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ZYRA E RREGULLATORIT PËR ENERGJI
REGULATORNI URED ZA ENERGIJU
ENERGY REGULATORY OFFICE

ANNUAL REPORT 2021

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INTRODUCTION

Dear all,

It is a special honour to present to the Assembly of the Republic of Kosovo the Annual Report of Activities of Energy Regulatory Office (ERO) and energy sector carried out during 2021. The Annual Report of Energy Regulatory Office was compiled in line with legal provisions of the Law on Energy Regulator and is submitted to the Assembly of the Republic of Kosovo for information, review and approval purposes.

The Report presents a detailed overview of activities and main achievements of ERO and the energy sector, along with the Financial Report of ERO for 2021. The Report contains data and information on the most important events in energy market, review of energy tariffs, financial reporting of ERO, as well as data on regulated activities in the energy sector in the Republic of Kosovo.

ERO, as an independent agency, focuses its activity on the security of supply at affordable prices, protection of energy customers, as well as sustainable functioning of energy enterprises.

On behalf of me and other members of the Board of Energy Regulatory Office, I want to express gratitude to all the personnel in energy sector, for their work and devotion in provision of services to customers, during this year of COVID-19 pandemic and the energy crisis.

2021 is considered as one of the most challenging years for the energy sector in Kosovo, due to the unprecedented increase of electricity prices in European markets and insufficiency of domestic generation to meet electricity consumption demand in Kosovo.

ERO has undertaken the required actions within its mandate for overcoming the crisis of electricity prices, with the purpose of providing sustainable energy supply, carrying out an extraordinary review of electricity tariffs and on the other side accelerating the licensing of new generation capacities from Renewable Energy Sources.

Electricity is a necessary pre-condition for a sustainable economic development in the Republic of Kosovo, Therefore, ERO, in cooperation with all relevant stakeholders, is engaged in improving the services provided to customers and incentivizing the construction of new energy capacities. Due to such engagements, during this year, ten (10) projects or generators entered into operation in our power system, with a total installed capacity of 123.4 MW, which were quite helpful during this high crisis of energy. One of such examples is the wind park in Bajgora, at the same time one of the biggest foreign investments in energy sector, which is becoming an important reference for foreign investors, therefore proving that Kosovo is an attractive country for investments in energy sector.

In order to facilitate the restructuring of energy sector, liberalization of energy market and coupling of energy markets, certain steps were taken, therefore in 2021 Energy Regulatory Office (ERO), Energy Regulatory Entity (ERE) and transmission system operators of Albania and Kosovo (TSO and KOSTT) supported by USAID signed a Framework Agreement for cooperation of energy markets. Also, ERO signed a Memorandum of Understanding with the Energy Regulatory Entity for reciprocal recognition of licenses for electricity supply and trade activity.

It should be emphasized that ERO is strongly engaged in strategic documents of energy sector, such as Energy Strategy, National Climate and Energy Plan, Law on Renewable Energy Sources,

Amendments of main laws of energy sector which shall be in line with the new package of European Directives.

Same as in previous years, also during this year ERO has cooperated closely with the parliamentary committees of the Republic of Kosovo, relevant ministries of the Government of Kosovo, Competition Authority, Energy Community Secretariat in Vienna, Energy Regulators Regional Association, Council of European Energy Regulators, and many other institutions.

Finally, I want to emphasize that ERO remains committed on the path towards energy transition, in line with the goals towards integration into the European energy market, always placing the customer at the centre of its policies.

Respectfully,

Ymer Fejzullahu,
Chairman of the Board

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List of abbreviations

List of Abbreviations

AIT	Average Interruption Time
CPA	Central Procurement Agency
EU	European Union
RES	Renewable Energy Sources
CCP	Customer Care Programme
CEER	Council of European Energy Regulators
TENGD	Thermal Energy and Natural Gas Department
LLD	Legal and Licensing Department
CPD	Consumer Protection Department
TPD	Tariffs and Pricing Department
EMD	Energy Market Department
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECRB	Energy Community Regulatory Board
SEE	South-East Europe
EMS	Serbia Transmission System Operation
ENS	Energy Not Supplied
ENTSO-E	European Network of Transmission System Operators for Electricity
ERC	Energy and Water Services Regulatory Commission of the Republic of North Macedonia
ERE	Energy Regulatory Entity of the Republic of Albania
ERRA	Energy Regulators Regional Association
USS	Universal Service Supplier
GWG	Gas Working Group
PHLG	Permanent High Level Group
GWh	Gig watt hour
HC	Hydropower Plant
MAR	Maximum Allowed Revenues
IAP	Ion-Adriatic-Pipeline
ITC	Inter TSO Compensation
EC	Energy Community
KEDS	Kosovo Electricity Distribution and Services
SEEEC	South East Europe Energy Community
KEK	Kosovo Energy Corporation
KESCO	Kosovo Electricity Supply Company
KESH	Albanian Energy Corporation
KfW	German Development Bank
CM	Council of Ministers
km	Kilometre
KOSTT	Transmission, System and Market Operators
PSRC	Public Services Regulatory Commission

kV	Kilovolt
kW	Kilowatt
OL	Overhead line
MPA	Ministry of Public Administration
PPA	**Power Purchase Agreement**
MESP	Ministry of Environment and Spatial Planning
MVA	Megavolt ampere
MW	Megawatt
MWh	**Megawatt hours**
MW_{TH}	**Thermal Megawatt**
MED	Ministry of Economic Development
NARUC	National Association of Regulatory Utility Commissioners
AU	Administration Unit
DH	District Heating
SS	Substation
DSO	Distribution System Operator
TSO	Transmission System Operator
MO	Market Operator
PECI	Projects of Energy Community Interest
PRR	Periodic Regulatory Review
RAB	Regulated Asset Base
RoR	Rate of Return
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SCADA	Supervisory Control and Data Acquisition
ECS	Energy Community Secretariat
TAP	Trans-Adriatic-Pipeline
TPP	Thermal Power Plant
TF	Task Force
ECT	Energy Community Treaty
MV	Medium Voltage
TR	Transformer
LV	Low Voltage
VAT	Value Added Tax
AI	Administrative Instruction
USAID	United States Agency for International Development
WACC	Weighted Average Cost of Capital
WBIF	Western Balkans Investment Framework
CA	Cadastral Area

1. EXECUTIVE SUMMARY

Energy Regulatory Office (hereinafter the Regulator), in line with the legal requirements deriving from the Law on Energy Regulator (Law no. 05/L-084) presents the Annual Report 2021, for review, to the Assembly of the Republic of Kosovo. The Annual Report contains information on the activities related to the scope of the Regulator, as well as the functioning of the energy sector, analysing the data of the licensees, including the development of energy market in Kosovo.

Part of this report is also the financial report of the budget of the Regulator for 2021.

During 2021, due to COVID-19 pandemic, ERO acted in accordance with the recommendations provided by health authorities, taking concrete measure for protection of the staff, including special health, hygiene and sanitary measures, restrictions of the personnel, restrictions in meeting and travels abroad, organization of work from home and required IT systems.

ERO Board, regarding different decision-making issues, has used the virtual means of electronic communication.

Energy sector in Kosovo, in the second half of 2021 was characterized with a sensitive increase of electricity prices, based on the prices on HUPX – Hungarian Electricity Exchange, which is taken as a reference due to its geographical proximity and liquidity – reached the value of 376 €/MWh, which represents an increase of 563% compared to the beginning of 2021.

Also, the non-allocation of transmission capacity at the interconnection border between KOSTT and EMS has contributed to the increase of electricity prices, consequently blocking the transmission lines for commercial operation. The lack of cross-border transmission capacities has caused serious difficulties for traders, such as the disruption of energy trade at this border, therefore reflecting the increase in the price of cross-border capacities at other borders and the price of energy imports, for Kosovo and Southeast Europe, and has caused difficulties in balancing the system.

Upon the commencement of operation as an Independent Regulatory Area within Continental Europe, from 14 December 2020 with the entry into force of the Connection Agreement between KOSTT and transmission system operators (TSOs) from Continental Europe, system balancing will be the full responsibility of KOSTT, which means covering all deviations from the Kosovo system.

The supply of the four northern municipalities of Kosovo, even during 2021 was carried out by KOSTT using the revenues from its own budget and the Government grant. The total cost of electricity supply in the four northern municipalities of the country is € 41,806,026, of which € 7,673,461 were from the Government grant, and the remaining part € 34,132,565 from the KOSTT budget.

This report presents the detailed data on the performance of the energy sector for 2021.

The overall electricity production in 2021 was 6,207 GWh, of which 5,770 GWh are from thermal power plants, whereas from HPP and other RES are 437 GWh, which represents a decrease of 1.5 % compared to the production of 2020.

The overall electricity demand in the system in 2021 was 6,885 GWh, which represents an increase of 11.65% compared to the demand in 2020. This increase was mainly fulfilled by domestic generation, with thermal power plants having the biggest share, whereas the remaining part was covered by imports.

The overall amount of electricity sold to final customers was 4,721.4 GWh, of which 3,131 GWh or 61.2 % was for household customers, whereas the other part 1, 986 or 38.8 % for non-household customers. The billing of non-household customers includes the billing of unregulated customers, which was 395.9 GWh in 2021.

For the category of household customers, the average energy price is 5.60 €cent/kWh, whereas for non- household customers the average price of energy is 8.39 €cent/kWh.

Losses in transmission system are at an acceptable level of 1.26% towards energy entering transmission, and are at approximately the same level with losses in transmission networks in region and Europe.

Technical losses in distribution system are still quite high, and in 2021 comprised 12.46%, whereas unauthorized consumption of energy (hereinafter commercial losses) comprise 12.11 % of distribution demand, of which unbilled energy in four northern municipalities of Kosovo comprises 5.95 % (372 GWh).

The following table presents the main data realized in 2021 compared to the balance of 2020 and the realization of 2019, which shows that in order to balance the system-supply towards the demand, the need for imports and exports arises.

Tab. 1.1 Main data realized in 2021

	Unit	Production	Demand	Import	Export	Losses	
						Transmission	Distribution
Realization 2021	**GWh**	**6,207**	**6,885**	**1,311**	**835**	**120**	**1,538**
Balance 2021	GWh	5,297	6,434	1,570	434	114	1,317
Realization/Balance	%	117.17	107.02	83.52	192.49	105.99	116.77
Realization 2020	GWh	6,301	6,167	839	1,283	107	1,409
Ratio 2021/2020	%	98.51	111.65	156.31	65.05	112.43	109.17

With respect to thermal energy sector, the situation remains mainly unchanged. The cogeneration project of DH Termokos has provided good results, therefore increasing heat quality for the customers connected to the network, whereas the cogeneration project of DH Gjakova has been finalized and is undergoing the testing phase.

- The production of thermal energy in 2021 in DH Termokos was 282 GWh_{Th} whereas DH Gjakova did not operate in 2021;
- The consumption of thermal energy in 2021 in DH Termokos was 253 GWh_{Th}, whereas DH Gjakova did not operate in 2021;
- Losses of thermal energy in 2021 in DH Termokos were 10.2 % (only for primary distribution network), whereas DH Gjakova did not operate in 2021.

There is no natural gas infrastructure and market in Kosovo, however energy laws and energy strategy foresee the development of the infrastructure of natural gas through the connection with gas infrastructure projects in the South-East Europe, through TAP (“Trans-Adriatic Pipeline) and gas interconnection project North Macedonia – Kosovo.

With respect to the development of generation projects from renewable sources, during this year after the finalization of projects under Authorization by ERO Board, and following technical acceptance, three (3) hydro power plants have entered into commercial operation, with a capacity of 15.95 MW and wind generator SOWI with a capacity of 103.41 MW. Therefore, during 2021, 119.36 MW of generator capacities from renewable sources have been put into operation. ERO, during this year has also handled the requests/applications for generators for obtaining the status of prosumers for self-consumption, which after fulfilling the legal requirements in accordance with the Rule on Authorization and the Support Scheme, have been allowed to continue the construction of self-consumption generating capacities.

Following the integration of markets between Kosovo and Albania, with the assistance of USAID, working groups established with the composition of Ministries, Regulators and System Operators continue to work on the review of primary and secondary legislation to enable the coupling of these markets and steps to be taken for its operation. In this context, the Energy Regulatory Office and the Energy Regulatory Entity along with the transmission system operators of both countries KOSTT and TSO, on 21 October 2021, in Tirana, signed the agreement on the coupling of electricity markets, as well as the recognition of Albanian Electricity Exchange ALPEX as the only electricity exchange for day-ahead and intra-day trade for commercial areas of both countries.

ERO is fully committed to an even closer cooperation with the Energy Community Secretariat in Vienna, as one of the main partners in drafting the primary and secondary legislation, the Government, the Competition Authority, and all other stakeholders of the energy sector in the country and beyond.

2 ENERGY REGULATORY OFFICE

Energy Regulatory Office (ERO) is an independent agency which is separated in legal and functional terms from any other natural or legal person. The duties and functions of the Regulator are defined in the Law 05/L-084 on Energy Regulator, which includes: the efficient, transparent and non-discriminatory establishment and functioning of the energy market; determining the terms and conditions as well as granting of licenses for carrying out activities in the field of energy; determining the terms and conditions and the granting of authorizations for construction of new capacities; market monitoring and improvement of energy supply security; setting tariffs for energy activities in a reasonable manner and based on tariff methodology; monitoring and preventing the establishment of dominant position and uncompetitive practices by energy enterprises, as well as resolving complaints and disputes in the energy sector.

The Regulator is responsible for designing and implementing the regulatory framework for the energy sector in Kosovo, in order to achieve compliance with the obligations of SEE Treaty and alignment with the *"acquis communautaire"* on energy, to ensure non-discriminatory access to all energy network users at prices reflecting real economic costs.

2.1 Board of the Regulator

The Board of the Regulator consists of 5 members including the chairman, who are appointed as full-time employees by the Assembly of Kosovo with a term of five (5) years. The Board of the Regulator is a decision-making body for all matters under ERO's jurisdiction and competence. The Board takes decisions by majority vote and has the quorum needed to take a decision if at least three Board members are present, but there should be three (3) votes in favour in order to become a final decision. The Board states its stances regarding the issues it handles through decisions that are taken at open sessions announced in advance on ERO's official website.

Until 2 August 2021, the ERO Board was non-functional since the mandate of the Chairman of the ERO Board expired in October 2017, while the mandate of the other two members of the Board expired on 14 December 2020. According to the provisions of Article 25 of the Law on Energy Regulator no. 05 / L-084, when the position of Chairman of the Board remains vacant, his/her duties will be performed by the oldest member of the Board, until the appointment of the new Chairman. The oldest member of the Board is considered the member with the longest experience in the capacity of the Board Member.

On 2 August 2021, the Assembly of Kosovo appointed the Chairman and two members of the Board, returning the functionality of the Board of ERO. At the end of 2021 the Board of the Energy Regulatory Office consisted of the following members:

Ymer Fejzullahu, Chairman of the Board

Selman Hoti, Board member

Izet Rushiti, Board member

Lutfije Dervishi, Board member

Gani Buçaj, Board member

For decision-making purposes, in line with the authority given under the legislation in force, the Board of ERO has held regular meetings, in which the functioning of the energy system in Kosovo was discussed and respective decisions were taken, as well as approval of the necessary documents for the sector.

The Board of ERO, until December 2021 held a total of ten (9) public sessions, in which 129 decisions were taken regarding the:

- Market monitoring and energy sector activities;
- Liberalization of the energy market;
- Price regulation
- Licensing of energy activities in Kosovo;
- Authorization for construction of new generation capacities from renewable sources;
- Customer protection;
- Approval of rules, methodologies and other documents in energy sector, and
- Other issues under its responsibilities.

All the reviewed and approved documents were initially published for public discussion, as required by law, in order to include all parties involved in the decision-making process and are published on the official website of ERO.

The Board, for all the activities, was supported by: Managing Director, Administration Unit and five (5) departments as follows:

- Legal and Licensing Department (LLD)
- Energy Market Department (EMD)
- Tariffs and Pricing Department (TPD)
- Costumer Protection Department (CPD)
- Thermal Energy and Natural Gas Department (TENGS)

The Board of ERO has supported the professional development of ERO staff aiming at the specialization of employees in the respective profiles within their responsibilities, through different trainings organized inside and outside the country.

2.2 Organizational structure and human resources

The Regulator is organized in accordance with the Law on Energy Regulator (Chapter II of the Law) and the Regulator's Operations Manual. The Regulator's Board according to the responsibilities defined by law performs the following activities:

- adopts regulatory and operational policies of the Regulator;
- organizes and supervises the work of the Regulator;
- supervises the budget implementation and financial management of the Regulator and approves its reports and financial statements;

- organizes recruitment procedures and supervises the work of the staff employed by the Regulator;
- approves the compensation levels and other employment conditions for the Regulator's employees;
- drafts and approves sub-legal acts required for the implementation of the Law on Energy Regulator.

The organizational structure of the Regulator is determined by the Regulator's Board based on the responsibilities and duties set by Law on Energy Regulator no. 05/L-084. The basic structure is composed of the Managing Director, the Board's Assistance Officer, the Public Relations Officer, five Departments and the Administration Unit (AU), which are established in accordance with the Regulator's operational tasks.

2.2.1 Managing director

The Managing Director coordinates the activities between the Board and professional and administrative staff; is responsible for implementing all decisions of the Regulator's Board, actively informs and advises the Board on developments in the energy sector, supports the Regulator's Board to ensure that all the Regulator's activities are carried out in accordance with the laws, regulations and policies of the Regulator and supervises the work of the Regulator's departments. The Managing Director reports and responds directly to the Board and carries out its duties under the directions and instructions of the Board, in accordance with the Regulator's Operations Manual.

2.2.2 Departments of the Regulator

Departments are led by the heads of departments who organize, control, plan, collaborate, evaluate their staff and take responsibility for the activities and fulfil all the tasks assigned to the work of departments. The head of the department is responsible for delegating the daily work of the department staff.

The role of the staff members of departments is to carry out their duties, whenever required under legal requirements and through the heads of departments they propose to the Board. In some cases, staff members may be authorized by the Board to perform special duties.

Staff members should work in close collaboration with the head of the department and other professional staff. The staff member should also be able to attend the trainings available from the Regulator to improve their professional skills and knowledge.

Legal and Licensing Department (LLD)

Legal and Licensing Department is responsible for drafting the secondary legislation, evaluation of applications for licensing of energy enterprises, evaluation of applications for granting the authorizations for construction of new capacities. This department also supervises and monitors licensees' activities.

Energy Market Department (EMD)

Energy Market Department is responsible for market structure, monitoring the performance of market participants as well as the evaluation and analysis of data in the energy sector. The department also monitors competition and behaviour of market participants in an objective, transparent and non-discriminatory manner.

Tariffs and Pricing Department (TPD)

Tariffs and Pricing Department is responsible for evaluation of tariff applications of licensed enterprises; monitors the execution of operational and capital expenses through tariff reviews; undertakes all the measures to ensure that the tariffs are cost-reflective, reasonable, non-discriminatory, based on objective criteria and established in a transparent manner, taking into consideration the affordability and customer protection.

Customer Protection Department (CPD)

Customer Protection Department is responsible for reviewing and resolving complaints and disputes between customers and energy enterprises, system operators and energy enterprises as well as between two energy enterprises. In the course of exercising its duties and responsibilities, this Department cooperates with all institutions and organizations which legitimately represent the customers.

Thermal Energy and Natural Gas Department (TENGD)

Thermal Energy and Natural Gas Department is responsible for reviewing and implementing the strategies, performance standards and other operational practices that are related to these sectors. This department carries out the monitoring of licensed enterprises through collection, analysis and evaluation of relevant data and information and also contributes to the development of reporting systems of district heating enterprises, focusing in technical-technological elements and integration of incentives and targets for efficiency. It also cooperates with other departments of the Regulator by providing support and technical expertise on issues related to thermal energy and natural gas.

Administration Unit (AU)

Administration Unit supports the functioning of the Regulator, organizes the efficient recruitment of the Regulator's staff, coordinates trainings of the Regulator's staff, supply and maintenance of office equipment and assists in arranging the office by making it comfortable for work for all the Regulator's staff.

ERO staff is structured in organizational departments defined on the basis of specific operational and administrative activities.

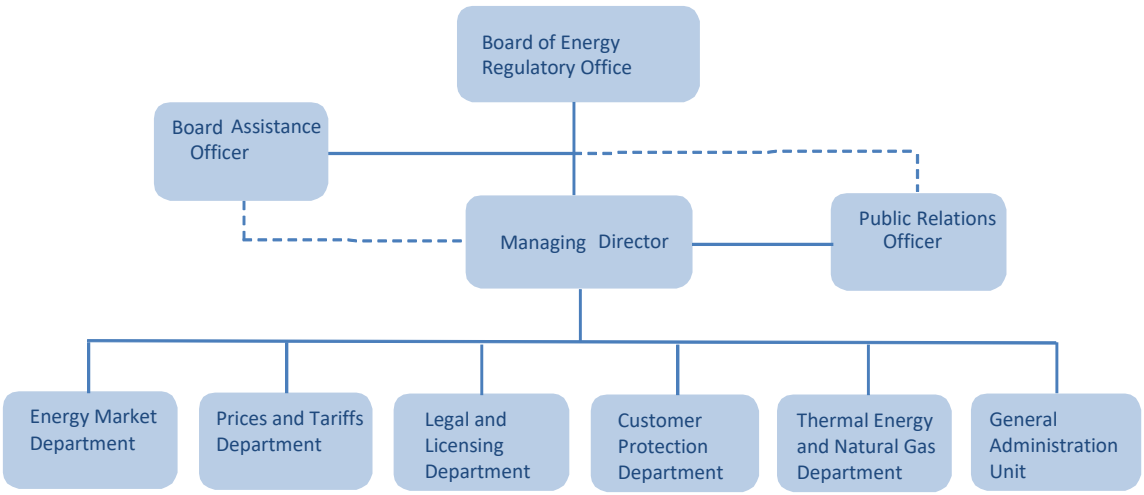


Fig. 2.1 Organizational structure of the Regulator

The total number of employees, as of the end of 31 December 2021, is 28 employees. This number includes 5 Board members and 23 staff members employed within the professional departments and Administration Unit. On 2 August 2021, the Assembly of Kosovo appointed two heads of departments in the ERO Board and their positions are being filled with replacements as provided by Law no. 06/L-114 for Public Officials. The educational structure of ERO staff consists of eleven engineers, nine economists, five lawyers and two employees with other university education and one employee with secondary education.

A short description of the organizational structure with the job positions in 2021 is provided in the table below.

Tab. 2.1 Organizational structure

Job positions	Planned positions	Employed	Vacancies
ERO Board	**5**	**5**	**0**
Managing Director	1	1	0
Public Relations Officer	1	1	0
Board Assistance Officer	1	1	0
Administration Unit			
Head of Administration Unit	9	9	0
Chief Financial Officer			
Procurement Manager			
Administration Officer			
Data Manager Officer			
Database Development Expert			
English Translator			
Receptionist			
Driver/Maintenance			
Legal and Licensing Department (LDD)			
Head of legal and licensing department	3	3	0
Legal Affairs and Monitoring Expert			
License Monitoring Analyst			
Tariffs and Pricing Department (TPD)			
Head of Tariffs and Pricing Department	4	3	1
Economic Expert for Regulatory Affairs and Tariffs			
Tariffs and Prices Analyst			
Tariff Structure Analyst			
Energy Market Department (EMD)			
Head of Energy Market Department	4	3	1
Power Supply and Market Structure Analyst			
Power Systems Analyst			
Market Monitoring Analyst			
Thermal Energy and Natural Gas Department (TENGD)			
Head of Thermal Energy and Natural Gas Department	2	1	1
Thermal Energy Analyst			
Customer Protection Department (CPD)			
Head of Customer Protection Department	3	1	2
Customer Protection Officer			
Standards Performance Analyst			
Total	**33**	**28**	**5**

The Regulator's staff is a team of experts with proven performance in the areas of responsibilities they cover.

2.3 Funding of the Regulator

The Energy Regulatory Office (ERO) is entitled the status of an "independent agency". The Constitution of the Republic of Kosovo stipulates that independent agencies are institutions established by the Assembly based on the relevant laws governing their establishment, functioning and competences. Independent agencies exercise their functions independently of any other body or authority in the Republic of Kosovo. This means that ERO should have full independence in budget planning and spending, i.e. its dedicated revenues, guaranteed by the Constitution and applicable law.

The issue of financial independence is mainly regulated by the EU Directives, which provide that Member States must ensure that regulatory authorities or independent agencies are able to make autonomous decisions independently of any political body, including the ways through which they exercise their mandates, the employees to be recruited, etc. This means that the Energy Regulatory Office should enjoy financial independence, which is enabled through the collection of own source revenues and the implementation of applicable legislation.

The current legislation clearly stipulates that ERO's revenues are "dedicated revenues", and, in this regard, ERO has the right to collect "dedicated revenues" from certain sources, which in the case of ERO include licensing fees. This is also provided for in the Law on Public Financial Management and Accountability, which stipulates that "dedicated revenue" is that revenue derived from a certain source of revenue, and these agencies, only in cases where that revenue is insufficient, may require additional budget allocations from the budget of the Republic of Kosovo, in accordance with the provisions of the Law on Public Financial Management and Accountability.

Based on Article 24 of the Law on Energy Regulator, ERO collects revenues from:

- Initial and annual licensing tax;
- Taxes from applications for issuance and modification of licenses;
- Taxes for the issuance of Certificates of Origin;
- Taxes for review of applications for authorization for construction of new generation capacities.

3 ACTIVITIES OF ENERGY REGULATORY OFFICE

3.1 Licensing of energy activities

The parties which are interested to carry out energy activities in Kosovo, must be granted a License from the Energy Regulatory Office, so that they can operate further for the production, distribution, supply, trade, etc., of electricity in Kosovo. With regards to the extent to how many MW or kW a license is required, this issue is described in more detail in the legislation in force, more specifically in Article 28, paragraph 2 of the Law on Energy Regulator and also in Article 3, paragraph 1 of the Rule on Licensing of Energy Activities in Kosovo (Rule ERO/No.07/2017, dated 31.03.2017). Based on the legal provisions of the legislation in force, so far the Regulator has issued licenses for the following activities: generation of electricity, generation of thermal energy; co-generation of electricity and thermal energy; transmission of electricity including transmission system operation; distribution of electricity including the operation of the distribution system; distribution of thermal energy; supply of electricity and thermal energy, including transit, import or export of electricity; wholesale electricity supply (trading); as well as the operation of the electricity market.

As stipulated in the above-mentioned paragraph, there are cases which do not require the issuance of license from the Energy Regulatory Office, as it is estimated that these activities do not have a large impact on the power system of Kosovo. Therefore, the activities that do not need a license are:

- electricity generation at the power location with a capacity not exceeding 5 MW;
- generation of thermal energy produced by heating plants for self-consumption or with a capacity not exceeding 1 MW;
- generation of electricity for self-consumption, where the generation plant or electricity customers are not connected to the transmission or distribution system.

Although the Regulator does not issue a License for the three points mentioned above, however it is involved in these activities where generators for these activities cannot be built without obtaining an Authorization for Construction of Generating Capacity, issued by the Regulator.

