required reinforcements of the existing transmission network facilities and construction of the new ones to ensure timely commencement of activities with regard to designing, constructing and putting into operation of infrastructure necessary for the continuous supply and system stability. The transmission network planned in this manner provides the same conditions for the users already connected and those to be connected to the transmission

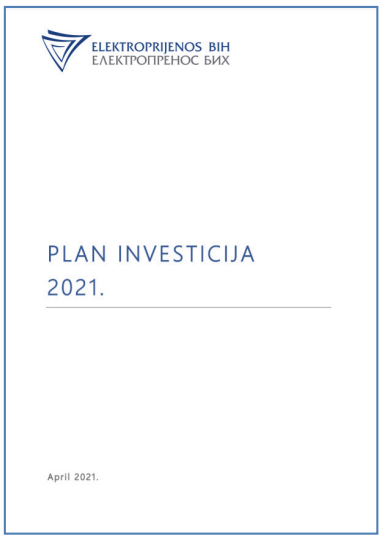
network. It implies uniform conditions related to the condition of the transmission network in terms of lifespan and refurbishment of equipment, construction of new facilities and operational readiness of facilities used for the transmission of electricity.

At the end of December 2020, Elektroprenos Bosne i Hercegovine submitted the *Long-Term Transmission Network Development Plan for the Period 2021 – 2030* to the Independent System Operator in Bosnia and Herzegovina for review, revision and approval, which is followed by final SERC approval.

Acknowledging the importance of this document, through the Licence Conditions for performance of the activity of an independent system operator, SERC prescribed the obligation of holding a public hearing on a revised Long-Term Plan, thus enabling the public to have an insight into and give comments and observations on the prepared material. The first hearing of this kind, held on 29 March 2021, drew significant attention of stakeholders in the sector, and proved to be fully justified. On 27 April 2021, the ISO BIH submitted the final Long-Term Plan to SERC for approval.

On 18 May 2021, the State Electricity Regulatory Commission passed the *Decision approving the Long-Term Transmission Network Development Plan for the Period 2021 – 2030.* On that occasion, a Conclusion was adopted according to which, in its 2021 Investment Plan Elektroprenos Bosne i Hercegovine is obligated to determine all necessary parameters required for the realisation of investments in shunt reactors from the approved Long-Term Transmission Network Development Plan with the aim of solving the problem of high voltage levels.

Elektroprenos BIH submitted its *Investment Plan for 2021* to SERC for approval on 9 June 2021. On 28 July 2021, SERC passed the *Decision approving the Investment Plan of Elektroprenos Bosne i Hercegovine for 2021*, noting that the Plan was submitted with a delay of more than six months, and called upon the competent bodies of Elektroprenos BIH to harmonise the dynamics of development and submission of planning documents with the obligations under the licence. SERC pointed out some worrisome facts that the Investment Plan was submitted for approval at the time when a considerable amount of planned funds had been already spent, that the approach of unrealistically projected dynamics of investments continued on this occasion as well and that the previously approved procurement of transformers was not conducted. On this occasion again, Elektroprenos BIH was called upon to undertake all necessary steps to permanently solve the issue of high voltage levels in the transmission system in a permanent manner.



Rules for Allocation of Cross-Border Transmission Capacities

The Coordinated Auction Office in South East Europe (SEE CAO) with the seat in Podgorica was formally established on 27 March 2014, commencing its operational activities on 27 November 2014

when annual auctions on the borders of Bosnia and Herzegovina with Montenegro and Croatia were organised.

In 2021, SEE CAO continued to organise its activities in line with auction rules for capacity allocation as approved by separate decisions of competent national regulators in the region, including the State Electricity Regulatory Commission. These rules include:

- Harmonised Allocation Rules for long-term transmission rights pursuant to Article 51 of Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation,
- Specific annex for the bidding zone borders serviced by the Coordinated Auction Office in South East Europe (CAO SEE) to the Harmonised Allocation Rules for long-term transmission rights,
- Rules for explicit daily capacity allocation on the bidding zone borders serviced by SEE CAO,
- Participation Agreement between the Coordinated Auction Office in South East Europe d.o.o. Podgorica (Allocation Platform) and the Registered Participant,
- Financial conditions for participation in procedures organised by the Allocation Platform pursuant to the Participation Agreement,
- SEE CAO Nomination Rules, and
- SEE CAO Information System Rules.

On several occasions, at national and international gatherings, SERC expressed its support to the successful operation of SEE CAO and expectations that the geographic scope would include the operators from all countries of South East Europe.

As Serbia does not participate in activities of this Office, there is still a need to regulate rules for allocation of cross-border capacities on the joint border between BIH and Serbia on an annual, monthly and daily basis. Consequently, on 17 November 2021, at the request of the Independent System Operator in Bosnia and Herzegovina, SERC approved:

- *Rules for annual and monthly auctions for allocation of transmission capacities on the bidding zone borders between EMS AD Beograd (EMS) and the Independent System Operator in Bosnia and Herzegovina (ISO BIH)*, and
- *Rules for daily auctions for allocation of transmission capacities on the bidding zone borders between EMS AD Beograd (EMS) and the Independent System Operator in Bosnia and Herzegovina (ISO BIH)*.

As SEE CAO operations do not cover intraday allocation of cross-border transmission capacities, at the request of the ISO BIH the following documents were also approved by same SERC decision:

- *Rules for intraday allocation of transmission capacities on the bidding zones borders between the Independent System*

Operator in Bosnia and Herzegovina (ISO BIH) and EMS AD Beograd (EMS), and

- *Rules for intraday allocation of transmission capacities on the border between control areas / Croatian Transmission System Operator (HOPS) and the Independent System Operator in Bosnia and Herzegovina (ISO BIH)*.

Furthermore, it was set in the same decision that *Rules for intraday allocation of transmission capacities on the border between control areas of the Independent System Operator in Bosnia and Herzegovina (ISO BIH) and the Montenegrin Electric Transmission System AD (CGES)*, which were approved by SERC on 4 November 2020, continue to apply.

The allocation of transmission capacities on the border with Serbia through annual and monthly auctions will be conducted by Elektromreža Srbije (EMS) also in 2021 while daily and intraday auctions will be conducted by the ISO BIH. Intraday auctions on the borders with Croatia and Montenegro will be conducted by HOPS and the ISO BIH respectively.

Operational Agreement of the SHB Load Frequency Control Block

On 9 November 2021, SERC passed the *Decision on Approval for Conclusion of Operational Agreement of the SHB Load Frequency Control Block*, between the transmission system operators of Slovenia, Croatia and Bosnia and Herzegovina, the text of which was agreed by the Parties and which was submitted for approval on 26 October 2021.

A Load Frequency Control Block (LFC block) is a part of a synchronous area consisting of one or more LFC areas, physically demarcated by points of measurement at interconnectors to other LFC blocks, operated by one or more system operators fulfilling the obligations of load-frequency control. This Agreement defines the work of three system operators (ELES – Slovenian Transmission System Operator, HOPS – Croatian Transmission System Operator and ISO BIH – Independent System Operator in Bosnia and Herzegovina), in the part pertaining to operation of the relevant LFC block.

Cross-Border Exchange of Energy for Manual Frequency Restoration Reserve

In 2017, the ISO BIH initiated the activities with the neighbouring system operators on the establishment of a model enabling the cross-border exchange of tertiary control energy (new term: energy for manual frequency restoration reserve). After a virtual cross-border line was registered in this context, the ISO BIH submitted to SERC for approval the *Contract on mutual delivery of cross-border tertiary control energy for the provision of system*

services from abroad for the electric power systems of Bosnia and Herzegovina and Serbia. The State Electricity Regulatory Commission approved this Contract on 11 October 2017. At the beginning of 2018, the *Contract on mutual delivery of cross-border tertiary control energy for the provision of system services from abroad for the electric power systems of Bosnia and Herzegovina and Montenegro* was prepared, which was approved by SERC on 13 March 2018.

The subject of the Contract is the provision of assistance in the form of mutual delivery of cross-border tertiary control energy in order to enhance secure and reliable operation of the neighbouring power systems. In this manner, the cross-border exchange of one of the products on the balancing market, formerly known as 'tertiary control', is formalised.

A virtual transmission line registered in the SCADA systems of the two operators for simulation of exchange is used for calculation of transactions, which is in line with *the ENTSO-E Continental Europe Operation Handbook*. For energy exchange in physical terms, the remaining available cross-border capacity will be used after the completion of intraday capacity allocation. A part of the obligations of Bosnia and Herzegovina regarding the measures under the *Road Map for the implementation of Western Balkans 6 Initiative* (the so-called *WB6 Initiative*) pertaining to cross-border exchange of balancing services is fulfilled through the implementation of these contracts.

In 2021, SERC monitored the cross-border exchange of energy for manual frequency restoration reserve. In accordance with the signed contracts, 300 MWh was delivered to Elektromreža Srbije (EMS), while 280 MWh was delivered to the Montenegrin Electric Transmission System (CGES). The value of this positive balancing energy delivered (upward balancing energy) amounts to EUR 103,741, of which the values of energy delivered to EMS and CGES amount to EUR 60,800 and EUR 42,941 respectively. Furthermore, 60 MWh of negative balancing energy (downward balancing energy) was taken from the Croatian Transmission System Operator (HOPS), which is registered as a revenue of the ISO BIH amounting to EUR 4,604.

The ISO BIH also purchased positive balancing energy from the neighbouring transmission system operators, with the amounts of 1,643 MWh and 610 MWh being purchased from EMS and HOPS respectively. The value of these transactions amounts to EUR 500,396, of which the values of EUR 299,300 and EUR 201,096 pertain to EMS and HOPS respectively. With this, the value of imports amounting to EUR 392,051 was registered in the balance of cross-border exchange of balancing energy.

Cross-border exchange of electricity for manual frequency restoration reserve with HOPS was carried out in accordance with the *Agreement on common control reserve in the SHB LFC Block.*

3.3 Licensing Proceedings

In 2021, SERC granted several licences, while at the time of creating this Report, it was intensively working on the application for issuance of a licence for the international electricity trading activity filed by Euro-Power d.o.o. Tešanj.

Due to the expiration of the term of the previously issued license for the international electricity trading activity, the proceedings were conducted and five-year term licenses were renewed to the following entities:

- GEN-I d.o.o. Sarajevo (February 2021), and
- Alpiq Energija BH d.o.o. Sarajevo (April 2021).

Temporary licenses for the international electricity trading activity with a two-year term were granted to the following entities:

- B.S.I. d.o.o. Jajce (June 2021), and
- Winter Wind d.o.o. Tomislavgrad (November 2021).

All the licences for the international electricity trading activity issued after January 2016 are used pursuant to the Standard licence conditions for performance of the international electricity trading activity. By the adoption of these conditions as a standard set of rules on the rights and obligations of the licensee known beforehand (the acceptance of which is confirmed by submitting a written statement to that effect already with the licence application), SERC further simplified and expedited the procedure for granting this type of licence, which is most common in practice. This also considerably reduced the number of documents which circulated so far both within SERC and in communication with the applicant and interested third parties due to formal and procedural reasons.

In November 2021, at the request of the licensee, the decision on revocation of licence for performance of electricity trading activity was passed for Ezpada d.o.o. Mostar.

At the beginning of November 2021, due to specific violations of provisions of the licence conditions, the decision suspending the licence for performance of electricity trading activity was passed for LE Trading BH d.o.o. Banja Luka. Namely, the Operator for Renewable Energy Sources and Efficient Cogeneration informed LE Trading BH d.o.o. Banja Luka, SERC and the Regulatory Commission for Energy of Republika Srpska of blockage of the licensee's account due to non-payment of its obligations under the mutual agreement. Furthermore, on 28 October 2021, the Independent System Operator in Bosnia and Herzegovina (ISO BIH) informed SERC that on the same day the licensee was excluded from the electricity market in BIH for a particular period of time due to the non-fulfilment of the financial obligations towards the ISO BIH as defined by the relevant documents. The fact that the applicant did not fulfil its obligations based on the

regulatory fee towards SERC either was also conducive to the conclusion that the regulated entity lacks financial stability. Alongside the suspension, at its own initiative SERC launched the procedure for revocation of this licence noting that the licensee's request for revocation was incomplete. After LE Trading BH and the public were informed of the actions undertaken, on 26 November 2021, the initial licensee's request was completed. Adhering to the efficiency principle and taking into consideration the interest of the applicant to cease performing the international electricity trading activity, on 8 December 2021, SERC passed the *Decision on revocation of licence*, at the request of the licensee.[4]

At the end of 2021, the following 16 companies were registered for the international electricity trading activity in the Register of valid licences: EFT – Rudnik i Termoelektrana Stanari d.o.o. Stanari, HSE BH Energetsko preduzeće d.o.o. Sarajevo, JP Elektroprivreda Hrvatske zajednice Herceg Bosne d.d. Mostar, MH Elektroprivreda Republike Srpske – Parent Company, a.d. Trebinje, JP Elektroprivreda Bosne i Hercegovine d.d. Sarajevo, Energy Financing Team d.o.o. Bileća, G-Petrol d.o.o. Sarajevo, Axpo BH d.o.o. Mostar, Petrol BH Oil Company d.o.o. Sarajevo, HEP Energija d.o.o. Mostar, Danske Commodities BH d.o.o. Sarajevo, Interenergo d.o.o. Sarajevo, GEN-I d.o.o. Sarajevo, Alpiq Energija BH d.o.o. Sarajevo, B.S.I. d.o.o. Jajce and Winter Wind d.o.o. Tomislavgrad.

The Independent System Operator in Bosnia and Herzegovina Sarajevo and Elektroprenos Bosne i Herzegovine a.d. Banja Luka are holders of the licence for performance of the activity of an independent system operator and the licence for the electricity transmission activity respectively. The Public Utility Komunalno Brčko d.o.o. Brčko holds the licence for electricity distribution in the Brčko District of BIH and the licence for electricity trading and supply in territory of BIH.

Every year, including this one, comparing the previous year's status Elektroprenos BIH updated and reported changes in overviews of the facilities used by the Company for performance of the electricity transmission activity as well as overviews of the transmission lines which are not owned by the Transmission Company and are not in the function of electricity transmission, on which SERC reached relevant conclusions at the end of March 2021.

At the beginning of March 2021, a *Conclusion on update of annexes to the Licence Conditions for the electricity distribution activity* was adopted, that is, overviews of facilities used for this activity in the Brčko District of BIH.

[4] On 29 December 2021, RERS passed the *Decision* to revoke the Decision on issuance of the license for performance of the electricity trading and supply activities in territory of Bosnia and Herzegovina for the Company LE Trading BH d.o.o. Banja Luka, thus creating the conditions to delete this company both from the Register of Traders and REMIT Register which are kept by SERC.

3.4 Monitoring of Activities of Licensed Entities

The State Electricity Regulatory Commission continuously monitors operations of the licensed entities and their compliance with the licence conditions. Monitoring is performed through analysis of regular and special reports submitted by all licensed entities as well as by visits to the licensees. The licensees submit annual, semi-annual, monthly and daily reports on individual activities of a financial, technical and organisational nature. In addition, licensees' reports on contingency events in the system are available.

Visits of SERC experts to the regulated entities enable a direct inspection of their documents and activities, which is of great relevance in particular when analysing the financial position of an entity from the aspect of application of approved tariffs.

In October 2021, with particular attention paid to the epidemiologic measures imposed due to the COVID-19 pandemic, the following regulated entities were visited:

- Independent System Operator in Bosnia and Herzegovina,
- Elektroprenos Bosne i Hercegovine, and
- JP Komunalno Brčko.

The compliance of the Independent System Operator in Bosnia and Herzegovina with the obligation to monitor voltage quality, which should be maintained within the prescribed limits through operational control, is of a particular interest to SERC. Regarding the multiannual occurrence of high voltage levels in the BIH power system, the ISO BIH is requested to find a permanent systemic solution, in proactive cooperation with Elektroprenos BIH, to ensure that the voltage levels in the network are within the allowed limits.

The ISO BIH prepares reports on emergencies in the power system. In case of events resulting in zero-voltage of busbars, practice of providing detailed reports on individual events should be continued (per event) as well as summary reporting within a document on the status of the control system and quality of supply, which would include a statistical overview of the main values (number, duration and quantities of energy not supplied, i.e. not produced). The ISO BIH is called upon to include outages of major generation facilities in the reports on larger disturbances in the BIH power system, regardless of a topology change.

With reference to the *Decision on approval of maximum capacity for the integration of variable energy sources* (September 2020), it was emphasised that the ISO BIH is obligated to inform SERC of all aspects of implementing this Decision on a continuous basis, or at least once every six months, including the availability of balancing reserves, status of regional initiatives and projects of the European Network of Transmission System Operators for

Electricity (ENTSO-E) which are related to cross-border exchange of balancing energy as well as economic and financial considerations of the integration of variable energy sources into the power system of Bosnia and Herzegovina.

As part of regulatory monitoring, SERC pays particular attention to reviewing financial performance indicators of the ISO BIH, of which SERC gives its opinion during decision-making process in the proceedings for setting of the tariff for operation of an independent system operator and tariffs for system and ancillary services (please see Section 3.6).

ELEKTROPRIJENOS BIH
ЕЛЕКТРОПРЕНОС БИХ

Under regulatory monitoring, the obligations of Elektroprenos BIH to develop long-term transmission network development plans for a ten-year period and develop and adopt annual investment plans were pointed out in particular. The obligation of Elektroprenos BIH set under the law is to enable continuous electricity supply in accordance with the defined quality standards.

SERC has been pointing out for years that the voltage levels in the BIH power system are very often above the prescribed limits. In this context, the State Electricity Regulatory Commission insists on taking more decisive steps and speeding up the activities of designing, contracting and purchasing compensation devices – shunt reactors, which are approved by the Investment Plan of Elektroprenos BIH for 2021.

The State Electricity Commission is of the opinion that the focus of investments by Elektroprenos BIH should be, *inter alia*, the removal of all 'interim' solutions from the previous period with the requirement to ensure full coordination with the distribution system operators in finding appropriate solutions for the supply of customers.

SERC called upon all decision-making bodies of Elektroprenos BIH to make joint efforts and carry out all required activities and steps to implement the approved investments in the shortest possible time. In this respect, it was requested that the information on the current status of the implementation of investments for installation of shunt reactors and renewal of telecommunication systems be provided.

As part of regulatory monitoring, SERC pays particular attention to reviewing financial performance indicators of Elektroprenos BIH, of which SERC gives its opinion during decision-making process in the proceedings for setting of the tariffs for electricity transmission services (please see Section 3.6).

SERC permanently insists on enhancing cooperation between the ISO BIH and Elektroprenos BIH and improving the coordination of their activities, in particular the international activities from which the BIH power system may have benefits.

As part of regulatory monitoring of JP Komunalno Brčko, on several occasions the State Regulatory Commission reiterated the necessity of developing the legal framework in the Brčko District of BIH, i.e., passing a new electricity law in accordance with the Third Energy Package as well as laws on renewable energy sources and efficient cogeneration and energy efficiency. SERC welcomed passing of the new *Law on Electricity* (28 October 2021), and called upon the regulated company to make its best efforts on its part to apply and implement the adopted act in the Brčko District of BIH within its legal and other capacities.

SERC pointed out again the lack of regulation of mutual ownership relationships between the competent bodies of the Brčko District of BIH and JP Komunalno Brčko over the assets in the function of electricity distribution and supply. In 2021, SERC continued to emphasise the necessity of full unbundling of accounts for distribution and supply activities as well of these activities and other non-energy activities (water production and distribution, landscaping and maintenance of public areas and collection, transport and disposal of waste materials).

As part of regulatory monitoring, SERC pays particular attention to reviewing financial performance indicators of Komunalno Brčko, of which SERC gives its opinion during decision-making process in the proceedings for setting of the tariff rates for electricity distribution services and tariff rates for electricity supply within the universal service in the Brčko District of BIH (please see Section 3.6).

In October and November 2021, the following international traders were visited in the function of regulatory monitoring of the licensed activity and establishing of facts about compliance with the licence conditions: LE Trading BH d.o.o. Banja Luka, HEP Energija d.o.o. Mostar, Danske Commodities BH d.o.o. Sarajevo and GEN-I d.o.o. Sarajevo.

On this occasion, the necessity to permanently fulfil general and specific criteria was emphasised (in case of performing other activities, the licensee is obligated to ensure unbundling of accounts for the licensed activity and other activities). The obligations of complying with the tariffs, Market Rules and Grid Code, including the right to participate in the work of technical committees, were pointed out. Furthermore, during the visit other business documents of international traders were also inspected, information on problems encountered by some entities was collected and it was suggested to pay more attention to some aspects of performing the licensed activity which may violate the compliance with the prescribed licence conditions. The current financial standing of the companies was inspected in terms of compliance with the prescribed conditions regarding the amount of registered capital and the licensees' financial stability.

3.5 Technical Aspect of Transmission System Operation

The BIH electric power system operation in 2021 was stable and without any bigger problems. All system users were able to operate functionally in line with the defined quality standards. All planned or additionally requested maintenance works in the transmission network were completed.

In the previous year, a maximum load of the electric power system amounting to 1,909 MW was recorded on 23 December 2021 at the 18th hour, which is also the day when a maximum daily consumption was recorded amounting to 38,444 MWh. The recorded load was below the historic maximum of 2,207 MW recorded on 31 December 2014 at the 14th hour. A minimum load of 685 MW was recorded on 7 June 2021 at the 4th hour, which is 80 MW more than the lowest load in the past several decades, which was registered on 25 May 2020 at the 4th hour. Minimum daily electricity consumption of 22,781 MWh was recorded on 2 May 2021.