Since its establishment until now, the Regulator has licensed about eighty (80) enterprises for various energy activities with different duration of license, depending on the lifespan of assets, of which about forty (40) of them still have active licenses in the energy market in Kosovo, which are under the monitoring of Energy Regulator regarding their activities.

Since the establishment of the Regulator, 2021 has been the most loaded year in relation to the licensing of energy activities in Kosovo. During this year only, the Regulator has issued around thirty (30) licenses mainly focused on electricity wholesale supply (trade), followed by electricity generation, but also not leaving aside electricity supply in Kosovo.

Unlike other years, this year there were applications for license extension or licensing of thermal energy production and distribution of thermal energy.

3.1.1 Licensing of electricity generation activities

Based on Article 29 of the Law on Energy Regulator, the electricity generation activity cannot be carried out without a license issued from the Regulator for the generators with a higher capacity than 5 MW.

The requests for licensing of energy generation activity have always been prevailing, including 2021, where as a result of this, the Regulator has continuously received applications for licensing of energy generation activity (from lignite, wind, water, solar, biomass etc.)

The Regulator, in addition to licensing of the generators which were constructed before the establishment of the Regulator, has also licensed other new generators which were constructed through the Authorization Procedure for Construction of New Capacities, led by the Regulator. Therefore, the license is obtained only by the generators above 5 MW who fulfil the criteria for licensing. Despite the requests for issuance of temporary licenses, during this year the Regulator did not issue temporary licenses for generation of electricity from hydro power plants, thus implementing the applicable legislation.

Below is presented a table with the data of enterprises that were granted an electricity generation license, their license was extended or are under the licensing process for electricity generation activity.

Tab. 3.1 Enterprises that were licensed, their license was extended or are in the process of licensing of electricity generation activity

No.	Name of enterprise	Description of licensed activity	License number	Address, headquarters of the licensee	Validity of license
1	SOWI KOSOVO L.L.C (Selac 3)	Electricity generation (from wind)	ZRRE/Li_82/21	Mujo Ulqinaku, No.12, Pristina, Republic of Kosovo	17.12.2021-16.12.2061- issuance of license
2	SOWI KOSOVO L.L.C (Selac 2)	Electricity generation (from wind)	ZRRE/Li_81/21	Mujo Ulqinaku, Nr.12, Pristina, Republic of Kosovo	13.12.2021-12.12.2061 - issuance of license
3	SOWI KOSOVO L.L.C (Selac 1)	Electricity generation (from wind)	ZRRE/Li_79/21	Mujo Ulqinaku, No.12, Pristina, Republic of Kosovo	15.10.2021-14.10.2061 - issuance of license
4	Matkos Group LLC. (HPP Sharri)	Electricity generation (from water)	ZRRE/Li_74/21	St.Shpetim Robaj, Pristina, Republic of Kosovo (headquarters Shterpce), Republic of Kosovo	23.02.2021 - in the licensing process
5	"KelKos Energy" LLC (HPP Deçani)	Electricity generation (from water)	ZRRE/Li_49/20	St. Demë Ali Pozhari, No. 41, 51000 Deçan, Republic of Kosovo	12.11.2020 - 11.11.2059 - issuance of license 15.10.2021- Suspended by Decision/Judgment of the Competent Court.
6	"KelKos Energy" LLC (HPP Belaje)	Electricity generation (from water)	ZRRE/Li_50/20	St. Demë Ali Pozhari, No. 41, 51000 Deçan, Republic of Kosovo	12.11.2020 - 11.11.2059 - issuance of license 15.10.2021-Suspended by Decision/Judgment of the Competent Court.
7	"KelKos Energy" LLC (HPP Lumbardhi II)	Electricity generation (from water)	ZRRE/Li_64/18 ZRRE/Li_64/20	St. Demë Ali Pozhari, No. 41, 51000 Deçan, Republic of Kosovo	14.10.2019 - 13.10.2020 temporary license 14.10.2019 - in the licensing process
8	"ContourGlobal Kosovo" L.L.C.	Electricity generation (from lignite)	ZRRE/Li_66/19	St.Anton Çeta, 5A, 10000 - Pristina, Republic of Kosovo	20.06.2019- in the licensing process
9	Kosovo Energy Corporation JSC (TPP Kosova A)	Electricity generation (from lignite)	ZRRE/Li_05/17 _A	St."Mother Teresa" No. 36, 10000, Pristina, Republic of Kosovo	04.10.2021-04.10.2023 license extension

SOWI KOSOVO L.L.C (Selac 1, Selac 2 and Selac 3) –as shown in the table above, during this year, the Board of the Regulator has issued three (3) licenses for electricity generation from wind, for three generators of this enterprise, as one of the biggest projects with regards to the investment in renewable energy in Kosovo, which has fulfilled the criteria for licensing of this activity with a total installed capacity of: Selac 1 with a capacity of **34.47 MW**, Selac 2 with a capacity of **34.47 MW** and Selac 3 with a capacity of **34.47 MW**. The generators have been constructed through the Authorization Procedure, led by the Energy Regulatory Office.

Matkos Group LLC (HPP Sharri) –applied at the Regulator for electricity generation license from the Hydro Power Plant "HPP Sharri", on 23 February 2021, for an installed capacity of **6.453 MW**. This

hydro power plant is still in the licensing process, however given that it has not fulfilled the environmental criteria required by the applicable legislation, this enterprise still remains in the licensing process, despite the fact that the hydro power plant has been constructed according to the authorization procedure led by the Regulator.

Kelkos Energy LLC (HPP Deçani, HPP Belaje and HPP Lumbardhi II) –this enterprise fulfilled all the licensing requirements, according to the instructions of the Regulator, was licensed by the Board of the Regulator for electricity generation, for two (2) generating units from: hydro power plant Deçani, with an capacity of **8.06 MW** and the hydro power plant Belaje, with a capacity of **9.8 MW**, whereas the hydro power plant Lumbardhi II, with a capacity of **6.2 MW**, due to the absence of the criteria required by the applicable legislation, had not managed to obtain an electricity generation license, therefore remaining in the licensing process since 21 December 2018.

Despite the licensing of these two units by the Board of the Regulator, none of these hydro power plants of the enterprise Kelkos Energy LLC has been in operation since 15 October 2021, due to the suspension of their operation, by a Decision consequently a Judgment of the competent courts of Kosovo.

Kosovo Energy Corporation JSC – Generation Division, Thermal Power Plant Kosovo A – this year, same as other years, KEK applied for extension of electricity generation license from lignite (coal), and the same was extended the license from the Board of the Regulator for the period from 04.10.2021 until 04.10.2023, where the enterprise in question was obliged, within this period, to submit to the Regulator any required documents related to the validity of the license.

With respect to the extension of the license, the duration of each license can be extended for a period that does not exceed the relevant time period of the current license, implying that the licensee manages to fulfil all the criteria and obligations of the license as well as the submission of a request in writing for extension of the current license.

ContourGlobal Kosovo L.L.C.– in addition to the application for generation of energy from renewable energy sources, the Regulator, on 20.06.2019 received an application with some additional documents for generation of energy from lignite (coal) with an installed capacity of **500 MW**. The application did not fulfil the requirements of the Regulator, therefore, as a result it has remained in the review process during this year as well.

3.1.2 Licensing of electricity supply activity

The interest of parties to obtain a license for this activity has been higher this year compared to the previous year when only one enterprise had applied for licensing and was licensed. This year, the Board of the Regulator issued two (2) electricity supply licenses, whereas two (2) enterprises remained in the licensing process, which may be licensed following the fulfilment of criteria and obligations foreseen for their licensing.

Despite a considerable number of electricity supply licenses in Kosovo (1.HEP Energjia KS LLC, 2.EDS International KS L.L.C, 3. Enerco LLC., 4.SharrCem LLC, 5.JAHA COMPANY LLC., 6.FUTURE ENERGY TRADING AND EXCHANGE DYNAMICS LLC., 7.GSA ENERGJI LLC., 8.Kosovo Energy Corporation JSC and 9. Kosovo Electricity Supply Company (KESCO) J.S.C), still none of them (the first 8 ones) has managed to enter the market to commence the supply of customers with electricity, except for Kosovo

Electricity Supply Company (KESCO) JSC, which continues to supply all the customers in the country with electricity, same as in previous years.

Tab. 3.2 Enterprises that were licensed, their license was extended or are in the licensing process of electricity supply activity during 2021

No.	Name of enterprise	Description of licensed activity	License number	Address, headquarters of the licensee	Validity of license
1	HEP Energjia LLC	Electricity supply	ZRRE/Li_43/15 ZRRE/Li_83/21	St. Luan Haradinaj, Hy.1-2, No.21, Pristina, Republic of Kosovo	14.10.2016-13.10.2021 - issuance of license 27.10.2021-26.10.2026 - issuance of license
2	EDS International KS L.L.C	Electricity supply	ZRRE/Li_77/21	Pejton Mujo Ulqinaku No.5 ap 10, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 - issuance of license
3	"GSA ENERGJI" LLC	Electricity supply	ZRRE/Li_48/15	Xheladin Hana, Obj.35/15, Pristina, Republic of Kosovo	11.11.2016 - 10.11.2021 - issuance of license 11.11.2021 - 10.11.2026 - license extension
4	MCM COMMODITIES LLC	Electricity supply	ZRRE/Li_78/21	Mother Teresa, 10000, Pristina, Republic of Kosovo	29.04.2021 - in the licensing process
5	Društvo Elektrosever D.O.O.	Electricity supply	ZRRE/Li_70/20	Filipa Visnjica bb, North Mitrovica, Republic of Kosovo	28.12.2020- in the licensing process

HEP Energjia LLC., - Is an enterprise which was licensed by the Regulator for electricity supply activity from 2016 until 2021, yet did not manage to supply electricity to customers due to different circumstances in the market. The same applied for license extension this year, but in the absence of timely submission of documents due to the pandemic, the license was not extended but another license was issued, following the submission of required documents for this purpose. The duration of the supply license is determined by the financial situation of the application, with a maximum time duration of twenty-five (25) years, whereas with respect to the enterprise HEP Energjia LLC, the Board of the Regulator issued a license for a five (5) year period, in line with Article 32 of the Law on Energy Regulator.

EDS International KS L.L.C –Following the submission of the entire documentation, this enterprise was also licensed by the Board of the Regulator for a period of five (5) years as well.

GSA Energji LLC – this enterprise was licensed by the Regulator from 2016 until 2021, and is an enterprise that has been part of the Kosovo electricity trade activity for a long time. Whereas, with respect to the supply, same as HEP, did not enter the energy market to carry out the electricity supply activity, even though it has been licensed for this activity since 2016. Despite this, the same applied within the legal deadlines for extension of the electricity supply license, submitting all the required documents and was extended the license for this activity from the Board of the Regulator, for a period of five (5) years.

MCM COMMODITIES LLC – remains in the licensing process, given that despite the requirements of the Regulator, it has not managed to submit the required documents for licensing, since the application period until now.

***Društvo Elektrosever D.O.O.* –** this enterprise also remained in the licensing process during 2021. It applied for electricity supply by the end of 2020, but unlike other enterprises, it applied only for certain municipalities in the North of Kosovo. The same submitted the documents required by the Rule on Licensing, but given that its licensing is related to the International Agreements between Kosovo and Serbia with respect to energy, then such data remains to be completed so that the same can be licensed by the Board of the Regulator.

The Regulator issues a decision for each licensing application, within sixty (60) calendar days following the submission of the completed application, except for the case of *Društvo Elektrosever D.O.O*, where the granting of the license is related to International Agreements.

3.1.3 Licensing of electricity wholesale supply (trade) activity

It is worth mentioning that the Regulator has received quite a high number of applications for licensing of electricity wholesale supply (trade) activity, unlike last year where the application for this activity was much lower.

It is worth emphasizing that in addition to licenses issued in accordance with the Rule on Licensing and other applicable legislation, the Regulator has also received requests for Reciprocal Recognition of licenses, which is a matter in progress. The Energy Community Secretariat has also been informed about this. In this regard, the Law on Electricity provides that licenses issued for the trading of electricity in other Contracting Parties of the Energy Community must be recognized in Kosovo. Such licensed suppliers will have the right to trade electricity without the need for an additional license. Traders and suppliers registered in another Party of the Energy Community have the right to participate in the electricity market, in accordance with the principle of reciprocity and in accordance with applicable market rules, balancing rules and fiscal rules.

Tab. 3.3 Enterprises that were licensed, their license was extended or are in the licensing process for electricity wholesale supply (trade) activity in 2021

0	Name of enterprise	Description of licensed activity	License number	Address, headquarters of the licensee	Validity of license
1	NOA ENERGY TRADE LLC Branch in Kosovo	Electricity wholesale supply (trade)	ZRRE/Li_80/21	St. Rexhep Luci, No.5, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 - issuance of license
2	ETMT ENERGY LLC (ZRRE/Li_76/21)	Electricity wholesale supply (trade)	ZRRE/Li_76/21	St. Mother Teresa, Entry 30, No.5, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 - issuance of license
3	Axpo Kosovo L.L.C	Electricity wholesale supply (trade)	ZRRE/Li_73/21	St.Ukshin Hoti, C4/3, Entry.A, II Floow, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 -issuance of license
4	FUTURE ENERGY TRADING AND EXCHANGE DYNAMICS LLC (name of the business) FUENTE Dynamics - (trade name)	Electricity wholesale supply (trade)	ZRRE/Li_72/21	Aktash St. Lordi Bajron, Prishtina Stars Complex, Floor 5, No.27, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 - issuance of license
5	"ENERGY FINANCING TEAM"L.L.C.	Electricity wholesale supply (trade)	ZRRE/Li_71/20	St. Rexhep Krasniqi, Apartment 9/1, Mati I, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 - issuance of license
6	RENRGY TRADING GROUP PRISTINA LLC	Electricity wholesale supply (trade)	ZRRE/Li_69/20	St. Sylejman Vokshi, No.50/3, Pristina, Republic of Kosovo	02.09.2021-01.09.2026 - issuance of license
7	"GSA ENERGJI" LLC	Electricity wholesale supply (trade)	ZRRE/Li_51/17	St.Xheladin Hana, Obj.35/15, Pristina, Republic of Kosovo	19.05.2016 - 18.05.2021 - issuance of license 02.09.2021-01.09.2026- issuance of license
8	"GEN-I TIRANA" LLC BRANCH IN KOSOVO (ZRRE/Li_34/12)	Electricity wholesale supply (trade)	ZRRE/Li_34/12	Gustav Majer 16, Pristina, Republic of Kosovo	29.12.2009-29.12.2011- issuance of license 11.11.2021-10.11.2026- extension of license
9	Interenergo d.o.o-Kosova LLC	Electricity wholesale supply (trade)	ZRRE/Li_56/16	Sali Çeku, Gogaj Building, app.14, Deçan, Republic of Kosovo	27.02.2017-26.02.2022 - issuance of license 20.08.2021- in the process for extension of license

From the table above, it is seen that during this year the Regulator has issued seven (7) licenses for electricity wholesale supply (trade), has extended one, whereas another one is in the licensing process.

3.1.4 Licensing of thermal energy production activity

Thermal energy activities have functioned in Kosovo based on the licenses issued by the Regulator, same as electricity ones, whereas the validity term of the majority of them has expired during 2021. The same, in line with the Rule on Licensing and other applicable legislation applied on time for the extension of their license, submitted the required documents for the relevant activity.

The table below presents the enterprises which applied for extension of licenses for generation and co-generation of thermal energy (from biomass). One has its headquarters in Pristina, whereas the other one in Gjakova.

Tab. 3.4 Enterprises that were licensed, their license was extended or are in the licensing process for thermal energy production activity

No.	Name of enterprise	Description of licensed activity	License number	Address, headquarters of the licensee	Validity of license
1	District Heating JSC	Production of thermal energy (from biomass)	ZRRE/Li_75/21	Rezina, Gjakovë, Republic of Kosovo	19.11.2021-18.11.2051-issuance of license (thermal energy from biomass) 26.02.2021 - in the licensing process for ccogeneration
2	District Heating "Termokos"JSC	Production of thermal energy (from heavy fuel oil)	ZRRE/Li_10/17	St. "28 Nëntori" nn-Dardani, Pristina, Republic of Kosovo	23.03.2021 - in the licensing process

District Heating JSC –the table above shows that this enterprise, with its headquarters in Gjakova, was issued the license for thermal energy generation from biomass for a period of thirty (30) years. The issuance of this license for generation of energy from biomass (as a renewable source of energy) has been conducted for the first time in Kosovo from the Board of the Regulator, following the fulfilment of the criteria set for license extension of this activity. The construction of this generator was followed and built through the authorization procedure led by the Regulator, similar to the construction of other generators for generation of energy from renewable energy sources (wind, water, etc.). The same enterprise has also applied for co-generation of electricity and thermal energy, whereas as it can be seen from the table above, the Board of the Regulator has not issued the license for co-generation of electricity and thermal energy, due to the fact that this enterprise has not fulfilled the criteria for licensing of this activity and remains in the licensing process until the obtaining of the environmental permit and the fulfilment of other required criteria such as measurements of gas emissions.

District Heating "Termokos" JSC –the only enterprise in the capital city for production of thermal energy has not managed to fulfil the criteria for extension of license for production of thermal energy (from heavy fuel oil) despite having applied within the legal deadline for extension of this license during 2021, and consequently has not been licensed by the Regulator's Board and remains in process until all legal requirements are met, according to applicable law. It is worth mentioning that this enterprise is supplied according to the Thermal Energy Supply Agreement from TPP Kosova B which transports thermal energy through the thermal energy transport network. The license according to which this activity is performed is the License for co-generation of Electricity and Thermal Energy, which was issued by the Board of the Regulator to KEK, TPP Kosova B, during 2017 with a validity period until 2026.

3.1.5 Licensing of thermal energy distribution activity

Same as the licenses for thermal energy generation of the enterprises "Termokos" and "District Heating", their validity term for distribution of thermal energy in Kosovo of the same enterprises has

also expired, therefore they applied for license extension for this activity, for the city of Pristina, respectively Gjakova.

The table below presents two enterprises which were extended their licenses for distribution of thermal energy for a period of fifteen (15) years.

Tab. 3.5 Enterprises that were extended the license for thermal energy distribution activity during 2021

No.	Name of enterprise	Description of licensed activity	License number	Address, headquarters of the licensee	Validity of license
1	District Heating "Termokos" JSC	Distribution of thermal energy	ZRRE/Li_11/17	St."28 Nëntori", nn-Dardani, Pristina, Republic of Kosovo	15.10.2021-14.10.2036-extension of license
2	District Heating JSC (former DH of Gjakova)	Distribution of thermal energy	ZRRE/Li_03/17	St."Tirana", nn. Gjakovë, Republic of Kosovo	19.11.2021-18.11.2036-extension of license

District Heating "Termokos" JSC and ***District Heating JSC*** –as seen from the table above, these licenses were extended for a period of fifteen (15) years, given that they applied within the legal term for license extension, therefore submitting the required documents for license extension.

3.2 Monitoring of energy enterprises

One of the main competences of the Energy Regulator in relation to the supervision/monitoring of energy enterprises, is given by the Law on Energy Regulator, especially Chapter XII, Law on Electricity and secondary legislation.

Therefore, the Regulator, based on applicable legal provisions, this year, same as other years, has continued the monitoring of enterprises licensed for energy activities, ensuring that the enterprises are acting in compliance with license criteria, implementation of rules, individual acts and other decisions issued by the Regulator or other applicable legislation. The monitoring is carried out by requesting reports and data from the licensees, holding meetings as well as carrying out visits (monitoring) the licensees, with or without warning.

During 2021, the Regulator has monitored the licensed energy enterprises, especially the ones above 5 MW, but also monitored the enterprises that are in the process of construction of generation capacities through the authorization procedure for construction of new capacities.

The detailed reports on the monitoring of energy enterprises are published on the website of the Regulator.

Monitoring according to the Reporting Manual in the Energy Sector –according to this manual, the licensed energy enterprises have submitted to the Regulator immediate reports, quarterly reports or annual reports, depending on the requirements prescribed in this manual or other requirements of the Regulator.

For some articles of the license, of a more particular importance, i.e. breach of license terms that may have a serious impact on government policies, customers or the cost of compensation, the licensee must notify the Regulator immediately. In case such notification is not made in time, the Regulator has the right to impose administrative measures or fines in accordance with the Rule on Administrative Measures and Fines.

Based on this and other data monitored by the Regulator during 2021, the Regulator has imposed administrative measures and fines for the Hydro economic Enterprise "Ibër Lepenc" JSC (HPP Ujmani).

Monitoring of the Compliance Program of the Distribution System Operator (KEDS JSC)– this program is in force since 2015 (V_750_2015), which is approved by the Board of the Regulator. Following the request of the Regulator, the same was modified and approved by the Board of the Regulator during 2020 (V_1223_2020), where according to KEDS Compliance Officer (approved by Decision V_1256_2020) reported to the Regulator on the fulfilment of obligations set in this program. The Regulator has monitored the implementation of this program and until the end of 2021 has not imposed any measure or fine on the licensee regarding the implementation of this program.

Monitoring of thermal energy enterprises–given that monitoring is amongst regular activities undertaken continuously by ERO, in 2021 it monitored the realizations and performance in season 2020/2021 of enterprises DH Termokos and DH Gjakova. It should be emphasized that due to the fact that DH Gjakova did not operate in season 2020/2021 (except for testing periods), the monitoring of DH Gjakova was focused only in the realization of investments and technical parameters of the testing of units. Whereas for DH Termokos, the monitoring of realizations included:

- Energy Balance: production and supply of thermal energy as well as network losses;
- Realization of revenues (billing and collection) and operational costs;
- Realization of capital costs- namely allowed new investments;
- New connections and customer supply contracts;
- Unauthorized use and disconnections; and
- Complaints and requests of customers and their handling by respective enterprises;

From the analysis of the data and information gathered during the monitoring, the Monitoring Report of realizations of DH Termokos in the 2020/2021 season was compiled, which was also reviewed by ERO Board. This report described the evaluations and findings for the realizations of each monitoring component and the respective recommendations were given.

3.3 Renewable Energy Sources (RES)

The applicable Law on Energy No. 05/L-081 sets up the policies related to RES development, aiming to promote the sustainable and economical use of RES domestic potentials, in order to meet the energy demand, increase the security of supply and environmental protection which is an integral part of the Energy Strategy of the Republic of Kosovo.

In order to implement RES policies, the respective Ministry has, according to the legislation in force, determined by a special sub-legal act the RES targets for energy, in line with the requirements of the relevant European Union Directive for RES.

The Law on Energy Regulator no. 05/L-084 stipulates that the construction of new generation capacities (RES), new systems for transmission and distribution of natural gas, including interconnectors, as well as direct power lines and direct pipelines for transmission of natural gas will be carried out in accordance with the authorization procedures according to this law, which will be undertaken by the Energy Regulatory Office, in accordance with objective, transparent and non-discriminatory criteria.

In order to meet the legal obligations for reaching the obligatory RES target, the Ministry of Economic Development has issued the Administrative Instruction no. 01/2013 and supplement/amendment with AI no. 05/2017 which has set the annual and long term targets of energy from RES.

The Administrative Instruction has determined that the mandatory target for Renewable Energy Sources by 2020 is 25% of the final gross energy consumption, as defined in Article 4 of the Decision of the Ministerial Council of the Energy Community No. D/2012/04 / MC-EnC.

The Republic of Kosovo is a signatory party to the Treaty Establishing the Energy Community, which was signed on 25 October 2005, ratified and entered into force on 1 July 2006 and started to be implemented on 1 July 2007. Based on this, Kosovo has assumed legal obligations to fulfil all obligations related to the energy sector, which also includes the obligation to reach RES targets by 2020, including the construction of new generation capacities from clean sources.

Annex I of this Administrative Instruction 05/2017 has determined the electricity capacities from RES (MW), where the set level of targets for renewable energy sources, admitted to the Support Scheme is as in the following table:

Tab. 3.6 Targets set for RES capacities in MW

Electricity Capacities from RES					
Primary Source of Energy	2016	2017	2018	2019	2020
Photovoltaic	6	7	8	9	30
Wind	1	61	115	129	150
Small HPPs	40	57	181	187	240
Biomass	6	8	10	12	20

In order to reach RES targets for generation of electricity from RES, as set forth in the above-mentioned Guideline, and in accordance with the legal mandate provided by the applicable legislation on energy, during 2021, ERO has received and reviewed applications for obtaining the authorization, in line with the Rule on Authorization Procedure for Construction of New Generation Capacities based on RES and Rule on Support Scheme from Renewable Energy Sources.

ERO Board, in order to support the promotion of renewable energy investments, has issued Decision V-810-2016 which sets the Feed-in-Tariff for generation of electricity produced by RES, where: electricity generated from water (hydro power plant <10 MW) has the price of 67.47 €/MWh, electricity generated from wind has the price of 85.0 €/MWh, electricity generated from solid biomass has the price of 71.3 €/MWh and electricity generated by solar/photovoltaic panels for targets up to 10 MW, according to the previous instruction was 136.4 €/MWh.

Also, in order to meet RES targets, ERO has also guaranteed the lifespan of the Power Purchase Agreement, which is concluded between the investor and KOSTT/MO, where the electricity generated from photovoltaic panels and the energy generated from wind turbines will have a duration of 12 years, while for other sources (hydropower and solid biomass) it will have a duration of 10 years, with applicable prices (Feed-In Tariff) and admitted to the Support Scheme. Whereas for

self-consumption generators, it has guaranteed the contract (PPA) with a duration of twelve (12) years, which is concluded with the supplier of the prosumer.

ERO, at the end of 2020, by Decision 1321_2020 decided to terminate the application of the Support Scheme with Feed-in Tariffs for support of new projects for construction of new generation capacities for electricity production from Renewable Energy Sources (RES) for the targets 2021-2030.

Also, through this Decision, it decided to terminate the admission of applications for obtaining the authorization for construction of new generating capacities, to be handled with Feed-in tariff from RES, from the date of entry into force of this Decision.

ERO has also emphasized that the decisions for preliminary or final authorization for construction of new generation capacities that were issued prior to the entry into force of this Decision, shall be handled according to the legal provisions of the Rule No. 10/2017 on the Support Scheme and the Decision V_810_2016, dated on 19 May 2016, issued by ERO Board.

ERO through Decision V_1321_2020 emphasized that, in line with the legal obligations and in cooperation with the institutions of the Republic of Kosovo, shall undertake actions for developing the projects from Renewable Energy Sources for the targets 2021-2030 through different forms of auctions, in selecting the beneficiaries from other forms through Premium Tariffs or similar ones, in conformity with the best practices in favour of public interest.

3.4 Authorization for construction of new capacities

ERO, during this year has continued to implement the authorization procedure, review of applications for issuance of authorization for construction of new generation capacities based on Renewable Energy Sources (RES) for companies that applied for obtaining an authorization.

ERO, within the framework of fulfilling its obligations under the legislation in force, has issued Final Authorizations for construction of new generation capacities, whereby in order to obtain the authorization each applicant has been subjected to a regularity analysis and correct fulfilment of the legal, administrative, technical, financial documentation and environmental issues, as well as obtaining relevant permits issued by relevant institutions in accordance with the activity that entities have requested to obtain the Final authorization for allowing the construction of new generation capacities based on RES.