Maximum and minimum loads in 2021 and over the past ten years are presented in Figures 1 and 2 respectively.

Figure 1. Maximum and minimum monthly load in 2021 (MW)

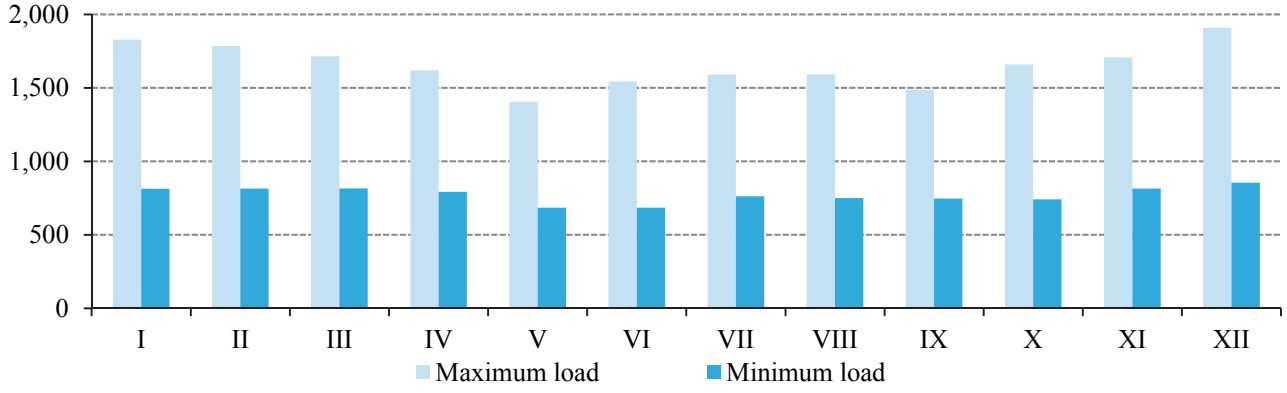
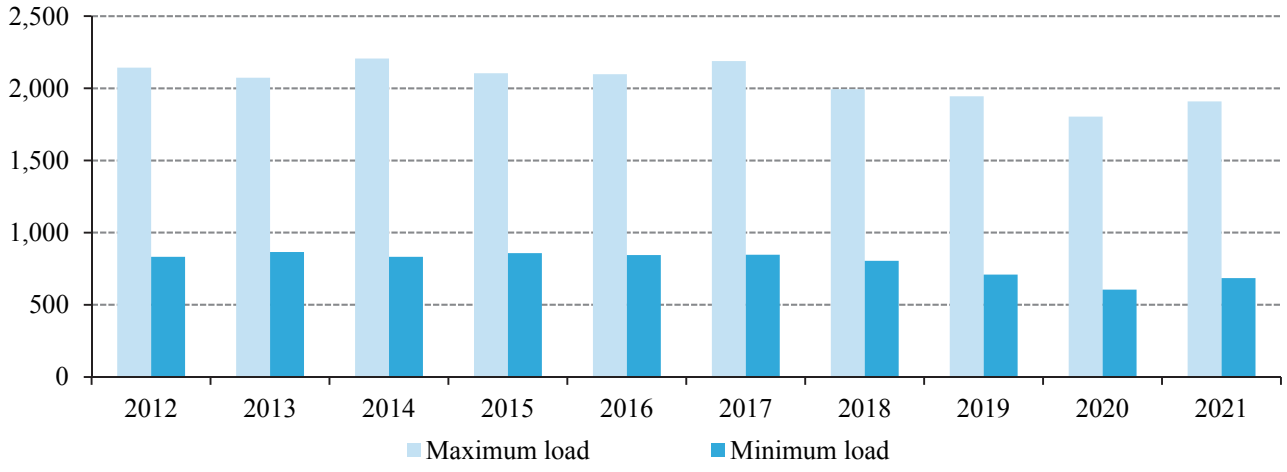


Figure 2. Maximum and minimum annual load in the period from 2012 to 2021 (MW)



Unintended deviations from declared exchange schedules towards the neighbouring power systems in 2021 amounted to 80 GWh in total at hours when an electricity deficit was registered in the BIH control area and 53 GWh at hours when an electricity surplus was registered. Monthly deviations of the BIH power system in 2021 are presented in Figure 3.

A maximum hourly electricity deficit (downward deviation) was registered in January 2021 amounting to 742 MWh/h while a maximum surplus (upward deviation) amounting to 118 MWh/h was registered in February 2021.

Total electricity in the transmission network amounted to 19,729.3 GWh, which is 8.83% more than in 2020. Transmission losses amounted to 369.2 GWh, or 1.87% of total energy in the transmission system.

In 2021, distribution losses amounted to 965 GWh or 9.22% in relation to total consumption of customers connected to the distribution network.

Percentage of transmission and distribution losses in the period from 2012 to 2021 is presented in Figure 4.

Figure 3. Monthly deviations of BIH power system in 2021 (MWh)

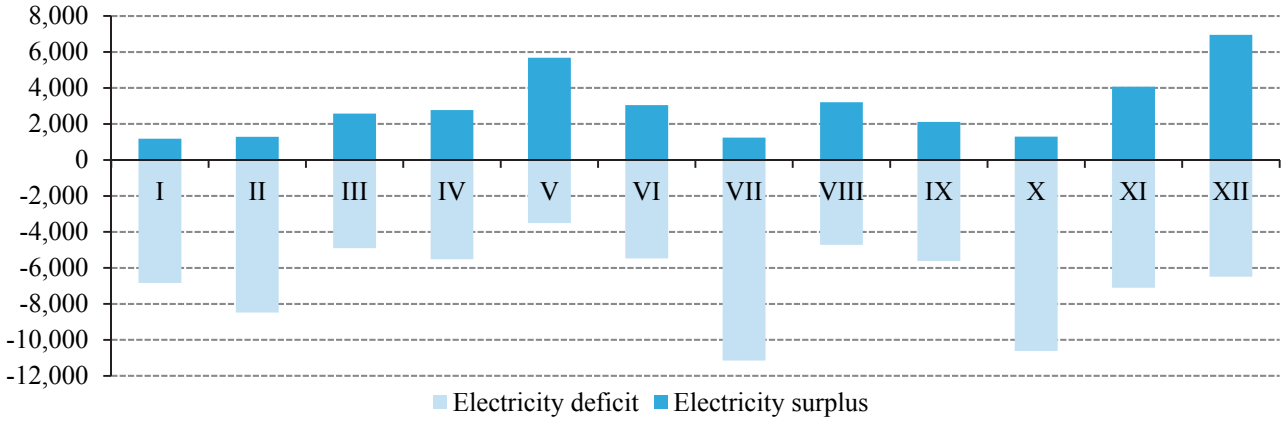


Figure 4. Transmission and distribution losses

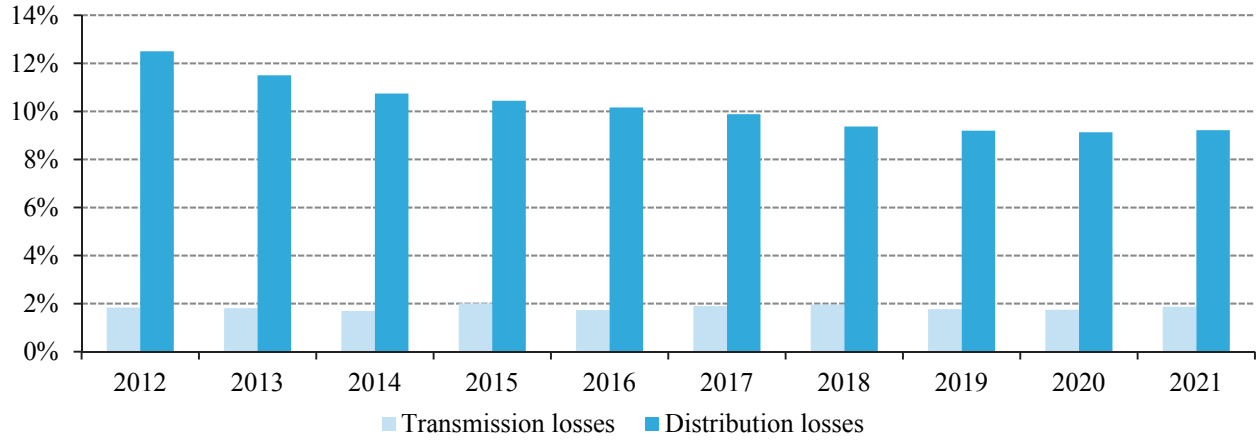


Table 1. Energy not supplied due to interruptions in the transmission network

	2017		*2018*		*2019*		*2020*		*2021*	
	MWh	*min*	*MWh*	*min*	*MWh*	*min*	*MWh*	*min*	*MWh*	*min*
ENS_{unpl}	1,362.35	16,594	1,181.83	13,661	1,095.03	21,370	393.01	11,825	678.07	14,788
ENS_{pl}	1,633.75	24,817	1,377.39	24,297	1,100.55	17,178	543.35	9,998	690.82	9,503
Total	2,996.10	41,411	2,559.22	37,958	2,159.59	38,548	936.36	21,823	1,368.89	24,291

Table 2. Average interruption time in the transmission network by month (min)

Month	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*	*XI*	*XII*
AIT_{2017}	5.3071	2.7625	3.0089	11.4069	4.2718	10.4772	9.7140	4.2352	8.5023	15.9486	3.2145	4.8497
AIT_{2018}	0.2046	9.5267	3.2354	1.7183	2.2664	6.3035	3.0782	5.2013	3.3805	0.1153	3.1875	0.2781
AIT_{2019}	0.1233	14.0321	8.8927	10.0696	3.3278	9.0077	13.4418	3.6580	9.3859	6.2718	0.6274	0.9416
AIT_{2020}	0.5982	5.3980	1.4336	1.0986	3.6368	7.3068	4.3183	2.5052	12.0331	4.7252	3.1260	2.2014
AIT_{2021}	0.4481	0.7509	3.9080	2.1174	3.9190	5.1968	4.4001	5.9464	4.9027	5.9328	4.5592	3.7586

In 2021 PHP Čapljina withdrew 144 GWh from the transmission system, while total production of this power plant amounted to 555 GWh.

Data on energy not supplied (ENS) due to unplanned interruptions (ENS_{unpl}), as well as energy not supplied due to planned interruptions (ENS_{pl}) in the BIH power system over the past five years are provided in Table 1. The trend of reduction in total energy not supplied continued, except in 2020 which was atypical due to the pandemic.

Table 2 contains data on continuity of supply, that is, the average interruption time (AIT) in the high-voltage transmission network.

In 2021, several contracts on construction, reconstruction and rehabilitation of transmission facilities were implemented.

Repair works were completed on a 220/110 kV, 150 MVA transformer in SS Mostar 4, which had been out of order since 19 February 2019. After the repair of the transformer, preparatory works, assembly works, wiring and conducted functional testing, on 22 January 2021 the transformer was put into operation in no-load condition, that is, put under voltage without load. After 24-hour operation in no-load condition and repeated detailed testing, on the following day the transformer was loaded and, consequently, put into operation. In this manner, the security of supply of customers increased.

The procedure for repairs of the 400/110 kV, 300 MVA transformer at the SS Višegrad continued. It is estimated that the transformer will be operational again in 2022.

On 15 January 2021, at the wind power plant Podveležje with installed capacity of 48 MW (15×3.2 MW), the first synchronisation

of generators to the power system was conducted, thus commencing the trial operation thereof. After the completion of all functional tests at the end of 2021, this third wind park in Bosnia and Herzegovina obtained the required approval of the ISO BIH for steady operation on 23 December 2021. The Podveležje wind plant is connected to the transmission network via the 110/30 kV Podveležje substation, which was put into operation on 9 October 2020.

After the completion of the necessary repair works, on 2 June 2021, the former rigid connection (the so-called 'T' connection) was removed between the 110/x kV substations Čapljina, Mostar 9 and Stolac, which formed two new transmission lines (TL) – TL 110 kV Čapljina – Mostar 9 and TL 110 kV Mostar 9 – Stolac.

The secondary control services in 2021 were provided by JP Elektroprivreda Bosne i Hercegovine d.d. Sarajevo, MH Elektroprivreda Republike Srpske, a.d. Trebinje and JP Elektroprivreda Hrvatske zajednice Herceg Bosne d.d. Mostar. During the year, tertiary control was activated 245 times (220 times as upward tertiary control, of which 77 times in October and 25 times as downward tertiary control, of which 13 times in December 2021). However, the nominated tertiary control volumes were often insufficient.

In 2021, 587 outages were registered in the transmission network at 400, 220 and 110 kV voltage level, of which 89, 183 and 134 at 400 kV, 220 kV and 110 kV transmission lines respectively, and six outages of 400/220 kV, 400 MVA transformers, four outages of 400/110 kV, 300 MVA transformers and eight outages of 220/110 kV, 150 MVA transformers.

In the past year, 64 failures of thermal power blocks and 24 outages of hydro generators were registered. Missing energy in the system was compensated through the activation of tertiary reserve.

Similar to the previous years, in 2021 voltage levels in the power system often exceeded the values prescribed by the Grid Code, in particular in the 400 kV and 220 kV network. The highest voltage level in the 400 kV network was registered at SS Mostar 4 in September when the measured voltage level reached 447.27 kV. In the same substation, the highest voltage level in the 220 kV network was measured in January (258.24 kV). In January at SS Sarajevo 10 the highest voltage level was measured in the 110 kV network reaching 124.96 kV.

The main reason for occurrence and duration of high voltage levels was under-loaded 400 kV transmission lines during low demand periods which generate large volumes of reactive power. The occurrence of high voltage levels is a regional problem and, consequently, solutions to this problem are also sought at regional level. With the aim of contributing to a long-term and quality

Table 3. SAIFI and SAIDI for the transmission network

		2017	*2018*	*2019*	*2020*	*2021*
SAIFI	Planned interruptions	0.92	0.76	0.64	0.42	0.47
	Unplanned interruptions	0.81	0.69	0.99	0.53	0.74
	Total	1.73	1.45	1.63	0.95	1.21
SAIDI	Planned interruptions (min/customer)	114.66	94.68	73.71	39.71	51.78
	Unplanned interruptions (min/customer)	48.55	53.31	63.24	31.67	26.39
	Total(min/customer)	163.21	147.99	136.95	71.38	78.17

Table 4. SAIFI and SAIDI for the transmission network including outages of middle voltage feeders caused by interruptions in the distribution network

		2017	*2018*	*2019*	*2020*	*2021*
SAIFI	Planned interruptions	3.93	3.33	2.76	2.57	2.96
	Unplanned interruptions	7.01	4.96	4.93	4.63	4.47
	Total	10.94	8.29	7.69	7.19	7.43
SAIDI	Planned interruptions (min/customer)	324.97	255.11	239.55	189.52	205.69
	Unplanned interruptions (min/customer)	465.81	314.55	453.10	382.64	359.62
	Total (min/customer)	790.78	569.66	692.68	572.16	565.31

solution to this problem, SERC continues to insist on conducting investment activities for the instalment of shunt reactors in the BIH power system, in addition to implementing all other measures to keep the voltage levels within the prescribed limits.

The quality of the power system operation is monitored by analysing the Transmission Company's data on technical aspects of the transmission system operation, which, in addition to the indices of continuity of customer supply ENS and AIT, are also presented by the SAIFI and SAIDI indices.

The SAIFI and SAIDI indices are obtained by monitoring the number and duration of interruptions in the Transmission Company's facilities resulting in supply interruptions for customers directly connected to the transmission network and/or supply interruptions in middle voltage feeders exceeding three minutes.

The SAIFI index (System Average Interruption Frequency Index) indicates the average number of interruptions per customer during a year

The SAIDI index (System Average Interruption Duration Index) indicates the average interruption duration for each customer in minutes per year

Tables 3 and 4 show the SAIFI and SAIDI indices for the past five years. Table 3 includes only interruptions caused by events in the network under the responsibility of Elektroprenos BIH, while Table 4 also includes interruptions in middle voltage feeders in the Transmission Company's substations caused by disturbances in the distribution network which are significantly less favourable, taking into consideration outspread connections and length of the distribution network and its tendency to various failures.

The basic data on the BIH electric power system and the map of the system are provided in Annexes A and B respectively.

3.6 Tariff Proceedings

Tariffs for Electricity Transmission Services

On 31 May 2021, Elektroprenos Bosne i Hercegovine filed a new application for modification of the electricity transmission tariffs in which the Company presented requests for revenues and expenditures as well as costs that the Company plans to charge for its services. In its application Elektroprenos BIH asked for the increase of an average tariff for electricity transmission to the amount of 5.37 EUR/MWh, which would be an 18.2% increase.

Tariffs are set pursuant to the criteria laid down in the *Law on Transmission of Electric Power, Regulator and System Operator of BIH* and *Tariff Pricing Methodology for services of electricity transmission, operation of ISO and ancillary services*. In tariff setting proceedings, to the maximum extent possible SERC adheres to the basic principles prescribing that tariffs will be fair and reasonable, non-discriminatory, established on objective criteria, based on justified costs and determined in a transparent manner.

A formal public hearing, in which facts in the tariff proceedings were determined, was held on 27 July 2021 via an internet communication platform due to the COVID-19 pandemic. In addition to the regulated company, three more entities with intervener status granted by SERC actively participated in these proceedings, which enabled them to protect their rights and interest through direct participation in the proceedings before the regulatory authority. On 5 August 2021, the *Presiding Officer's Report* was submitted to all participants in the proceedings for comments. At the end of August 2021, their opinions of, that is, comments on this Report were provided only by Elektroprenos BIH as the applicant and Elektroprivreda BIH, as one of the three interveners.

A final decision in this proceeding was not adopted, so the SERC Decision effective as of 1 May 2017 continue to apply. Consequently, the part of the transmission network charge pertaining to energy remains 2.955 EUR/MWh while the part of the transmission network charge pertaining to capacity amounts to 0.753 EUR/kW (an average transmission network charge amounts to 4.545 EUR/MWh).

Tariffs for Operation of an Independent System Operator; Tariffs for System and Ancillary Services

Pursuant to the legal obligation to submit for consideration the applications for revenues and expenditures in the following year as well as costs that the Company plans to include in its tariffs, on 28 October 2021 the ISO BIH filed such an application, in which it presented and explained planned revenues, expenditures and costs in 2022. The revenue requirement for 2022 amounting to EUR 5,429,488 was requested, the requested tariff for operation of an independent system operator paid by customers for electricity withdrawn from the transmission system amounted to

0.516496 EUR/MWh (a 29% increase), while the tariff paid by producers for electricity injected into the transmission system amounted to 0.04109 EUR/MWh (a 41% increase). The proposed tariff for system service amounted to 5.6626 EUR/MWh, which is 131.3% more that the tariff determined on 29 December 2020.

A formal public hearing in these tariff proceedings, in which, in addition to the regulated company, four interveners actively participated, was held on 20 November 2021 via an internet communication platform due to the COVID-19 pandemic. The *Presiding Officer's Report* was distributed to all participants in the proceedings for comments on 8 December 2021.

On the basis of the Presiding Officer's Report, comments received from the regulated company and the interveners, and following the analyses of the applicant's required costs and expenditures and all other available documents, the State Electricity Regulatory Commission passed the *Decision on tariff for operation of an independent system operator* and the *Decision on tariffs for system and ancillary services* on 22 December 2021.

It is determined that the annual revenue requirement of the ISO BIH in 2022 amounts to EUR 4,746,480. The Decision specifies that the tariff for operation of an independent system operator which is paid by producers for energy injected into the transmissions system amounts to 0.0317 EUR/MWh (an 8.77% increase) while customers for energy withdrawn from the transmission network pay the tariff in an amount of 0.4003 EUR/MWh (this part of the tariff remains unchanged).

When determining the tariff for system service, based on available data the tariff amounting to 1.403 EUR/MWh was calculated, which is 42.68% less than the previous tariff. According to the *Decision on tariffs for system and ancillary services*, the financial scope of the system service in 2022 amounts to EUR 30,705,492. Taking into account the present facts and respecting the precautionary principle due to a high number of variables affecting the revenues and expenditures in the balancing mechanism, the Commission decided to keep the tariff for system service at the same level of 2.4486 EUR/MWh, announcing that on a needs basis it would initiate its adjustment when deemed appropriate.

Tariffs for Electricity Customers in the Brčko District of BIH

The proceedings for setting of the tariff rates for electricity distribution services and electricity supply within the universal service in the Brčko District of BIH were initiated on 13 October 2021, following an application which was submitted by the regulated company on 6 October 2021. JP Komunalno Brčko, as the public supplier in the Brčko District of BIH which purchases all the electricity for the supply of its customers on the wholesale electricity market requested an increase in the tariffs applicable since 1 April 2020, which would enable the following:

- A 6.75% increase in the costs of distribution network charge for all customers,
- A 6.2% increase in an average price for supply within the universal service for the category 'other consumers' and households by 5.92% and 6.43% respectively,
- A profit amounting to 2% of electricity purchase costs for the supply within the universal service, and
- A price increase in the tariff element 'active electric power' for the first tariff group under the category 'other consumers'.

A formal public hearing in these proceedings, in which there were no interveners, was held on 10 November 2021. At the end of the same month, the *Presiding Officer's Report* was distributed to the regulated company for comments, which stated in its feedback that it had no comments nor observations on this document.