3.4.1 Applications that are under review process at the Regulator

ERO, during this year, has received applications for obtaining the authorization for construction of new generation capacities, which are in the phase of completing their applications. Below is a list of applications that are under review process.

Tab. 3.7 Enterprises that are under the review process for obtaining the preliminary authorization

No.	Legal entity	Facility	Location	Installed capacity	REVIEW PROCESS
1	EUROKOS DD LLC	Hydro Power Plant	DRINI PSHP - REVERZIBIL/ Prizren	250 MW	process
2	NIN TECHNOLOGY LLC	Biomass	Ferizaj	5.2 MW	process
3	HIDROENERGJI LLC	Hydro Power Plant	HPP LEPENCI 1/Hani I Elezit	9.98 MW	process
4	DARDANA INVEST LLC	WIND	WIND PARK KITKA 2/Kamenica	33 MW	process

3.4.2 Projects in the construction process according to Final Authorization

With regards to the projects which are constructed and finalized according to the terms stipulated in the Rule No. 11/2017 on Authorization Procedure, there are three (3) projects from wind turbines with 103.4 MW, with a total of twenty-seven (27) turbines in the wind park in Bajgora of the Municipality of Mitrovica. Also, seven (7) projects from hydro power plants, with a total capacity of 25.3 MW were finalized and following the technical admission, the commissioning procedures according to legal and contractual obligations were finalized as well. A biomass project, with a capacity of 1.2 MW of electricity and 15 MW of thermal energy from the PE District Heating- Gjakova was also finalized, a project funded from the European Commission. The total of finalized new generation capacities is around 130 MW.

Whereas the project of Bondcom Energy Point LLC, for generation of electricity from WIND, Wind Park Bodakova, with a capacity of 11 MW is in the realization process, according to the legal terms defined in the Rule on Authorization Procedure.

3.4.3 Entry into operation of RES generators

During this year, following the finalization of projects according to the Authorization from ERO Board, and following technical admission, ten (10) projects have entered into operation, with a total installed capacity of 123.4 MW.

The following table presents the projects which have entered into commercial operation for generation of electricity from RES.

Tab. 3.8 Enterprises that have entered into operation

No.	Legal entity	Object	Location	Installed capacity	Entry in operation
1	SOWI KOSOVO L.LC.	WIND	Selac/Mitrovica	34.47 MW	20 October 2021
2	SOWI KOSOVO L.LC.	WIND	Selac/Mitrovica	34.47 MW	14 December 2021
3	SOWI KOSOVO L.LC.	WIND	Selac/Mitrovica	34.47 MW	17 December 2021
4	EUROKOS LLC	HPP	Brod/Dragash	2.48 MW	22 February 2021
5	EURKOS llc	HPP	Restelica/Dragash	2.35 MW	22 February 2021
6	HYDRO LINE LLC	HPP	Dolac/Mitrovica	1.19 MW	04 March 2021
7	MATKOS GROUP LLC - HPP VICA	HPP	Vica/Shtërpce	4.6 MW	28 April 2021
8	N.T.N. RELENUAL TAHIRI LLC.	HPP	Radesha/Dragash	3.4 MW	08 June 2021
9	DH GJAKOVA JSC	Biomass	Rezina/Gjakova	1.2 MW	19 November 2021
	Total			118.63 MW	

3.4.4 Modification of Final Authorization

During this year, ERO has also handled the request for modification of authorization, according to the requests of the applicants, in line with legal criteria of the Rule on Authorization Procedure for construction of new capacities from RES.

ERO, on 23.02.2021 received a request for modification of the Final Authorization V_760_2016, of the company "Matkos Group" LLC, through which it requested the modification/decrease of installed capacity, according to the Water Permit No. 102/21, dated on 09.02.2021, issued by the Ministry of Economy and Environment.

ERO, following the evaluation and review of the request on modification of Final Authorization, and attached relevant evidence, concluded that the request is based on the legal obligations of Article 19 of the Rule on Authorization Procedure, as well as the Decision on Water Permit No. V_1415_2021, issued on 04 October 2021, and approved the request of Matkos Group LLC and Modified the Decision on Final Authorization V_760_2016, dated on 28 January 2016.

3.4.5 Termination of the term of Final Authorizations

During 2021, ERO has also handled the requests for extension of validity terms of final authorizations. The requests were submitted by the company AF Energy LLC, on extension of the validity term of the decision on Final Authorization V_924_2018, dated on 29 March 2018, for construction of new generation capacities from the hydro power plant HPP Kotlina, with a capacity of 4.9 MW, CA Kotlinë, in Municipality of Hani i Elezit. ERO Board, following the evaluation and review of the request, decided by Decision V_1420_2021, dated on 07 September 2021, through which it refused the request of the party AFA Energy LLC, and at the same time terminated the validity term of the Decision on Final Authorization V_924_2018, dated on 29 March 2018.

ERO also reviewed the request of the company "2 Korriku" LLC, on extension of the validity term of the decision on issuance of Final Authorization V_880_2017, dated on 18 January 2017, for construction of new generation capacities from the hydro power plant HPP Soponica, with a capacity of 1.3 MW, in Municipality of Kaçanik, where following the evaluation and review from ERO Board, the request for extension was refused, due to the expiry of legal terms for finalization of the projects, and at the same time notified the party that the validity term of the authorization has ended.

3.5 Self-consumption generators

ERO, during this year, has also handled requests/applications of generators for obtaining the status of prosumer for self-consumption. Following the fulfilment of legal requirements, in accordance with the Rule on Authorization and the Support Scheme, they were allowed to proceed with the construction of generation capacities for own-consumption.

The following table presents the number of decisions issued by ERO Board, for self-consumption generators during 2021.

Tab. 3.9 Self- consumption authorizations

Decisions for self-consumption	No. of issued decisions
Solar	50
Total	50

The following table presents the legal entities that were issued the decision for authorization for the construction of self-consumption generators.

Tab. 3.10 Enterprises that were issued the decision for construction of self-consumption generators

No.	Legal entity	Object	Location	Installed capacity	Date of issuance o Decision
1	DEKORITY LLC	Solar	Konjuh,Lipjan	65 kW	02.09.2021
2	N.T.SH. GENCI -AF	Solar	Miradi e Epërme,Fushë Kosovë	30 kW	02.09.2021
3	HILL GROUP LLC	Solar	Preoc, Graçanicë	100 kW	02.09.2021
4	Natural person - N.H.	Solar	Çagllavicë, Graçanicë	5 kW	02.09.2021
5	Natural person - N.H.	Solar	Çagllavicë, Graçanicë	5 kW	02.09.2021
6	Natural person - T.H.	Solar	Çagllavicë, Graçanicë	5 kW	02.09.2021
7	VAM TRADE LLC	Solar	Çagllavicë, Graçanicë	100 kW	02.09.2021
8	ÇARSHIA LLC	Solar	Lagjja Marigona, Preoc, Gracanicë	100 kW	02.09.2021
9	Natural person - F.H.	Solar	Lagjja Marigona, Preoc, komuna e Gracanicë	5 kW	02.09.2021
10	Natural person-I.H.	Solar	Lagjja Marigona, Preoc, komuna e Gracanicë	5 kW	02.09.2021
11	Natural person -H.S.	Solar	Bibaj, komuna e Ferizajt	15 kW	02.09.2021
12	N.P.T. SEDEFI COMERC	Solar	Vitomiricë, Pejë	70 kW	02.09.2021
13	Natural person N.J.	Solar	Gllamnik,Podujevës	5 kW	02.09.2021
14	Natural person B.N.	Solar	Lagjja Sofali, Prishtinës	5 kW	02.09.2021
15	AGRO TRADE LLC	Solar	Laplje Selo, Gracanicë	30 kW	02.09.2021
16	AGRO TRADE LLC	Solar	Laplje Selo, Gracanicë	25 kW	02.09.2021
17	AGRO TRADE LLC	Solar	Laplje Selo, Gracanicë	5 kW	02.09.2021
18	AGRO TRADE LLC	Solar	Laplje Selo, Gracanicë	25 kW	02.09.2021
19	Municipality Of Prizren	Solar	Remzi Ademi 4, Prizren	53.76 kW	02.09.2021
20	HIT FLORES LLC	Solar	Rruga e Dëshmorëve, Dragash	100 kW	02.09.2021
21	Natural person - R.K.	Solar	Rr. Arkitekt Karl Gega", Aktash, Prishtinë	25 kW	02.09.2021
22	Natural person - H.C.	Solar	Nagafc, Rahovec	9.9 kW	02.09.2021
23	Natural person - H.O.	Solar	Cercë, Istog	5 kW	02.09.2021
24	RELUX LLC	Solar	Magj. Ferizaj - Prishtinë, Graçanicë	94.72 kW	02.09.2021
25	Natural person - A.SH.	Solar	Dubovik, Pejë	3 kW	02.09.2021
26	Natural person - F.V.	Solar	Isvor, Novobërdë	5 kW	02.09.2021
27	Natural person - V.X.	Solar	Veternik, Prishtinë	5 kW	02.09.2021
28	VALONI PETROL LLC	Solar	Veternik, Prishtinë	45.28 kW	02.09.2021
29	VALONI PETROL LLC	Solar	Veternik, Prishtinë	41.52 kW	02.09.2021
30	BOOST BERRIES LLC	Solar	Vitomiricë, Pejë	12.16 kW	04.10.2021
31	Natural person - RR.V.	Solar	Prelez I Muhaxherëve, Ferizaj	4 kW	04.10.2021
32	MALESIA FOODS LLC	Solar	Konjuh, Lipjan	14 kW	04.10.2021
33	BALKAN PETROL LLC	Solar	Kaçanik I Vjetër, Kaçanik	50 kW	04.10.2021
34	Natural Person - B.M.	Solar	Maxhunaj, Vushtrri	3 kW	04.10.2021
35	UNDP KOSOVO	Solar	Rr. E Zagrebit - Dragodanit, Prishtinë	27 kW	04.10.2021
36	Natural person - S.R.	Solar	Rr. Vëllezërit Haradinaj, Rahovec	10 kW	04.10.2021
37	N.T.SH. SEM - PRO	Solar	Rr. Tranzitit, Prizren	100 kW	04.10.2021
38	Natural person - S.H.	Solar	Çagllavicë, Graçanic	5 kW	15.10.2021
39	LODA DESING LLC	Solar	Rrakaj, Ferizaj	31.5 kW	15.10.2021
40	Natural person J.TH.	Solar	Xërxë, Rahovec	15 kW	27.10.2021
41	Natural person - XH.TH.	Solar	Xërxë, Rahovec	15 kW	27.10.2021
42	FORMA LLC	Solar	Bresalc, Ferizaj	100 kW	19.11.2021
43	SILCA GROUP LLC	Solar	Mirosalë, Feriza	100 kW	17.12.2021
44	PROEX LLC	Solar	Deçan	100 kW	17.12.2021
45	EURO FISI LLC	Solar	Radivojcë, Viti	100 kW	17.12.2021
46	KB KRUSHA LLC	Solar	Krusha e Madhe, Rahovec	20.14 kW	17.12.2021
47	Natural person - R.RR.	Solar	Panorc, Malishevë	14 kW	17.12.2021
48	Natural person - R.S.	Solar	Llugagji, Lipjan	10.8 kW	17.12.2021
49	PROEX LLC	Solar	"Bekim Berisha", Pejë	100 kW	17.12.2021
50	PROEX LLC	Solar	Rr."Shpëtim Robaj", Prishtinë	100 kW	17.12.2021
Total				1919.8 kW	

The above-mentioned projects are expected to be completed within the period specified in the dynamic project implementation plan in accordance with the technical criteria of connection.

Fig. 3.1 Views from the realization of the self-consumption generator Sedefi Comerc 70 kW, Vitomericë, Pejë

ERO has also received five (5) other requests with a total capacity of 262.6 kW from natural and legal persons, which are under review and according to the procedures in force, after completion will be allowed to construct new generation capacities from self-consumption generators.

3.6 Monitoring the construction of new generation capacities

The Regulator, during this year, has monitored the legal entities that have obtained a Final Authorization for construction of generation capacities.

ERO has monitored the works in realization of projects from the company SOWI KOSOVO LLC for the project Wind Park SELAC 1, SELAC 2 and SELAC 3, authorized by decisions V_980_2018, V_981_2018 and V_982_2018, dated on 13 June 2018, where according to the dynamic plan, twenty-seven (27) turbines for electricity generation from wind are expected to be placed.

Below are presented the photos from the realization of the WIND PARK SELAC project, Municipality of Mitrovica.

Fig. 3.2 Views from the works in realization of the project WIND PARK SELAC 103.41 MW

In addition to this, ERO has monitored other projects that are being executed according to Decisions on Final Authorizations, which are in different phases of construction, according to legal deadlines set in respective decisions. Their monitoring has been carried out continuously depending on the requirements that have arisen during their implementation.

ERO will continue to monitor the construction of new generation capacities from Renewable Energy Sources, meanwhile respecting all the legal procedures and criteria established by the applicable legislation.

3.7 Addressing the energy supply in the north of Kosovo

3.7.1 Previous developments and context

The energy supplied for the four northern municipalities of Kosovo, prior to 2017, was treated as "energy losses" and the cost of energy was handled from the Energy Regulatory Office (ERO) in a similar manner as other network losses which are included in customer tariffs. ERO has decided that these costs of losses shall be covered through KOSTT tariffs, upon the opening of the wholesale market, from 01 April 2017.

In November 2017, based on the substantive issue raised by the Ombudsman and confirmed by an interim court measure, ERO has explicitly ordered and instructed that no money received from Kosovo electricity customers can be used to buy energy to cover the cost of losses in the four northern municipalities of the country. Consequently, from 02 December 2017 until today, the energy consumed in the four northern municipalities of the country has been withdrawn by the Kosovo Transmission System Operator (KOSTT) from the European interconnection network, creating a deviation, the cost of which is constantly raised. In this context, i.e. due to legal and financial impossibility, KOSTT has requested from the Government of Kosovo to allocate funds to cover the consumption of the northern part of Kosovo, until the issue of supply of the northern part of Kosovo is addressed on a regular manner.

The Assembly of Kosovo, through the recommendation no.896, dated on 11.05.2021, authorized PE KOSTT to cover the energy deviations in the four northern municipalities of the country: North of Mitrovica, Leposaviq, Zubin Potok and Zveçan, according to the solution presented and approved in the functional commission and using the revenues from own-budget, means that will be compensated from the dividend or any other possible mechanism. The total cost for 2021 for covering electricity losses in four northern municipalities of the country is 41,806,026 €, of which 7,673,461 € were a government grant and the remaining part 34,132,565 € is from the KOSTT budget.

3.7.2 Current situation regarding the licensing of Elektrosever

The Energy Agreement concluded between Kosovo and Serbia in 2013, mediated by the European Union, as well as the conclusions of the EU in 2015, among others, determine the addressing of energy supply in the four northern municipalities of the country. This process provided for the creation of a new entity ("Elektrosever") registered as a business in Kosovo, which has been realized. "Elektrosever" in December 2020 applied to ERO for a license for electricity supply in accordance with the legal and regulatory framework of Kosovo. ERO has confirmed the receipt of the application and is still in the review process.

3.8 Market integration

3.8.1 The process for establishment of a joint electricity market Kosovo- Albania

Kosovo has an advanced position towards the creation of a common market with Albania, which in fact would be the first concrete merging of the two markets in the region.

The Kosovo-Albania joint market will improve the security of electricity supply for the two countries, taking into account the fact that the two countries have complementary electricity generation systems.

In order to continue with the integration of markets between our countries, it is necessary to continue the harmonization of legislation and secondary regulatory acts in order to eliminate obstacles that may arise in this regard. In this context, with the assistance of USAID, working groups already set up with the composition of Ministries, Regulators and System Operators are working in this direction. Also, the operation of both systems, as a single control area according to the agreement signed at the end of 2019 between the two system operators, with the approval of both regulators, is an important step towards market integration and optimization of interconnection capacities. The working groups already set up between TSOs, Regulators and the Electricity Exchange are continuing the work to review the primary and secondary legislation to enable the unification of these markets and the steps to be taken for its operation.

In 2020, KOSTT and the Albanian Transmission System Operator (TSO) established the Albanian Energy Exchange (ALPEX). The Energy Regulatory Office and the Energy Regulatory Entity together with the transmission system operators of both countries KOSTT and TSO on 21 October 2021 in Tirana signed the agreement on the coupling of electricity markets.

Through the agreement, the signatory parties recognize the Albanian Electricity Exchange ALPEX as the only electricity exchange for day ahead and intra-day trading for the commercial areas of both countries. This agreement is also a precondition for subsequent agreements that enable the operation of the joint electricity exchange ALPEX.

The signing of the agreement was realized in the framework of the meeting of the legal working group for defining the activities and agreements that must be implemented in order for the joint energy exchange ALPEX to become operational during 2022.

3.8.2 Further liberalization of electricity market

In 2016, new laws in the energy sector were adopted: Law on Energy, Law on Electricity and Law on Energy Regulator. These laws are partially in line with the Third Package, namely Directive No. 2009/72/EC, regarding the common rules for the internal electricity market and Regulation No. 714/2009/EC, on the criteria for access to the network for cross-border electricity services, as well as the requirements of the Energy Community Treaty.

Following the changes in the primary legislation, ERO has taken all steps to harmonize the secondary legislation for the energy sector, enabling the functioning of the energy market in accordance with the requirements of the Energy Community Treaty.

ERO has continuously taken actions to promote the development of a competitive wholesale and retail market, which enables customers to benefit from competitive prices, and in order to implement this has drafted and approved the Guideline on Liberalization of the Electricity Market in Kosovo. According to this guideline, it is planned that the price deregulation for final customers will be carried out gradually, where customers connected to the 220 kV and 110 kV voltage network will be the first to enter the deregulated market, who are already supplied at unregulated prices, whereas other customers connected to the 35 kV voltage level, were foreseen to be supplied with energy at

deregulated prices starting from 31 March 2020, and the customers connected to the 10 kV voltage level were foreseen to be supplied with regulated prices until 31 March 2021.

ERO during 2020 and early 2021 has undertaken all regulatory and procedural actions to notify customers connected to the voltage level of 35 kV, that they will enter the deregulated market (who do not meet the criteria to be within universal service of supply), has held meetings with these customers to inform them on the electricity market liberalization process as well as has held meetings with chambers of commerce. However, the circumstances created by the COVID 19 pandemic, and the requests of the Chambers of Commerce to postpone the market liberalization process have made it impossible for this process to be completed during 2021, as foreseen by the Guideline on Market Liberalization.

3.8.3 Implementation of the Rule on Electricity Market Integrity and Transparency (REMIT)

REMIT Regulation, which is a transposition of Regulation No. 1227/2011 of the European Parliament and of the Council, was approved by ERO in June 2020. According to the obligations deriving from the REMIT rule, market participants must be registered in the national register which is created by ERO.

ERO has transposed from the ECRB format, the format of questionnaires for data collection by licensees, which has been sent to market participants. Based on the data submitted by market participants, ERO has established the national register of market participants, according to the legal requirements arising from the REMIT rule. Rules, forms and the national register are published on the website of ERO.

3.9 The crisis in energy sector

2021 was characterized with an increase of prices in European electricity markets, impacted by the gas demand in Asia, low level of gas storages in European stocks and increase of electricity demand due to economic recovery following the initial restrictions of COVID-19, joined by a series of economic, atmospheric and political factors in the entire world.

At the beginning, the energy sector in Kosovo was not impacted by the crisis of prices/offer, given that our country had lower demand during hot months and sufficient domestic production capacities.

The second half of 2021 was characterized by an unprecedented increase in prices, the combined impact of the factors mentioned above made prices in HUPX - the Hungarian Electricity Exchange which is taken as a reference due to its geographical proximity and liquidity - reach the value of 376 €/MWh which represents an increase of 563% compared to the beginning of the year. As a net importer of electricity, Kosovo is also affected by rising prices in Europe. In addition to rising prices, in 2021 in Kosovo there was a significant increase in electricity demand, which affected the security of supply.

Electricity consumption in the country in December 2021 exceeded the normal growth records by 10.8% compared to last year, while the maximum load on the Transmission System had reached the highest peak recorded ever with 1,398 MW, while the average hourly consumption was 1,198 MWh/h. According to the indications, the increase in consumption comes as a result of the massive use of electricity for heating by customers, with special emphasis on the last months of 2021.

In order to address the energy crisis, the following actions were undertaken:

1. The Prime Minister Office set up a Task Force to address the energy crisis;
2. KESCO requested an extraordinary tariff review;
3. The Energy Regulatory Office began to analyse the options available for the reform of electricity tariffs for final customers and in December announced the extraordinary review of Maximum Allowed Revenues for regulated enterprises;
4. The government took a decision to provide a financial subsidy of 20 million euros to cover the need for imports. According to that decision, KEK had to purchase electricity to cover the demand;
5. KOSTT and the Ministry of Economy warned of planned outages, limiting electricity for at least 2 hours each day;
6. The Minister of Economy had declared a state of emergency in the energy sector, pending approval by the Assembly of Kosovo;
7. The Assembly of Kosovo convened an extraordinary plenary session to discuss the energy situation and approved the Decision on declaring an emergency state of electricity.

In addition to the unprecedented increase in large demand for electricity supply, the energy crisis in the country was also caused due to the lack of electricity production from domestic sources, caused by the problems listed below.

On 6 December 2021, in SS Kosova A, the overvoltage discharge on the primary side in the transformer T35 220 / 6kV that serves for self-supply of Generators in TPP Kosova A exploded. After a few minutes, the 220kV traction insulator exploded, in the main busbar of KOSTT- it, causing the fall of all elements which have been connected to this busbar including the stopping of the TPPA3 unit, while fall of the TPPA5 unit was caused as a result of large fluctuations caused by the short circuit in the busbars system. TPPA3 and TPPA4 units went into operation after 4-5 days, respectively on 10 and 11 December.

In the second week of December 2021 there were unplanned failures of units B1 and B2. This led to a significant lack of domestic generation and lack of thermal heating in Prishtina. The lack of district heating for more than 12 thousand households in Prishtina, caused an increase in electricity demand and another wave of serious deviations from the interconnection system.

KEK managed to return the TPPB1 unit to production within 48 hours, while TPPB2 required a renovation that would last until 20 January 2022. On the one hand the suspension of unit B2 greatly made it difficult to cover consumption, while on the other hand the global crisis of energy resulted in enormous increase in electricity prices in international markets. During December 2021 only, KEDS and KESCO imported electricity in the amount of € 32.3mil.

It should be noted that the non-allocation of transmission capacity at the border between KOSTT and EMS has also contributed to the increase in prices, consequently at this border (Kosovo-Serbia) no commercial transaction takes place. The lack of cross-border transmission capacity has caused serious difficulties for traders, such as the disruption of energy trade at this border, therefore reflecting the increase in the price of cross-border capacity at other borders and the price of energy imports, for Kosovo and Southeast Europe and has caused difficulties in system balancing.

EMS has so far not responded to KOSTT's requests for the designation of NTCs and capacity allocation from 1 January 2021 onwards. Cooperation on the issue of cross-border capacity allocation is provided for under Article 12 and Article 8.6 point (g) of EC Regulation 714/2009 on the criteria for

network access for cross-border electricity exchanges and Article 6.3 of Directive 2009/72/EC concerning joint rules for the internal electricity market. Based on this, on 18.02.2021 KOSTT filed a complaint to the Secretariat of the Energy Community against the state of Serbia as a signatory to the Energy Community Treaty, due to non-compliance with the Treaty by the state of Serbia, and this is causing financial damage to KOSTT and electricity customers.

3.10 Activities of the Regulator in the area of price regulation

3.10.1 Tariff review

The Energy Regulatory Office (ERO) based on the competences given in the primary legislation and the secondary legislation for the energy sector is the sole authority responsible for setting the tariffs for the regulated activities in the energy sector. ERO, through an open and transparent process determines revenues and tariffs; this regulatory responsibility in addition to being specified in local legislation, is also defined by Directive 2009/72/EC regarding joint rules for the internal electricity market.

The Energy Regulatory Office has carried out the Regular Annual Adjustment for Maximum Allowed Revenues (MAR) [1] and the tariffs to be covered by the Regulated Companies. During this process, ERO has determined regulated revenues and tariffs for the Transmission System and Market Operator (TSO/MO, KOSTT), Distribution System Operator (DSO, KEDS) and the Universal Service Supplier (USS-KESCO). This evaluation of ERO for revenues and tariffs is based on the proposals submitted by regulated companies as well as decisions on Maximum Allowed Revenues for the regulatory period 2018-2022 for the TSO/MO and DSO.

The review process for the relevant tariff year 2021 should have been finalized by the end of March 2021, however this did not happen due to the fact that the Board was not functional until 2 August 2021, when it was completed upon the appointment of two members and the chairman by the Assembly of the Republic of Kosovo. Following the completion of the Board, ERO continued with the tariff review process.

In accordance with the rules in force, ERO has initiated the process of regular annual adjustments of Maximum Allowed Revenues and tariffs for regulated activities. In the framework of this process, ERO has notified all stakeholders, giving them the opportunity to participate in this process.

Licensees have submitted their applications on requirements for Maximum Allowed Revenues based on the cost expectations that may occur during the relevant tariff year 2021.

Following the evaluation of these applications, ERO has prepared and published the Consultation Reports in order to receive comments from stakeholders.

The review of applications for regulated revenues and tariffs in the electricity sector has included: activities of wholesale purchase of energy from domestic generators, import of electricity, electricity transmission activity, electricity distribution activity and the activity of universal service supplier

[1] Maximum Allowed Revenues are comprised of operational expenses & maintenance, allowed network losës as well as depreciation-allowed return on investment assets that a regulated economic unit is allowed to collect from regulated customers during a relevant tariff year.

(USS). In this tariff review, ERO has analysed the data realized for 2020 and the data realized until July 2021 which were reflected in the cost review for the relevant tariff year.

The entire process has gone through public consultation, including meetings and communications with stakeholders. ERO, upon determination of revenues and tariffs for regulated operators, has taken into account the documents which were published in the official website of ERO, as follows:

- Application of the Universal Service Supplier KESCO JSC (USS) for the request for Maximum Allowed Revenues, submitted on 8 March 2021;
- Application of the Distribution System Operator – KEDS JSC (DSO) on Maximum Allowed Revenues, submitted on 8 March 2021 at ERO;
- Application of the Transmission System and Market Operator – KOSTT JSC (TSO/MO), on Maximum Allowed Revenues, submitted on 27 January 2021 at ERO;
- Consultation Report – Annual Adjustments of Maximum Allowed Revenues for USS (April 2021 – March 2022), published on 24 August 2021;
- Consultation Report – Annual Adjustments of Maximum Allowed Revenues for KOSTT (relevant tariff year 2021), published on 24 August 2021;
- Consultation Report – Annual Adjustments of Maximum Allowed Revenues for KEDS (relevant tariff year 2021), published on 24 August 2021;
- Final Report on Maximum Allowed Revenues for USS, Responses to Comments (relevant tariff year 2021), published on 08 October 2021;
- Final Report on Maximum Allowed Revenues of TSO/MO, Responses to Comments (relevant tariff year 2021), published on 08 October 2021; and
- Final Report on Maximum Allowed Revenues of DSO, Responses to Comments (relevant tariff year 2021), published on 08 October 2021.

3.10.2 Energy purchases in wholesale market

Electricity purchases in the wholesale market include purchases of energy from KEK, from renewable energy generators connected to the transmission and distribution network, as well as purchases of energy from imports realized in organized markets.

Production prices for the Public Generator (KEK JSC) are deregulated from 1 April 2017. This energy is offered in the wholesale energy market, with priority for the Universal Service Supplier, and after determining the amounts needed in order to cover the demand of customers entitled to universal service of supply, whereas the remaining part of energy produced from KEK is offered in the wholesale market.

Wholesale energy purchases must be provided in a transparent, competitive and efficient manner, respectively in accordance with the basic principles for energy trading, that are defined in the Energy Trading Procedure which is mandatory for trading parties.

In addition to purchases of energy for the supply of final customers, in the wholesale market is realized the trading of energy to cover losses and ancillary services by the Transmission System Operator and the Distribution System Operator.

Electricity generation must be balanced with the electricity demand in real time, to enable the safe operation of the power system. Kosovo's power system is designed so that electricity production depends mainly on power plants, but the energy produced by local generation is not enough to cover the energy demand at the time of maximum demand and also there are surpluses during the minimum demand. Therefore, in order to manage the power system efficiently, there is a need for imports (during maximum demand) and exports (during minimum demand) that are realized in the wholesale market.

The sources of electricity in the wholesale market from which the energy demand in the country is covered are: energy production by KEK, hydropower plants, solar power plants, wind turbines and energy purchases from imports. The energy and financial data of the allowed wholesale market for 2021 are summarized in the following table:

Tab. 3.11 *Allowed costs for energy purchases*

Allowed costs for energy purchase	GWh	€/MWh	€'000
Amounts supplied by KEK	4 021	29,5	118 625
Generators at TSO level	316,65	32,4	10 259
Generators at DSO level	41,85	45,18	1 891
Import	95,28	151,8	14 460
Imbalance costs		-	(568,9)
Compensation and adjustments		-	(1, 779)
Total supplied amounts	**4 531**	**31,5**	**142 870**
Retail margin		3,00%	3 986
Total energy purchase costs	**4,531**	**32,5**	**147 220**

From the data presented in the table above, it is noticed that the allowed average price for energy purchase in the wholesale market for USS for 2021 was 32.5 €/MWh without including RES Fund costs.

Wholesale realized costs for the purchase of electricity were in the amount of 176.6 million euros compared to the allowed costs of 147.2 million euros or expressed in percentage, 20% higher. This higher cost came as a result of the failure of TPP A and TPP B units during December 2021, as well as the enormous increase in the import price. The failure of the TPP B2 unit has made it very difficult to cover consumption with domestic production, whereas replacing this production with import has been extremely expensive due to the global energy crisis. Only during December 2021, import costs for KEDS and KESCO have reached the value of 32.3 million euros. During December, significant imbalances were caused between the consumption of electricity in the country and the energy provided by the responsible operators, the balancing of the system was carried out by withdrawing electricity in an unauthorized way from the European transmission system. In some cases, electricity drawn from the Continental European system was over 40% of domestic consumption demand. The Coordination Centre for Continental Europe within ENTSO-E (Swiss Grid) as well as the Regional group for Continental Europe (RGCE), the entity of ENTSO-E, requested from KOSTT the immediate cessation of diversions in the European interconnection network. In order to overcome this situation, in December 2021 the Government of Kosovo approved a financial subsidy of 20 million euros to cover the need for imports of regulated customers of universal service, through a contractual agreement between the Ministry of Economy and KEK. Through this agreement, KEK is authorized to use this subsidy in further contractual agreements with KESCO for the import of electricity for customers within the universal service.

One of the required parameters for conducting tariff review is the planning of energy consumption for regulated customers. For this purpose, in this tariff review ERO has used the balance sheet[2] for 2021. This balance sheet should reflect only the costs of electricity supply for customers who are entitled the right to supply under the criteria of universal service.

The amount of energy for export during this forecast is not considered as USS energy, as USS shall nominate only the amounts required to cover the consumption of customers with universal service. This amount of energy must be managed by the respective manufacturer in accordance with dispatching priorities. The consumption of universal service customers does not include the categories of customers connected at transmission level.

Following the determination of amounts required for supply in order to cover the demands of USS customers, the costs for purchasing energy in the wholesale market must be calculated.

In the evaluation of wholesale energy purchase cost, ERO has taken into account the direct costs of the Supplier towards RES, according to the Rule on Support Scheme, costs for energy purchase from other generators, according to contractual criteria.

The allowed wholesale energy costs shall be calculated according to the following formula, through the Rule on USS Revenues:

$$WHPC_t = (GENC_t + IMPC_t + IMBC_t * IMBF_t)*(1+RETM_t)$$

Ku:

$GENC_t$	*Allowed costs of energy purchase from domestic generators in relevant year t*
$IMPC_t$	*Allowed costs of energy from import in relevant year t*
$IMBC_t$	*Net imbalance costs in relevant year t*
$IMBF_t$	*Imbalance sharing factor in relevant year t*
$RETM_t$	*Retail margin in relevant year t*

3.10.3 Maximum Allowed Revenues for regulated tariff customers

The reasonable costs which are used to determine the Maximum Allowed Revenues for regulated customers with universal service obligation include: retail costs of the supplier, pass-through costs (transmission and distribution network costs), energy purchase costs, working capital, bad debt, adjustments of realized costs, etc. The revenues of the universal service supplier enable it to cover the costs of each supply chain activity starting from the activity of generation & mining, transmission, distribution to the supplier. Thus, the supplier collects from the final customers the total costs of electricity supply, which are then allocated to each party depending on the service costs.

It is worth noting that the costs of purchasing energy from imports and pass-through costs (TSO / MO and DSO) have increased significantly due to the increase in wholesale energy costs in electricity markets. So the allowed costs were 265.5 million euros, while the realized ones are 314 million euros,

[2] The energy balance presents all the data in a joint energy unit. This allows the users to see the total consumed energy as well as the relative contribution of each different source, for the entire system.

or a difference of 48.5 million euros. According to the rule on revenues, this difference is adjusted in the 2022 tariffs.

The details of these costs for 2021 are presented in the following table:

Tab. 3.12 Maximum Allowed Revenues of Universal Service Supplier

MAR of Universal Service Supplier	Unit	USS Proposal 2021	Allowed ERO 2021
Indexation parameters			
Interest rate It	%	6,85%	6,85%
Retail costs of the Supplier			
OPEX - $OPMC_t = OPMC_{t-1}$ * (1 + CPI	€m	6	4,6
Depreciation - DEPCt = DEPCt-1 * (:	€m	0,1	0,1
Pass-through costs			
TSO costs	€m	21,5	17,8
DSO costs	€m	104,2	90,5
RES fund costs	€m	11,9	9,9
Working capital (WCLCt)			
WCLC = (1 / 12) * It * (RETRt + WH	€m	1,7	1,5
Energy purchase costs			
Wholesale energy purchase costs	€m	149,4	147,2
Licensing tax			
Licensing tax	€m	0	0,03
Bad Debt (BDTA)			
BDTA	%	5%	4%
BDTA	€m	15,8	11,6
Adjustments of revenues for USS			
Adjustments 2020	€m	5,5	6,8
Maximum Allowed Revenues	**€m**	**316,2**	**290,1**

Below is graphically presented the share of costs by activities in the total costs of electricity supply to regulated customers.

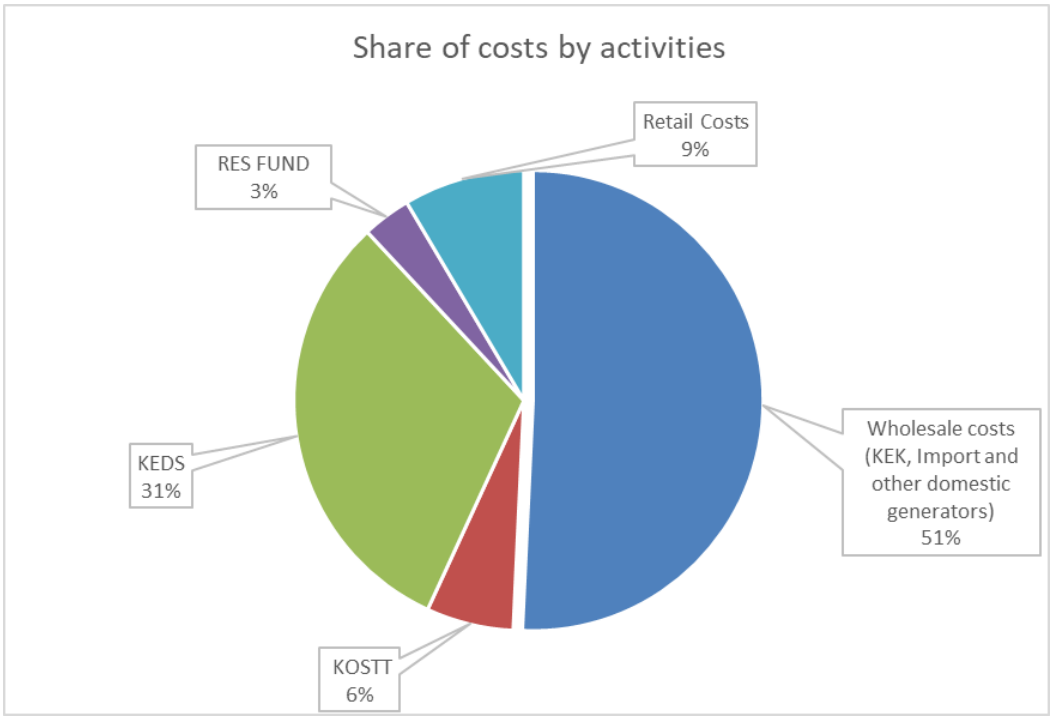


Fig. 3.3 Share of costs by activities

Note: The Renewable Energy Sources (RES) Fund is a fund established and managed by the Market Operator in line with the Rule on Support Scheme

3.10.4 Regulated tariffs for universal service customers

ERO sets regulated tariffs for customers who are entitled the right to supply under the criteria of universal service. The criteria based on which customers are entitled this right are set out in the Law on Electricity, according to which: "The right to universal service of supply is entitled to all household customers, and non-household customers who have an annual turnover of not more than ten (10) million euros, or not more than fifty (50) employees ".

The regulated tariffs set by ERO for the relevant tariff year 2021, are projected to cover the costs of electricity service for all customers regulated by the universal service supplier. Customers who are billed with regulated tariffs are customers connected to the voltage levels 35kV, 10kV and 0.4kV, while customers connected to the voltage level 220kV and those to 110kV are supplied with unregulated prices (market prices).

Since 2017, electricity consumption has increased steadily, one of the causes of this increase has been the change of tariff structure.

The volume of electricity consumed in 2021 was 41% higher than in 2017. The increase in energy consumption was also accompanied by a record increase in the maximum peak load, which overloaded the networks and the ability of transformer capacities to deliver this energy to customers. The difference between 2021 and all previous years, especially during the winter months, suggests an increase in electricity consumption and the use of electricity for heating, which may have resulted from the customers who before the change of tariff structure may have used other alternatives whereas now use electricity for heating.

It should be emphasized that the right to supply with market prices, respectively the possibility of choosing the supplier is entitled to all customers. By 2021, ERO had licensed 9 suppliers from whom the customers can purchase energy at unregulated prices, however only KESCO is an active supplier.

The structure of retail tariffs of electricity for customers entitled to universal service (regulated tariffs) is designed to recover the revenues determined in an amount of 290.1 million euros.

The structure of tariffs for regulated customers is presented in the following table:

Tab. 3.13 The structure of regulated tariffs for final customers for 2021

Tariff group	Voltage level of supply	Tariff element	Unit	Time of day	Approved 2021
1	35kV	Fixed customer tariff	€/customer/month		11,19
		Engaged power	€/kW/muaj		5,85
		Active energy (P), of which	€c/kWh	High tariff	4,92
			€c/kWh	Low tariff	3,16
		Reactive energy (Q)	€c/kVArh		0,67
2	10kV	Fixed customer tariff	€/customer/month		4,62
		Engaged power	€/kW		5,04
		Active energy (P), of which	€c/kWh	High tariff	5,73
			€c/kWh	Low tariff	3,69
		Reactive energy (Q)	€c/kVArh		0,67
3	0.4 kV Category I (customers with reactive energy)	Fixed customer tariff	€/customer/month		2,57
		Engaged power	€/kW		2,97
		Active energy (P), of which	€c/kWh	High tariff	6,69
			€c/kWh	Low tariff	4,96
		Reactive energy (Q)	€c/kVArh		0,67
4	0.4kV Category II	Fixed customer tariff	€/customer/month		2,97
		Active energy (P), of which	€c/kWh	Single tariff	8,83
		Active energy (P), of which	€c/kWh	High tariff	10,71
			€c/kWh	Low tariff	5,30
5	0.4kV 2 rate meter (household)	Fixed customer tariff	€/customer/month		1,74
		Active energy (P), of which	€c/kWh	High tariff	6,75
			€c/kWh	Low tariff	2,89
6	0.4kV 1 rate meter (household)	Fixed customer tariff	€/customer/month		1,74
		Active energy (P), of which	€c/kWh		5,32
7	0.4kV (household-unmetered)	Evaluated consumption:			
		Fixed customer tariff	€/customer/month		1,74
		Active energy (P), of which	€c/kWh	Average tariff	6,75
8	Public lighting	Fixed customer tariff	€/customer/month		3,21
		Active energy (P), of which	€c/kWh	Single tariff	9,24

High tariff (day) is applied from 07:00 - 22:00 during the period 1October until 31 March

High tariff (day) is applied from 08:00 - 23:00 during the period 1 April until 30 September

The customer is charged with reactive energy above the allowed one which corresponds with cos(Φ)<0.95

Prior to tariff design, the pass-through costs of USS shall also be determined, such as transmission use of system and distribution use of system. These pass-through costs are described below.

3.10.5 Revenues and tariffs for transmission use of system, system operation, and market

During 2021, ERO has carried out the process of regular annual adjustments, where the revenues of the TSO/MO have been adjusted to take into account: the efficiency factor, indexation of costs for the inflation rate applied to operating expenses, repairs & maintenance. Adjustments for losses purchase costs, return costs and depreciation resulting from investments planned under the development plan and other reasonable costs for operation of the transmission system have also been applied.

ERO applies "Incentive-based regulation" which is based on the principle that tariffs for natural monopolies (networks tariffs) should be determined in a manner that imitates competition, as every company operating in a competitive environment is expected to improve their operational efficiency.

The Development and Investment Plans, approved by ERO, present the plans for development of the transmission network in Kosovo for the next 5 and 10 years. Such plans present the projects which are required for the reliable and safe operation of transmission system, in order to achieve the security of supply, to support the energy market and competition as well as the integration of renewable sources.

In order to enable the security of electricity supply, to support the load increase, integration of renewable sources and increase of supply quality, ERO, during periodic review for the regulatory period 2018-2022 allowed capital investments of around 60 million euros for TSO/MO. From the allowed value for the 5-year tariff period, 26.4 million euros were planned to be invested in 2021, whereas the TSO/MO has reported that it has realized 4.7 million euros or rate of realization of capital investments is only 18%.

It is a well-known practice applied by regulators to make a mid-term forecast of investment planning. This will enable the medium term predictability of corporate revenues on the one hand, whereas on the other hand the regulator will be able to make a profiling of costs, respectively of tariffs so that there are no significant fluctuations over the years.

In order to ensure security of supply, liberalization and integration of electricity markets, integration of new generation capacities, reduction of losses and improvement of other technical parameters of the network, the required revenues for the operation of the transmission network have been allowed. It is worth emphasizing that the costs of purchasing energy to cover the allowed losses were 6.54 million euros, while 10.83 million euros have been realized, which have increased due to rising prices in electricity markets.

The following table presents the Maximum Allowed Revenues approved by ERO Board, for the relevant tariff year 2021 for TSO/MO.

Tab. 3.14 Maximum Allowed Revenues for TSO/MO

Maximum Allowed Revenues for TSO/MO - 2021	mil€
Operational expenses	7.11
Depreciation	11.74
Allowed return	10.88
Allowed losses	6.54
RES Fund Costs	16.98
Costs of Ancillary Services	9.53
Non-regulated Tariff Revenues	-0.06
Revenues from ITC	-3.60
Adjustments of PRR1 and 2017	
Adjustments	-1.26
Remaining revenues from KEK	-3.33
Revenues Correction Factor KREV	-15.59
Final MAR	38.94

The Maximum Allowed Revenues for KOSTT will be collected through tariffs approved by ERO based on the Methodology on determination of Transmission System Tariffs, System Operation and Market Operation. Therefore, KOSTT has two licenses issued by ERO: Transmission System Operator which manages and operates the high voltage electricity transmission system and Market Operator which is responsible for the organization and administration of trading (sale-purchase) of electricity and conducting transactions between producers, suppliers and other customers.

The following table presents the tariff structure for Transmission Use of System Tariffs, the System Operation and market for the relevant tariff year 2021.

Tab. 3.15 Tariff structure for TSO/MO for 2021

Tariff group	Tariff element	Unit	Tariff
Transmission connected generatio	System Operator Tariff	€/MWh	1,621
	Market Operator Tariff	€/MWh	0,026
Distribution connected generation	System Operator Tariff	€/MWh	0,038
	Market Operator Tariff	€/MWh	0,026
Distribution Operator	System Operator Tariff	€/MWh	1,344
	Market Operator Tariff	€/MWh	0,023
Supply	TUOS Tariff 400/220 kV	€/kW/vit	5,273
	TUOS Tariff 110 kV	€/kW/vit	10,784
	System Operator Tariff	€/MWh	1,344
	Market Operator Tariff	€/MWh	0,023
	RES Fund Tariff	€/MWh	2,011

3.10.6 Revenues and tariffs for distribution use of system

During 2021, ERO has reviewed the Maximum Allowed Revenues and tariffs of Distribution System Operator. The regular annual adjustment process of DSO is similar to the one of TSO/MO.

ERO through a transparent process which includes consultation with all stakeholders has reviewed their comments and requests, and then has determined the Maximum Allowed Revenues for the DSO for 2021.

In order to enable the security of electricity supply, support the increase of load, integration of renewable sources, network expansion and strengthening and the increase of the quality of supply, ERO during the periodic review for the regulatory period 2018-2022 has allowed capital investments of about 131 million euros for the DSO. From the allowed value for the 5-year tariff period, 20.5 million euros were planned to be realized in 2021, while the DSO has reported that it has realized 22.57 million euros or the rate of realization of capital investments is 10% higher. Investment projects for 2021 in DSO include investments in medium and low voltage network, investments in digitalization and modernization of the network, investments in SCADA, smart meters, etc. Through investment projects, the DSO aims to achieve key objectives such as reduction of technical and commercial losses, reliable and better energy supply and increasing existing capacities, integrating RES and modernizing the network.

It is worth emphasizing that energy purchase costs for covering the losses allowed in the DSO were 50.88 million euros while the realized losses are 86.7 million euros which have increased due to rising prices in electricity markets.

The following table presents the Maximum Allowed Revenues approved by ERO Board for relevant tariff year 2021 for DSO.

Tab. 3.16 Maximum Allowed revenues for DSO for relevant tariff year 2021

Maximum Allowed Revenues for	mil€
Operational expenses	25,52
Depreciation	16,21
Allowed return	15,94
Obligations for SO and MO	1,30
Allowed losses	50,88
Unregulated revenues	-3,50
Adjustments	-1,50
Licensing tax	0,10
Revenues Correction Factor KREV	-14,44
Final MAR	**90,51**

Following the determination of Maximum Allowed Revenues, the tariffs shall be set in order to collect the approved revenues.

The Maximum Allowed Revenues for DSO shall be collected through the tariffs approved by ERO, based on the Methodology on determination of distribution use of system tariffs. The following table presents the structure of tariffs for Distribution Use of System for 2021.

Tab. 3.17 The structure of DSO tariffs for 2021

Tariffs of customers connected to DSO		
Voltage level	Unit	Tariff
35 kV	€c/kWh	0,90
10 kV	€c/kWh	1,31
0.4 kV	€c/kWh	2,10

3.10.7 Thermal energy tariffs

In line with the primary legislation - Articles 47 and 48 of the Law on Energy Regulator, the Energy Regulatory Office (ERO) is responsible for determining the tariff methodology and approving tariffs in the regulated energy sector.

Within its legal competencies and obligations, the Energy Regulatory Office has issued the Thermal Energy Pricing Rule. The rule sets out the procedures for submitting, reviewing the tariff application and approving the tariffs, as well as the Methodology for calculating the maximum allowed revenues and tariffs.

Schematically, the Tariff Methodology is presented as follows:

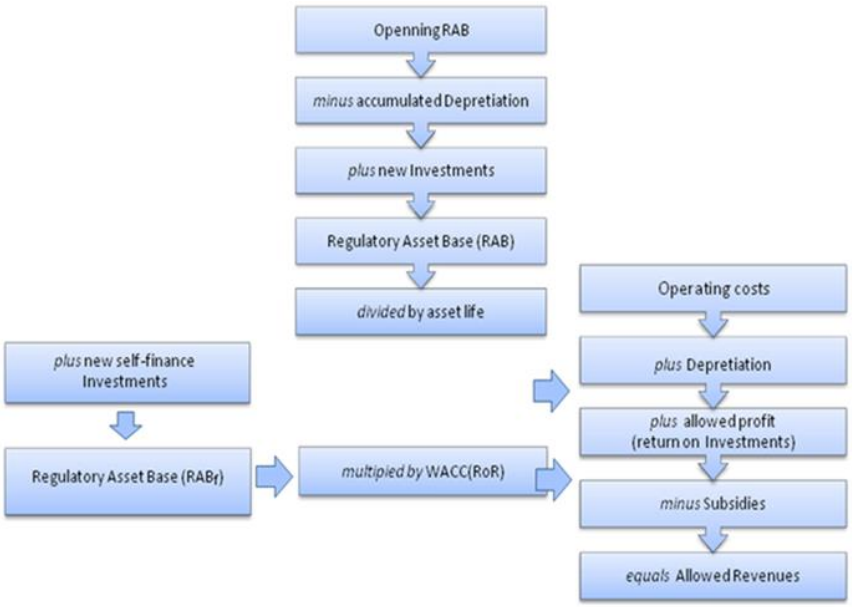


Fig. 3.4 The scheme of calculation of allowed revenues

From the schematic presentation it can be seen that the costs that the enterprise has to cover consist of operating costs, depreciation which represents the possibility for the enterprise to replace its assets, the cost of network losses and return to the Regulated Asset Base (RAB).

The process for determination of tariffs and their approval for 2020/2021 season is carried out in two steps:

1. Determination of Maximum Allowed Revenues, based on: i) the information and data provided in the tariff application; ii) information submitted during the regulatory reporting of realizations in the previous season 2020/2021; and iii) the co-ordination between current and projected realizations, which is based on the difference between the planned and actual revenues of the previous heating season.
2. Calculation of tariffs based on Maximum Allowed Revenues and Tariff Structure.

For determination of Allowed Revenues of DH Termokos J.S.C for the 2021/2022 season, in line with Thermal Energy Pricing Rule, the Regulator has undertaken the following steps:

1) Evaluation and Determination of Allowed Operational Costs;
2) Evaluation and Determination of Depreciation;
3) Determination of Allowed Return on RAB (return on investments), which includes:

   a) determination of RAB –evaluation and approval of company's assets, verification and approval of planned investments and working capital; and

   b) Calculation of Allowed Rate of Return (RoR)/ WACC;
4) Evaluation and Determination of the allowed cost of network losses.

ERO has engaged the available expertise to make a more realistic evaluation of the information provided, submitted by Termokos. A comprehensive analysis and evaluation of the presented information was carried out, which has been followed by the comparison of the respective data from the previous seasons, in order to make the accurate determination (forecast) of the allowed revenues for the 2021/2022 season.

Within the tariff review for DH Termokos, ERO has drafted the Regulatory Reports for determination of Maximum Allowed Revenues as well as for determination of thermal energy tariffs for the 2021/2022 season.

Following the review of relevant documents of tariff review, in the session of 3 November 2021, ERO Board approved the Maximum Allowed Revenues (MAR) for DS Termokos for the season 2021/2022, in an amount of 7,185,202 euros. The tariffs reflected from MAR of DH Termokos for the heating season 2021/2022 remained at the same level as the ones from the previous season.

The issued decisions:

- on approval of Maximum Allowed Revenues (MAR) for DH Termokos, which shall be collected from thermal energy (heating) tariffs for final customers for the season 2021/2022;
- on approval of thermal energy tariffs for final customers of DH Termokos for the heating season 2021/2022;

With respect to DH Gjakova, it should be emphasized that DH Gjakova has not submitted the tariff application according to "Implementation Schedule and Plan", but has continuously requested to be released from the obligation of submitting the tariff application, justifying it with the construction of

the new heating plant, consequently the change of technology has caused difficulties in planning and submitting the data and information required for tariff review.

In this regard, it should be noted that, during the development of the construction project of the new heating plant, external consultancy was engaged within the project in order to assist DH Gjakova, among others, for the preparation of the tariff review application. The provision of assistance for this component has been continuously postponed during the development of the project, both for objective reasons related to the pandemic and due to the unwillingness of DH Gjakova to accept such assistance. However, after the constant insistence of the ERO representative in the Project Steering Committee, the engaged assistance started working in this direction and in August 2021 prepared a final version of the tariff application. This final version of the application was submitted to DH Gjakova for further processing at ERO, normally following their review and any updates or remarks.

Despite repeated requests from ERO, DH Gjakova did not submit the application nor did it confirm compliance with the data and information contained in the version of the application prepared by the consultancy. After the official letter of ERO, DH Gjakova on 24 December 2021 submitted by e-mail the same version of the application prepared and submitted by the consultancy. In order to be in accordance with the regulatory procedures, ERO has requested from DH Gjakova that this application shall be re-submitted in the appropriate format signed by the relevant management staff of DH Gjakova. As a result, DH Gjakova on 30 December 2021 re-submitted the application in the format required by ERO.

Due to the delayed submission of the tariff application, ERO has not managed to analyse and review the tariff application of DH Gjakova by the end of 2021.

The structure and levels of thermal energy tariffs for DH Termokos are presented as follows:

Tab. 3.18 The structure of thermal energy tariffs for 2021/2022

Thermal energy tariffs- DH Termokos, season 2021/2022			
Metered tariff components	**Unit**	**Value**	
Monthly tariff for thermal capacity (fixed component)	[€/kW/month]	0,78	
Tariff for supply/consumption of thermal energy (variable component)	[€/MWh]	36,25	
Unmetered tariff components	**Unit**	**Customers**	**Customers**
Monthly tariff for thermal capacity (fixed component)	[€/m^2 per month]	0,11	0,14
Tariff for supply/consumption of thermal energy (variable component)	[€/m^2 per month]	0,65	0,81
Total tariff for unmetered customers	[€/m^2 per month]	0,76	0,95

3.11 Activities of the Regulator in the area of customer protection

In line with Article 17 of the Law on Energy Regulator, the Regulator is responsible for resolving complaints and disputes between customers and energy enterprises, system operators and energy enterprises, as well as between two energy enterprises. In addition to other competencies given by the Law on Energy Regulator, ERO is responsible for ensuring the proper application of the legislation on protection of customers in the energy sector in Kosovo.