On 15 December 2021 SERC passed the *Decision on tariffs for electricity distribution services in the Brčko District of BIH* and the *Decision on tariffs for electricity supply within universal service in Brčko District of BIH*, which will take effect on 1 January 2022. According to these decisions, the average tariff for electricity distribution remained at the same level while the average price for supply of households and commercial customers connected to 0.4 kV increased by 3.77% and 3.17% respectively.

3.7 Electricity Market

In Bosnia and Herzegovina, in 2021, electricity generation amounted to 17,055.44 GWh, which is 1,645 GWh, or 10.8% more in comparison to the previous year. The hydrological conditions were favourable resulting in an increase of generation by hydropower plants of even 2.038 GWh, or 47.6%, totalling 6,314 GWh. On the other hand, due to decreased coal production and reduced availability of thermal blocks, generation by thermal power plants decreased by 622 GWh, or 6%, amounting to 6,314 GWh. A decrease in generation was recorded in all five thermal power plants in BIH, with the highest decrease registered in thermal power plants in Tuzla (8.4%) and Gacko (7.2%).

The wind power plants connected to the transmission system generated 382 GWh, or 120 GWh more than in the previous year, due to 108 GWh generated by the Podveležje wind plant which commenced its trial operation in the middle of January 2021.

Small-scale renewable generation amounted to 518.67 GWh, or 29.9% more in comparison to 2020. The favourable hydrological conditions reflected on generation in this category, in which the dominant share is held by small hydro power plants with 433.41 GWh (341.02 GWh in 2020). A significant percentual increase (62.0%) of still relatively small amounts was registered in generation by solar (photovoltaic) power plants – in 2021, their

generation amounted to 73.89 GWh compared to 45.62 GWh produced in 2020. Biomass and biogas power plants and wind power plants connected to the distribution system produced 11.34 GWh (12.56 GWh in 2020) and 0.03 GWh (0.05 GWh in 2020) in total respectively. Independent producers have a significant share in small-scale renewable generation, whose facilities produced 396.19 GWh (76.4%), while the remaining share (23.6%) was produced by power plants owned by the public utilities. Industrial power plants produced 19.98 GWh. A breakdown of generation over the last ten years is provided in Figure 5 while a breakdown of consumption in BIH is provided in Figure 6.

Total electricity consumption in BIH, after a 7.3% decrease in 2019 and an 8.1% decrease in 2020, increased by 7.4% amounting to 12,170GWh. Consumption of customers connected to the transmission network (HV customers) increased by 31.4% amounting to 1,170 GWh. Consumption recovery is mostly the consequence of the increased demand on the global metal market on which the largest electricity consumers in BiH are present: Arcelor Mittal Zenica, B.S.I. Jajce i R-S Silicon Mrkonjić Grad.

Consumption of customers connected to the distribution network amounted to 10,468 GWh (a 4.7% increase). An increase in

Figure 5. Breakdown of electricity generation in BIH over the last ten years (GWh)

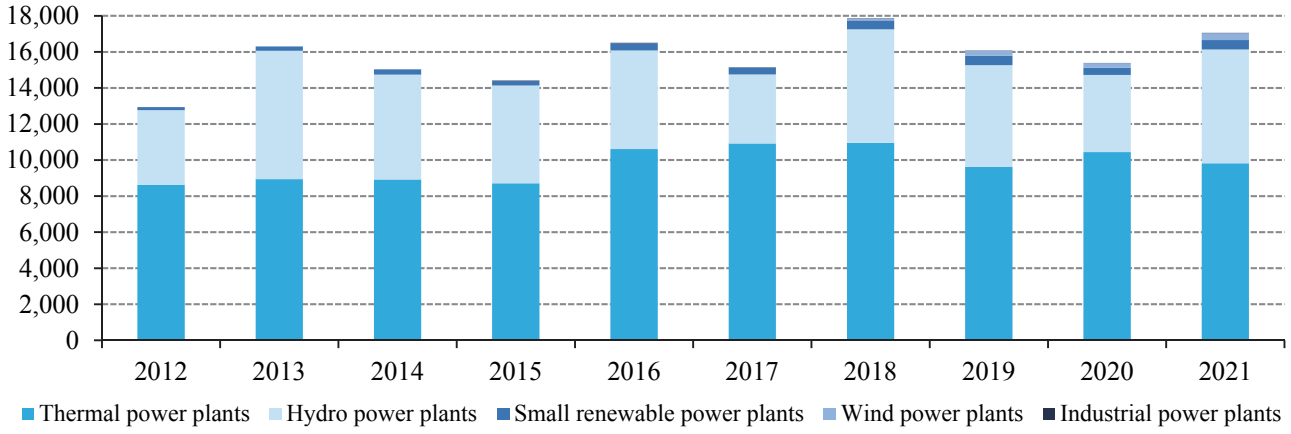
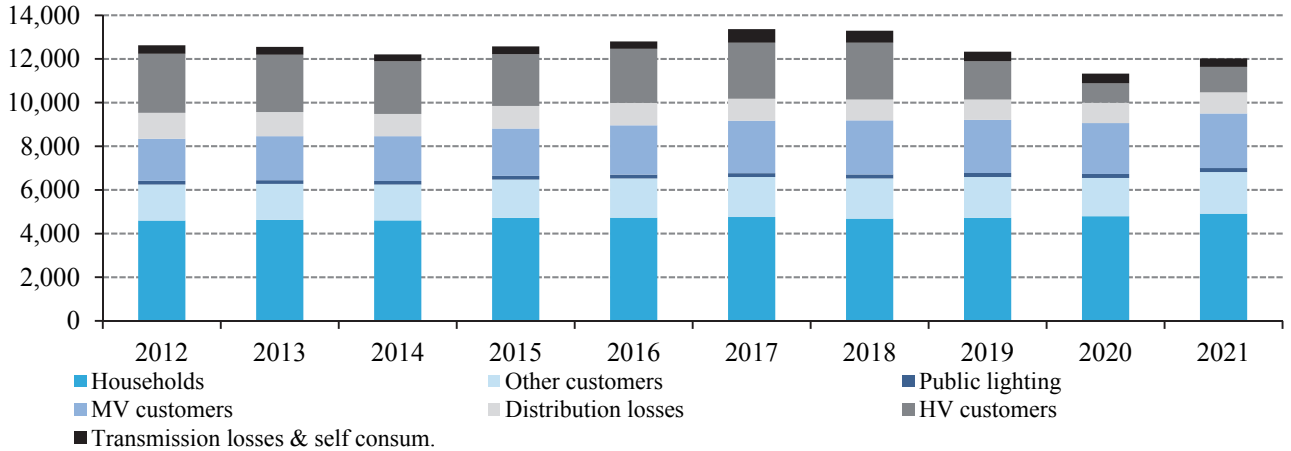


Figure 6. Breakdown of electricity consumption in BIH over the last ten years (GWh)



consumption was registered by all categories of customers connected to the distribution system except by public lighting. The highest increase (8.9%) was registered in the category of 'other consumers' (small customers, that is, commercial customers at 0.4 kV). The consumption of households amounted to 4,912 GWh (a 2.4% increase).

A total of 11,162 GWh of electricity was withdrawn from the transmission system, which is 667 GWh or 6.4% more in comparison to 2020. Data on energy withdrawn from the transmission system by months and suppliers are presented in Figures 7 and 8 respectively.

The difference between total generation and total consumption in Bosnia and Herzegovina, that is, the balance surplus in 2021 amounted to 4,886 GWh, which makes BIH and Bulgaria (surplus of 8,820 GWh) the only countries in the South East Europe with a surplus in the energy balance. Although in Bulgaria expensive greenhouse gas emissions permits have to be bought for generation due to the implementation of the EU *Emissions Trading System* (ETS), operation of thermal power plants became profitable due to an increase in wholesale electricity prices.

An overview of electric power balance volumes realised in 2021 is provided in Figure 9. The detailed balance volumes and electric power indicators of BIH are provided in Annexes C and D respectively.

Figure 7. Energy withdrawn from the transmission network in BIH – monthly data (GWh)

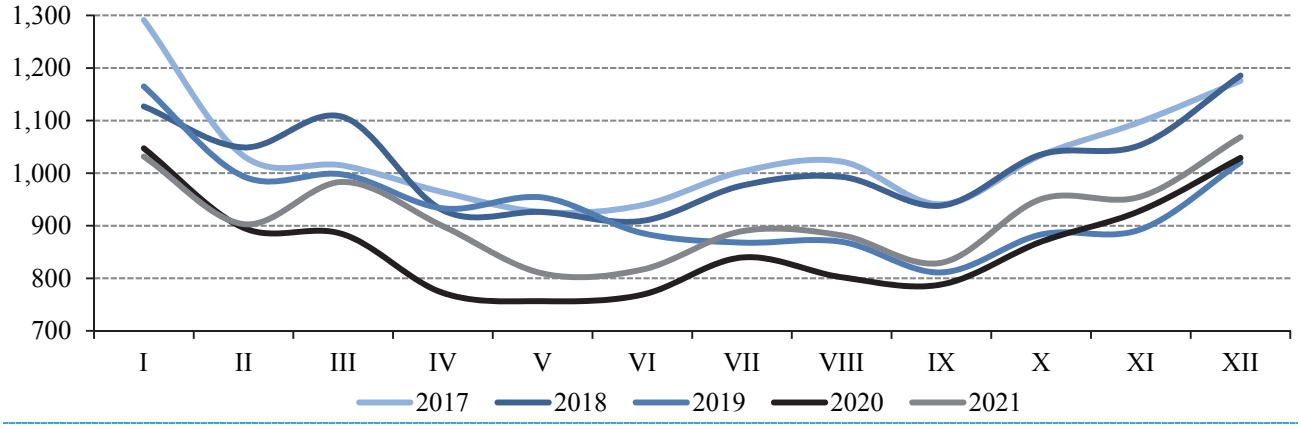


Figure 8. Energy withdrawn from the transmission network in 2021 per supplier (GWh)

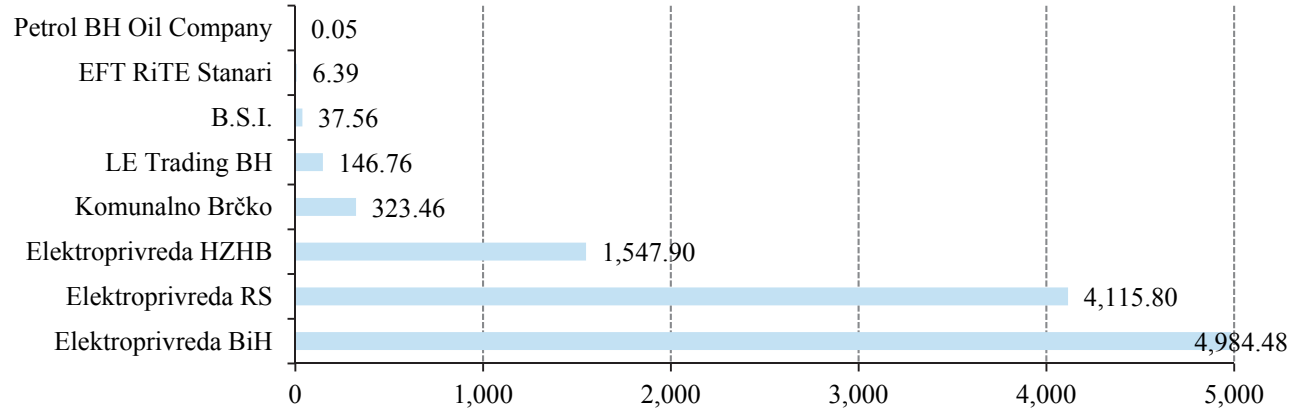
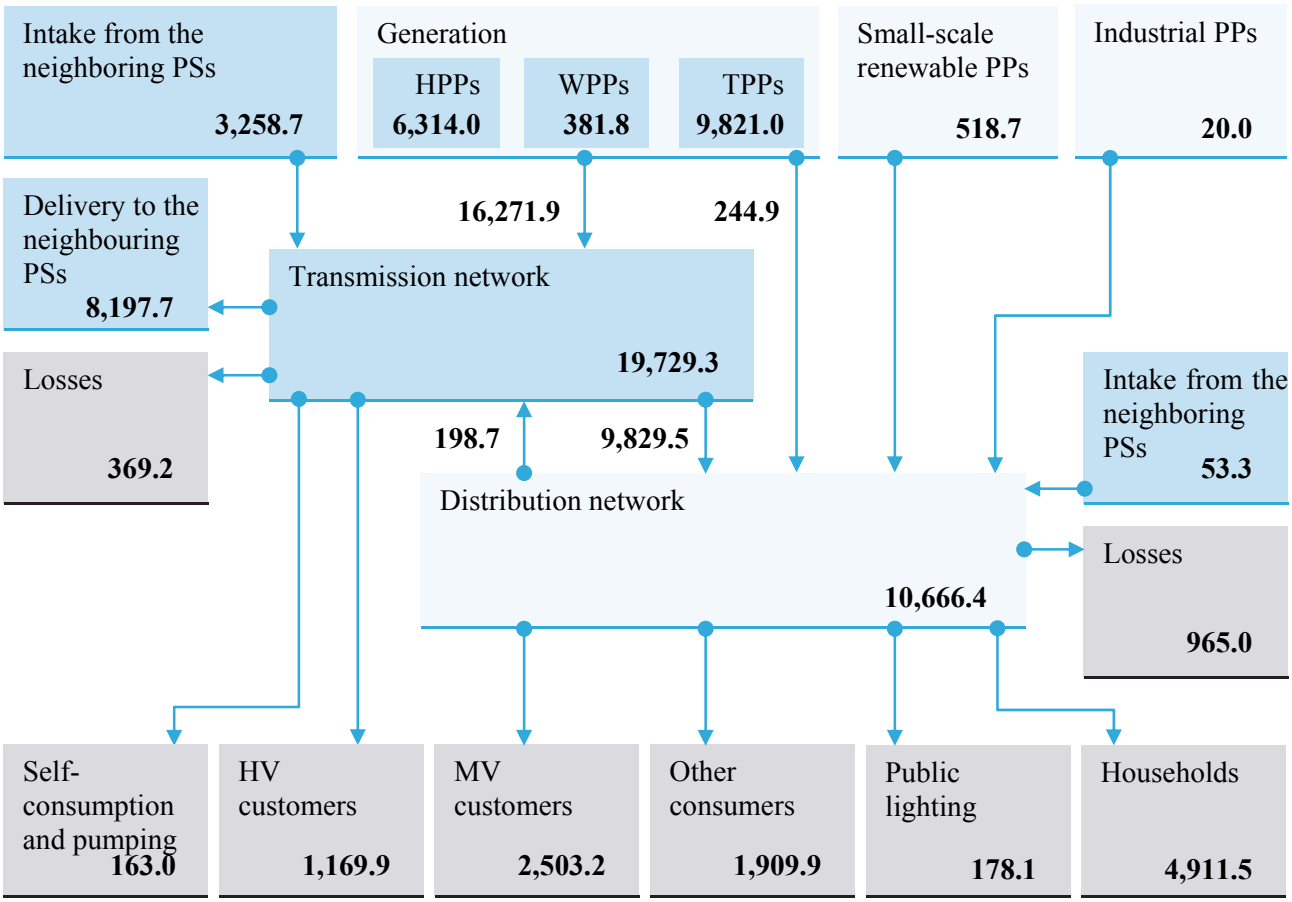


Figure 9. Balance volumes realised in 2021 (GWh)



European Electricity Market

In 2021, there was a significant increase in electricity demand, and due to an insufficient response on the supply side, wholesale prices reached all-time highs exceeding 400 EUR/MWh (Table 5).

The existing disadvantages of supply, that is, generation and related deficits, were affected by the energy transition process, in which the supply of natural gas to Europe, as the key transition fuel, is performed with difficulties present in the supply chain and geopolitical problems. Under these circumstances generation by coal-fired power plants increased by 18.4% after many years of continuous decrease in this type of generation, in line with the European decarbonisation policy. These developments were caused by reduced gas supplies from Russia and shutting down of the nuclear power plants in Germany, installed capacity of which decreased from former 25 GW to only 4 GW with the total closure planned by the end of 2022. However, under these circumstances generation by nuclear power plants increased by 50 TWh, due to generation in France, Sweden, Spain and Belgium. Furthermore, after multiannual increasing trends, generation by wind power plants decreased (due to a 2% decrease in average wind speed in 2021). Comparative data on generation in the ENTSO-E synchronous area are provided in Table 6.

Table 5. Electricity prices at power exchanges (EUR/MWh)

PX indices	*Average price*	*Maximum price*	*Minimum price*
EPEX Germany	96.62	431.98	-17.00
EPEX Austria	106.47	434.34	4.90
SIPX	114.61	427.09	7.34
HUPXDAM	113.44	420.46	14.90
OPCOM	111.20	428.24	22.03
SEEPEX	113.56	420.49	19.86
CROPEX	114.27	427.09	-32.05

EPEX Germany – European Energy Exchange (EEX) index for Germany
EPEX Austria – European Energy Exchange (EEX) index for Austria
SIPX – Slovenian Power Exchange index
HUPXDAM – Day-ahead index of Hungarian Power Exchange (HUPX)
OPCOM – Romanian Power Exchange index
SEEPEX – Serbian Power Exchange index
CROPEX – Croatian Power Exchange index

Table 6. Electricity generation in the ENTSO-E synchronous area (TWh)

Type of power plants	*2020*	*2021*	*Change (%)*
Nuclear power plants	834	884	6.0
Gas-fired power plants	709	695	-2.0
Hydropower plants	577	571	-1.0
Coal-fired power plants	490	579	18.2
Wind power plants	466	447	-4.1
Biomass and biogas	206	212	2.9
Solar power plants	165	180	9.1
Others	55	51	-7.3
Total	3,502	3,619	3.3

In the forthcoming period, wholesale prices on the European power exchanges will depend on a suitable response on the side of electricity supply (generation) with the key factors being the security of European natural gas supplies and the pace of deployment of renewable energy sources.

Regional Electricity Market

The electricity market in South East Europe, which is of direct interest to electric power entities in BIH, was influenced by the same trends as the rest of Europe. However, due to a significant balancing deficit, which amounts to approximately around 3.5 GWh on an hourly basis, wholesale prices in South East Europe

are higher than in the rest of Europe, and may be compared only to the prices in Italy.

An average value of the HUPXDAM index, which is dominant in the region, amounted to 113.44 EUR/MWh in 2021, which is almost three times higher than in the previous year. An intense price rise was registered in the second half of the year in particular, reaching an average of 246 EUR/MWh in December.

When analysing wholesale prices, the factors affecting their growth may not be neglected, primarily the existing energy deficit in the region. *The EU Emissions Trading System* has even bigger impact thereon, that is, the constant increase in prices for greenhouse gas emissions permits (ranging from 30 EUR/t to 88 EUR/t in December). An accelerated coal phase-out is present in Romania and Greece but not in Bulgaria, where an increase in generation by thermal power plants was registered. In the Western Balkans countries, which rely on coal for electricity generation, there were problems with coal exploitation and availability of thermal blocks (Serbia, North Macedonia, Kosovo*), which increased imports at exceptionally high prices due to lack of other solutions. The deficit in the region grows even more due to a slow pace of deployment of renewable energy sources.

The formation of national power exchanges in the Western Balkans countries and market coupling have not been developing at an expected pace. Furthermore, the prices of reservation of the cross-border lines which are used to supply the region with the missing energy are clearly high (Slovakia – Hungary, Austria – Hungary, Austria – Slovenia), which causes the price difference between the 'reference' Hungarian Power Exchange (HUPX) and the European Energy Exchange (EEX).

Electricity Market in BIH

In 2021, total electricity consumption in BIH amounted to 12,170 GWh, or 7.4% more than in the previous year. Customers connected to the transmission system withdrew 1,170GWh, or 31.4% more, while customers connected to the distribution system withdrew 10,468 GWh, or 4.7% more in comparison to the previous year. Of this amount 9,503 GWh pertain to the withdrawal by end customers and 965 GWh to losses in the distribution network. Total sale to end customers amounted to 10,673 GWh, which is a 7.0% increase.

The number of electricity customers in BIH reached 1,570,415 at the end of the year, of which 1,444,520 are households and 125,895 other consumption categories (Table 7).

The competent regulatory commissions do not to set tariff rates for those consumption categories which cannot be regulated any longer under the applicable legislation. With the end of 2014, regulation of supply tariffs for all customers was abolished except for households and customers belonging to the category of 'other

Table 7. Number of electricity customers in BIH

Supplier	*110 kV*	*35 kV*	*10 kV*	*Other consumers*	*Households*	*Public lighting*	*Total*
Elektroprivreda BIH	8	64	947	65,292	716,118	4,852	787,281
Elektroprivreda RS	5	30	996	31,065	515,370	212	547,678
Elektroprivreda HZHB	1		266	15,893	180,955	2,006	199,121
Komunalno Brčko		1	67	3,732	32,077	446	36,323
Other suppliers		2	7	3			12
Total	14	97	2,283	115,985	1,444,520	7,516	1,570,415

consumers' (small customers, that is, commercial customers at 0.4 kV), while practice of regulating tariffs for distribution services was kept. Since 1 January 2015, all customers in BIH have the possibility to choose their suppliers on the market. Customers that do not chose their supplier on the market may be supplied by public suppliers at public supply prices, while households and small customers may be supplied within the universal service at regulated prices.