According to the provisions of the Rule on Resolution of Complaints and Disputes in the Energy Sector, all customers have the right to file complaints related to the services provided by the supplier or system operator, and these complaints should be addressed first to the supplier or system operator, as the first instance body, which reviews the complaint and issues a response within the legal deadline. After receiving the answer, the customer can address the Regulator for further review of the complaint.

The Regulator during 2021 has registered 74 official complaints of customers who have used their right against responses issued by the Supplier, has returned 36 complaints for review to the Supplier and Distribution System Operator, as well as 53 customer complaints related to the review of the accuracy of metering. In addition to registered and resolved customer complaints, the Regulator has also provided support in providing information, explanations, verbal consultations, e-mails, and through telephone to all energy customers.

The number of received complaints by customer categories is presented in the following table.

Tab. 3.19 Customer complaints by categories 2021

Customer complaints by categories	Number	Share [%]
Household customers	59	79,73
Commercial customers	15	20,27
Industrial customers	0	0,00
Total	74	100,00

The figure below presents the number of complaints divided by their nature.

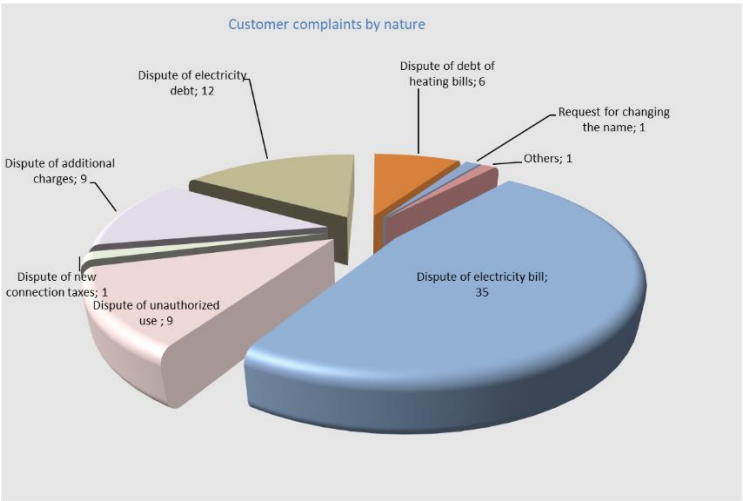


Fig. 3.5 Number of customer complaints by nature

The following is an explanation of the nature of customer complaints filed for 2021:

- **Dispute of electricity bills,** relates to customer complaints in cases of incorrect or irregular readings, which is considered as giving an inaccurate overview of the actual state of electricity consumption.
- **Dispute of unauthorized use of electricity**, relates to complaints of customers who have been charged by the energy company with invoices for unauthorized use of electricity (return of losses). ERO based on the Law on Electricity and the legal provisions of the Rule on Resolution of Complaints and Disputes is incompetent in relation to such cases, and has instructed customers to address their complaints to the Basic Court in Prishtina, Department of Administrative Affairs.
- Dispute of new connections, relates to customer complaints who were denied the right for a new connection by the Distribution System Operator. In such cases of complaints, in order to implement a new connection, customers were obliged by the company to initially pay the debts in the old code that existed before.
- Dispute of additional charges, relates to customer complaints to whom the electricity company has billed additional charges to the regular billing. These complaints result from non-registration of electricity consumption, as a result of the defect of any metering system.
- Dispute of electricity debt, relates to customer complaints for issues caused by inaccurate definition of the electricity debt not collected by the supplier in cases of property transactions and for usurped property.
- **Dispute of the tariff group**, relates to customer complaints for change of tariff group, where customers request to change the tariff group for various reasons.
- **Dispute of heating bills of "Termokos"**, related to the complaints of customers who have disputed the previous accumulated debts, due to poor quality of heating.

During 2021, the Regulator has solved 251 customer complaints, including complaints that have been returned for reconsideration to the supplier and Distribution System Operator as well as requests of customers for review of the accuracy of metering. From the overall number of resolved complaints, 181 or 72.11% of them were approved in favour of customers, whereas 70 or 27.89% were rejected as ungrounded. All complaints reviewed by the operators, which were proceeded to the Regulator, were once again reviewed by the Regulator in order to establish the complete resolution of the complaints according to the customers' requests and the respective customers were informed. In all reconsidered cases, the customers agreed with the provided solutions.

Fig. 3.6 Resolved complaints 2021

The number of customers' complaints, registered and resolved by the Regulator through years is presented in the following table.

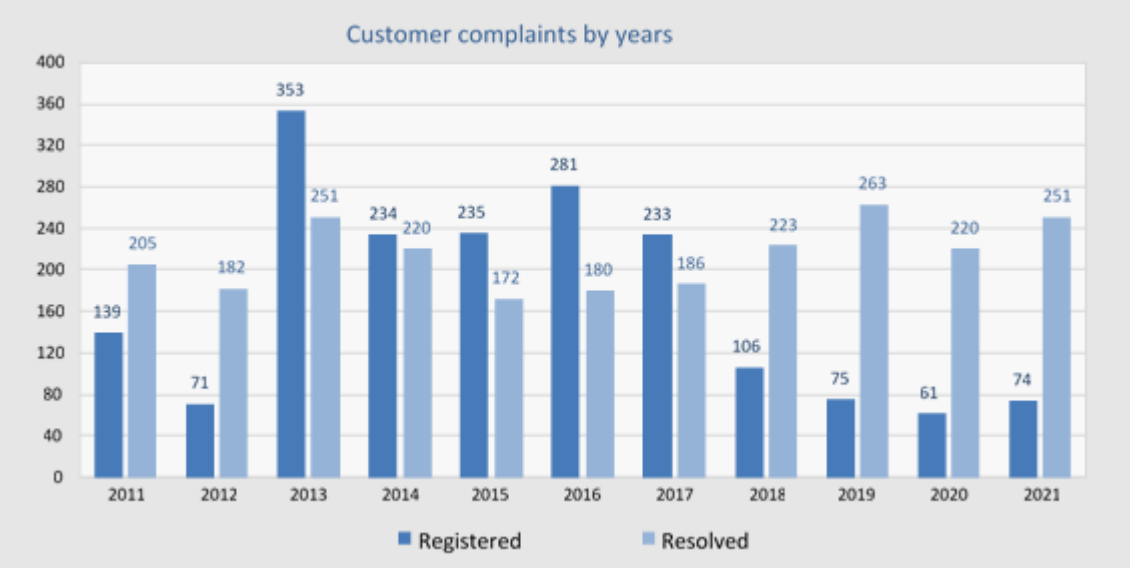


Fig. 3.7 Registered and resolved customer complaints 2011-2021

3.11.1 Decisions of the Regulator's Board in the area of customer protection

Based on the Rule on Resolution of Complaints and Disputes in Energy Sector, costumers and licensees are entitled to file a complaint against the decision of the Customer Protection Department (CPD) as a first instance to the Regulator's Board as a second instance.

During 2021, costumers submitted 21 complaints to the Regulator's Board, against CPD decisions. Of the 21 registered complaints, the Regulator's Board reviewed all of them and rejected these complaints as ungrounded.

The supplier KESCO, during 2020, submitted 18 complaints to the Regulator's Board against CPD decisions. Of the 18 registered complaints, the Board reviewed all of them and rejected these complaints as ungrounded.

Also during 2021, the Regulator's Board reviewed 3 recommendations issued by the CPD regarding complaints of commercial and industrial customers, whereby the Board approved all these recommendations.

3.11.2 Other activities related to customer protection

In addition to the registered complaints, the Regulator's staff during this reporting year has also carried out 889 meetings and 1,563 telephone conversations with parties including electronic communications, who have addressed the office for various contractual issues between the costumers and licensees. The Regulator's staff during the communication with costumers has informed and instructed them about the rules, procedures and their rights and obligations regarding electricity supply.

During 2020, the Regulator also received 18 customer complaints by mail. Despite the fact that it was necessary to address the licensees or the courts regarding these complaints, the customers insisted on addressing the Regulator in resolving them. The nature of these complaints was mainly for unauthorized use of electricity, as well as damage compensation. The Regulator in all these cases responded in writing to the customers by instructing them about further procedures regarding their complaints.

During 2021, the Regulator, same as in the previous years, had close cooperation with the Department of Costumer Protection within the Ministry of Trade and Industry. During this reporting year, it has received some customer complaints from this institution. These complaints were received and reviewed by the Regulator in accordance with the legal provisions.

During 2021, a number of Regulator's decisions were appealed by dissatisfied parties to the Basic Court in Pristina - Department for Administrative Affairs, to evaluate the legality of administrative decisions. During 2021, the Regulator based on the decisions of the Basic Court in Pristina has prepared 22 responses to indictments, 21 responses to complaints, 3 complaints against plaintiffs KEDS, KESCO and customers against the against the claimants KEK, KEDS, KESCO and costumers regarding the decisions of the Regulator's Board. Also, during this reporting year the Regulator has been engaged in 2 court hearings in the Basic Court in Pristina as a defendant party. In addition to the responses to indictments, it is worth mentioning that same as in previous years during this reporting year as well, the number of court proceedings that the Regulator has followed has increased significantly and is demanding high engagement.

It is important to emphasize that, so far, no decision of ERO related to customer complaints in administrative procedure has been returned for review due to legal non-compliance by the administrative body; all these charges against decisions of ERO were rejected as ungrounded and the challenged decisions remained in force.

4. COOPERATION WITH OTHER PARTIES AND TRANSPARENCY

ERO has shown full transparency in exercising its functions by holding Board meetings which are open to the public and publishing all decisions. Through press releases, announcements, preparation of the bulletin and other publications on the website and on Facebook, the general public was informed in a timely manner about all activities and events of ERO.

All interested parties can have access to the available data through the electronic website of ERO http://www.ero-ks.org/zrre/sq/te-dhena.

ERO has continuously informed the customers and the broad public in all the activities it has carried out. For this purpose, during 2021, over thirty announcements and press releases were issued, which were sent to the media and published on the website and on Facebook.

4.1 Public involvement in regulatory processes through public consultations

During 2021, ERO has held 7 public consultations for review of different regulatory documents.

- On 24 August, as part of the Regular Annual Adjustment Process for Maximum Allowed Revenues (MAR) to be recovered by the Regulated Operators in the energy sector, ERO published the Consultation Reports as initial proposal for updated MARs of the Transmission System and Market Operator (TSO/MO, KOSTT), Distribution System Operator (DSO, KEDS and Universal Service Supplier (USS). The initial evaluation was based on the proposals submitted by regulated companies as well as decisions on MAR for the regulatory period 2018-2022.
- In the third session of the Board, held on 07 October 2020, the Board approved the MAR of KOSTT, KEDS and Universal Supplier (KESCO). The general value of approved MAR for the regulatory period April 2021- March 2022 was determined to be 290.1 million euros.
- On 10 September, ERO published for public consultation the Regulatory Report on Determination of Maximum Allowed Revenues for the district heating Termokos JSC. The report presents the review of the request and preliminary evaluation for Maximum Allowed Revenues for the season 2021/2022 of the enterprise Termokos JSC. The report was prepared based on Thermal Energy Pricing Rule, which determines the procedures for submission and review of tariff application and approval of tariffs, as well as the methodology on calculation of allowed revenues and tariffs.
- On 12 October, the Energy Regulatory Office (ERO) published for public consultation the Ten-Year Development Plan (2022-2031) of the company District Heating JSC of the Municipality of Gjakova.
- On 25 November 2021, the Energy Regulatory Office (ERO) published for public consultation the Consultation Report on Review of Input Values and Operational Expenses for the Universal Service Supplier- USS, for the period 1 April 2022- 31 March 2025. This Consultation Report presents the initial proposals of ERO on input values and operational expenses for the upcoming period 2022-2024. ERO determines the values of some parameters which directly impact the determination of USS Allowed Revenues. These values include operational expenses, efficiency factor, lifespan of assets, bad debt, retail margin and imbalance sharing factor.

- On 10 December 2021, Energy Regulatory Office (ERO) published for public consultation the draft- Annual Balance of Electricity for 2022. This Balance was compiled by the Transmission System and Market Operator KOSTT JSC, in line with Law no. 05/L-081 on Energy (Article 8) as well as the document Rule and Methodology on Preparation of Electricity Balances. The Annual Balance of Electricity presents the annual plan of electricity consumption compared to the available electricity. The Annual Balance of Electricity is based on the planned needs of electricity consumption for 2022, which is forecast to be supplied by domestic generation and electricity import. Also, the balance foresees the export of electricity surpluses as well.
- On 13 December 2021, ERO, based on its legal mandate, decided to open the extraordinary review process, due to the request received from the Distribution System Operator (KEDS) and Universal Supplier of Electricity (KESCO). During this process, ERO will review the applications of licensees, evaluating the need for continuing the electricity supply, increase the efficiency of consumption and affordability of prices by customers.

4.2 Reporting and cooperation with the Assembly of Kosovo

Same as every year, during 2021, the Regulator has continued the regular reporting to the Assembly of Kosovo and according to the requests received from parliamentary committees there have been other reports related to various regulatory issues of the energy sector.

- The Board of the Regulator, on 28 September 2021, presented the Annual Report for 2020 to the Parliamentary Committee for Economy, Employment, Trade, Industry, Entrepreneurship and Strategic Investments. Representatives of the Regulator reported on the activities related to the scope of the Regulator as well as the functioning of the energy sector, analysing the data of licensees, including the development of the energy market in Kosovo.

Fig. 3.8 Presentation of the Annual Report to the Parliamentary Committee

- On 28 December 2021, ERO presented to the Committee for Economy, Employment, Trade, Industry, Entrepreneurship and Strategic Investments the Performance Plan for 2022. The representatives of ERO presented to the members of the parliamentary committee the plans of performance for 2022, referring to the projected activities and target objectives.

Fig. 3.9 Presentation of the Performance Plan to the Parliamentary Committee

4.3 Meetings with other stakeholders- opening of the free market

It is important to emphasize that ERO, on 12 December 2020, by decision V_1339_2020 approved the Evaluation of Competition in Energy Market in Kosovo 2018-2019. Since December 2020, KESCO was the only active supplier in Kosovo, supplying over 630,000 customers. According to the survey of ERO with licensed suppliers in Kosovo (8 licensed suppliers), the main barrier to the competitive market in Kosovo are the agreements related to the Bulk Supply Agreement between KEDS (now KESCO) and KEK during privatization and the lack of information on the profile of customers.

In order to move forward with the Market Liberalization process and fulfilment of required commitments from ERO arising from the Energy Treaty, ERO Board, in December 2020 issued a letter to all commercial customers connected to the level of 35kV and 10 kV that from 1 April 2021 they will be subject to deregulated prices. In addition, ERO has held numerous meetings with the business community, the Chamber of Commerce and other stakeholders to inform them on this process. On the other hand, KESCO and other suppliers have met and provided offers to customers who are entitled to deregulated prices under the Law on Electricity.

On 31 March 2021, due to ongoing pressure, ERO issued a notice and made a public statement that the market liberalization process has been postponed and all customers will continue to be supplied with the Universal Service of Supply.

4.4 Cooperation and agreements with other parties

Agreement on cooperation of electricity market Albania - Kosovo

The Energy Regulatory Office (ERO), the Energy Regulatory Entity of Albania (ERE) and the transmission systems operators of Albania and Kosovo (TSO and KOSTT) supported by USAID have signed on 21 October 2021, in Tirana, the Framework Agreement of electricity market cooperation.

This agreement sets out the rights, obligations and required steps that the signatory parties must take to cooperate in relation to the organization of the joint day-ahead and intraday electricity markets, in terms of roles and responsibilities in relation to operations, administration and decision-

making, through the organization of the allocation of cross-border transmission capacities at their joint borders day-ahead or intraday.

The coupling of electricity markets will contribute to the expansion of the security of electricity supply and increase the competition in electricity market as well as maintenance and expansion of a market with fair prices.

This cooperation will strengthen the efficient use of joint cross-border interconnections through objective, market-based, non-discriminatory and transparent methods. Also, this cooperation will provide the proper and non-discriminatory entry in the day-ahead and intraday market, increasing the efficiency of benefits in both electricity markets.

This cooperation, as the first in the region in a joint market, shall serve as an incentive for expanding the coupling of more markets in the region and beyond.

Fig. 3.10 Signing of the framework agreement for cooperation of electricity markets

Agreement for reciprocal recognition of licenses Albania - Kosovo

Upon the reciprocal recognition of electricity supply and trade licenses, Kosovo and Albania are a step closer to the joint electricity market. The development of an integrated regional electricity market will increase competition and improve the security of supply at affordable prices.

Fig. 3.11 Signing of the agreement for reciprocal recognition of licenses Albania- Kosovo

4.5 Cooperation with international organizations

Partnership activities with ERRA

On 12 October 2021, the Chairman of the Board of Energy Regulatory Office (ERO), with his collaborators, held a bilateral meeting with ERRA (Energy Regulators Regional Association) representatives. Being a member of ERRA, since the first years of its establishment, it has helped ERO to strengthen its human capacities and also establish a stronger institution for regulation of the energy sector. ERO's participation in ERRA activities has been a strong connection bridge for cooperation with other regional regulators, which ERO considers as one of the core values of its involvement in ERRA. During the meeting, ERRA presented the future activities that will take place in this association and ERO expressed its full commitment to participate and contribute to these activities.

Activity of W-GDP Women's Global Development and Prosperity Initiative for Advancement of Leader Women in Energy

Funded by USAID for Europe and Eurasia, the National Association of Regulatory Utility Commissioners (NARUC) has provided support to women leaders in energy regulatory agencies through the project for empowerment of women in the sector. The Energy Regulatory Office (ERO) is also benefiting from this project with the aim of changing socio-cultural norms in energy regulatory agencies and promoting women to decision-making positions. In this way it aims to achieve gender equality and improve employment practices and focus on career advancement of employees.

This project works closely with Human Resources within ERO to eliminate legal and practical barriers that prevent women from advancing in a male-dominated industry. It provides ongoing training/education on gender awareness in order to change socio-cultural norms.

4.6 Participation of the Regulator in international activities

The participation in international activities is considered by ERO as one of the main elements that contributes to the strengthening of the institution and increase of knowledge and experience of its staff. Following are presented the main activities and active participation in international organizations, international conferences, working tables or bilateral and multilateral meetings.

4.6.1 Participation in Energy Community Regulatory Board (ECRB)

The Energy Community (EC) is an international organization established by the International Treaty (the so-called Energy Community Treaty) in October 2005 in Athens, involving the countries of the European Union and the region of Southeast Europe and the Black Sea. The activities of the EC in 2020 were focused on the fulfilment of common goals: the implementation of the "acquis communautaire", the development of a harmonized regulatory framework at regional level, and the liberalization and integration of electricity and natural gas markets.

The Contracting Parties of EC are: Albania, Bosnia and Hercegovina, Kosovo, North Macedonia, Montenegro, Serbia, Moldova, Ukraine and Georgia. The member states of the European Union are in the capacity of participants, while Norway, Turkey and Armenia have the status of the Observer.

Fig. 3.12 Member states of South-East Europe in Energy Community

Energy Community Treaty (ECT) is a key strategic component of the European Union (EU) for South East Europe and an effective pre-accession tool, which is aimed at expanding benefits from the Regional Energy Market before the regional countries become EU members.

The main institutions of the EC are: Ministerial Council (MC), Permanent High-Level Group (PHLG), Energy Community Regulatory Board (ECRB), the EC Secretariat with headquarters in Vienna and four advisory forums: on electricity, natural gas, social issues and oil.

The Energy Community Regulatory Board (ECRB)- is an institution established under Article 58 of the ECT, comprised of regulatory authorities of the contracting parties, participants and observers. ECRB plays the role of a coordinating body of the regulatory authorities for harmonization of the regulatory framework, exchange of knowledge and development of best practices on implementation of the Treaty.

Based on the provisions of the EC Treaty, ECRB has the responsibility to:

- advise to the Ministerial Council and PHLG on statutory, technical and regulatory issues;
- issue recommendations to parties, in line with the provisions of the Treaty, on any cross-border disputes, etc.;
- undertake measures against parties, if authorized by the MC;
- facilitate cooperation and coordination among regulatory authorities;
- give recommendations and draft reports about the functioning of energy markets; and
- seek fulfilment of the parties' obligations under ECT.

With the purpose of fulfilling its responsibilities, ECRB is organized in working groups that perform activities in their respective fields. ECRB is chaired by the President, annually elected by the representatives of national regulators, and the vice-President who is delegated by the European Commission.

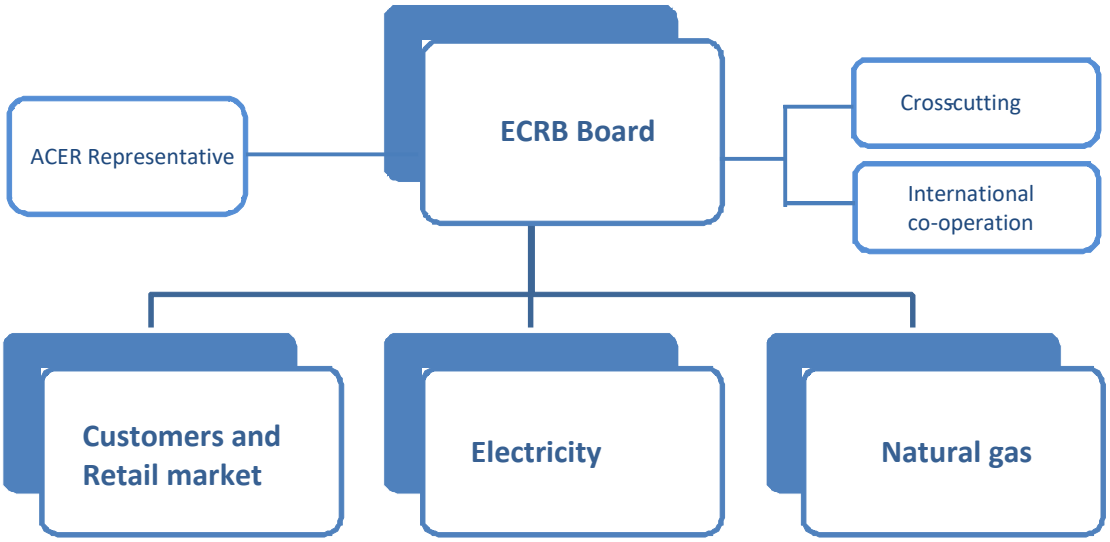


Fig. 3.13 The structure of the Energy Community Regulatory Board

4.6.2 Activities of the Regulator within ECRB

Under its obligations to the EC, ERO has appointed its members to the ECRB and to each working group and actively participates in the activities of the Board and the relevant working groups.

Due to restrictions from the COVID-19 pandemic, during 2021, the activities of the working groups were limited, while the meetings were mainly held 'online'. However, despite the limitations, the ECRB and relevant working groups have undertaken regular activities under the ECRB work program.

4.6.2.1 Electricity Working Group

During 2021, this Working Group has held regular "online" meetings and activities within its scope; for more efficient work, this group has undertaken its actions through its subgroups (Task- Forces), as follows:

- TF1 –Opening and integration of the wholesale electricity market - in order to support the effective opening of electricity regional markets in Energy Community, this subgroup is focused on regulatory support activities, integration of the "day-ahead" and "intra-day" markets in South East Europe.
- **TF2 - Favourable regulatory investment climate –**the activities of this sub-group are focused on creating a stable, sustainable and harmonized regulatory framework at the regional level, as a basic precondition for attracting investments in energy infrastructure.
- **TF3 –Monitoring of the wholesale electricity market:**

  Market monitoring as a key component of regulatory responsibilities, includes full knowledge of market performance and development prospects enabling the promotion of competition, customer protection, energy efficiency, investment and security of supply.
- **TF4 – Integration of renewable energy and balancing–**Within this task force, the regulatory challenges for the integration of renewable energy in energy systems and the responsibility of energy producers from renewable sources for balancing the system have been evaluated.
- **TF5 –Opinions on the electricity grid codes and regulatory guidelines –**the main task of this subgroup has been the reviewed coordination and provision of opinions on electricity grid codes and relevant regulatory guidelines.
- **TF6 –Implementation of network codes and guiding regulations –** According to this duty, EWG shall review the monitoring process of ACER and ENTSO- E and shall report on the monitoring activity, and is mainly focused on the implementation of Grid Codes – Connection Code.

4.6.2.2 Gas Working Group (GWG)

This working group focuses its activities on issues of regulating the natural gas sector, harmonizing the regulatory framework at regional level and other issues related to the development of natural gas infrastructure in the SEE region. For efficiency purposes and in favour of handling specific issues, specific subgroups are created ("Task Force"-TF).

- **TF1 –Monitoring of natural gas wholesale market -** Market monitoring is a fundamental component of regulatory responsibilities which includes the complete reporting on market performance and development prospects enabling the promotion of competition, customer protection, energy efficiency, investments and security of supply of natural gas.

- **TF2 –Implementation of the Grid Code in congestion management -** The activities within this task force have focused on congestion monitoring at interconnection points considering capacity trading in secondary markets and the use of 'intermittent' capacity, as well as analysis of existing long-term contracts.
- **TF3 –Implementation of the Grid Code for capacity allocation mechanism–** activities are focused on involving national regulatory authorities and gas transmission system operators in the selection of the joint capacity reservation platform, in order to implement Article 37 of the Network Code for capacity allocation.
- **TF4 – Favourable regulatory investment climate –**the activities of this sub-group are focused on creating a stable, sustainable and harmonized regulatory framework at the regional level, as a basic precondition for attracting investments in natural gas infrastructure.
- **TF5 –Opinions on natural gas grid codes and regulatory guidelines–**The main task of this subgroup has been the reviewed coordination and provide opinion on electricity grid codes and relevant regulatory guidelines.

4.6.2.3 Customers and Retail Markets Working Group

Within ECRB, there is a customer working group with its own sub-groups, which deals with customer-protection related activities, retail prices and tariffs, contractual relations between suppliers and customers, and the quality of energy supply and regulation of the voltage quality.

- **TF1 –Monitoring of the retail market-** Market monitoring as a fundamental component of regulatory responsibilities includes full knowledge of market performance and development prospects to enable the creation of an effective framework that balances the needs of market participants and promotes competition, customer protection, energy efficiency, investments and security of supply.

- **TF2 – Customer protection –**as customer protection is considered as one of the main tasks of the Regulatory Authorities, consequently this responsibility is transferred also to the regional/international organizations such as ECRB, CEER and MEDREG. The activities are focused on the cooperation of these 3 regional bodies for the exchange of best and most efficient practices in the area of customer protection.

- **TF3 – Quality of supply -** achieving a satisfactory level of supply quality continuously remains a basic activity of the Regulatory Authorities, as well as monitoring the quality of electricity and gas supply.