In 2021, the option of being supplied within the universal service was used by all households in BIH and most of the customers belonging to the category of 'other consumers'. An average electricity price for these customers amounted to 77.66 EUR/MWh and it was 1.7% lower than in 2020 when it amounted to 78.99 EUR/MWh. An average price for households amounted to 71.73 EUR/MWh (a 2.2% decrease), while an average price for customers belonging to the category of 'other consumers' was 93.11 EUR/MWh, or 1.6% lower in comparison to 2020. These changes are not the result of modified tariff rates but of the consumption patterns and their adaptation to the benefits enabled by the tariff structure.

The Regulatory Commissions in BIH work on the gradual elimination of inherited cross-subsidies among some categories of electricity customers, which is done in accordance with best international regulatory practice in order to avoid so-called 'tariff shocks.' The evident trend of reducing the ratio of the average prices between small commercial customers and households in the past several years in BIH is visible in Figure 10. According to the 2021 data, cross-subsidies between these categories amount to 29.8% on average, with the lowest values recorded among the customers supplied by Komunalno Brčko (11.3%), while the highest values were recorded among the customers supplied by Elektroprivreda RS (31.7%). There is an obvious need for further reduction of cross-subsidies, thus complying with the basic regulatory principle of reflecting real costs in price formation. This would facilitate market competition also in supply of households, i.e., open up possibilities for suppliers on the market to offer more favourable prices and become competitive in this market segment as well. Trends of average electricity prices for end customers in BIH are presented in Figure 10, while Figure 11 gives an overview of average electricity prices per public suppliers and customer category in 2021.

Figure 10. Average electricity prices by customer category, excluding VAT (EUR/kWh)

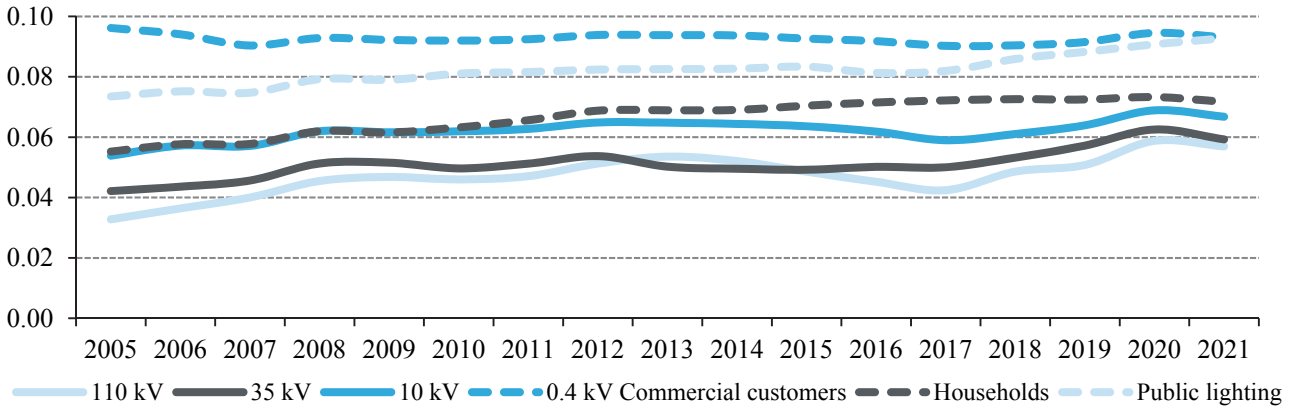
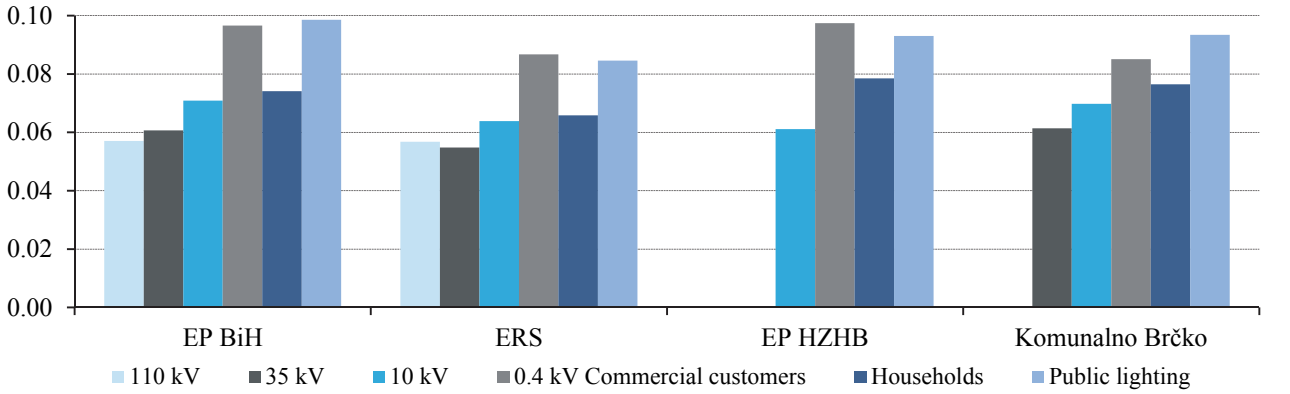


Figure 11. Average electricity prices by public utility, excluding VAT (EUR/kWh)



As of 1 January 2016, on the retail market in Bosnia and Herzegovina the first cases of supplier switching were registered among the customers connected to the distribution system since when their number varies on a monthly basis. In 2021, the largest number of customers was supplied by their traditional suppliers (the so-called 'incumbents'). In addition to the incumbents three more suppliers were active on the retail market: HEP Energija d.o.o. Mostar, Petrol BH Oil Company d.o.o. Sarajevo and Energy Financing Team d.o.o. Bileća. They delivered to customers connected to 35 kV, customers connected to 10 kV and customers falling under the category 'other consumers' 15.79 GWh, 32.80 GWh and 2.64 GWh respectively.

In the transmission system, sales of LE Trading BH d.o.o. Banja Luka to Aluminij d.d. Mostar (19.66 GWh) and B.S.I. d.o.o. Jajce (127.10 GWh) were registered and an amount of 0.25 GWh which Elektroprivreda BIH delivered to the Company FL Wind d.o.o. Tomislavgrad. Furthermore, Elektroprivreda RS delivered 57.23 to B.S.I. Company, while Elektroprivreda HZHB delivered to Aluminij 9.00 GWh. In addition, Elektroprivreda BIH supplied one 10 kV customer located in the distribution area operated by Elektroprivreda HZHB with a delivery amounting to 3.40 GWh.

In conclusion, in 2021 a total of 253.55 GWh was delivered to customers that switched suppliers, or 2.2% of total energy withdrawn

by end customers in BIH. In the previous period, tens of thousands of customers changed the conditions of supply by modifying the contract with their previous traditional suppliers, thus choosing on the open market the supply offer that suited them best. A total of 6,821.41 GWh was delivered to the customers supplied within the universal service (63.9% of total consumption by end customers), while 3,851.16 GWh (36.1%) was delivered to the customers for whom prices are not regulated.

Trading on the wholesale market in Bosnia and Herzegovina, which is based on bilateral sales contracts between suppliers, is significantly more dynamic (Figure 12.). Although this market has not been institutionalised yet, the result of numerous bilateral contracts is significant – in 2021, a total of 17 licensed entities were active and traded 4,898 GWh through internal transactions on the market. Furthermore, cross-border transactions were also registered totalling 7,563 GWh, of which exports amounted to 6,173 GWh while imports amounted to 1,390 GWh.

In addition to the wholesale and retail markets, in Bosnia and Herzegovina the balancing market operated by the Independent System Operator in BIH is also functional. Essentially, it is a monopsony market, where on the demand side there is only one entity – the ISO BIH, while on the supply side there are mostly generators providing ancillary services. The calculation of deviations (imbalances) of balance responsible parties from the daily schedule is also conducted on the balancing market in terms of energy and prices. Imbalance prices are determined based on prices of balancing energy on an hourly basis. All transactions between suppliers on one side and the ISO BIH on the other are conducted based on the market principles through annual and monthly bids while prices of the balancing energy are formed through offers by suppliers of secondary and tertiary control on a day-ahead hourly basis.

The total value of ancillary services purchased on the balancing market in 2021 amounts to EUR 36.2 million of which EUR 21.6

Figure 12. Overview of trading on the wholesale market in BIH in 2021 (MWh)

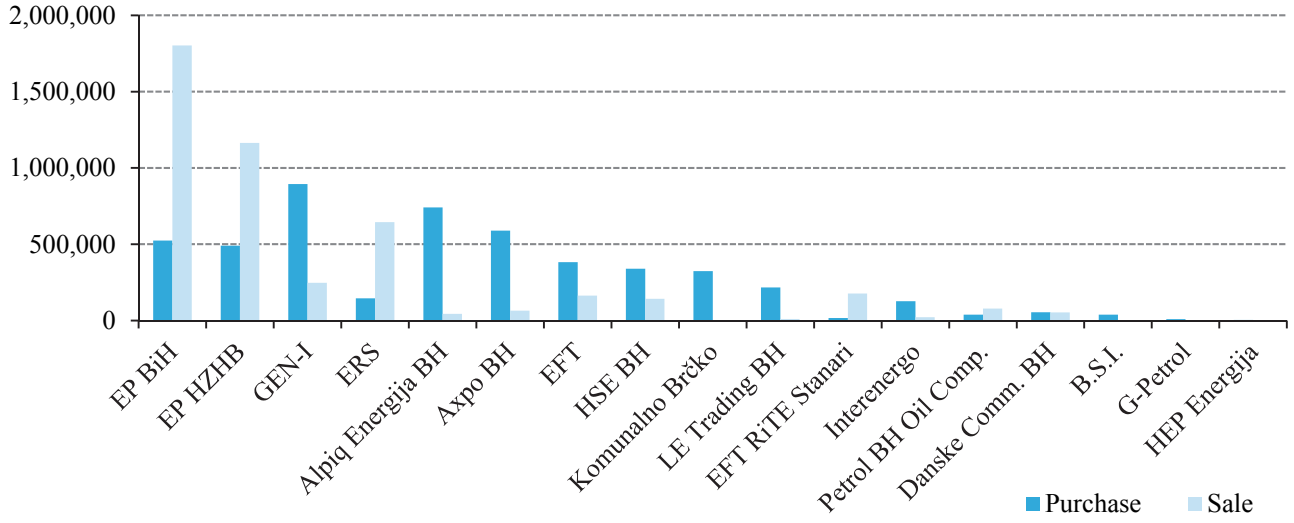


Table 8. Values of purchased ancillary services

Ancillary service	*2020 (EUR)*	*2021(EUR)*	*Difference (%)*
Secondary control – capacity	4,711,981	4,039,100	-14.3
Tertiary control – capacity	3,171,376	2,230,389	-29.7
'Upward' balancing energy	1,972,150	4,962,862	176.9
'Downward' balancing energy	-1,464,158	-1,382,848	-5.6
Losses in the transmission system & compensations	19,148,939	26,339,516	37.6
Total	27,360,288	36,189,019	32.3

million pertains to the purchase of energy to cover losses in the transmission system, EUR 4.7 million to payment of compensations, that is, deviations towards the SHB LFC Block (the so-called *FSkar* calculation) and EUR 9.9 million to payment of balancing capacity and balancing energy (Table 8).

The upward and downward balancing energy was activated in an amount of 51.90 GWh (secondary 42.70 GWh and tertiary 9.20 GWh) and 37.97 GWh (secondary 37.39 GWh and tertiary 0.58 GWh) respectively. As far as imbalances of the balance responsible parties are concerned, deviations in the direction of deficit (shortage) and the direction of surplus (excess) were recorded totalling 88.44 GWh and 35.42 GWh respectively, which resulted in a deficit (shortage) towards SHB LFC Block amounting to 45.02 GWh. The average imbalance prices reached amount to 86.19 EUR/MWh (54.15 EUR/MWh in 2020) and 39.82 EUR/MWh (17.26 EUR/MWh in 2020) for energy deficit and surplus respectively.

By the provision of system service to suppliers withdrawing energy from the transmission system and the calculation of deviations from the daily schedule by balance responsible parties, the ISO BIH made revenue of EUR 40,211,468 of which EUR 27,332,007 and EUR 12,879,461 were collected for the system service tariff and imbalances respectively. A hike in revenues from imbalances is evident, which is the consequence of a significant price increase of wholesale prices in 2021 which reflected on the prices of balancing energy. Furthermore, exports and imports of cross-border balancing services were registered amounting to EUR 108,345 and EUR 500,396 respectively.

Cross-Border Trade

Good connections of the BIH system with the neighbouring electric power systems enable a high level of electricity exchange with the neighbouring countries. In 2021, a total of 6,173 GWh was exported, or 11.4% more than in the previous year. A total of 15 entities exported electricity, among which EFT – Rudnik i Termoelektrana Stanari with 1,710 GWh was the leader in terms of the export scope, followed by Elektroprivreda Republike Srpske and GEN-I with 874 GWh and 781 GWh respectively etc.

Table 9. Cross-border trade per border, including registered transits (GWh)

Country	*Exports*	*Imports*
Croatia	3,710.4	1,673.7
Serbia	3,128.0	2,403.4
Montenegro	2,975.3	955.1
Total	9,813.7	5,032.2

Electricity imports amounted to 1,390 GWh, which is a 7.1% decrease compared to the previous year. Among the 14 entities importing to BIH, the highest electricity imports were achieved by Elektroprivreda Republike Srpske (359 GWh), LE Trading BH (225 GWh), Energy Financing Team (178 GWh) etc. The largest scope of cross-border electricity trading is achieved with Serbia followed by Croatia and Montenegro (Table 9). An overview of cross-border transactions by entities in 2021 is provided in Figure 13.

In 2021, registered electricity transits through the BIH transmission system amounted to 3,640 GWh, which is an increase of 105 GWh, or 3.3% in comparison to 2020. Transit flows are of special importance because they are used as the basic element to calculate revenues and expenditures within the *Inter-TSO Compensation Mechanism* (ITC mechanism). The expenditures of Bosnia and Herzegovina on this basis in the first seven months of 2021 amount to EUR 1,095,245, and for the second time in a row Bosnia and Herzegovina did not record any revenues in the specified timeframe. According to the ITC mechanism calculation rules, increased transit flows increase revenues, while increased import and export flows reduce revenues, that is, increase expenditures.

Figure 13. Overview of cross-border transactions by entities in 2021 (MWh)

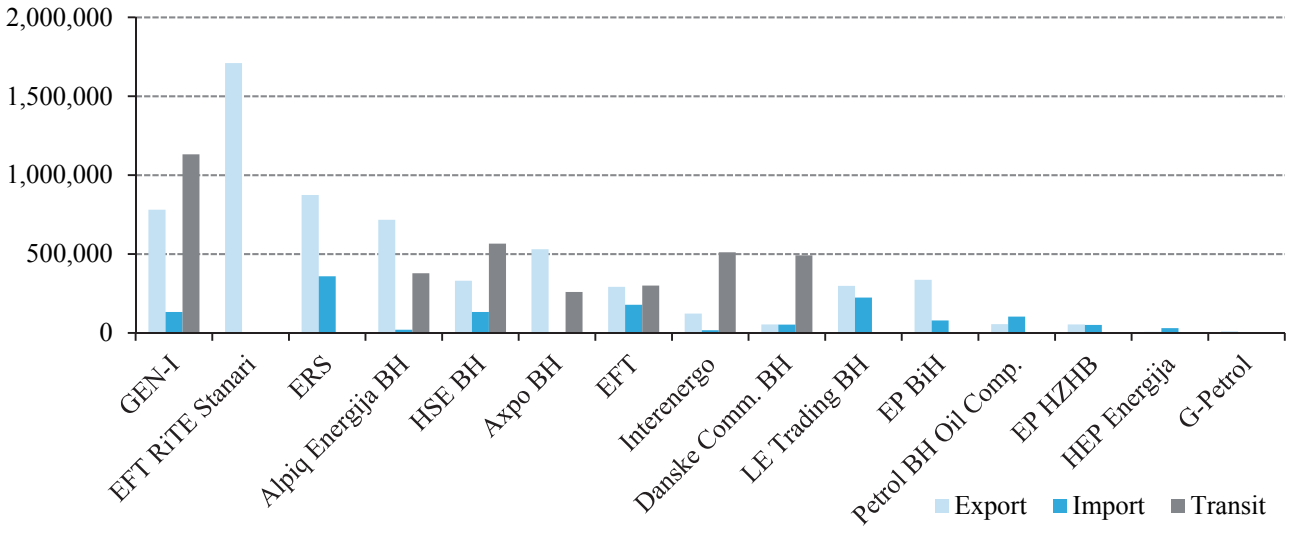


Table 10. Revenues generated from annual auctions

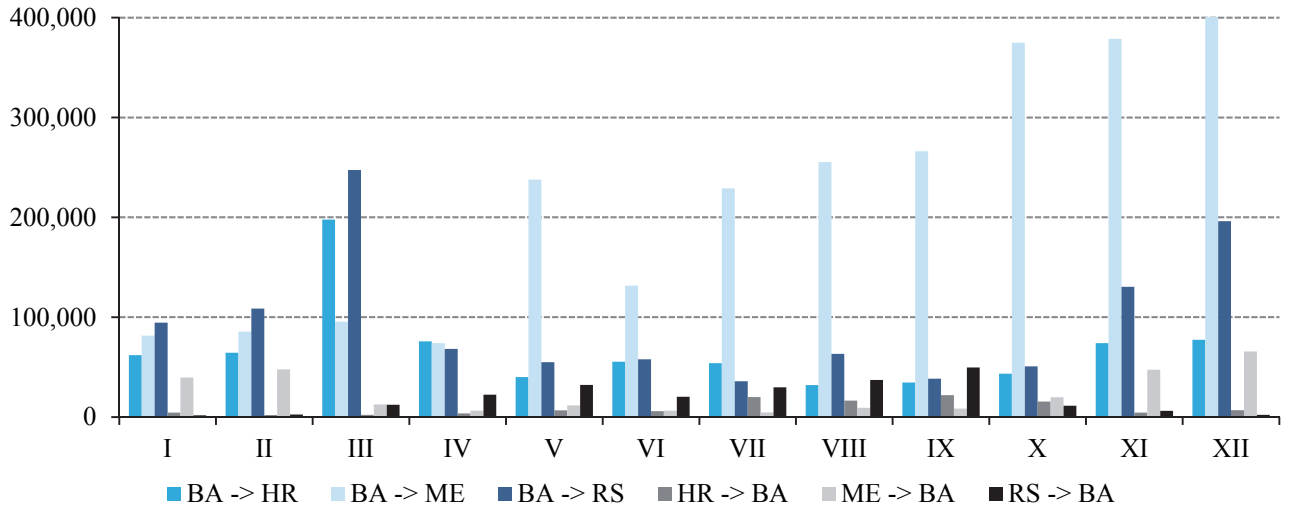
Year	*Revenue (EUR)*	*Year*	*Revenue (EUR)*
2013	1,041,054	2018	599,097
2014	1,485,638	2019	1,372,254
2015	558,187	2020	1,332,094
2016	486,765	2021	1,806,487
2017	1,033,461	2022	4.046.638

The total revenue of BIH on the basis of cross-border transmission capacity annual auctions for 2022 amounts to EUR 4,046,638, which is the highest revenue realised on annual auctions so far. Unlike the previous period when the highest price was reached on the border with Croatia in the direction from BIH to Croatia, in the past several years a trend of increased exports on the eastern borders of BIH and higher transmission capacity prices on these borders was noticed. This year the highest price was reached again on the border with Montenegro amounting to 2.04 EUR/MWh in the direction from BIH to Montenegro, which is a 74.4% increase in comparison to the previous year.

The revenues achieved to date on the basis of auctions for allocation of cross-border transmission capacities on an annual basis, which are organised by the ISO BIH at the end of the year, are provided in Table 9. Figure 14 provides an overview of revenues based on monthly auctions per border and direction.

Pursuant to the Tariff Pricing Methodology for services of electricity transmission, operation of an independent system operator and ancillary services, Elektroprenos Bosne i Hercegovine is the user of all revenues based on the allocation of the right to use cross-border transmission capacities as well as revenues achieved by the application of the ITC mechanism.

Figure 14. Revenues based on monthly and daily auctions, per border and direction (EUR)

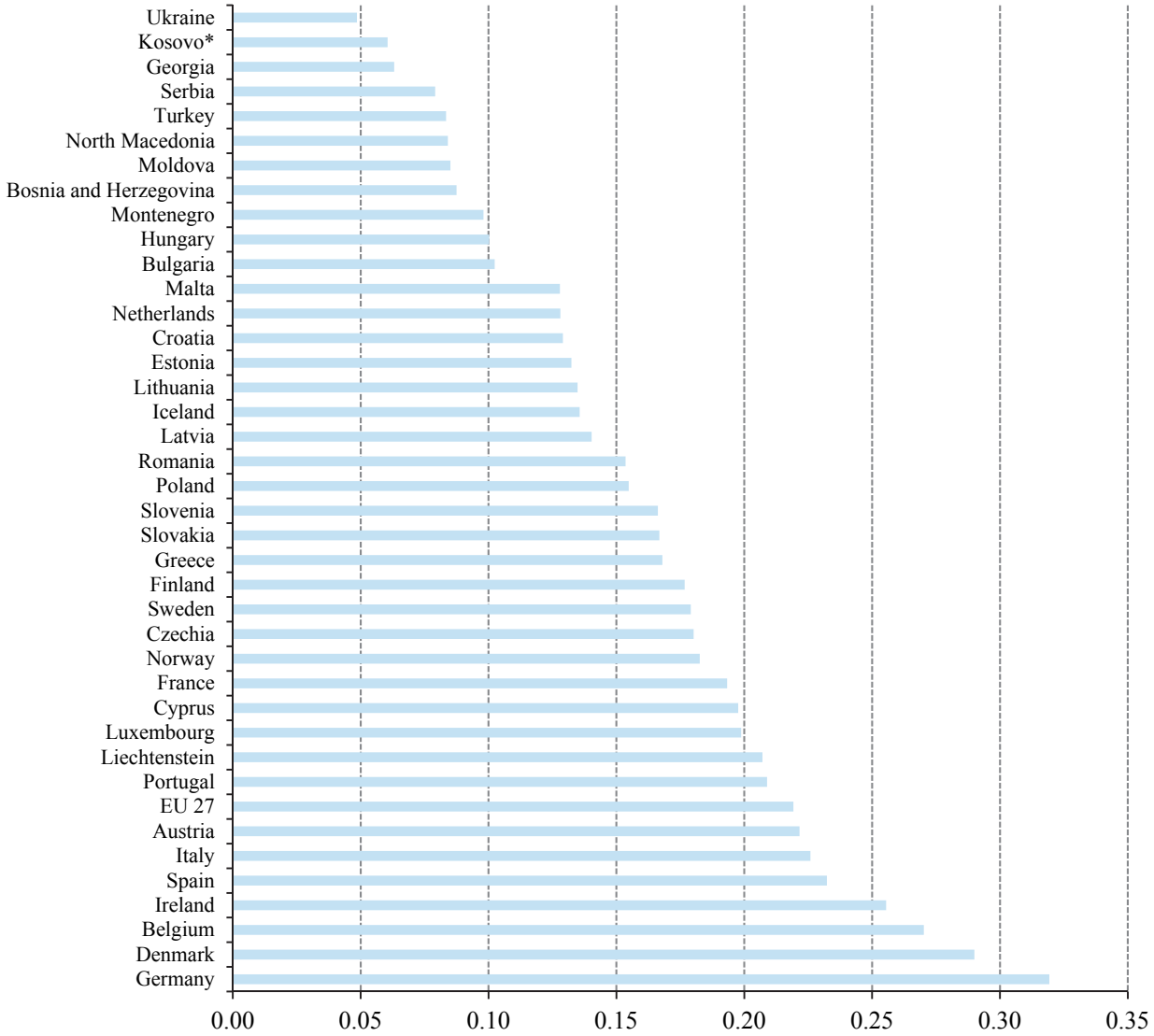


3.8 Energy Statistics

Aware of the relevance of objective presentation of data on energy volumes and electricity prices, in 2021 SERC continued to pay particular attention to enhancing its performance in the segment of energy statistics. The key partner in the exchange of energy volumes and data is the Agency for Statistics of Bosnia and Herzegovina (BHAS) with which SERC has been cooperating for many years, in particular with regard to fulfilling the reporting requirement of international bodies in line with prescribed methodologies and reporting dynamics. The cooperation between the two institutions contributes to energy statistics development and harmonisation of the BIH official system of statistics with statistics of the EU countries in all fields, in particular in the field of energy statistics.

Agency for Statistics of Bosnia and Herzegovina

Figure 15. Electricity prices expressed in EUR/kWh for households (annual consumption from 2,500 to 5,000 kWh) in the first half of 2021, using Eurostat methodology



Note: All taxes and levies included

* This designation is without prejudice to positions on status, and is in line with the United Nations Security Council Resolution 1244 and the International Court of Justice Opinion on the Kosovo Declaration of Independence.

Figure 16. A geographic overview of electricity prices for households (in EUR/kWh) in the first half of 2021, using Eurostat methodology

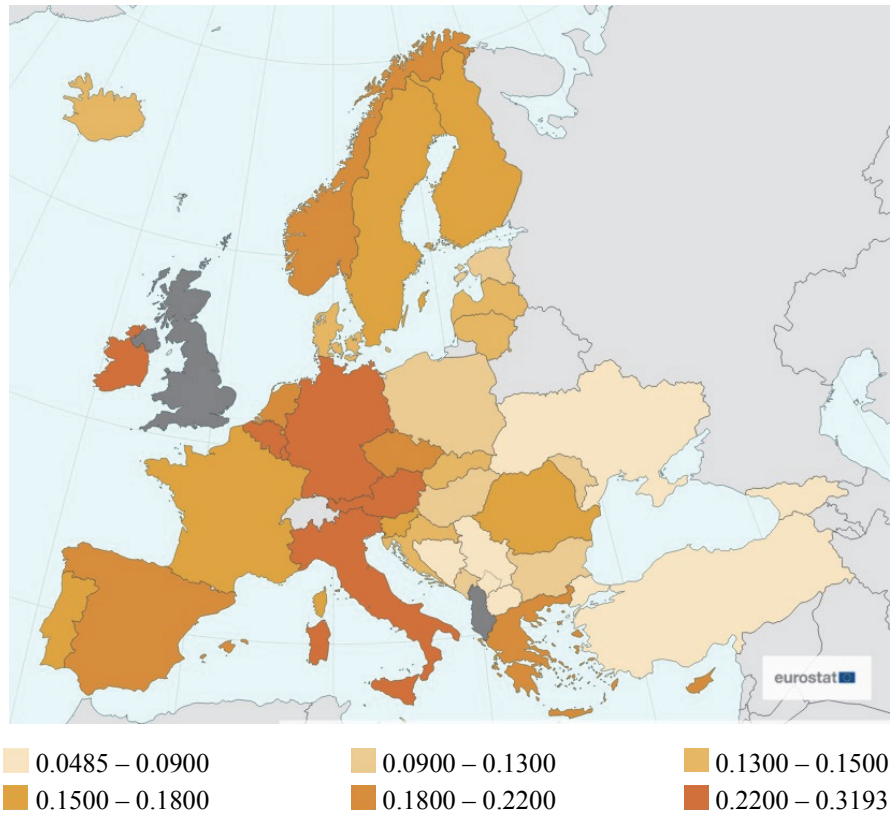
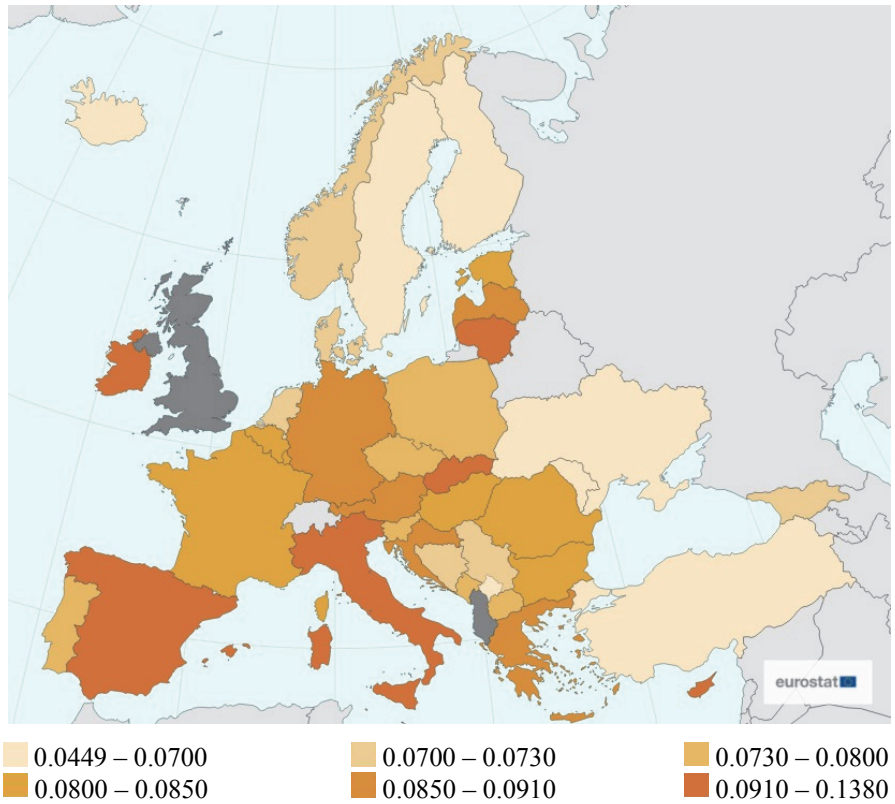


Figure 17. A geographic overview of electricity prices for industrial customers (in EUR/kWh) in the first half of 2021, using Eurostat methodology



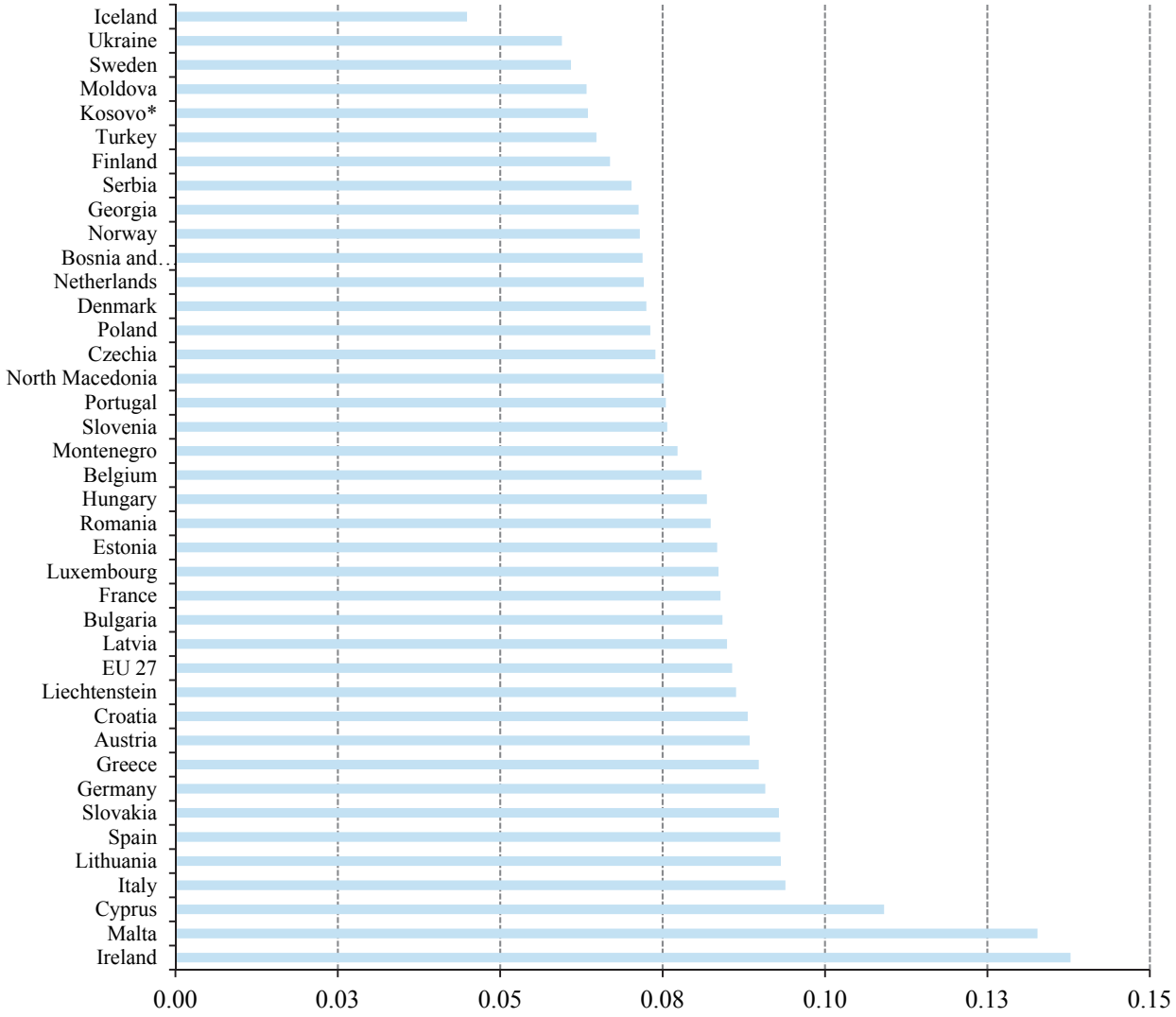
The results of cooperation between the two institutions are recognisable in Eurostat's reports, which include data on electricity prices in Bosnia and Herzegovina since 2011, thus enabling their comparison with the EU countries and some countries that are in the EU accession process (Figures 15 – 18).

In addition to analysing data on the BIH electric power sector, SERC continuously collects and analyses data on regional markets, including data on the power exchanges seated in Leipzig, Budapest, Bucharest, Ljubljana, Belgrade and Zagreb (Table 5).

Based on a systematic approach to numerous electric power indicators, SERC provided quality answers to a number of inquiries by national and international institutions also in 2021 by presenting statistical data on the electric power sector of Bosnia and Herzegovina.

Eurostat is the statistical office of the European Union situated in Luxembourg. Its task is to provide the European Union with statistics at European level that enable comparisons between countries and regions.

Figure 18. Electricity prices expressed in EUR/kWh for industrial customers (annual consumption from 500 to 2,000 MWh) in the first half of 2021, using Eurostat methodology



Note: All taxes and levies included

3.9 Judicial and Other Disputes

All six judgements of the Court of Bosnia and Herzegovina so far have confirmed the lawfulness of the SERC decisions that were disputed before court by the legal persons whose applications were decided upon after the completion of the tariff proceedings or dispute settlement procedures. In 2021, there were no new applications for revision of any decision from the SERC regulatory practice by any person that has standing to commence an action.

One of the regulatory specifics is the adjudicative function of the regulator, that is, the competence to resolve disputes among the users and service providers in the regulated sector. Pursuant to the *Law on Transmission of Electric Power, Regulator and System Operator of BIH*, part of SERC competences and powers includes dispute resolution pertaining to the transmission system. In 2021 there were no new dispute resolution requests under SERC competence.

In addition to directly ensuring the right to fair and non-discriminatory access to the transmission network and the active protection of customers through dispute resolution, the State Regulatory Commission makes every effort to act in an educative and preventive manner and these efforts significantly prevent these disputes. The preventive activities are carried out in several ways – by monitoring the regulated entities and the quality of services they provide, by collecting, analysing and processing data on rules and actions of the regulated entities with regard to access to the transmission network and the protection of customers and by the active participation of SERC representatives in creating various platforms and educative tools for system users and electricity customers.

3.10 Other Key Activities

The State Electricity Regulatory Commission continued to exchange data with a number of state institutions in 2021, including the Council of Ministers of Bosnia and Herzegovina, Ministry of Foreign Trade and Economic Relations of BIH, Directorate for European Integrations of the BIH Council of Ministers, Competition Council of BIH and BIH Agency for Statistics,[5] and prepared different types of information they needed. SERC gave a particular contribution to activities of the Stabilisation and Accession Committee and a Subcommittee on Transportation, Environment, Energy and Regional Development. In line with its legal powers to act in the area of Brčko District of BIH as a regulatory authority, through its activities SERC also cooperates with the Brčko District Government.

[5] The State Electricity Regulatory Commission signed Memoranda of Understanding with the BIH Agency for Statistics and Competition Council of BIH on 19 April 2011 and 28 May 2014 respectively.

Since their establishment, the State Regulatory Commission and Entity Regulatory Commissions – the Regulatory Commission for Energy in the Federation of BIH (FERK) and the Regulatory Commission for Energy of Republika Srpska (RERS) cooperate and harmonise their activities.

SERC continues its active engagement in the reform and the development of an EU-*acquis* compliant legislative framework for electricity. In this process, based on the obtained regulatory experience in the implementation of laws in the electricity sector and previous education and cooperation with the relevant international institutions, SERC expressed its commitment to provide support and concrete assistance in the fulfilment of obligations of Bosnia and Herzegovina through various normative activities. At the request of the Ministry of Foreign Trade and Economic Relations of BIH, which is the competent authority for policy creation under the *Law on Transmission of Electric Power, Regulator and System Operator of BIH*, SERC nominated its representatives for the Working Group for continuation of activities on the development of a new state law by which the legally-binding part of the Third EU Energy Package[6] would be transposed into national legislation. However, there were no concrete activities of this working group in 2021 because neither meetings of the nominated representatives were organised nor were there any requests for comments in this domain.

Acting in line with its competence, SERC supports the development of an *Integrated Energy and Climate Plan of Bosnia and Herzegovina*. The Ministry of Foreign Trade and Economic Relations of BIH together with the relevant entity ministries is in charge of its development. SERC participates in the activities of an intradepartmental working group established to develop this plan as well as in activities of the Energy Efficiency Task Force, Task Force on Renewables and the Security of Supply and Internal Energy Market Task Force.

Furthermore, upon invitation of the Ministry of Foreign Trade and Economic Relations of BIH, SERC actively participates in activities of the Working Group for the Establishment of the Energy Management Information System and Energy Efficiency Information System in the BIH institutions (EMIS).

In the past several years, SERC pointed out the need for and importance of developing the legal framework in the Brčko District of BIH and its alignment with the Third EU Energy Package, emphasising in particular that unsuitable legal solutions create a serious obstacle for implementation of investments in this part of BIH. In January 2021, after the submission of an Initial draft law on electricity by the Government of the Brčko District of BIH, from the aspect of its existing experience in regulating energy

[6] Directive 2009/72/EZ concerning common rules for the internal market in electricity, Directive 2009/73/EC concerning common rules for the internal market in natural gas, Regulation (EC) No 714/2009 on conditions for access to the network for cross-border exchanges in electricity, Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks.

activities in the District, SERC gave its comments on the submitted text expressing its readiness for an additional contribution in creating individual solutions in a public hearing, which was expected to take place taking into consideration the importance of this document. Irrespective of absence of public consultation in the legislative procedure, SERC welcomed the efforts made by the authorities of the District in passing the *Law on Electricity* at the end of October 2021, expecting that laws on renewable energy sources and energy efficiency would be soon in the legislative procedure.

SERC also provides significant support within the *Program of Integration of Bosnia and Herzegovina into the European Union*, through active participation in the activities under Chapter 15 – Energy, Chapter 21 – Trans-European Networks, and Chapter 28 – Consumer and Health Protection.

In 2021, SERC representatives continued to actively participate in the implementation of a World Bank project, under which *Study on the electricity market liquidity in Bosnia and Herzegovina* is prepared, a project of the German Agency for International Cooperation (GIZ) titled *Decarbonisation of the energy sector in BIH* and in the preparation of *Study on the potential for implementation of hydrogen technologies and its utilisation in the Energy Community*.

Acting as a national regulator in representing the interests of Bosnia and Herzegovina, SERC participated in several regional projects in 2021. Among them of particular importance are the projects organised by the United States Agency for International Development (USAID) and the National Association of Regulatory Utility Commissioners (NARUC):

- Women's Global Development and Prosperity Initiative: Advancing Women Leaders in Energy,
- Digitalisation and Cybersecurity, and
- Enhancing Market Performance.

As part of the Regulatory Partnership of energy regulators in Bosnia and Herzegovina (SERC, FERK and RERS) with NARUC, which is supported by USAID, in 2021 via an internet communication platform professional training on regulatory communications and public relations was organised as well as the Workshop on Regulatory Independence. *A Memorandum of Understanding* between the parties to the Regulatory Partnership was signed in January 2014. Since then, information and experience had been exchanged, and the best practices introduced enabling the regulators to continue to create and implement non-discriminatory and independent regulation with the aim of ensuring efficient, transparent and stable functioning of the power sector and, at the same time, protecting interests of customers and investors.

USAID Energy Policy Activity

In September 2019, the United States Agency for International Development launched a five-year *USAID Energy Policy Activity*

(USAID EPA) under which USAID is helping Bosnia and Herzegovina attract investors and integrate its energy market into regional and EU markets. This project provides technical assistance to coordinate, manage, and improve the legal framework and transparency in the gas and electricity sectors. Through these activities, legislative and other measures at all levels of government will be developed and recommended to ensure that the BIH energy sector legislation is compliant with EU requirements. The project also supports an appropriate public outreach and awareness program to promote a liberalised market-based energy sector and educate general public about the benefits of the changes taking place in the energy sector.

Creating a transparent and competitive legislative and regulatory framework and integrating the BIH energy sector into the regional and EU markets is vital to attract new investments which contribute to the diversification of sources, prevention of corruption and the increased security of supply. In this context, *Gap analysis with recommendations for amending the legal framework and enhancing independence of the energy regulatory commissions in BIH* was prepared within USAID EPA in 2021.

SERC representatives directly participate in the activities under this project which are conducted by the Working Group for Development of Guidelines for Virtual Power Plants, Working Group for Development of Guidelines for Distribution System Operators, Working Group for Network Codes, Public Outreach Working Group and Working Group for Cyber Security in the Energy Sector.

As part of these activities in 2021, the development of guidelines for aggregators was finalised, defining a set of required measures for amending the legal and regulatory framework at the BIH and entity level, whose implementation will remove barriers and enable aggregation of distributed resources and establishment of aggregators. Aggregators are a new category of electricity market players that perform aggregation of distributes resources (distributed generation, demand response, energy storage devices) and enter the electricity marker and the balancing services market independently or through a balance responsible party. Furthermore, with the development of *Gap analysis with the recommendations for amending distribution network codes and relevant rulebooks – A Summary Overview*, the development of guidelines for amendments to the network codes, that is, the Grid Code and distribution network codes, was finalised (please see sections 3.1 and 3.2).