4.6.2.4 REMIT and Cyber Security Working Group

Four task forces have functioned under this group:

- **TF1 – REMIT Guideline** - will evaluate whether the respective guideline developed from ACER can be used in the same manner or if adjustment with the specifics of the Contracting Parties or "REMIT light" version applicable in the Energy Community is required. In the last case, the working group will develop special guidelines of ECRB.
- **TF2 –Maintenance of central register**- will evaluate the possibility of carrying out the registration and establishment of central register, including possible IT requirements for automated collection of registration data.
- **TF3 –Internal information platform** - this task force will discuss and evaluate the need for the centralized platform for publication of the internal information.
- **TF4 – Implementation of REMIT**- the Regulator will report on cases, investigations undertaken, etc. in relation to REMIT, including cases discussed and coordinated by the ECRB.

4.6.3 Participation of the Regulator in ERRA activities

Being an associated member of ERRA [3], ERO has its regular members appointed to the working groups and the group of chairpersons, who have held their meetings during this period, but through the internet.

The representatives of ERO participated in the meeting of the working group of EMER Committee, RES Committee and Customer Working Group, with the topic "Regulation of Smart Meters" organized from the Energy Regulators Regional Association, in November 2021, held in Budapest.

4.7 Procurement activities

The Regulator continues to follow the procurement procedures from Central Procurement Agency (CPA), which sometimes, due to the amendment of the Law on Public Procurement are overlong and bring difficulties in providing the services and supplies which are necessary for a normal functioning of the office.

[3] *ERO since 2005 is a member of the Regional Association of Energy Regulators, ERRA. ERRA is a voluntary organization composed of independent energy regulatory bodies mainly from Europe, Asia, Africa, the Middle East, South America and North America.* https://erranet.org/

5. FINANCIAL REPORTING FOR THE REGULATOR

The Regulator is funded from own source revenues, in line with the Law on Energy Regulator, Chapter 4, namely the taxes collected by enterprises and licensed operators in the energy sector.

5.1 Revenues

All collected revenues of the Energy Regulatory Office have been deposited in accordance with Article 64 of the Law on Public Financial Management and Accountability in the official bank account established by the General Director of Treasury.

In 2021, the Energy Regulatory Office realized revenues in the amount of € 1,401,715.66. Given that the total amount of budget spent by ERO in 2021 is € 644,731.79, unspent revenues in the amount of € 756,983.87, in accordance with Article 23 of the Law on Energy Regulator, are transferred to the Budget of the Republic of Kosovo.

Tab. 5.1 Revenues

Description	Amount
Own Source Revenues 2021	1,401,715.66 €
Expenditures 2021	(644,731.79) €
Revenues transferred to the Budget of the Republic of Kosovo	756,983.87 €

5.2 Budget

The Assembly of Kosovo, in line with Law no. 07/L-001 on the Budget of the Republic of Kosovo for year 2021 approved the budget of the Energy Regulatory Office in the amount of € 775,586, which is entirely allocated as a government grant, although according to the Law on Energy Regulator, the Regulator is funded from own source revenues and only in cases where such revenues are insufficient, then the Regulator may use budget allocations in the form of government grants. According to the economic categories the ERO budget is as follows:

Tab. 5.2 Budget at the beginning of the year

Description	Budget
Wages and Salaries	519,205.00 €
Goods and Services	183,581.00 €
Utilities	22,000.00 €
Capital Expenditures	50,800.00 €
Total	775,586.00 €

By the decisions of the Government, dated on 30.11.2021 no.10/46, 23.12.2021 no. 21/50 and 29.12.2021 no. 11/52, the budget of the Energy Regulatory Office has been reduced by 116,812.57€. The budget was reduced in the following economic categories: salaries and wages €107,652.63, goods and services €1,373.67 and utilities €7,786.27. Expressed in percentage, ERO's budget has been reduced by 15%.

It is important to emphasize that the budget of ERO was cut by the Government of the Republic of Kosovo at the end of 2021, due to its non-allocation. The reason for not spending the budget in the economic category "wages and salaries" is the non-completion of the position of Chairman and two members of the Board during most of 2021, while as a result of the non-functional Board, two staff positions could not be filled. Budget cuts in the categories "goods and services", and "municipal expenditures" are due to savings during 2021.

Tab. 5.3 Final budget

Description	Budget
Wages and salaries	411 552,37 €
Goods and services	182 207,33 €
Utilties	14 213,73 €
Capital expenditures	50 800,00 €
Total	658 773,43 €

5.3 Budget expenditures

To fund the activities carried out in 2021, the Regulator spent € 644,731.79.

According to the economic classification, ERO's expenditures are as follows:

Tab. 5.4 Expenditures by economic categories

Description	Amount
Wages and salaries	411 552,37 €
Goods and services	169 829,69 €
Utilities	14 114,37 €
Capital expenditures	49 235,36 €
Total	644 731,79 €

Budget realization in proportion to the remaining budget after cuts is 97.87%.

The budget execution rate by economic categories, expressed in percentage, is presented in the table below.

Tab. 5.5 Realization of the budget expressed in percentage

Description	Budget	Expenditures	Difference	Realization in %
Wages and salaries	411 552,37 €	411 552,37 €	- €	100,00%
Goods and services	182 207,33 €	169 829,69 €	12 377,64 €	93,21%
Utilties	14 213,73 €	14 114,37 €	99,36 €	99,30%
Capital expenditures	50 800,00 €	49 235,36 €	1 564,64 €	96,92%
Total	658 773,43 €	644 731,79 €	14 041,64 €	97,87%

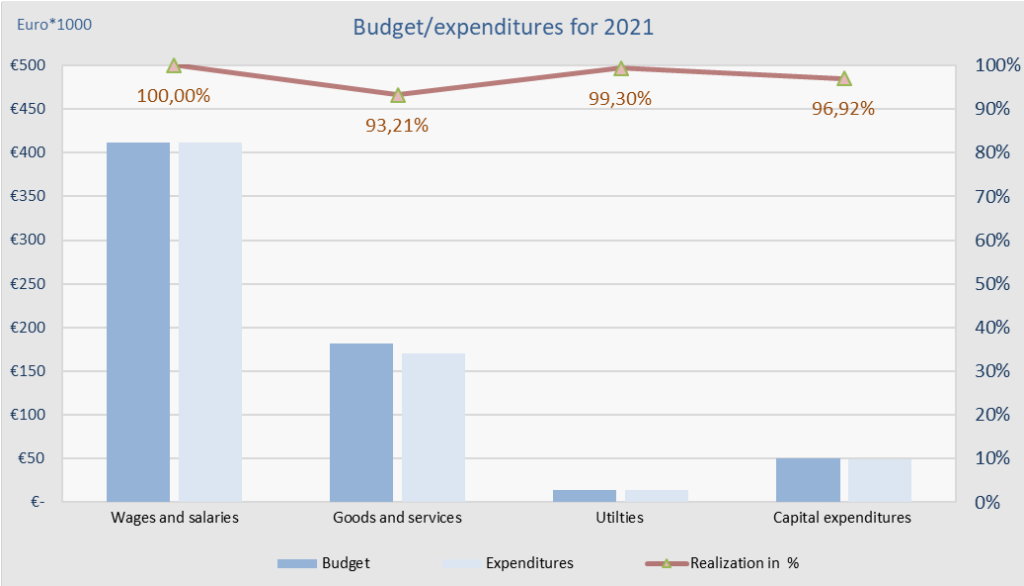


Fig. 5.1 Budget and expenditures for 2021

The following tables present the expenditures by economic codes.

Tab. 5.6 Wages and salaries

Wages and salaries	Amount
Net wages	342 335,41 €
Personal Income Tax	30 021,20 €
Employer's pension contribution	19 597,88 €
Employee's pension contribution	19 597,88 €
Total	411 552,37 €

Tab. 5.7 Goods and services

Goods and services	Amount
Allowances for official travel within the country	38,00 €
Expenditures for official travels abroad	1 600,99 €
Allowances for official travels abroad	5 305,74 €
Accomodation for official travels abroad	3 245,34 €
Other expenditures for official travels abroad	882,20 €
Internet expenditures	2 033,88 €
Expenditures for mobile telephony	4 367,77 €
Postal expenditures	255,00 €
Education and training services	4 260,00 €
Different intellectual and advisory services	3 083,14 €
Printing services	46,80 €
Other contracting services	3 212,00 €
Membership expenditures	6 560,00 €
Furniture	4 205,00 €
Computer	3 500,00 €
Hardware for IT	5 961,60 €
Other equipment	- €
Office supplies	3 173,25 €
Beverage supply	2 306,86 €
Accomodation	- €
Generator fuels	- €
Vehicle fuel	4 266,69 €
Vehicle registration	335,00 €
Vehicle insurance	699,30 €
Municipal tax for vehicle registration	30,00 €
Security of premises	8 188,27 €
Vehicle maintenance and repair	708,90 €
Building maintenance	8 039,51 €
Maintenance of information technology	15 313,80 €
Maintenance of furniture and equipment	- €
Building rent	53 235,00 €
Equipment rent	1 633,81 €
Machninery rent	12 449,00 €
Advertisments and vacancies	350,00 €
Official dinners	5 271,16 €
Rental tax payment	5 271,68 €
Total	169 829,69 €

As shown in Table 5.7, the amount of funds spent for this category of expenditures is €169,829.69.

The budget expenditures based on the activities are as follows:

Tab. 5.8 Expenditures according to activities

Expenditures by activities	Amount
Travel expenditures	11 072,27 €
Telecommunication services	6 656,65 €
Expenditures for services	17 161,94 €
Purchase of furniture and equipment	13 666,60 €
Other purchases - goods and services	5 480,11 €
Derivatives and fuels	4 266,69 €
Registration and insurance services	9 252,57 €
Maintenance	24 062,21 €
Rent	72 589,49 €
Marketing expenditures	350,00 €
Representation expenditures	5 271,16 €
Total	169 829,69 €

Tab. 5.9 Utilities

Utilities	Amount
Electricity	13 165,85 €
Water	245,96 €
Telephone expenditures	702,56 €
Total	14 114,37 €

Tab. 5.10 Capital expenditures

Capital expenditures	Amount
Information technology equipment	49 235,36 €
Total	49 235,36 €

6. ELECTRICITY SECTOR

6.1 Characteristics of the electricity sector

The power system in the Republic of Kosovo consisting of electricity generation, electricity transmission, electricity distribution and suppliers as well as wholesale traders is designed primarily to produce basic electricity, which is based on lignite as raw material but not for covering the maximum loads and balancing the system which remains a major challenge for all stakeholders in the sector.

Kosovo has installed production capacities of 1,568 MW, including generation capacities from RES, however the operating capacity is considered around 1,236 MW of which thermal power plants (TPP) comprise around 77.69%, whereas the remaining part consists of HPP Ujmani, RES in transmission and other RES (hydro power plants, solar panels and wind plants) with 22.31%.

The majority of consumption is covered by domestic generation, however, due to power plant aging and insufficient flexibility to accommodate demand at different times, especially at peak times, then the need for imports and sometimes exports to balance the system arises.

The figure below shows electricity generation, import, export and demand over the last ten years.

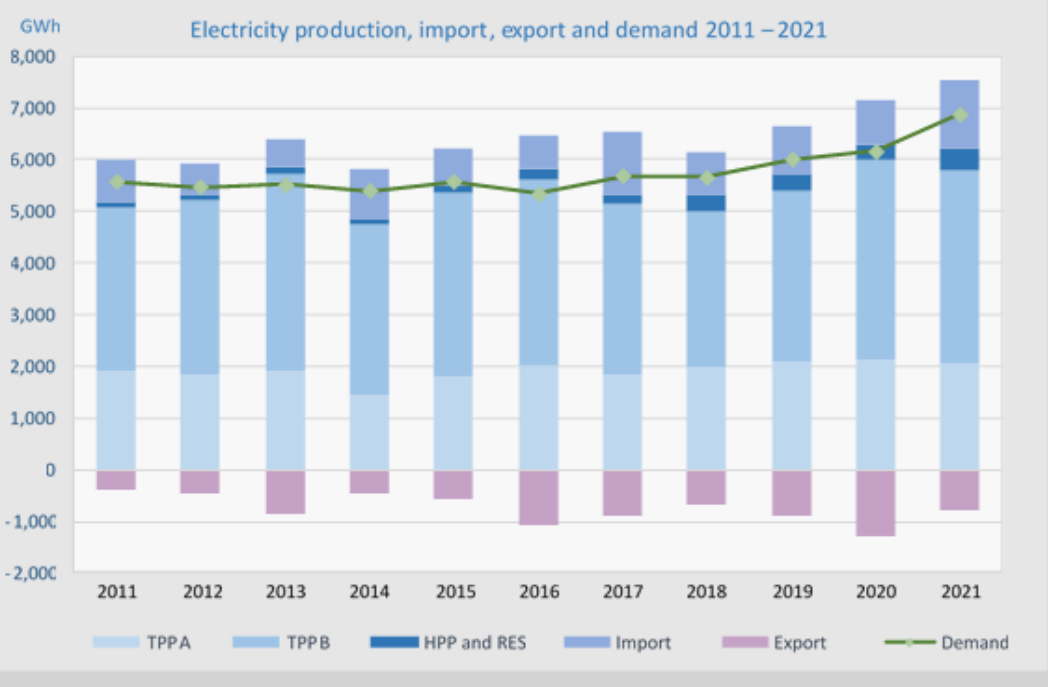


Fig. 6.1 Energy production, import and demand 2011-2021

6.1.1 Electricity market

The electricity market in Kosovo is constantly evolving and is inextricably linked to the regional market and beyond.

Kosovo and Albania have continued the activities in relation to the creation of a joint stock exchange with Albania for the day-ahead and intraday market, as well as the coupling of electricity markets. The working groups and the representatives of the two countries Kosovo - Albania, have held joint virtual meetings regarding the action plan for carrying out these activities for preparation of the necessary documents for the establishment of the Power Exchange and the market coupling between the two countries.

In Kosovo there is still no organized day-ahead or intraday market, so wholesale electricity trading is carried out mainly through bilateral contracts between producers and suppliers (traders). A part of the electricity to meet the local demand for the needs of customers entitled to the universal service (USS), to cover system losses, as well as for customers at deregulated prices, is imported (purchased) through bilateral contracts in the free market and/or in regional day-ahead or intraday markets (through traders).

Price deregulation for final customers, according to the Guideline on Liberalization of Electricity Market in Kosovo[4] continues to be carried out gradually, where customers connected to the 220 kV and 110 kV voltage network are already supplied at deregulated prices. The deadline that, starting from 31 March 2021, customers connected to the 35 kV and 10 kV voltage level who are not entitled the right to universal service have to be supplied with energy at deregulated prices has been extended.

HPP Ujmani, also during 2021 continued to trade all the energy in the free market, respecting the Principles of the Electricity Trading Procedure.

The energy produced by KEK, according to the Bulk Supply Agreement [5] (BSK) is offered to the Supplier who supplies the customers entitled to the Universal Service as well as to cover system losses, and the surpluses are traded at the wholesale market in line with the Electricity Trading Procedure[6]".

Taking into account the old age of thermal power plants, the lack of regulating generators, Kosovo power system does not have the flexibility to adjust to demand, especially high demand in peak time, therefore the need for electricity imports namely exports arises. From the overall electricity demand at the country level, 6,885 GWh (including transmission and distribution losses), most of it is covered by domestic generation, whereas the rest is covered by electricity imports.

[4] http://ero-ks.org/2018/AktetUdhezimet/Udhezues_per_Ndryshimin_dhe_Plotesimin_e_Udheshuesit_per_Liberalizimin_e_Tregut_te_Energjise_Elektrike_ne_Kosove_13_qershor&30_tetor_2018.pdf

[5] https://mzhe-ks.net/repository/docs/MARREVESHJE_PER_FURNIZIM_ME_SHUMICE_-_tetor2012_KKDFE.pdf

[6] http://ero-ks.org/2019/Tregu/Procedura_per_Tregtimin_e_Energjise_Elektrike.pdf

The table below presents system balancing, which shows that during 2021 Kosovo was a net importer.

Tab. 6.1 Balancing of the power system

	Power system balancing 2020	GWh
1	Production from generators in transmission	6 067
2	Production from generators in distribution	140
3	Import	1 311
4	Total available energy	7 518
5	Export	835
6	Net import/export	-477
7	System deviations (retrieval from the system)	-132
8	Transit	2 056
9	National demand	6 885
10	Transmission losses	120
11	Consumption of customers in transmission network	396
12	LLOMAG Consumption	111
13	Load in distribution network	6 258
14	Distribution losses	1 538
15	Net consumption in distribution	4 721

Compared to 2020, the production from generators that deliver electricity to transmission decreased for 1.94%. The import in 2021 increased for 36.39% compared to the previous year, whereas compared to 2020, the export decreased for 34.92%. The distribution connected generators had a decrease of 18.57%. National demand in 2021 was 6,885GWh. It is worth emphasizing that deviations in 2021 were 41% lower than in the previous year, mainly due to the deviations for covering the consumption in the four northern municipalities of the country.

It should be emphasized that KOSTT since 14 December 2020 has started operating as a Regulatory Area within the Kosovo-Albania Regulatory Block and is now recognized as a trading area, where balancing the system will be the full responsibility of KOSTT, which means covering all system deviations, the responsibility regarding the safe operation of the interconnection system, as well as the allocation of cross-border capacities and congestion management which means the collection of revenues from cross-border trades, in addition to the allocation of cross-border capacity with Serbia.

The figure below shows the flow of electricity from generation, transmission up to the distribution to customers as well as electricity flows towards regional networks and from regional networks including transit.

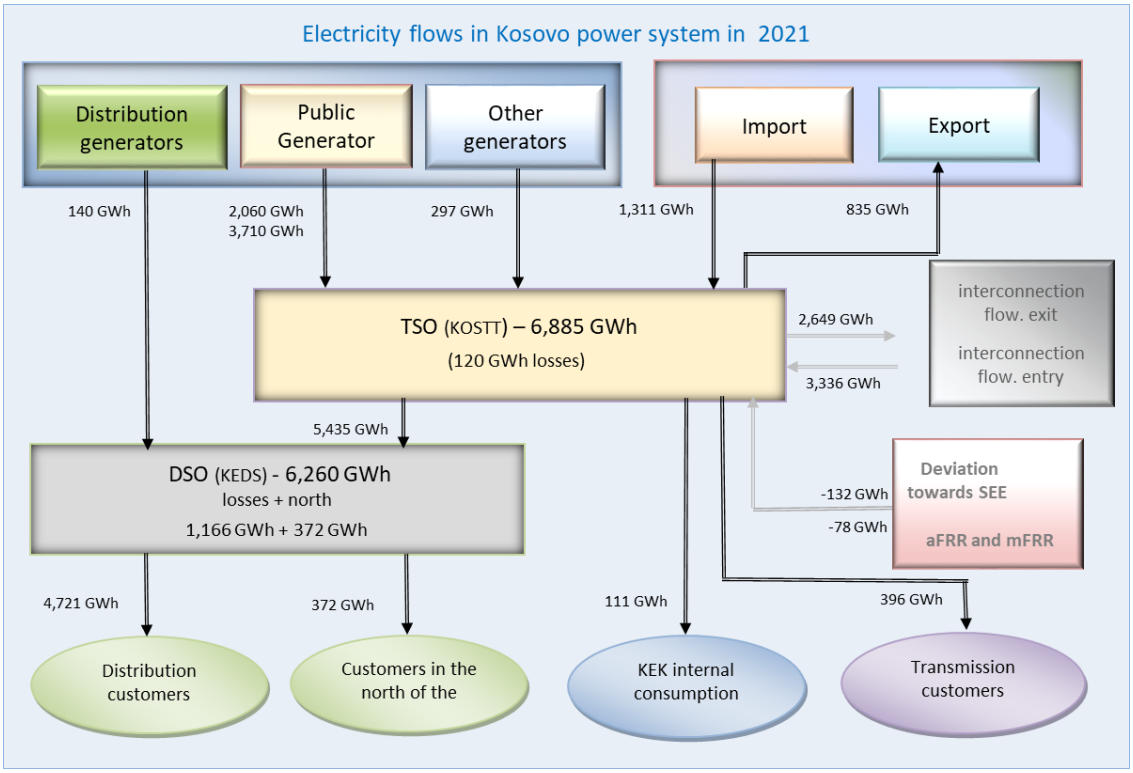


Fig. 6.2 Electricity flows in the system in 2021

6.1.2 Adequacy of generation and security of supply

During recent years, there is a small increase of generating capacities as a result of the commissioning of some renewable sources, however local generation is not sufficient to cover the maximum load in the power system of Kosovo. This lack of energy to meet national demand is covered by electricity imports.

The overall generation capacity of generators in Kosovo is 1,236 MW, while the maximum load during this year was 1,398 MW, therefore the ratio of the generation adequacy towards the maximum load is 88.4%.

The table below shows maximum and minimum monthly loads during 2021.

Tab. 6.2 Maximal and minimal charges in 2021

Load 2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h	MWh/h
Maximal	1,325	1,326	1,213	1,140	849	801	828	840	728	1,066	1,170	1,398
Minimal	659	556	553	407	310	347	352	371	340	392	461	811

While the generation system has adequacy shortcomings, the transmission system contains sufficient reserves to enable electricity flows to meet local demand, including coverage of maximum load (peak) as well as to enable transit through interconnection lines.

The table below shows the maximum and minimum loads (P_{max} and P_{min}) of the Kosovo power system over the years, the time of their occurrence, production, as well as the respective import and export of electricity.

Tab. 6.3 Maximal and minimal charges of the power system

Year	Maximum load							Minimum load						
	Pmax			Production	Import	Export	Deviation *	Pmin			Porductio n	Import	Export	Deviation *
	[MW]	Data	Ora	[MW]	[MW]	[MW]	[MW]	[MW]	Data	Ora	[MW]	[MW]	[MW]	[MW]
2015	1 129	31,12	20:00	825	308	0	-4	272	30,08	04:00	250	0	50	-72
2016	1 160	31,12	18:00	797	321	0	42	246	12,06	06:00	711	0	310	155
2017	1 161	11,01	20:00	660	415	0	86	286	3,06	06:00	733	50	440	57
2018	1 203	31,12	18:00	787	271	0	145	265	27,06	06:00	577	5	430	-113
2019	1 253	31,12	18:00	861	348	16	60	289	7,06	06:00	435	15	140	21
2020	1 251	21,12	11:00	819	350	32	114	288	9,08	04:00	548	12	280	8
2021	1 398	21,12	23:00	653	463	90	372	310	25,05	04:00	811	131	599	19

* Deviation of the system towards interconnection system

As mentioned earlier, the energy required to cover the losses in the transmission and distribution network is provided proportionally by the remaining energy from KEK after the allocation of energy for the universal service, then the rest of the energy to cover the losses in a market is provided by import.

6.2 Primary energy sources

In recent years there has been an increase in production capacity from RES such as: water energy, wind energy, solar energy, but the energy produced by lignite as a primary source of energy still continues to dominate in Kosovo, which on the one hand provides the security of long-term electricity production, but the environmental impact remains a problem due to the emission of greenhouse gases and other pollutants.

6.2.1 Lignite production and consumption

Lignite production in 2021 was 8.54 mil. ton, whereas the consumption 8.74 mil. ton, these amounts being similar to 2020.

Production and consumption of lignite by months, for 2020 is presented in table 6.4.

Tab. 6.4 Production and consumption of the lignite 2021

Lignite production/consumption	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lignite production (t*1000)	8 535	617	741	665	732	853	691	759	588	537	712	818	822
Lignite consumption (t*1000)	8 739	852	770	721	755	826	760	643	551	606	760	786	708
Lignite consumption in the marke	175	7	8	6	7	0	2	4	10	39	28	37	26

The following figure shows the production and consumption of lignite during 2011-2021.

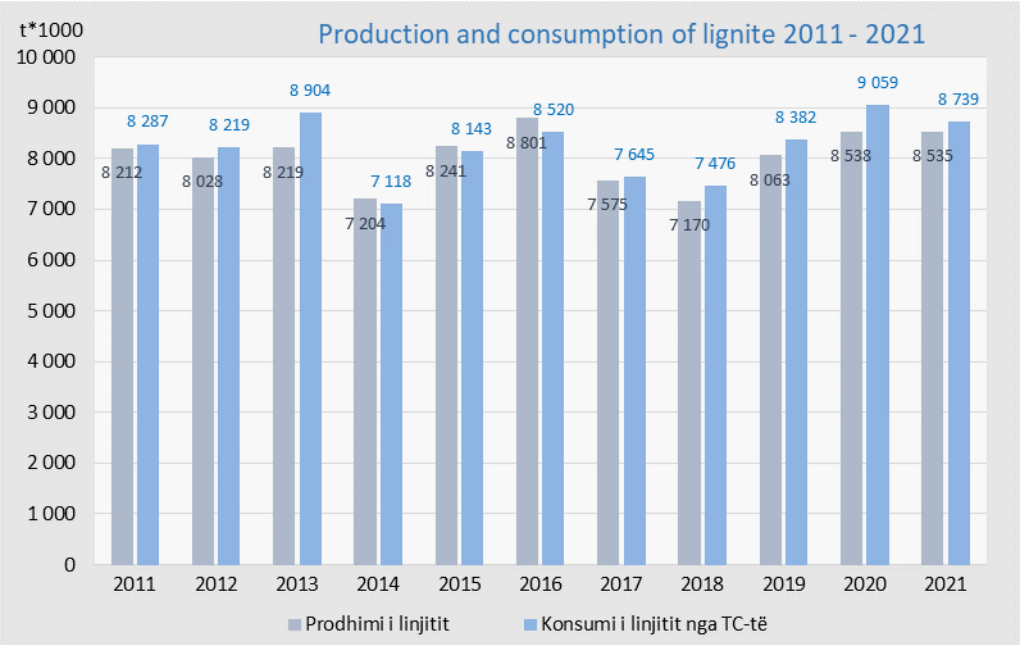


Fig. 6.3 Lignite production and consumption 2011 – 2021

6.3 Electricity production

6.3.1 Electricity production capacities

The total operating capacity of electricity generation in Kosovo is 1,236 MW, of which 960 MW or 77.7% MW are from thermal power plants and the rest are hydropower plants and renewable energy sources (hydropower plants, wind farms and photovoltaic panels).

The capacity of generating units is presented in the following table by primary source, installed and operational capacity, minimal and maximal generation limit as well as the year of entry into operation.