After the successful organisation of the previous Energy Summits whereby a new model of dialogue was established on the latest issues in the energy sector, the United States Agency for International Development (USAID) through its Energy Policy Activity (USAID EPA), the United Nations Development Programme

(UNDP), the EU Delegation to BIH, the German Agency for International Cooperation (GIZ) and the British Embassy Sarajevo initiated preparatory activities for the Energy Summit 2022 in Bosnia and Herzegovina, which will be held in Neum from 23 to 25 March 2022, under the auspices of the Ministry of Foreign Trade and Economic Relations of BIH, the State Electricity Regulatory Commission, the Regulatory Commission for Energy in the Federation of Bosnia and Herzegovina and the Regulatory Commission for Energy of Republika Srpska.

At this gathering it is planned to bring together participants from the national and entity parliaments, ministries and regulatory authorities, municipalities, electric power utilities, chambers of commerce, small and medium enterprises, non-governmental organisations and media, and representatives of international organisations and donors active in the sector.

Next EU Package – 'Fit for 55'

After the package *Clean Energy for All Europeans*, that is, the package of energy rules to provide competition needed to facilitate the clean energy transition, which was finalised by the European Union in June 2019,[7] the European Commission presented a proposal for the next package of rules – *Fit for 55*.

Prior to this, on 11 December 2019 the European Commission set a new strategy through the *European Green Deal*, according to which there will be no net emissions of greenhouse gases in 2050 in the European Union. This Plan aims to protect, conserve and enhance the natural capital, and protect the health and well-being of citizens while at the same time the transition must be just and inclusive.

The *Fit for 55* package includes eight proposals for revision and five new proposals for the EU legislation and sets an intermediate target of reducing net emissions of greenhouse gases by at least 55% by 2030 compared to 1990 levels. The interconnected proposals cover areas of climate, energy, transport, taxation and land use, to bring them into line with the targets agreed in the *European Climate Law*, that is, *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999*.

In the forthcoming period SERC will follow up the adoption of new rules from the *Fit for 55* package and analyse contents and activities stemming from the new European Union rules. This approach takes into account the fact that all new EU regulations and directives in the energy sector become binding also for Bosnia and Herzegovina through the mechanisms developed under the Treaty establishing the Energy Community.

[7] On 30 November 2021, the Ministerial Council included a part of this package of rules in the Energy Community legal framework (please see Section 4.1).

4. ACTIVITIES IN INTERNATIONAL INSTITUTIONS

4.1 Energy Community

The *Treaty establishing the Energy Community*, which was signed in Athens on 25 October 2005, and came into effect on 1 July 2006, provides for the creation of the biggest internal market in the world for electricity and gas, with effective participation of the European Union on one side, and the following nine Contracting Parties: Albania, Bosnia and Herzegovina, Georgia, Kosovo*, Moldova, Montenegro, North Macedonia, Serbia and Ukraine.[8]

In accordance with the expression of interest, the following countries participate in the work of the Energy Community bodies: Austria, Bulgaria, Croatia, Cyprus, the Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Romania, Slovakia, Slovenia and Sweden. These 19 countries have the status of Participants and directly participate in the work of the Energy Community bodies; in the voting procedure their positions are expressed by votes of the European Commission.

Armenia, Norway and Turkey have observer status in the Energy Community.

By signing the Treaty, the Contracting Parties from the region are obligated to establish a common electricity and gas market that will operate in accordance with the standards of the EU energy market into which it will integrate. It is to be achieved by gradual transposition of the EU *acquis*, which means the implementation of the relevant EU directives and regulations pertaining to electricity, gas, security of supply, oil, environment, renewables, energy efficiency, infrastructure, competition and statistics (Annex E). The Treaty establishing the Energy Community is valid until July 2026.

To ensure an adequate process of establishing and functioning of the Energy Community, the following institutions were established: Ministerial Council, Permanent High Level Group, Regulatory Board and Secretariat. Whereas the Electricity Forum (Athens Forum) and the Gas Forum were established by the Energy Community Treaty, the Oil Forum was established by a Ministerial Council Decision in 2008. The Law Forum, the Sustainability Forum and Dispute Resolution Forum convene on the basis of the Secretariat's initiative.

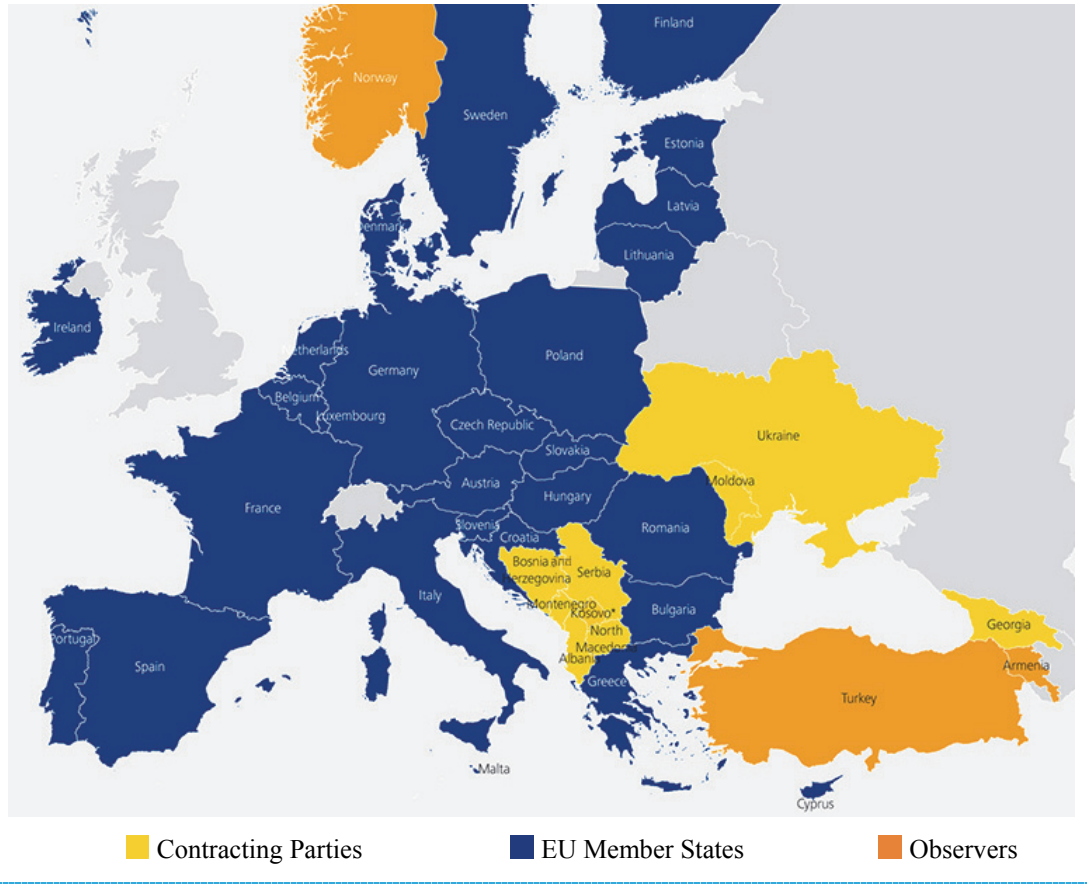
The Ministerial Council, as the highest body of the Energy Community, ensures the achievement of Energy Community goals. It consists of one representative of each Contracting Party and two representatives of the European Union.

The main goals of the Energy Community are the creation of a stable and single regulatory framework and market space that ensures reliable energy supply and attracts investments in the electricity and gas sectors. In addition, it assumes the development of alternative sources of gas supply and improvement of the environment, with the implementation of energy efficiency and the utilisation of renewable sources.

[8] The list shows the Contracting Parties on 31 December 2020. Moldova, Ukraine and Georgia have Contracting Party status as of 1 May 2010, 1 February 2011 and 1 July 2017 respectively.

When the Treaty entered into force, Bulgaria and Romania were also the Contracting Parties which joined the European Union on 1 January 2007 as well as Croatia which is an EU Member State as of 1 July 2013.

Figure 19. Geographic scope of the Energy Community



The Permanent High Level Group (PHLG) brings together senior officials from each Contracting Party and two representatives of the European Commission, ensuring continuity of and follow-up to Ministerial Council's meetings and deciding on implementation of measures in certain cases.

The Energy Community Regulatory Board (ECRB), seated in Athens, is composed of representatives of the regional national regulatory bodies, while the European Union is represented by the European Commission, with the assistance of one regulator of each EU participant and one representative of the Agency for the Cooperation of Energy Regulators (ACER). The ECRB considers the issues of regulatory cooperation and may become a body issuing regional regulatory decisions and serving as a dispute resolution institution. The Regulatory Board has a key role in expanded market operation.

The Energy Community Fora bring together all interested stakeholders – representatives of governments, regulators, industry, customers, international financial institutions etc.

The Energy Community Secretariat, seated in Vienna, represents the key administrative actor and, together with the European Commission, ensures the necessary coordination and supports the work of other institutions. The Secretariat is responsible for reviewing the proper implementation of Contracting Parties' obligations under the Treaty, and it submits yearly progress reports to the

Ministerial Council. To this extent, the Secretariat acts as a '*guardian*' of the Treaty, while the European Commission plays a general coordinator role.

In the past period, the Energy Community has grown into a mature organisation, which provides a solid institutional framework for co-operation, mutual support and exchange of experiences and, therefore, serves as a model for regional cooperation on energy matters.

The significant support to the energy market development is provided by the measures adopted in the framework of the 'Berlin Process', i.e. the initiative of six Western Balkans countries (WB6 initiative) which includes Albania, Bosnia and Herzegovina, Kosovo*, North Macedonia, Montenegro and Serbia. In the area of electricity, they primarily refer to removal of shortcomings in primary and secondary legislation, development of organised wholesale and balancing markets, market allocation of cross-border capacities, deregulation of prices, unbundling of commercial activities from those characterised by natural monopoly and strengthening the regulatory independence.

Ms. Ursula von der Leyen, President of the European Commission:
"Our first priority is to accelerate the enlargement agenda across the region and support our Western Balkan partners in their work to deliver on the necessary reforms to advance on their European path. But our engagement with the Western Balkans goes beyond that, and the Berlin Process has served as an incubator for many initiatives that have now become an integral part of the EU's policy vis-à-vis the region. Together we have set the course for a more sustainable, more digital and more resilient Europe."

(Berlin, 5 July 2021)

The goal of the Berlin Process is to strengthen cooperation between the Western Balkans countries and their integration into the European Union. Cooperation programs in various sectors focus on regional transport and energy infrastructure and reforms. This emphasises that well-connected and functioning infrastructure networks drive economic growth, provide business opportunities, attract investments and generate jobs.

Following the EU-Western Balkans summits held in Berlin, Vienna, Paris, Trieste, London, Poznan and Sofia, the Eighth Western Balkans Summit was held again in Berlin on 5 July 2021. The summit brought together by video-conference heads of states or governments from the Western Balkans and their counterparts from nine EU Member States, the United Kingdom and high-level EU representatives. During the Summit, the European Commission reconfirmed its commitment to cooperation with and support for the region in its post-pandemic recovery, focusing on, *inter alia*, green and digital transition investments, sustainable energy and digital infrastructure.

The Summit conclusions stressed the need for continuation and further development of the core elements of cooperation. These elements notably include the *Economic and Investment Plan*, with a focus on sustainable transport, clean energy and digital connectivity projects implemented through the Western Balkans Investment Framework (WBIF). Furthermore, the commitment to achieving the objectives of the *Green Agenda for the Western Balkans* was emphasised.[9] The Green Agenda is an important driver for the transition to carbon-neutral and climate-resilient economies, with the aim of decoupling economic growth from resource consumption and waste generation, tackling high pollution levels and safeguarding the rich biodiversity of the region. The participants welcomed the progress achieved to date

[9] The Sofia Declaration on the *Green Agenda for the Western Balkans* was signed on 10 November 2020 in the context of the Berlin Process.

in its implementation and recognised efforts of the Regional Cooperation Council, Sarajevo (RCC) in coordinating the preparation of the Action Plan[10] for the implementation of the Declaration.

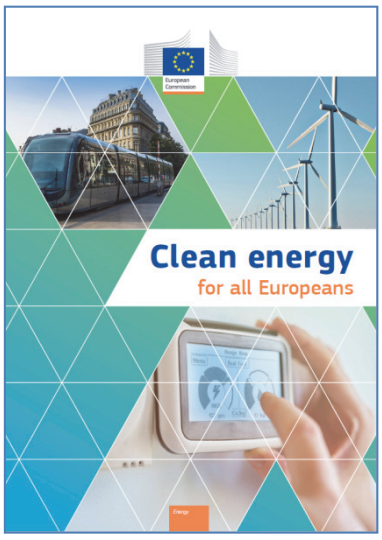
Under the Serbian Presidency, the Energy Community Ministerial Council held its annual meeting on 30 November 2021. On that occasion, by the Ministerial Council decisions, the following five out of eight EU rules in total constituting the *Clean Energy for All Europeans* package were included in the *acquis* with the necessary adaptation:

- Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council,
- Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources,
- Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency,
- Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC, and
- Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast).

Furthermore, European Commission regulations pertaining to Regulation (EU) 2018/1999 with necessary adaptations were included in the *acquis* as follows:

- Commission Delegated Regulation (EU) 2020/1044 of 8 May 2020 supplementing Regulation (EU) 2018/1999 of the European Parliament and of the Council with regard to values for global warming potentials and the inventory guidelines and with regard to the Union inventory system and repealing Commission Delegated Regulation (EU) No 666/2014, and
- Commission Implementing Regulation (EU) 2020/1208 of 7 August 2020 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) 749/2014.

The rules under the *Clean Energy for All Europeans* include the *energy efficiency first* principle and will drive an acceleration of



[10] The Action Plan for the implementation of the *Green Agenda for the Western Balkans* was adopted on 6 October 2021 in Brdo near Kranj, Slovenia.

necessary investments and clean energy uptake in all sectors. States are obligated to prepare integrated *National Energy and Climate Plans* for the period from 2021 to 2030 which include an outline of a long-term strategy for at least next 30 years. In addition to strengthening customer rights (more transparency in household bills, greater choice and more flexibility to change supplier), the new rules will make it easier for individuals to produce their own energy, store it or sell it onto the grid. The new rules will increase the security of supply thanks to smarter and more efficient solutions on the electricity market which enable flexibility of the system and help integrate renewable energy sources, which will lead to a cleaner, more stable and more competitive electricity sector across Europe.

Targets of the Contracting Parties for 2030 on energy efficiency, renewable energy and greenhouse gas emission reduction will be adopted at the next meeting of the Ministerial Council in 2022, based on a study which is being prepared by the European Commission.

Regulation EU 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010 was included in the *acquis*, with necessary adaptations as well, by the Ministerial Council decision.

At the proposal of the European Union, the Ministerial Council adopted *General Policy Guidelines on the adoption of a De-carbonisation Roadmap for the Contracting Parties of the Energy Community*. This will send an important signal as to the readiness of the Energy Community to join the European Union and other international partners in achieving net-zero greenhouse gas emissions by 2050. However, Contracting Parties expressed their concern about financial capabilities to implement this Roadmap and expressed an expectation that EU would assist in these efforts respecting the principle of common but differentiated responsibilities of each party.

The Energy Community priorities in next year under the Presidency of Ukraine, include continued reform, that is, negotiations on amendments to the Treaty establishing the Energy Community, strengthening of the principle of solidarity, improving energy market integration between Energy Community Contracting Parties and EU Member States and the relevance of decarbonisation.

Aware of big challenges in this field, Contracting Parties will support the initiative of the Secretariat for the establishment of national decarbonisation funds, co-funded by EU grants and revenues generated from carbon taxes. This support is vital to mitigate the consequences of the transition and ensure a fair and just transition.

Bosnia and Herzegovina and the Energy Community

By active participation in the Energy Community, Bosnia and Herzegovina confirms its commitment to the energy sector reforms, energy market liberalisation and harmonisation of its policies with those of EU Member States.

It is obvious that additional efforts should be made at different administrative levels in Bosnia and Herzegovina to transpose and implement the Energy Community *acquis*. The deadlines for the fulfilment of numerous obligations of BIH have already expired, with a relatively short period of time left for a significant number of new obligations (Annex E).

This is also indicated by the Ministerial Council Decision of 29 December 2020 according to which the rights of Bosnia and Herzegovina to participate in the decision-making on matters of budget and enforcement for a period of two years are suspended, unless it rectifies in the meantime the breaches which pertain to the provisions of the Second Energy Package in the gas sector, the transposition of the Third Energy Package, and the reduction of sulphur dioxide resulting from the combustion of heavy fuel oils and petroleum-derived liquid fuels.

Furthermore, the content of the Ministerial Council Decision of 30 November 2021 raises some concerns, according to which Bosnia and Herzegovina failed to comply with its obligations under the Treaty stablishing the Energy Community. Namely, the decision of the State Aid Council on a guarantee by the Federation of Bosnia and Herzegovina for the construction of Block 7 of the Tuzla Thermal Power Plant was in breach of Article 18 of the Treaty as it was not issued under commercial terms. BIH was called upon to rectify the breach and ensure compliance with the Energy Community *acquis* immediately.

With regard to the case of legal and functional unbundling of distribution system operators, the Ministerial Council noted the absence of an opinion by the Advisory Committee and called upon the Permanent High Level Group to resume the discussion of that case before recommending adoption of a decision by written procedure. There are other infringement cases in progress in the Energy Community initiated by the Energy Community Secretariat, which pertain to the environmental impact assessment procedure for the planned Thermal Power Plant Ugljevik 3, energy end-use efficiency and energy services and the failure to transpose Regulation (EU) No 347/2013 on guidelines for trans-European energy infrastructure.

SERC Activities in the Energy Community Bodies

The work of the State Electricity Regulatory Commission in the Energy Community was carried out with the necessary cooperation of the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, through support and contribution to the implementation of different projects supporting the Energy Community development, and in particular, through proactive involvement in surveys which were planned and implemented by different groups with the wider thematic spectrum bringing together energy regulators from the region and the European Union.

SERC activities in the Energy Community continue to focus on the Energy Community Regulatory Board (ECRB), which was

established on 11 December 2006 in Athens. Since then SERC actively participates in its activities, representing the interests of Bosnia and Hercegovina. The SERC chairmanship of the ECRB Customers and Retail Markets Working Group since 2007 contributes to the affirmation of Bosnia and Herzegovina.

In 2021, during which the Regulatory Board held three meetings, it gave a significant contribution to the creation of Energy Community policies in the field of regulatory initiatives in promoting investments, and enhancing regulatory independence. In the past year, the ECRB continued the joint activities with the Agency for the Cooperation of Energy Regulators (ACER), the Council of European Energy Regulators (CEER) and the Mediterranean Energy Regulators (MEDREG).

Significant electricity price hikes, both in the Energy Community and in the rest of Europe, were the subject of a special assessment by the ECRB in 2021. It sheds light on the impacts of the price surge on the Contracting Parties' electricity markets and summarises the measures taken by governments and regulators to protect consumers. While the price surge has not impacted all Contracting Parties in the same way, the assessment shows that households and small commercial consumers have largely been sheltered from the impacts due to regulated prices and national electricity production being generally reserved for this part of the market. On the other hand, industrial consumers have been exposed to the currently high energy prices, and are bearing the cost of imports in most cases, which has forced some to temporarily shut down.

The ECRB organises a considerable part of its activities through several working groups (Customers and Retail Markets Working Group, Electricity Working Group, Gas Working Group and Wholesale Energy Market Integrity and Transparency – REMIT Working Group), with the support of the ECRB Section of the Secretariat.

4.2 Energy Regulators Regional Association – ERRA

The Energy Regulators Regional Association (ERRA) is an organisation composed of independent energy regulatory bodies from Europe, Asia, Africa and America. Amendments to the ERRA Constitution made in 2015 removed barriers for joining of regulators from new regions and allowed active participation of all members. ERRA has 34 full members and 14 associate members, of which some are regional associations, which enables regulators from 62 countries to participate in ERRA activities (Figure 20).

The goals of ERRA are the improvement of energy regulation in the member countries, facilitating the development of independent and stable energy regulators, improvement of cooperation among regulators, exchange of information, research and experience among the members, better access to information on world-wide experience on regulation of energy activities. ERRA also promotes and organises training courses in the field of energy regulation.

Figure 20. ERRA membership

The State Electricity Regulatory Commission is a full ERRA member as of 19 May 2004. At the General Assembly meeting held in May 2010, the two Entity Regulatory Commissions – the Regulatory Commission for Energy in the Federation of BIH and the Regulatory Commission for Energy of Republika Srpska, became ERRA associate members.

In line with their competences, SERC representatives actively participate in the activities of the ERRA General Assembly, the Electricity Markets and Economic Regulation Committee, the Renewable Energy Committee and the Customer Protection Working Group.

Under the new circumstances caused by the COVID-19 pandemic, in 2021 the activities of SERC representatives within ERRA continued mostly via internet platforms, while in the second half of the year, after almost two years, in-person meetings took place. The most relevant topics discussed in 2021 include, *inter alia*, price disruptions in wholesale markets, electricity market integration, roles and potentials of smart technologies and services, including various aspects of utilizing electricity and gas smart meters, regulatory support to renewable sources including tariff regulation for renewable energy generated from wind and solar sources, renewable energy supporting schemes, hydrogen perspective in the energy sector and customer protection including strengthening customer awareness through price comparison tools.

In addition to active participation in the ERRA bodies, the State Electricity Regulatory Commission fulfils its role as an ERRA member by providing relevant information on the power sector of Bosnia and Herzegovina and regulatory practice in particular.

4.3 Mediterranean Energy Regulators – MEDREG

Mr. Petrit Ahmeti, MEDREG President: "They (regulators) should work to implement smart policies to promote both hydrogen and RES and long-term regulatory predictability, which are key aspects to support development of infrastructure to both accommodate Hydrogen and RES towards energy transition."

(Rome, 4 November 2021)

The Association of Mediterranean Energy Regulators (MEDREG) was established in 2007 in order to facilitate cooperation among the energy regulators from the countries of Northern, Southern and Eastern shores of the Mediterranean basin. The Association gathers regulatory authorities from Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Italy, Israel, Jordan, Lebanon, Libya, Malta, Montenegro, Morocco, Palestine, Portugal, Slovenia, Spain, Tunisia and Turkey (Figure 21).

The main objective of the Association is the promotion of clear, stable and harmonised legal and regulatory frameworks in the Mediterranean region with the aim of facilitating investments in energy infrastructures and supporting market integration. Towards this goal, MEDREG promotes a permanent exchange of know-how, data collection and diffusion of expertise through comprehensive studies, recommendation reports and specialised training sessions in the field of energy regulation. The Association is also dedicated to consumer protection focusing on access to information and awareness-raising regarding changes in the sector.

Its organisation is structured around the General Assembly, the Secretariat seated in Milan and five working groups: (1) on Institutional Issues, (2) on Electricity, (3) on Gas (4) on Environment, Renewable Energy Sources and Energy Efficiency and (5) on Customer Issues. MEDREG carries out its activities through an effective internal and external cooperation process with the objective to implement the conditions for the establishment of a Mediterranean Energy Community.

In 2021, the focus of MEDREG activities was, *inter alia*, on renewable energy, energy transition and low-carbon initiatives.

Figure 21. Geographic scope of MEDREG

Under the specific working conditions due the COVID-19 pandemic, during this year SERC representatives participated in the work of the General Assembly and Working Groups' activities by the use of various communication tools and provision of required information and comments during the development of various reports and other documents.

4.4 Council of European Energy Regulators – CEER

The Council of European Energy Regulators (CEER) is a non-profitable association of independent statutory bodies responsible for energy regulation at national level. CEER brings together 39 national regulatory authorities (30 full members and nine observers) from European Union Member States, European Free Trade Association (EFTA) and EU accession countries including Contracting Parties of the Energy Community Treaty.

The overall aim of CEER is to facilitate the creation of a single, competitive, efficient and sustainable internal market for gas and electricity in Europe. The Council of European Energy Regulators acts as a platform for cooperation, information exchange and assistance between Europe's national energy regulators in the energy sector.

The State Electricity Regulatory Commission has observer status in CEER as of 1 January 2017. As Observers, SERC staff participates in activities of the CEER General Assembly and CEER's working groups. Furthermore, the State Electricity Regulatory Commission has access to the CEER's established regulatory network and cooperation tools, and the possibility of a deep understanding of European Union energy policies and practices. In this regard, participation in activities of the Council of European Energy Regulators is also helpful on the path of Bosnia and Herzegovina towards EU membership, and the full obligations this will entail in terms of implementation of the *acquis* in the field of energy.

4.5 International Confederation of Energy Regulators – ICER

The International Confederation of Energy Regulators (ICER), established in October 2009, is a voluntary framework for cooperation between energy regulators from around the globe. ICER's aim is to improve public and policy-maker awareness and understanding of energy regulation and its role in addressing a wide spectrum of socio-economic, environmental and market issues.

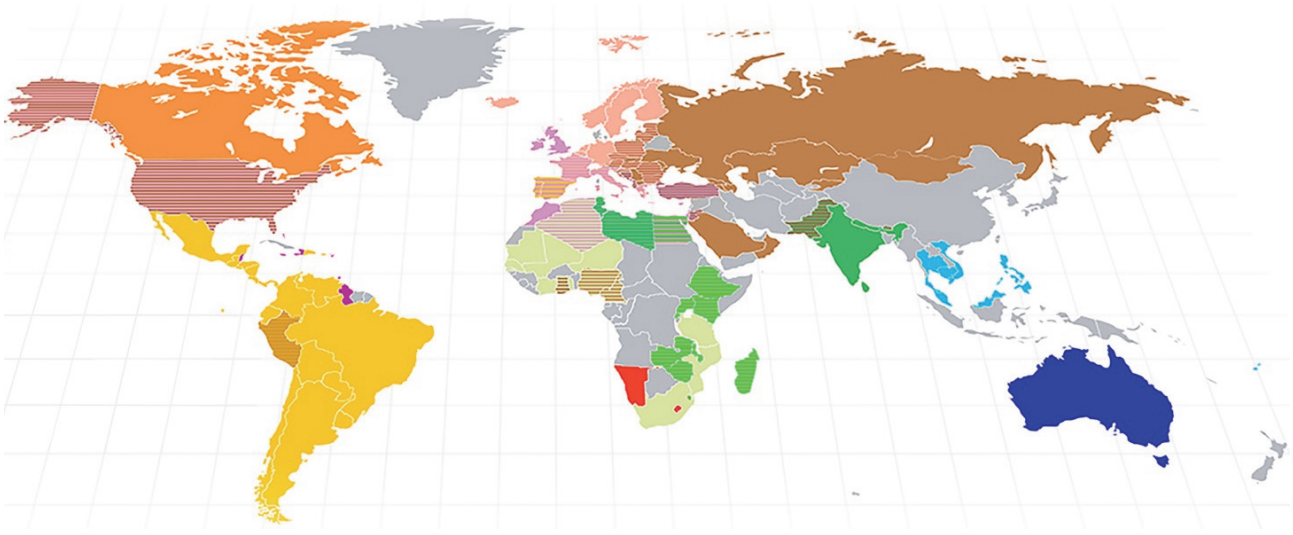
Over 270 regulatory authorities are included in the ICER's membership through 13 regional regulatory associations (Figure 22). SERC participates in and follows the activities of ICER through ERRA, MEDREG and CEER, and provides support to ICER's activities in different ways, including the provision of responses regarding different activities and surveys, thus enabling an insight into and the exchange of practice in the area of relevance to regulatory activities.

ICER's work is focused around several key areas, in line with the topics defined during each *World Forum on Energy Regulation* (WFER), the leading international conference on energy regulation, held once every three years. The Seventh World Forum on Energy Regulation held in March 2018 in Cancun, Mexico focused on disruptive innovations which are currently transforming the fundamentals of the energy value chain worldwide. Furthermore, the most relevant current regulatory issues including empowered consumers, dynamic markets and sustainable infrastructure were addressed. The Forum promoted the advancement of women in energy by streamlining gender perspective in all of its activities which is the continuation of activities launched in October 2013 in ICER's *Women in Energy* initiative.

Due to the COVID-19 pandemic, the upcoming World Forum on Energy Regulation has been postponed by one year, so the Eighth World Forum on Energy Regulation will be held in Lima, Peru, in March 2022. The main theme of this Forum is "The Energy Transformation Challenge" with four main pillars: competitiveness, institutionality, universal access to energy and energy transition.

In 2013, ICER launched its Chronicle as a means to further promote ICER goals of enhanced exchange of regulatory research and expertise. From then until the beginning of 2021 a SERC employee was engaged as a member of the Editorial Board of this professional magazine. The ICER Chronicle is a publication issued twice a year in electronic format, gathering professional articles on regulatory topics.

Figure 22. ICER Members



AEMC
Australian Energy Market Commission

CAMPUT
Canada's Energy and Utility Regulators

ERRA
Energy Regulators Regional Association

OOCUR
Organization of Caribbean Utility Regulators

SAFIR
South Asia Forum For Infrastructure Regulation

AFUR
African Forum for Utility Regulators

CEER
Council of European Energy Regulators

MEDREG
Mediterranean Energy Regulators

RAERESA
Regional Electricity Regulators Association of Southern Africa

ARIAE
Ibero-American Association of Energy Regulators

EAPIRF
East Asia and Pacific Infrastructure Regulatory Forum

NARUC
National Association of Regulatory Utility Commissioners

RERA
Regional Electricity Regulators Association of Southern Africa

4.6 Cross-Regional Cooperation

Various forms of cooperation between regional energy regulators associations exist for a certain period of time through organisation of joint training events, workshops and relevant working group meetings. While some regulators are members of several associations of energy regulators at the same time, these associations operate in regions that substantially differ in their degree of integration, meaning that common challenges are often met with different means. At the same time some common memberships of the associations promote convergence of goals and principles. This is the reason why cooperation of these associations in terms of exchanging experiences and regulatory practices becomes more important.

Recognising the relevance of these forms of cooperation and the commitment to foster a compatible and transparent energy regulation by promoting best practices and exchanging experiences, the Council of European Energy Regulatory (CEER), the Energy Community Regulatory Board (ECRB) and the Association of Mediterranean Energy Regulators (MEDREG) signed a *Cooperation Arrangement* on 12 December 2018 in Vienna.

Strengthening regulatory dialogue across Europe and the Mediterranean region to support consumers in becoming active energy market participants in the context of the COVID-19 pandemic and recovery are themes of the *on-line* workshop organised in 2021 by the ECRB, CEER and MEDREG under the existing cooperation arrangement. Special focus is given to commercial quality, prosumers and active self-consumption, billing and digitalization. Furthermore, there was discussion of the regulatory measures which would enable more active consumer engagement in the energy market, as their active involvement plays a vital role in driving strong competition and ensuring markets work effectively as well as in the energy transition.

In addition, the ECRB and MEDREG held a joint *on-line* workshop in order to exchange expertise and implementation practices on the challenges and opportunities in deploying renewable energy sources into electricity networks. The joint workshop focused on the integration of renewables into the system and related market balancing mechanisms. The workshop underlined the importance of finding the right balance between regulation of markets and the technological developments and market strengthening and it also highlighted the crucial role energy regulators must play in ensuring the well-functioning of the markets and the cost-effective deployment of renewables.

The State Electricity Regulatory Commission is a member of both the ECRB and MEDREG and has observer status at CEER. This position of SERC will further strengthen its professional capacities in terms of gaining more knowledge and exchanging experience and regulatory practice.

Dr. Annegret Groebel,

CEER President:
"Placing consumers at the centre of energy markets, with consumer-centric dynamic regulation, and empowering consumers to actively contribute to and benefit from a flexible energy system is an essential part of the regulatory model on which CEER is building its new Strategy 2022-2025 towards a carbon-neutral society and economy."

Mr. Marko Bislimoski,

ECRB President:
"Consumers have been at the heart of the ECRB since the very beginning. It is our core duty as regulators to ensure that the liberalization of energy markets and the energy transition deliver for the benefit of consumers."

Mr. Stefano Besseghini,
MEDREG Permanent Vice-President:
"MEDREG calls for an increasing digitalization that supports the development of smarter and safer energy systems, which will enable consumers to better benefit from innovative services and be active players in the energy markets."

(Brussels, Vienna, Milan, 26 May 2021)

5. AUDIT REPORT

Pursuant to the Law on Transmission of Electric Power, Regulator and System Operator of BIH, SERC is funded from its own revenues. The basic revenue of SERC in 2020 was the regulatory fee paid by holders of licences for performance of the activity of electricity transmission, independent system operator, international electricity trading and supply of customers with electricity and electricity distribution in the Brčko District of BIH. The regulatory fee is determined so as to cover SERC's costs, while the obligations to pay the regulatory fee in the forthcoming period are reduced by an excess of revenues over expenditures.

In addition to efforts to attain the mentioned own funding, SERC financial dealings also include the following activities:

- incurrence and settlement of financial obligations for the needs defined in the approved Financial Plan,
- short-term planning and cash flow management,
- regular monitoring of the Financial Plan implementation in the current year,
- an analysis and estimate of future cash flows as the basis for development of a new financial plan,
- preparation of the financial plan for the following year,
- monitoring and development of financial management and internal control,
- internal financial reporting as the basis for adoption of the relevant business decisions, and
- financial reporting to external bodies, authorised institutions and the public.

The final outcome of the aforementioned activities and adopted decisions are financial reports presenting business results at the end of a business year. SERC financial reports are audited on an annual basis in order to have an independent and impartial audit of the stated business results as well as to check the compliance of these procedures with the applicable regulations.

The audit of SERC financial reports for the previous year was performed in the first quarter of 2021 by the Auditing, Accounting and Consulting Company Revik d.o.o. Sarajevo with whom a contract was concluded in the process carried out in accordance with public procurement procedures.

While performing an audit pursuant to the International Standards on Auditing, the auditors collected evidence on transactions and other data published in the financial reports to be confident beyond doubt that they did not include any relevant material errors. In addition to determining the objectivity of the financial reports as a whole, the audit included the evaluation of accounting

"In our opinion, the enclosed annual financial reports show realistically and objectively the financial standing of SERC on 31 December 2020, its financial performance and cash flow for the year which ended at that point, in accordance with the Law on Accounting and Auditing of the Federation of BIH and the International Financial Reporting Standards (IFRS)."

REVIK d.o.o., Sarajevo,
15 April 2021

Revik d.o.o. Sarajevo
Member of HLB International

policies applied and relevant estimates made by the SERC management.

Based on the collected data, the independent auditor gave a positive assessment of SERC financial reports for 2020. It is the opinion of the independent auditor that the presentation of financial reports, recognising and measuring of transactions and business events, objectively and realistically present the state of assets, liabilities, capital and financial results of business performance.

With the mentioned opinion, SERC maintained the highest audit opinion for compliance of its financial reports with the applicable international accounting standards and legal regulations, which SERC was given by external auditors since its establishment, including the opinions by the Audit Office of the Institutions of Bosnia and Herzegovina.

No irregularities were found through *ex-post* controls of financial transactions. This confirmed the efficiency of the established financial management and internal control system enabling the prevention or identification of possible errors in order to protect the property from loss caused by negligence or poor management.

With the aim of further enhancing the financial management and control system, under an *Internal Audit Agreement* signed with the Internal Audit Unit of the Ministry of Foreign Trade and Economic Relations of BIH, SERC expects objective and professional assistance in facilitating the organisation of business. The aim of using internal auditing services is to ensure the development of *ex-ante* audit of defined processes as well and strengthen the overall risk management process (so-called risk management). In the reporting period, no internal audit was carried out.

Through external auditing, SERC ensures an independent and reliable report on the use of property and management of revenues and expenditures. Lead by the commitment to the principles of objectivity and transparency in its work, with the aim of providing information on its financial standing and business results, the State Electricity Regulatory Commission publishes its audit report on an annual basis. In addition to the publication in the legally prescribed register, the financial reports for 2020 were published on the SERC website.

6. MAIN ACTIVITIES IN 2022

The State Electricity Regulatory Commission will continue its activities on ensuring the conditions for free trade and unhindered electricity supply in accordance with the pre-defined quality standard to the benefit of citizens of Bosnia and Herzegovina, and in compliance with international agreements, national laws, the relevant European regulations and directives as well as other internal electricity market rules.

In 2022, SERC will continue to cooperate with the Parliamentary Assembly of Bosnia and Herzegovina (PABIH), in particular with the Committee on Traffic and Communications of the House of Representatives of PABIH and the Committee on Foreign and Trade Policy, Customs, Traffic and Communications of the House of Peoples of PABIH. In addition, the focus of interest will remain on the information exchange and harmonisation of key regulatory activities with the Ministry of Foreign Trade and Economic Relation of BIH, which is competent for policy creation in accordance with the *Law on Transmission of Electric Power, Regulator and System Operator of BIH*.

All existing modalities of mutual follow up and harmonisation of activities will be used also in 2022 in relationships with the Regulatory Commission for Energy in the Federation of BIH and the Regulatory Commission for Energy of Republika Srpska as well as with other regulatory bodies established at national level, primarily the Competition Council of BIH.

In order to meet the need of different decision-making levels for quality and reliable statistical energy data, SERC will remain a reference source and an active generator of these data. To this end, SERC will follow developments of EU rules and comply with the Energy Community agenda continuing its cooperation with the BIH Agency for Statistics.

Furthermore, SERC will follow activities and trends in the whole energy sector and directly participate in all relevant events.

Through its activities SERC will focus on:

- Setting tariffs in line with SERC competencies,
- Issuance, modification, suspension and revocation of licences,
- Regulatory monitoring of licensed entities,
- Creation of new regulatory rules and analysis of the regulatory rules already adopted and the existing practice, together with review and revision of SERC acts,
- Monitoring the procurement of ancillary service and provision of the system services and balancing of the BIH power system, and, on a needs basis, continuing the development of a design for these services,

- Fostering a higher degree of integration of the national electricity market,
- Contribution to organising and functioning of the wholesale market, including the establishment of an institutional framework for an organised day-ahead market,
- Contribution to organising and functioning of the fully open retail market in BIH,
- Development of rules regulating connection of users to the transmission system,
- Capacity building in terms of the fulfilment of international obligations with regard to regulatory reporting,
- Approving and monitoring rules developed by the Independent System Operator in Bosnia and Herzegovina, Elektroprenos BIH and Komunalno Brčko,
- Approving the *Indicative Generation Development Plan for the Period 2023 – 2032* and the *Long-Term Transmission Network Development Plan* for the upcoming ten-year period as well as an *Investment Plan of Elektroprenos BIH*,
- Monitoring the implementation of the Inter-TSO Compensation Mechanism (ITC mechanism) and operation of the Coordinated Auction Office in South East Europe (SEE CAO),
- Regulatory activities regarding the network codes and guidelines and the Regulation on wholesale energy market integrity and transparency,
- Regulatory activities regarding the improvement of cyber security in the BIH power sector,
- Sharing information on regulatory practice with the regulated entities and the public, and
- Performing other tasks within competences vested in SERC.

While conducting its activities SERC will take into account the protection of customers and give its full contribution to the creation of best applicable solutions in accordance with competences vested in SERC under law.

Taking into account the fact that under the Treaty establishing the Energy Community Bosnia and Herzegovina is obligated to transpose the rules of the European Union on the internal energy market ('Third Energy Package') into its national legislation and apply them in practice, SERC will contribute to the legal framework development in line with its competences and through optimal coordination with other stakeholders.

The State Electricity Regulatory Commission will take the same approach regarding the extension of the *acquis*, that is, legal framework of the Energy Community, which from 30 November 2021 includes a part of the package of European Union energy rules the goal of which is to provide competition needed to

facilitate the clean energy transition (*Clean Energy for All Europeans*).

The implementation of the power sector reform in Bosnia and Herzegovina, harmonisation of secondary legislation and efficient coordination among the bodies participating in its drafting and development is in the interest of all stakeholders. The aim is to create a clear and stable legal framework based on the European directives and rules on the internal electricity market.

In this context, SERC is planning to continue to actively participate in the development of an EU-*acquis*-compliant legislative framework in the field of electricity in Bosnia and Herzegovina, and removal of shortcomings in the electricity sector as specified in the reports of the European Commission on BIH.

In line with its competences, SERC will contribute to the implementation of recommendations of meetings of the BIH Stabilisation and Association Committee and Subcommittee on Transport, Energy, Environment and Regional Development. SERC will continue to participate in the *Program of Integration of Bosnia and Herzegovina into the European Union*, through active contribution to the activities under Chapter 15 – Energy, Chapter 21 – Trans-European Networks, and Chapter 28 – Consumer and Health Protection.

SERC will participate in supporting and implementing regional priorities and Energy Community projects as well as the priorities identified for the BIH power sector within the Energy Community as specified in the Conclusions of the BIH Council and *Annual Implementation Report of the Acquis under the Treaty establishing the Energy Community*. SERC will fully contribute to the implementation of measures in the energy sector as agreed within the 'Berlin Process'.

SERC is also planning to contribute to the continued implementation of several regional projects of the United States Agency for International Development (USAID) and the National Association of Regulatory Utility Commissioners (NARUC).

In 2022, the multiannual *USAID Energy Policy Activity* will continue so SERC will follow up its activities and participate in the implementation of some components which are of relevance for the regulatory activities. Furthermore, SERC plans to actively participate in the next Energy Summit in BIH, which will be held in 2022 under this project.

SERC will also focus on the activities of international bodies pertaining to the electricity market regulation, primarily of those in the work of which SERC participates:

- ECRB – the Energy Community Regulatory Board,
- ERRA – the Energy Regulators Regional Association,
- MEDREG – the Mediterranean Energy Regulators,

- CEER – the Council of European Energy Regulators, and
- ICER – the International Confederation of Energy Regulators.

SERC will continue to follow up the work of the Agency for the Cooperation of Energy Regulators (ACER), and depending on the legal framework development in BIH consider the possibility to directly participate in activities of this body.

ANNEX A: Basic Data on the Power System of Bosnia and Herzegovina

(Source: ISO BIH, Elektroprenos BIH and public electric power utilities)

Basic Data on Installed Capacity of Generating Units

Total installed capacity of generation units in Bosnia and Herzegovina amounts to 4,608.26 MW, with 2,076.6 MW, 2,065 MW and 134.6 MW installed in the major hydro power plants, thermal power plants and larger wind power plants respectively. Installed capacity of small hydro, solar, biogas and biomass power plants and small wind power plants amounts to 180.18 MW, 56.51 MW, 2.11 MW, 0.40 MW respectively, while installed capacity of industrial powers plants amounts to 92.85 MW.