Tab. 6.5 Generation capacities in Kosovo power system

Generation units	Capacity of units (MW)			Entry into operation
	Installed	Net	Min/max	
TPP Kosova A1	65	does not operate		1962
TPP Kosova A2	125	does not operate		1964
TPP Kosova A3	200	144	100-130	1970
TPP Kosova A4	200	144	100-130	1974
TPP Kosova A5	210	144	100-135	1975
TPP Kosova A	610	432		
TPP Kosova B1	339	264	180-260	1983
TPP Kosova B2	339	264	180-260	1984
TPP Kosova B	678	528		
HPP Ujmani	35,00	32,00		1981
HPP Lumbardhi I	8,08	8,00		(1957) 2006
HPP Dikanci	4,02	3,34		(1957) 2013
HPP Radavci	1,00	0,90		(1934) 2010
HPP Burimi	0,95	0,85		(1948) 2011
Lumbardhi II	6,20	6,20		2020
Total HPP (outside the Support Scheme)	55,25	51,29		
EGU Belaja	8,06	8,06		2016
EGU Deçani	9,81	9,81		2016
HPP Hydroline-Albaniku III	4,27	4,27		2016
HPP Brod II	4,80	4,80		2015
HPP Restelica 1&2	2,28	2,28		2016
HPP Brodi III	4,70	4,70		2016
HPP Brezovica	2,10	2,10		2017
HPP Orqusha	4,00	4,00		2021
HPP Lepenci 3	9,98	9,98		2019
HPP Dilli com	0,31	0,31		2020
HPP Hidroline-Albaniku II	3,55	3,55		2020
HPP ECO Energji	1,00	1,00		2020
HPP Hidroline-Albaniku IV	1,12	1,12		2021
HPP Restelica 3	2,35	2,35		2021
HPP Brod I	2,48	2,48		2021
Wind Power	1,35	1,35		2010
Air Energy-Kitka	32,40	32,40		2018
PV LedLight Technology	0,10	0,10		2015
PV ONIX SPA	0,50	0,50		2016
PV Birra Peja	3,00	3,00		2018
PV Frigo Food Kosova	3,00	3,00		2018
PV Eling	0,40	0,40		2019
PV SGE	3,00	3,00		2019
SOWI Kosova	103,41	103,41		2021
HPP Sharri	6,45	6,45		2021
HPP Vica	4,60	4,60		2021
HPP Shterpca	4,90	4,90		2021
Total RES (inside the Support Scheme)	223,92	223,92		
Total	1 567,17	1 235,22		

During 2021, there has been an increase in the RES generating installed capacities, which was mainly impacted from the entry into operation of the wind generator SOWI, with a capacity of 103.41 MW, which continue to enter into operation as private investments.

6.3.2 Electricity production

The total generation of electricity in 2021 was 6,207 GWh, while in 2020 it was 6,301 GWh, which means that there is a decrease of 1.5%. Whereas, compared to the electricity balance for 2021, generation was realized around 117.2%.

The table below presents national production as well as self-consumption by units and months during 2021.

Tab. 6.6 Electricity production in 2021

Producers GWh	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TPP A3 gross	943,2	59,7	74,8	104,9	0,2	48,8	97,7	103,8	59,5	107,5	89,9	104,1	92,2
TPP A4 gross	388,3	53,1	21,8	89,3	104,2	58,3	0,0	0,0	0,0	0,0	0,0	0,0	61,5
TC A5 gross	1 018,6	105,1	94,3	14,8	70,9	106,6	86,2	82,7	79,8	106,4	94,1	101,9	75,8
TPP A own-expenditu	290,2	27,2	24,2	25,0	21,6	25,5	22,9	24,1	18,1	25,4	22,7	25,6	28,0
TPP A threshold	2 059,9	190,7	166,8	184,0	153,8	188,3	161,1	162,4	121,2	188,5	161,2	180,4	201,6
TPP B1 gross	2 060,5	179,3	178,7	151,4	188,4	192,8	191,2	89,1	105,7	200,7	186,1	199,6	197,4
TPP B2 gross	2 042,0	207,3	171,3	149,2	201,7	203,3	188,5	201,5	190,8	30,6	209,2	202,2	86,3
TPP B own-expenditu	392,4	36,9	33,7	29,6	35,8	37,9	36,9	28,4	29,0	22,2	36,9	37,0	28,2
TPP B threshold	3 710,0	349,8	316,3	270,9	354,3	358,2	342,7	262,2	267,5	209,1	358,4	364,8	255,6
HPP+RES Transmissi	297,4	18,6	30,8	28,3	33,7	45,2	29,3	14,8	12,7	13,6	14,5	23,1	32,9
RES Distribution	139,5	13,9	16,1	12,8	20,6	26,2	15,4	7,1	3,6	2,8	6,7	4,3	9,9
Total	**6 206,9**	**573,0**	**530,0**	**496,1**	**562,4**	**617,9**	**548,6**	**446,5**	**405,1**	**414,0**	**540,9**	**572,5**	**500,0**
Balance 2021	5 297,2	587,4	442,3	414,4	331,4	410,8	405,4	403,1	395,4	357,1	422,2	493,6	634,3
Total ratio/balance	117,2%	97,5%	119,8%	119,7%	169,7%	150,4%	135,3%	110,8%	102,4%	116,0%	128,1%	116,0%	78,8%

Gross production of thermal power plants in 2021 was 6,453 MWh, of which 683 MWh or 10.6% is consumed by the power plants as own consumption. Part of this consumption (for both generators TPP Kosova A and TPP Kosova B) is realized directly from the plants, while the remaining part is fed into the transmission system and then consumed by the power plants.

The figure below presents the participation of generators in the overall electricity generation in 2020.

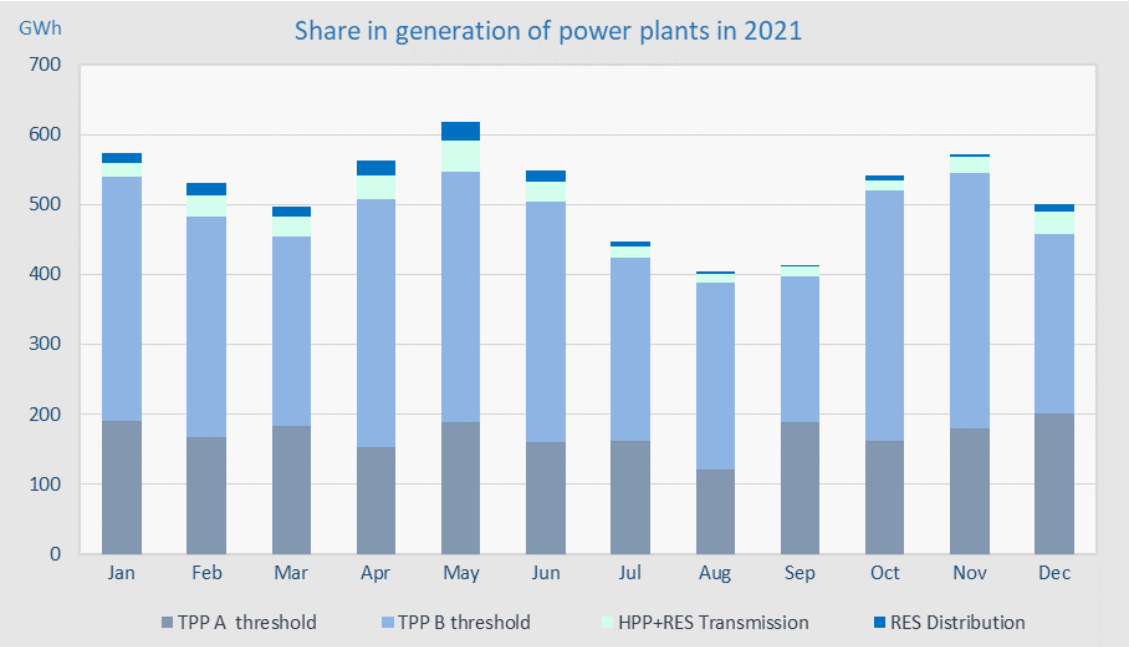


Fig. 6.4 Production of generating units in 2021

The generation of RES connected to the transmission network in 2021 was 297.4 GWh and is higher by 46.1% compared to 2020 due to the fact that the wind plant Sowi, with a capacity of 103.41 MW entered into operation. Whereas, the production of RES connected to the distribution network was 139.5, and is for 22.3% higher compared to 2020, because hydro-generators with a total capacity of 26.3 MW entered into operation.

The following tables present electricity generation from RES connected to the transmission network, respectively distribution network.

Tab. 6.7 Production of RES connected to transmission network in 2021

RES in transmission	Installed capacity	Production	Share in production*
	MW	MWh	%
HPP Ujmani	35,00	109 435	36,80
HPP Kaskada Lumbardh	32,15	61 656	20,73
Air Energy/Kitka	32,40	80 493	27,07
PEE Selaci	103,41	45 822	15,41
Total RES	202,96	297 406	100%

* Share of generating units towards RES production in transmission

Tab. 6.8 Production of RES connected to distribution system in 2021

RES in distribution	Installed capacity	Production	*Share in production
	MW	MWh	%
Hydroline	4,58	18 953	13,58
Dikanci	4,02	9 376	6,72
Radavci	1,00	3 713	2,66
Burimi	0,95	1 740	1,25
Eurokos-JH	4,80	42 415	30,40
HPP Brezovica	2,10	2 918	2,09
HPP Orqusha	4,00	12 840	9,20
HPP Lepenci 3	9,99	25 125	18,01
HPP Eko Energji	1,00	1 730	1,24
HPP Dilli Com	0,31	1 150	0,82
Wind	1,35	527	0,38
Solar- C	0,10	126	0,09
Solar-Feti	0,10	51	0,04
Solar Onix	0,50	637	0,46
Solar Birra Peja	3,00	4 166	2,99
Solar Frigo Food	3,00	4 179	2,99
Solar plant "Eling"	0,40	620	0,44
Solar plant Green Energ	3,00	3 376	2,42
HPP Sharri	6,45	1 038	0,74
HPP Vica	4,60	3 084	2,21
HPP Shtërpca	5,30	1 724	1,24
NG. Gjakova		47	0,03
Total RES	60,55	139 535	100%

Operation of generating units

The planned overhauls for TPP Kosova A and TPP Kosova B in 2021 have been postponed for technical reasons which have resulted from the pandemic restrictions. This has affected the operation of these units to be higher than that provided in the energy balance, which has also resulted in higher production.

Compared to last year, the number of interruptions from the operation of lignite generating units was almost the same. The following table shows all types and frequency of interruptions and availability in working hours of thermal power plants for 2021, where it is noticed that the availability of generating units of TPP Kosova A3 and TPP Kosova A5 was at a good level.

Tab. 6.9 Interruptions of generating units 2021

2021	TPP Kosova A			TPP Kosova B	
	A3	A4	A5	B1	B2
Planned interruptions	2	4	3	2	2
Unplanned interruptions	7	0	2	8	2
Failures	3	0	1	7	6
Total interruptions	12	4	6	17	10
Working hours	6 614	2 726	7 202	7 411	7 374

The operating hours of the generating units of TPP Kosova A and TPP Kosova B in graphical form are shown in the figure below, with variations by units, where it is noticed that unit B1 and B2 have operated with around 84% of hours of the year, where in 2020 have operated 88% of the year.

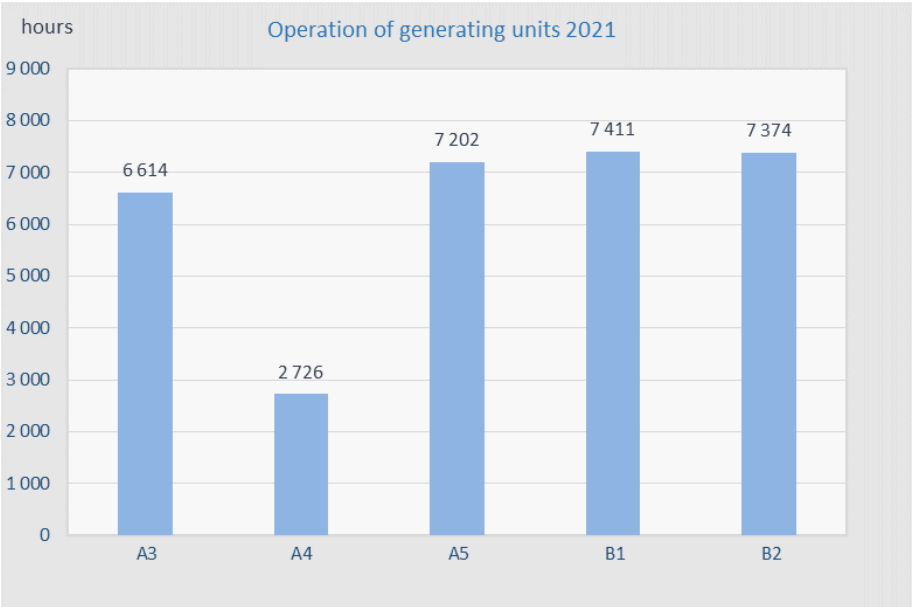


Fig. 6.5 Operation of generation units in 2021

The figure below presents the production of generating units for the period 2011 – 2021.

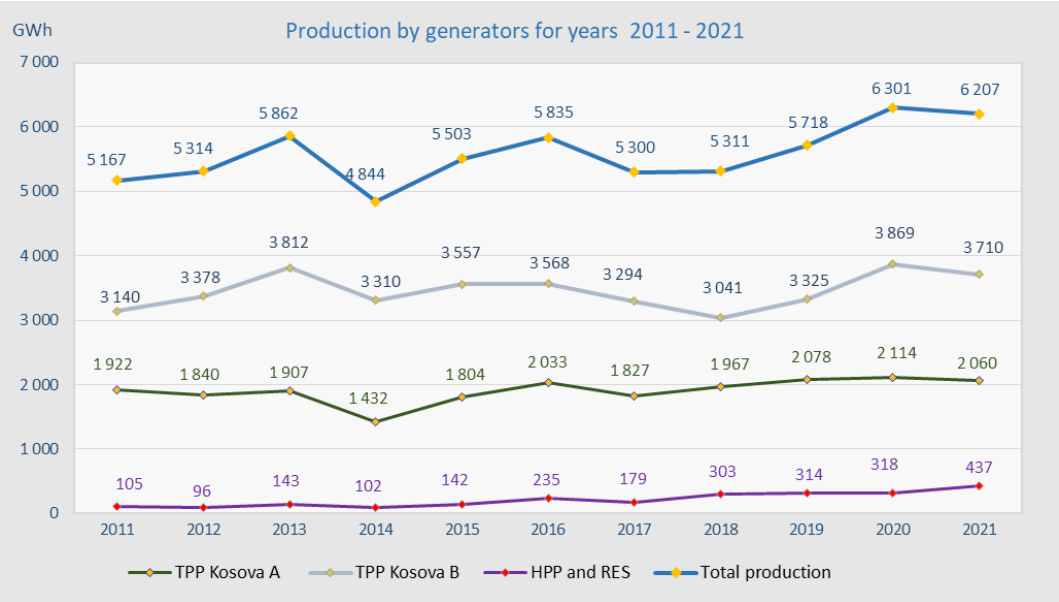


Fig. 6.6 Production of electricity for 2011 – 2021

6.4 Transmission system

Transmission as a regulated energy activity is responsible for the operation, management, maintenance, development and construction of the transmission network and transmission lines and the balancing of the system, as well as to ensure the long-term capability of the network in order to meet reasonable requirements for electricity transmission.

The transmission network of the power system of Kosovo is quite developed and offers sufficient security of the system and is well connected to the regional and European system through interconnection lines with:

- Albania, North Macedonia, Montenegro and Serbia– with 400 kV lines;
- Albania and Serbia – with 220 kV lines; and
- Serbia - with two lines 110 kV.

The transmission network of the Kosovo power system meets the local transmission needs as well as the N-1 criterion for the entire high voltage level.

The following tables show the transformation capacities and transmission network lines according to the voltage level.

Tab. 6.10 Substations in transmission network

Transformation (kV/kV)	Owner	No. of SS	No. of TR	Power (MVA)
400/220	KOSTT	1	3	1200
400/110	KOSTT	2	4	1200
220/110	KOSTT	3	9	1350
220/35	Feronikel	1	2	320
220/35/10(20) (Besiana)	KOSTT	1	1	40
220/10(20) (Besiana)	KOSTT	-	1	40
220/10(20)	KOSTT	1	2	80
110/35/10(20)	KOSTT	6	7	277,5
110/35/6.3	Trepça	1	2	126
110/6.3	Trepça	-	1	31,5
110/35	Ujmani	1	1	20
110/6.3	Sharri	1	2	40
110/10(20)	KOSTT	14	26	949,5
110/35	KOSTT	7	19	641
110/10	KOSTT	2	8	252
35/110 (Deçan)	Kelkos	-	1	40
Total		41	89	6 608

Tab. 6.11 Transmission network lines

Voltage (kV)	Owner	Length (km)
400	KOSTT	279,5
220	KOSTT	238,5
110	KOSTT	919,2
Total		1 437,2

The following scheme presents basic information on the number of substations (SS), transformers (TR) and installed transforming power, line length, and the power plants connected at the relevant voltage level.

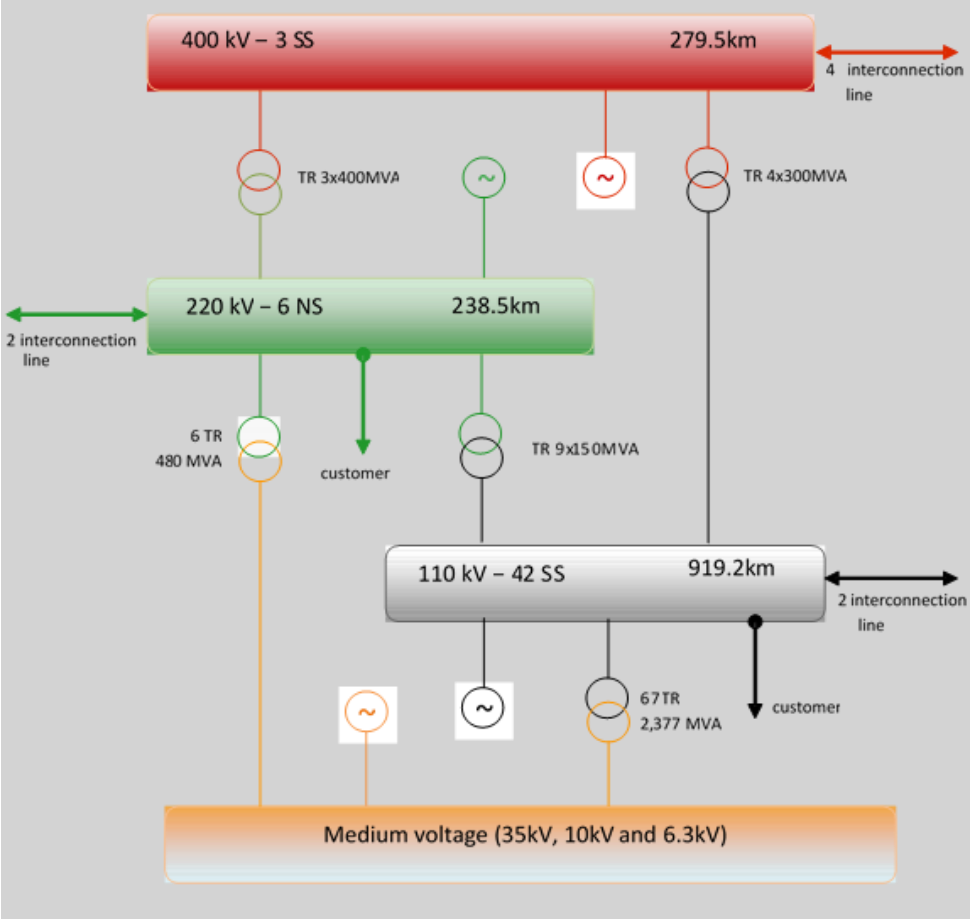


Fig. 6.7 Basic data of transmission network

6.4.1 Electricity flows in transmission network

The transmission system in Kosovo is well interconnected with the regional and European system through interconnection lines with neighbouring countries and has sufficient capacity to cope with the energy flows in the system, to cover customer demand from domestic production and imports but also for eventual exports of electricity surpluses, as well as for energy transiting from other countries.

It should be emphasized that the transit of electricity charges the network by increasing losses, network amortization, as well as the need for maintenance of the transmission network, for which the operator is compensated through the ITC Mechanism. Electricity transit in Kosovo in 2021 was 2,506 GWh or around 29.9% compared to demand.

The following figure presents energy flows in all interconnection lines in both directions (entry, exit).

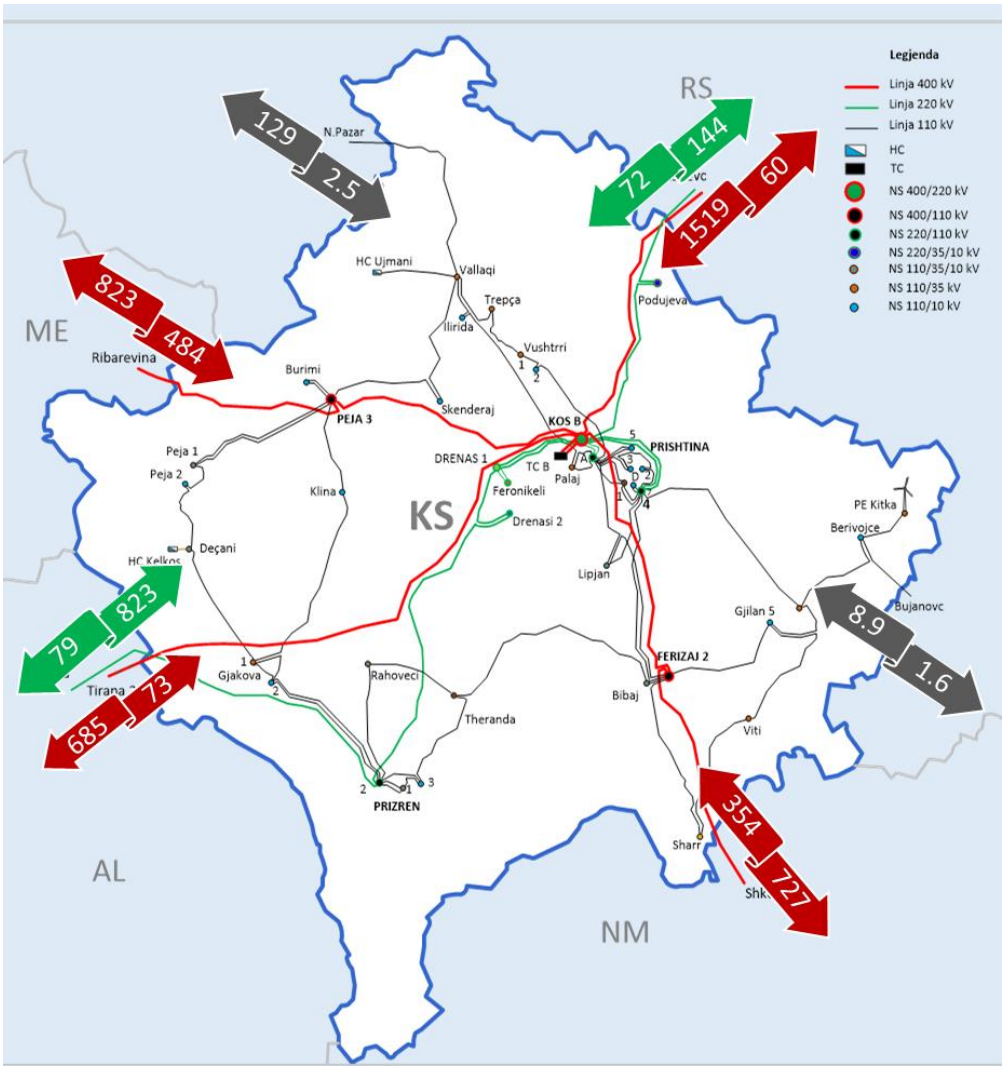


Fig. 6.8 Energy flows through interconnection lines

6.4.2 Investments in transmission system

During 2021, investments were made in transmission network. The investment projects are presented below divided in the following categories:

Projects completed in 2021 which have one-year warranty period

The managing of the group of projects financed from EBRD which were finalized in 2021:

During 2021, precisely on 10.09.2021 the final part of the group of projects financed by EBRD was finalized, such as:

- 110 kV double line and cable line, SS Fushë Kosova;
- SS Prishtina 4- Rehabilitation of self-consumption, Closets AC/DC Cables; and
- Supply and installation of UPS in the central facility of KOSTT,

These projects are now under monitoring during the guarantee period for any eventual defect, where depending on the case, if the defect occurs, it is notified to the contractor for improvement and elimination.

Projects funded by KOSTT, that started in 2021 and are in the initial phase of implementation

The project in Kastriot which includes:

- Construction of SS 110/35/10(20) kV Kastrioti with transformer 40MVA, and
- Construction of the line/cable 110kV for connection of the new substation 110/35/10(20) kV Kastrioti,

Was signed in May 2021 and is expected to be finalized in May 2023 is in the phase of preparing the design and documentation for obtaining construction criteria and permits (according to legislation) as well as the application for expropriation and servitude in the planned project track, in the relevant institutions and in the Ministry of Environment, Spatial Planning and Infrastructure.

The project in Fushë Kosovë, which includes:

- Construction of SS 110/35/10(20) kV Fushë Kosova,

the procurement process was initiated during 2021 and the signing of the contract is expected by the beginning of 2022.

Managing the projects which started in 2018/2020 that are being implemented and are ongoing, which shall be finalized in 2022:

- Conversion of substations from the voltage of 10 kV to 20 kV (upon the request of KEDS);
- Supply and installation of signs for signalization of lines according to the request of Civil Aviation;
- Supply of reserve parts for lines, swaying and tightening, OPGW, joint box and other accompanying equipment;
- Supply with spare parts for substations;
- Hardware supply;
- Microsoft licenses and IT system migration;
- Inclusion of the new substations in the SCADA/EMS system in QND and QEND;
- Works on connections to the city water and sewerage network in SS Prizren 1, SS Prizren 3, SS Lipjan, SS Viti, SS Ferizaji 1 (ongoing for other SS)
- Renovation of Command Buildings in: SS Deçani, SS Lipjan, SS Burim, SS Viti, - SS Prishtina 3, SS Prizren 3, SS Gjakova 2, SS Besiana and SS Vitia, SS Gjakova 1 (ongoing for other SS);

Some of the projects forecast to start implementation such as:

- The project (ID/011): SS Malishevë AIS 220/35/10(20)kV; and
- Supply and installation of power transformers for SS Malisheva and SS Fushë Kosova;

have not started yet since 2020, are under appeal process in the Procurement Review Body due to complaints submitted during the procurement process, and in order to proceed further, the decision of PRB is required.

Projects of the phase VI and VII – Funding from German Development Bank KfW for the implementation of projects.

According to the investment plan, this group of projects is planned to be financed with loan from KfW, and it was planned that during 2019 technical specifications to be prepared through consultancy services whereas the realization to be carried out for the period 2020-2022. Due to the non-signing of the loan agreement, these projects shall be postponed for the following years. If the financing agreement is reached, their realization is planned to take place during the period 2023 - 2026.

6.4.3 Maximal charges and energy demand in power system

In order to analyse the functioning of the power system, the value of maximum load (peak) is also important, and this usually takes as a sample five (5) maximum loads realized in different hours and different days of the year. The following table shows the maximum load (peak) values for 2021.

Tab. 6.12 Values of maximum loads (peak) in 2021

Maximal charge Pmax (MW)	Data	Hour
1 398	21.12.2021	23
1 361	20.12.2021	18
1 325	15.02.2021	23
1 324	18.01.2021	23
1 317	17.01.2021	23

The maximum load in the Kosovo power system was recorded on 21 December 2020 at 23:00 am in the amount of 1,398 MW, which is higher than the maximum load in 2020, in an amount of 1,249 MW.

Demand varies in daily and seasonal periods, and the summer peak was 1,140 MW, whereas the summer minimum was recorded on 25 May 2021, at 04:00 in the amount 310 MW.