Major generating units

Hydro power plants	Capacity of power unit (MW)	Total installed capacity (MW)
Trebinje I	2×54+63	171
Trebinje II	8	8
Dubrovnik (BIH+Cro)	126+108	234
Čapljina	2×210	420
Rama	80+90	170
Jablanica	6×30	180
Grabovica	2×57	114
Salakovac	3×70	210
Mostar	3×24	72
Mostarsko blato	2×30	60
Peć-Mlini	2×15.3	30.6
Jajce I	2×30	60
Jajce II	3×10	30
Bočac	2×55	110
Višegrad	3×105	315

Thermal power plants	Installed capacity (MW)	Available capacity (MW)
TUZLA	715	635
Tuzla G3	*100*	*85*
Tuzla G4	*200*	*182*
Tuzla G5	*200*	*180*
Tuzla G6	*215*	*188*
KAKANJ	450	398
Kakanj G5	*110*	*100*
Kakanj G6	*110*	*90*
Kakanj G7	*230*	*208*
GACKO	300	276
UGLJEVIK	300	279
STANARI	300	283

Wind power plants	Capacity of power unit (MW)	Total installed capacity (MW)
Mesihovina	22×2.3	50.6
Jelovača	18×2	36
Podveležje	15×3.2	48

Basic Data on the Transmission System

transmission lines

Nominal voltage of transmission lines	Length (km)
400 kV	865.93
220 kV	1,520.09
110 kV	4,037.08
110 kV – cable line	34.66

interconnections

Nominal voltage of transmission lines	Number of interconnectors
400 kV	4
220 kV	10
110 kV	23
Total	*37*

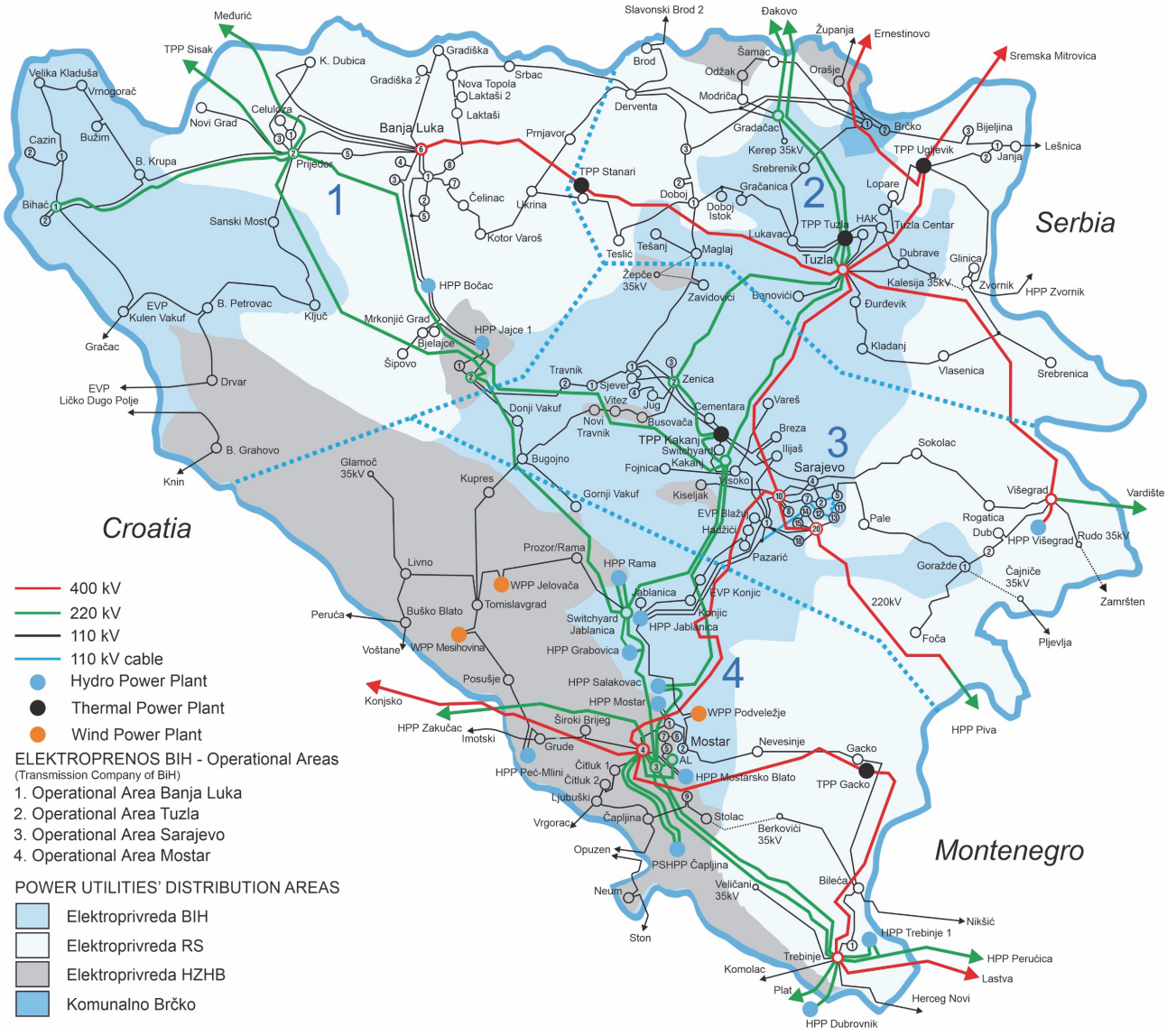
substations

Type of substation	Number of substations	Installed capacity (MVA)
SS 400/x kV	10	5,980.5
SS 220/x kV	8	1,423.0
SS 110/x kV	135	5,662.0

transformers

Transmission ratio of transformers	Number of transformers	Installed capacity (MVA)
TR 400/x kV	14	4,900.0
TR 220/x kV	13	1,950.0
TR 110/x kV	250	6,215.5

ANNEX B: Map of the Electric Power System of Bosnia and Herzegovina with Operational Areas of Elektroprenos BIH and Distribution Areas of Public Electric Power Utilities (31 December 2021)



ANNEX C: Balance Values of the Electric Power Sector of Bosnia and Herzegovina

(GWh)

Year 2021	EP BIH	ERS	EP HZHB	Komunalno Brčko	Other entities	BIH
Generation in hydro power plants	1,665.49	2,487.46	2,082.77		78.27	6,313.99
Generation in thermal power plants	4,840.82	3,107.68			1,872.48	9,820.98
Generation in larger wind PPs	107.17		162.99		111.65	381.81
Generation in small and industrial PPs	63.59	58.89			416.17	538.66
Generation	6,677.06	5,654.04	2,245.76		2,478.58	**17,055.44**
Customers connected to distr. network	4,861.66	3,896.14	1,424.27	285.65		10,467.72
Transmission losses						369.20
Large customers	549.67	422.94	12.95		184.32	1,169.88
PPs self-consumption and pumping		12.43	143.86		6.69	162.98
Consumption	5,411.33	4,331.51	1,581.08	285.65	191.01	**12,169.78**

Year 2020	EP BIH	ERS	EP HZHB	Komunalno Brčko	Other entities	BIH
Generation in hydro power plants	1,024.07	1,677.83	1,533.93		40.65	4,276.48
Generation in thermal power plants	5,155.80	3,285.61			2,001.57	10,442.98
Generation in larger wind PPs			147.50		114.31	261.81
Generation in small and industrial PPs	58.05	36.07			315.28	409.40
Generation	6,237.92	4,999.51	1,681.43		2,471.81	**15,390.67**
Customers connected to distr. network	4,677.57	3,690.32	1,352.59	272.74		9,993.22
Transmission losses						317.16
Large customers	560.62	216.72	17.20		95.50	890.04
PPs self-consumption and pumping		12.57	112.59		3.92	129.08
Consumption	5,238.19	3,919.61	1,482.38	272.74	99.42	**11,329.50**

Year 2019	EP BIH	ERS	EP HZHB	Komunalno Brčko	Other entities	BIH
Generation in hydro power plants	1,443.95	1,604.74	2,537.38		63.53	5,649.60
Generation in thermal power plants	4,527.31	3,017.35			2,068.32	9,612.98
Generation in larger wind PPs			165.98		87.69	253.67
Generation in small and industrial PPs	62.52	47.24			448.00	557.76
Generation	6,033.78	4,669.33	2,703.36		2,667.54	**16,074.01**
Customers connected to distr. network	4,737.34	3,726.24	1,407.10	271.87		10,142.55
Transmission losses						323.95
Large customers	493.33	374.32	571.41		311.52	1,750.58
PPs self-consumption and pumping		13.83	96.28		2.94	113.05
Consumption	5,230.67	4,114.39	2,074.79	271.87	314.46	**12,330.13**

Year 2018	EP BIH	ERS	EP HZHB	Komunalno Brčko	Other entities	BIH
Generation in hydro power plants	1,533.61	2,729.05	1,984.86		52.56	6,300.08
Generation in thermal power plants	5,648.34	3,249.42			2,056.00	10,953.76
Generation in larger wind PPs			103.50			103.50
Generation in small and industrial PPs	63.46	50.58			401.61	515.65
Generation	7,245.41	6,029.05	2,088.35		2,510.18	**17,872.99**
Customers connected to distr. network	4,705.96	3,770.48	1,392.22	270.02		10,138.68
Transmission losses						398.77
Large customers	464.34	361.65	131.09		1,646.73	2,603.81
PPs self-consumption and pumping		11.77	137.43		3.49	152.69
Consumption	5,089.64	4,143.91	1,650.44	270.02	1,650.22	**13,293.95**

Year 2017	EP BIH	ERS	EP HZHB	Komunalno Brčko	Other entities	BIH
Generation in hydro power plants	941.41	1,575.30	1,287.41		27.27	3,831.39
Generation in thermal power plants	6,007.23	2,870.62			2,040.59	10,918.44
Generation in small and industrial PPs	60.38	42.21			298.98	401.57
Generation	7,009.02	4,488.13	1,287.41	0	2,366.84	**15,151.40**
Customers connected to distr. network	4,730.02	3,772.64	1,399.58	276.86		10,179.10
Transmission losses						341.52
Large customers	1,225.42	339.99	3.40		993.01	2,561.82
PPs self-consumption and pumping		14.03	266.11		3.82	283.96
Consumption	5,955.44	4,126.66	1,669.09	276.86	996.82	**13,366.40**

ANNEX D: Electric Power Indicators of Bosnia and Herzegovina

		2017	2018	2019	2020	2021
Electricity generation	(GWh)	15,151.40	17,872.99	16,074.02	15,390.67	17,055.44
Net imports	(GWh)	3,428.16	3,118.73	2,824.96	3,266.28	3,312.00
Net exports	(GWh)	5,213.15	7,697.77	6,568.84	7,327.44	8,197.66
Total electricity supplied	(GWh)	13,366.40	13,293.95	12,330.13	11,329.50	12,169.78
Gross electricity consumption	(GWh)	13,366.40	13,293.95	12,330.13	11,329.50	12,169.78
Transmission losses	(GWh)	341.52	398.77	323.95	317.16	369.20
Transmission losses	(%)	1.90%	1.96%	1.77%	1.75%	1.87%
Distribution losses	(GWh)	1,005.92	950.00	933.29	912.62	965.04
Distribution losses	(%)	9.88%	9.37%	9.20%	9.13%	9.22%
PPs self-consumption and pumping	(GWh)	283.96	152.69	113.05	129.08	162.98
Final consumption of electricity	(GWh)	11,735.00	11,792.50	10,959.84	9,970.65	10,672.56
Non-households		*6,978.87*	*7,107.16*	*6,233.91*	*5,175.82*	*5,761.04*
Households		*4,756.13*	*4,685.33*	*4,725.94*	*4,794.83*	*4,911.52*
Maximum system load	(MW)	2,189.00	1,994.00	1,945.00	1,804.00	1,909.00
Net maximum capacity of power plants	(MW)	4,462.23	4,506.53	4,530.64	4,530.64	4,608.26
Coal-fired power plants		2,156.23	2,156.23	2,156.23	2,156.23	2,157.85
Hydropower plants in total		2,207.47	2,235.60	2,238.84	2,248.79	2,256.78
small hydropower plants		*124.00*	*159.00*	*162.24*	*172.19*	*180.18*
pumped storage power plants		*420.00*	*420.00*	*420.00*	*420.00*	*420.00*
Total of other renewable sources		18.06	71.39	111.46	124.00	193.62
wind		*0.30*	*51.00*	*87.00*	*87.00*	*135.00*
solar		*16.52*	*18.15*	*22.35*	*34.89*	*56.51*
biomass		*0.25*	*0.25*	*1.12*	*1.12*	*1.12*
biogas		*0.99*	*0.99*	*0.99*	*0.99*	*0.99*
Transmission network	(km)	6,371.11	6,402.10	6,409.71	6,420.64	6,457.78
380 kV		*864.73*	*865.93*	*865.93*	*865.93*	*865.93*
220 kV		*1,520.38*	*1,520.09*	*1,520.09*	*1,520.09*	*1,520.09*
110 kV		*3,986.00*	*4,016.07*	*4,023.69*	*4,034.62*	*4,037.08*
Number of interconnectors		37	37	37	37	37
Substation capacity	(MVA)	13,022.00	12,903.00	12,783.00	13,045.50	13,065.50
Electricity customers		1,541,968	1,553,439	1,567,786	1,588,773	1,570,415
Non-households		*127,553*	*126,508*	*128,224*	*137,629*	*125,895*
Households		*1,414,415*	*1,426,931*	*1,439,562*	*1,451,144*	*1,444,520*
Eligible customers		1,541,968	1,553,439	1,567,786	1,588,773	1,570,415
Customers that switched supplier		56	31	16	17	12
Electricity supplied	(GWh)	1,859.97	1,737.69	365.92	157.90	235.55
Share in final consumption	(%)	15.85%	14.74%	3.34%	1.58%	2.21%
Customers for whom prices are not regulated		10,521	9,784	10,091	13,640	9,910
Electricity supplied	(GWh)	5,148.53	5,265.27	4,371.07	3,423.61	3,851.16
Share in final consumption	(%)	43.87%	44.65%	39.88%	34.34%	36.08%

ANNEX E: Energy Community *Acquis*

The Energy Community *acquis* (Energy Community legal framework) follows the development of the European Union legal framework, the so-called *acquis communautaire*, in the area pertaining to electricity and related sectors. When defining the new *acquis*, the Ministerial Council (MC) and the Permanent High-Level Group (PHLG) make some adaptations of the EU rules to the Energy Community institutional framework, taking into account the time limits in the region. This approach ensures that the Contracting Parties keep up with the development of the European Union and regularly harmonise their legal framework with the one in the EU. At present the Energy Community *acquis* includes the key energy legislation of the EU in the fields of energy, gas, security of supply, oil, environment, renewable energy sources, energy efficiency, infrastructure, competition and statistics. In November 2021, a part of the *Clean Energy for All Europeans* package was included in the Energy Community *acquis*. The general deadlines for transposition into national legislation and implementation of EU regulations and directives are provided in brackets.

Cross-Cutting Acquis

- Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council, as adapted by Decision 2021/14/MC-EnC (deadline: 31 December 2022),
- Commission Delegated Regulation (EU) 2020/1044 of 8 May 2020 supplementing Regulation (EU) 2018/1999 of the European Parliament and of the Council with regard to values for global warming potentials and the inventory guidelines and with regard to the Union inventory system and repealing Commission Delegated Regulation (EU) No 666/2014, as adapted by Decision 2021/14/MC-EnC (deadline: 31 December 2022),
- Commission Implementing Regulation (EU) 2020/1208 of 7 August 2020 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) No 749/2014, as adapted by Decision 2021/14/MC-EnC (deadline: 31 December 2022),
- Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency, as adapted by Decision 2018/10/MC-EnC (deadline: 29 May 2020).

Acquis on Electricity

- Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast), as adapted by Decision 2021/13/MC-EnC (deadline: 31 December 2023),
- Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules, as adapted by Decision 2018/04/PHLG-EnC (deadline: 12 July 2021),
- Commission Regulation (EU) No 2016/1388 of 17 August 2016 establishing a network code on demand connection, as adapted by Decision 2018/05/PHLG-EnC (deadline: 12 July 2021),
- Commission Regulation (EU) No 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators, as adapted by Decision 2018/03/PHLG-EnC (deadline: 12 July 2021),
- Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council, as adapted by Decision 2015/01/PHLG-EnC (deadline: 24 December 2015),
- Regulation (EU) No 838/2010 of the European Commission of 23 September 2010 on laying down guidelines relating to the inter-transmission system operator compensation mechanism and a common regulatory approach to transmission charging, as adapted by Decision 2013/01/PHLG-EnC (deadline: 1 January 2014),
- Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2008 concerning common rules for the internal electricity market and repealing Directive 2003/54/EC, as adapted by Decision 2011/02/MC-EnC (deadline: 1 January 2015),
- Regulation (EC) 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, as adapted by Decision 2011/02/MC-EnC (deadline: 1 January 2015).

Acquis on Gas

- Commission Regulation (EU) No 2017/460 of 16 March 2017 establishing a network code on harmonised transmission tariff structures for gas, as adapted by Decision 2018/07/PHLG-EnC (deadline: 28 February 2020),
- Commission Regulation (EU) No 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems, as adapted by Decision 2018/06/PHLG-EnC (deadline: 28 February 2020),
- Commission Regulation (EU) No 2015/703 of 30 April 2015 establishing a Network Code on Interoperability and Data Exchange Rules, as adapted by Decision 2018/02/PHLG-EnC (deadline: 1 October 2018),
- Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks, as adapted by Decision 2019/01/PHLG-EnC (deadline: 12 December 2020),
- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal natural gas market and repealing Directive 2003/55/EC, as adapted by Decision 2011/02/MC-EnC (deadline: 1 January 2015),
- Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission network and repealing Regulation (EC) No 1775/2005, as adapted by Decisions 2018/01/PHLG-EnC and 2011/02/MC-EnC (deadline: 1 January 2015).

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Acquis on Security of Supply

- Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC, as adapted by Decision 2021/13/MC-EnC (deadline: 31 December 2023),
- Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010, as adapted by Decision 2021/15/MC-EnC (deadline: 31 December 2022).

Acquis on Oil

- Directive 2009/119/EC of the European Parliament and of the Council of 14 September 2009 imposing an obligation on Member States to maintain minimum stocks of crude oil and/or petroleum products, as adapted by Decision 2012/03/MC-EnC (deadline: 1 January 2023).

Acquis on Environment

- Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels, as adapted by Decision 2016/15/MC-EnC (deadline: 30 June 2018),
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU, as adapted by Decision 2016/12/MC-EnC (deadline: 1 January 2019),
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), as adapted by Decisions 2013/06/MC-EnC and 2015/06/MC-EnC (deadline: 1 January 2018),
- Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, as amended by Directive 2006/21/EC, Directive 2009/31/EC and Directive 2013/30/EU, as adapted by Decision 2016/14/MC-EnC (deadline: 1 January 2021),
- Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on limitation of emissions of certain air pollutants by large combustion plants, as adapted by Decision 2013/05/MC-EnC (deadline: 31 December 2017),
- Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, as adapted by Decision 2016/13/MC-EnC (deadline: 31 March 2018),
- Article 4(2) of the European Community Council Directive 79/409/EEC of 2 April 1979 on conservation of wild birds (deadline: 1 July 2006).

Acquis on Renewable Energy Sources

- Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, as adapted by Decision 2021/14/MC-EnC (deadline: 31 December 2022).

Acquis on Energy Efficiency

- Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency, as adapted by Decision 2021/14/MC-EnC (deadline: 31 December 2022),
- Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU, as adapted by Decision 2018/03/MC-EnC (deadline: 1 January 2020),
- Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, as adapted by Decision 2015/08/MC-EnC (deadline: 15 October 2017),
- Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, as adapted by Decisions 2009/05/MC-EnC and 2010/02/MC-EnC (deadline: 30 September 2012).

Acquis on Infrastructure

- Regulation (EU) No 347/2013 of the European Parliament and Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009, as adapted by Decisions2015/09/MC-EnC and 2021/11/MC-EnC (deadline: 1 January 2017).

Acquis on Competition

The following activities are not allowed and shall be assessed pursuant to Article 101,102 and 107 of the Treaty establishing the European Community:

- Prevention, restriction or distortion of competition,
- Abuse of dominant position,
- Any state aid which distorts or threatens to distort competition.

In particular, with regard to public undertakings and undertakings to which special rights have been granted, provisions of the Treaty establishing the European Community, in particular Article 106, shall be upheld.

Acquis on Statistics

- Commission Implementing Regulation (EU) 2019/803 of 17 May 2019 concerning the technical requirements regarding the content of quality reports on European statistics on natural gas and electricity prices pursuant to Regulation (EU) 2016/1952 of the European Parliament and of the Council, as adapted by Decision 2020/03/MC-EnC (deadline: 15 June 2022),
- Regulation (EU) 2016/1952 of the European Parliament and of the Council of 26 October 2016 on European statistics on natural gas and electricity prices and repealing Directive 2008/92/EC, as adapted by Decision 2018/1/MC-EnC (deadline: 1 March 2018),
- Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics, as adapted by Decisions 2012/02/MC-EnC, 2013/02/MC-EnC, 2015/02/MC-EnC and 2021/12/MC-EnC (deadline: 31 December 2013).

Note: The rules listed in this Annex are available on the website of the State Electricity Regulatory Commission (www.derk.ba).

Additional information on the activities and procedures conducted by the State Electricity Regulatory Commission may be obtained on the website at www.derk.ba, by phone on +387 35 302060 and +387 35 302070, fax +387 35 302077, e-mail info@derk.ba or at the SERC seat in Tuzla, Đorđa Mihajlovića 4/II.