As mentioned above, due to the inflexibility of the power system and especially the inflexibility of the existing thermal power plants, there are cases when on the same day, even at the same hour we have imports and exports of electricity. But, generally within the same day, in daylight hours (high tariff) the production does not cover the demand and electricity needs to be imported, while at night (low tariff) there are surpluses of electricity which must be exported.

The diagram below shows the average per hour of demand, production and exchange of electricity, which shows their relation during different daily periods.

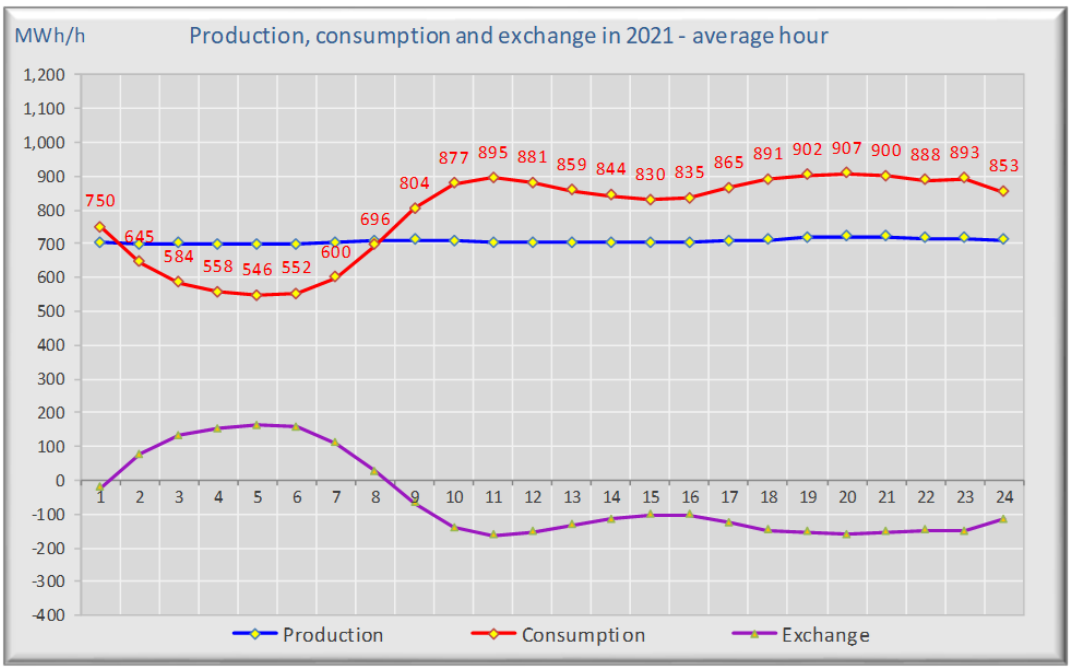


Fig. 6.9 Daily diagram as annual average per hours for 2021

The difference between the average of maximum and minimum daily consumption, during the months of 2021 is shown in the chart below.

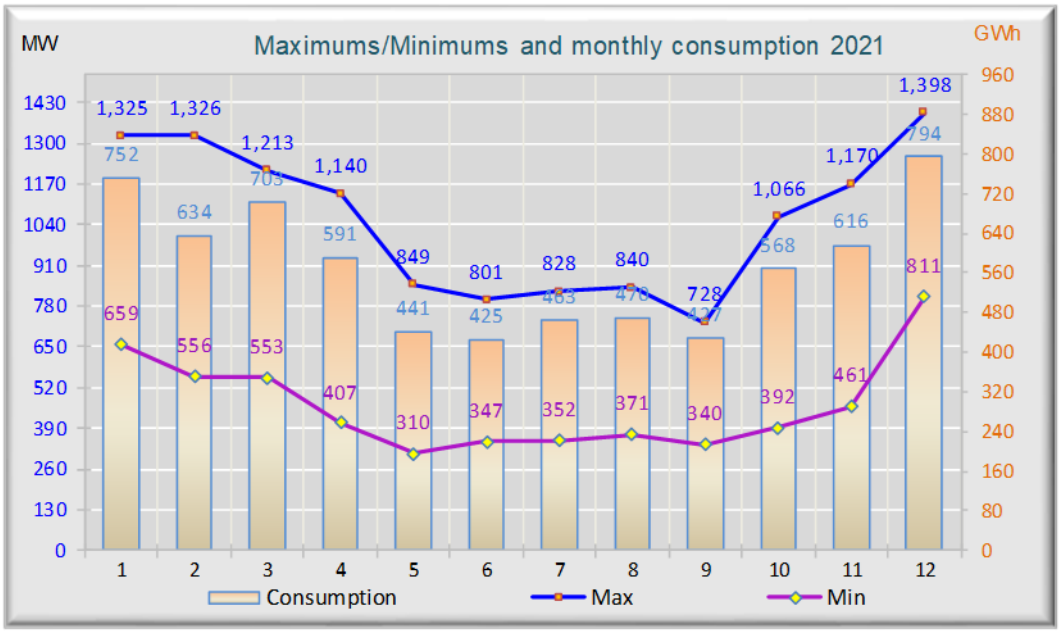


Fig. 6.10 Monthly average of demand and maximal/minimal charges 2021

Reductions due to the lack of electricity

Based on the reports of the operators, during 2021 there were power outages due to the lack of energy, in an amount of 29,068 MWh.

It should be emphasized that the Board of ERO at the end of 2018 has issued a decision to prohibit reductions due to the lack of energy, except in cases when plants are jeopardized.

As it can be seen from the diagram below, despite efforts to eliminate supply reductions due to electricity shortages, there have been reductions over the years. In the last years, the reductions have decreased significantly and in some years they were eliminated completely, except for the last year where there were reporting of reductions due to the emergent energy situation.

The figure below presents reductions due to the lack of electricity through years.

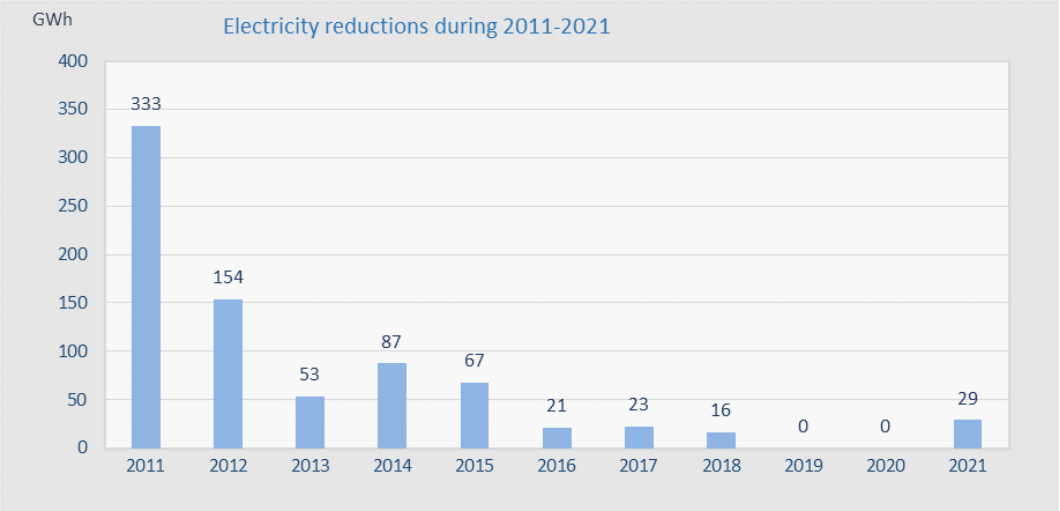


Fig. 6.11 Consumption reductions during 2011 - 2021

6.4.4 Electricity demand and transmission network losses

The total electricity demand in 2021 was 6,885 GWh and represents an increase of 11.65 % compared to 2020, which was 6,167 GWh whereas compared to the forecast of Electricity Balance for 2021, the electricity demand is 7.02 % higher.

Table 6.13 shows the total demand and transmission losses realized in 2021 and compared to Electricity Balance 2021.

Tab. 6.13 Overall demand and transmission network losses in 2021

2021	Gross demand - realization	Gross demand-balance	Ratio real./bal.	Transmission losses - realization		Transmission losses - balance	
	MWh	MWh	%	MWh	%	MWh	%
January	752 154	727 330	103,41	14 630	1,95	13 308	1,83
February	637 756	610 608	104,45	10 964	1,72	11 105	1,82
March	702 612	595 699	117,95	11 656	1,66	10 401	1,75
April	600 028	487 816	123,00	9 324	1,55	8 282	1,70
May	455 919	473 174	96,35	6 676	1,46	7 220	1,53
June	430 197	417 871	102,95	6 396	1,49	6 715	1,61
July	458 923	440 273	104,24	7 552	1,65	6 799	1,54
August	464 231	452 092	102,68	8 031	1,73	7 383	1,63
September	419 534	429 922	97,58	8 179	1,95	7 826	1,82
October	564 183	495 698	113,82	10 070	1,78	9 967	2,01
November	609 399	575 361	105,92	11 043	1,81	11 001	1,91
December	790 340	728 063	108,55	15 779	2,00	13 528	1,86
Total	6 885 276	6 433 907	107,02	120 301	1,75	113 535	1,76

Since 2011 there has been a stabilization of electricity demand, with small fluctuations from year to year, but in the last year there is a higher increase that can be seen in the figure below.

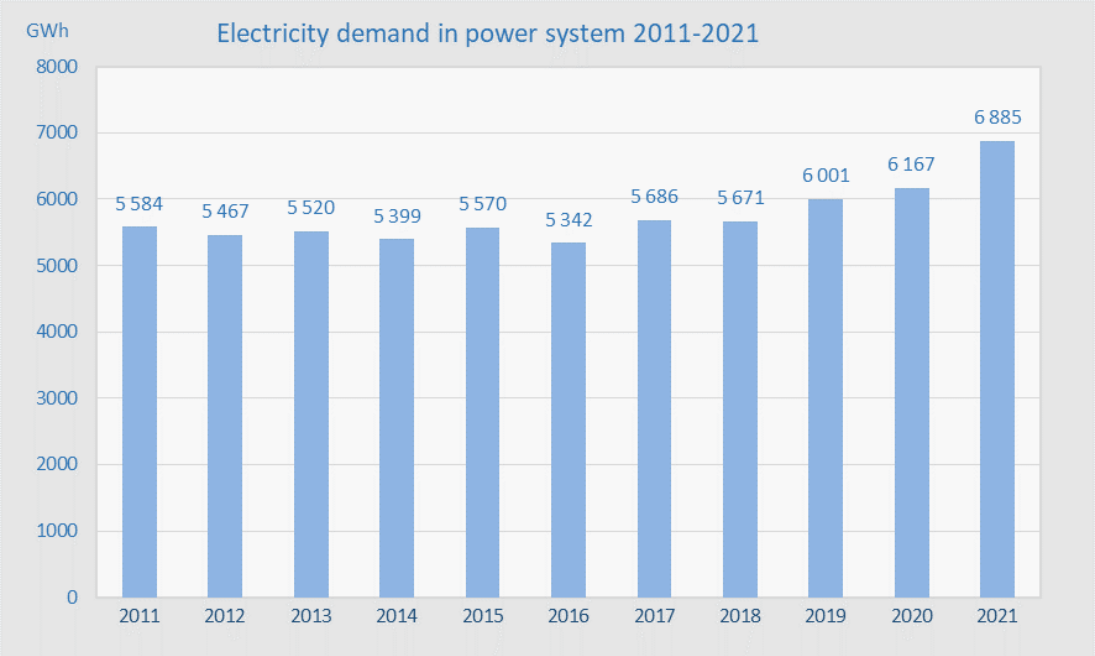


Fig. 6.12 Overall demand in power system 2011-2021

The total electricity demand is divided into the consumption of customers connected to the transmission network, consumption in the distribution system (including losses), self-consumption for needs of generation plants, and transmission losses, as shown in the table below divided by categories for 2021.

Tab. 6.14 Demand by categories and energy losses

Energy demand 2021	Total MWh
Gross consumption in distribution*	6 259 515
Ferronikeli	315 669
Trepça	23 692
Sharrcemi	56 563
Internal consumption of KEK	109 536
Transmission losses	120 301
Overall demand	**6 885 276**
Own expenditures of KEK from transmission	131 409

(*) Electricity received in distribution from transmission + production in distribution

Electricity received from the transmission network for self- consumption for the needs of power plants in 2021 was 131 GWh, of which 105 GWh for generators of TPP Kosova A and 26 GWh for TPP Kosova B.

Electricity demand varies according to the consumption period but also according to customer categories, and this is shown in the following table, including the losses in the transmission and distribution network (technical and commercial losses).

Tab. 6.15 Share of different categories in overall demand 2021

2021/GWh	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Household consumption	3 131	351,6	299,6	314,6	284,4	209,4	183,6	200,5	208,0	178,3	249,9	283,5	367,6
Commercial consumptior	1 145	100,6	93,4	100,0	88,2	76,6	82,0	97,6	103,9	76,4	92,2	100,0	133,7
Industrial consumption	842	74,7	68,0	79,9	76,5	70,5	78,7	81,6	82,2	73,0	54,9	49,8	51,7
Commercial losses	758	95,5	76,6	102,2	66,8	39,8	33,2	23,6	19,1	38,3	86,0	81,3	95,6
Technical losses	780	105,9	80,2	84,3	65,9	43,2	38,7	39,8	34,6	37,5	61,5	72,9	115,6
Transmission losses	120	14,6	11,0	11,7	9,3	6,7	6,4	7,6	8,0	8,2	10,1	11,0	15,8
Int. cons. of KEK	110	9,2	8,9	10,0	8,9	9,7	7,6	8,2	8,3	7,8	9,6	10,9	10,2
Total	**6 885**	**752,2**	**637,8**	**702,6**	**600,0**	**455,9**	**430,2**	**458,9**	**464,2**	**419,5**	**564,2**	**609,4**	**790,3**

The electricity demand, presented in table 6.15, varies by months, and in some categories this change is quite noticeable, such as household consumption and commercial losses that are higher in the winter season, which is mainly due to the use of electricity for heating.

The losses in the transmission system are at an acceptable level owing to the investments made by KOSTT and are approximately at the same level as the losses in the transmission networks in the region and Europe.

The figure below shows the share of losses in the transmission network towards the overall demand of the Kosovo power system.

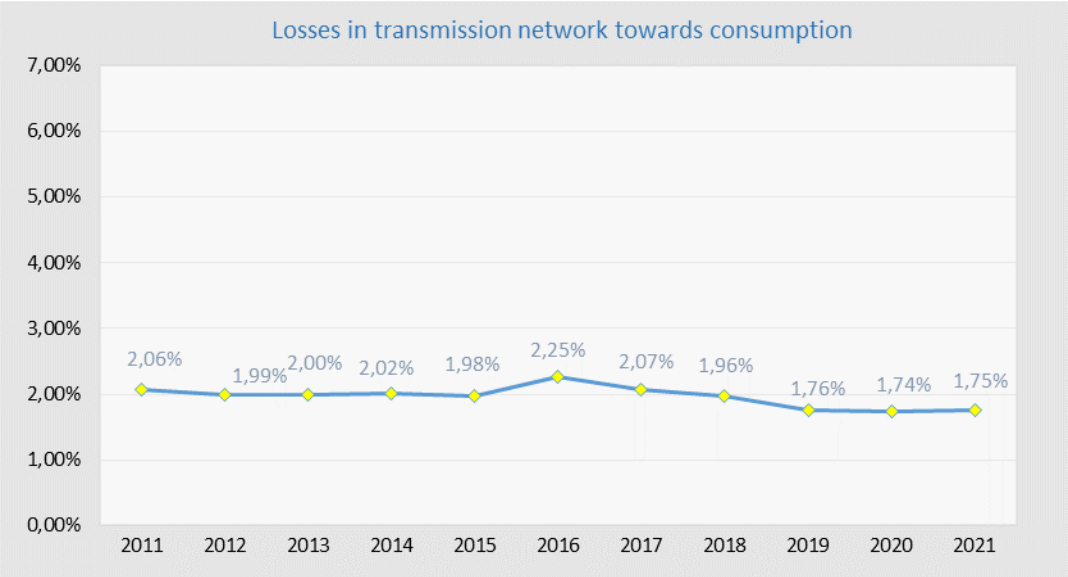


Fig. 6.13 Share of losses in transmission network 2011-2021

The losses shown in the figure above present the share of losses calculated towards the domestic demand whereas the level of transmission losses is affected by all the energy entered into the transmission system. Therefore, in order to calculate the share of losses towards the transmission network load, other sources, such as transit, as well as energy for generators own costs, should be included in addition to domestic demand. The share of transmission losses calculated in this form is 1.32%.

6.5 Electricity distribution system

The distribution network, as a regulated energy activity, is responsible for the operation and maintenance of the distribution system and the management of the generators connected to the distribution system.

Distribution network consists of voltage lines of 35 kV, 10(20) kV, 6 kV and 0.4 kV, as well as relevant substations of the level 35/x kV, 10(20)/0.4 kV and 6/0.4 kV.

Basic data of substations and lines, including capacity, transformation and length of lines of distribution system are presented in the tables below.

Tab. 6.16 Substations and transformers according to voltage level in DSO

Transformation (kV/kV)	Owner	No. of SS	No. of TR	Installed power (MVA)
35/10	KEDS	44	94	662
35/10	Private	11	15	68
35/20	KEDS	2	5	41
35/6 kV	Private	5	12	43
35/0.4kV	Private	17	25	22
10(20)/0.4	KEDS	2 532	2 627	1 338
10(20)/0.4	Private	2 805	2 820	1 391
10/20	KEDS	1	1	109
10/0.4	KEDS	2 893	2 893	899
10/0.4	Private	1 247	1 253	606
6(3)/0.4	KEDS	66	66	13
6/0.4	Private	1	1	1
Total		9 624	9 812	5 194

Tab. 6.17 DSO lines

Voltage (kV)	Owner	Aerial network (km)	Cable network (km)	Total (km)
35 kV	KEDS	484	138	622
10(20) kV	KEDS	1 536	521	2 057
10 kV	KEDS	4 165	904	5 069
6 kV	KEDS	42	8	50
3 kV	KEDS	4	1	5
0.4 kV	KEDS	17 716	2 632	20 349
Total		23 948	4 204	28 152

The scheme below presents basic information on the number of substations (SS), transformers (TR) and transformer power (VA), line length, and the plants connected at the relevant voltage level.

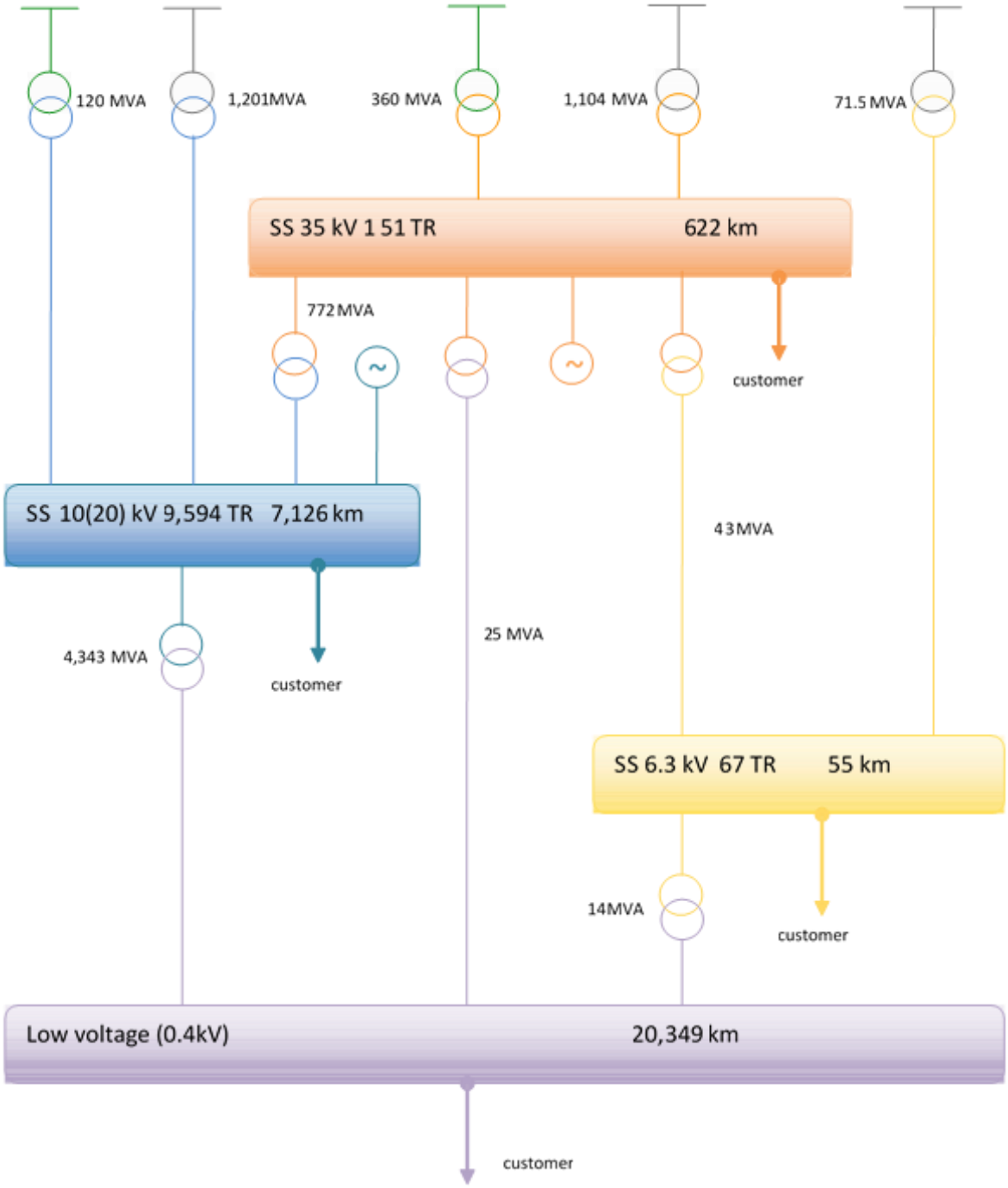


Fig. 6.14 Basic data of distribution system

6.5.1 Investments in distribution system

The Distribution System Operator continuously invests in the distribution network based on the allocated investment budget approved by the Energy Regulatory Office, and therefore increases the functioning of the distribution system to provide reliable electricity supply, as well as increase of existing network capacity. Investments include projects in the medium and low voltage network as well as projects in the digitalization and modernization of the network such as SCADA, smart PLC meters, etc.

The realization of investments of 2021 includes projects that are planned for 2021 and projects which are realized and planned within the scope of previous years. Projects are selected by analysing the need for investment in the most critical areas by evaluating them through priority criteria to achieve key investment objectives, such as:

- Reduction of technical and non-technical losses;
- Reliable and qualitative supply of electricity;
- Increase of the existing network capacities and network modernization.

The projects were selected by analysing the technical criteria such as: losses, network load, voltage failures, number of reductions, energy demand, increase of consumption, network aging and number of customers.

In addition to the implementation of medium voltage projects from previous years, medium voltage projects of 2021 were directed to the most critical areas such as Peja, Deçan, Malisheva, Gjakova, Skenderaj, Vushtrri, Lipjan, Prizren, Prishtina and Drenas. These projects were implemented to solve the problems of rapid increase of consumption, network overload and improvement of other technical parameters. Some of these projects were intertwined with the urban plans of the municipalities of the Republic of Kosovo.

Reinforcement projects in the low voltage network are focused in the regions Drenas, Podujevë, Obiliq, Skenderaj, Vushtrri, Gjakovë, Malishevë, Suharekë, Pejë and Deçan. In LV projects, despite investments in the 0.4 kV voltage level, the medium voltage network has also been strengthened in accordance with future exit plans. In the investments in MV and LV all lines have been changed as well as substations and other equipment that did not meet the technical criteria. These projects aim to improve the level of voltage and provide quality supply of electricity.

Investment projects 2021

Investment projects for 2020 are presented in two parts, as *"Projects within the scope of previous years continued/completed in 2021"* and *"Investment projects planned for 2021".*

It is important to note the impact of COVID-19 pandemic on the implementation process of investment projects for 2020 which has caused the planned target for project completion to be delayed.

Projects within the scope of previous years finalized in 2021

They include medium voltage projects (at 10 kV and 20 kV) and low voltage projects of previous years which were in the process of implementation during 2021.

Conversion of exits at the 20 kV voltage level

KEDS continued in Pristina with the process of the implementation of investments in switching 10kV exits in operation at the 20kV voltage level.

Planned investment projects in 2021

Investments in medium voltage level (MV)

The projects are selected by analysing the need for investments in most critical areas, evaluating them through priority criteria to achieve key investment objectives. The projects aim to solve the

problems of rapid consumption increase, network congestion and improvement of other technical parameters.

Prishtina district

Many 10kV exits in Prishtina district supplied by substations Prishtina 2, Prishtina 3, Prishtina 5, Prishtina 6 and Prishtina 7 are converted to voltage level 20 [kV].

13,968 customers will benefit from these investments.

Investments in the 10 [kV] level

Peja District, Barani exit: Barani is a very long exit with a length of 18 km consisting of scattered branches and narrow bottlenecks which affect the voltage of the final customer. With this project, there will be investments in the entire exit and 2,385 customers will benefit

The implementation of this project will continue during 2022 as well.

Ferizaj District, Exits Q.M.I dhe Industrial Zone: The exits are overcharged and the existing topology cannot withstand the load during maximum demand. In these exits, the load increases continuously due to the new neighbourhoods and businesses, therefore investment in this zone is essential to meet the new demands for electro-energetic consents. There have been investments in the entire exits, where from two exits, four will be created. 321 customers will benefit from this project. The implementation of these projects shall continue during 2022 as well.

Gjakova District, exits supplied by SS Gjakova I 35/10 kV and exits supplied by SS Gjakova 2 110/10(20) kV: Cermjani, Dobroshi, Skivjani, Beci, Ura e Terzive, Ponosheci and Bistazhini are supplied by SS Gjakova 1 and SS Gjakova 2 which were selected among the investment projects for 2021, due to the overload, losses and problems with failure of voltage. The exits also have great lengths and topology with scattered branches.

The exits Ereniku and Piskota were added to the list of investments 2021 due to the combination of existing exits in new exits. 13,161 customers benefit from these projects. The implementation of these projects will continue during 2022 as well.

Exits supplied by SS Malisheva 35/10 kV: Carralluka, Mirusha, Bellanica and Kijeva are supplied by SS 35/10 kV Malisheva. As it is known, the exits are overloaded and there are large voltage failures starting from the voltage level of 35 kV. They were included in the list of projects for 2021 due to the overload and voltage failure issues, in order for the investment in the area of Malisheva to be completed in accordance with the investment of KOSTT. 7, 636 customers will benefit from these projects.

The implementation of these projects will continue during 2022 as well.

Mitrovica District, The exits supplied by SS Skenderaj 110/10 kV: Qirezi, Likovci, Turiqevci and Llausha are the exists selected for investment for this year, due to voltage failure issues, losses and overload. The Llausha exit was not included in the Investment Plan 2021, however through the investment projects, the exits Qirezi, Likovci, Turiqevci and Llausha will be combined in new exists so that the distribution of load will be unfluctuating in all exists. Therefore, the inclusion of

Llausha exit in the Investment Plan was required. 5,877 customers will benefit from these investments.

The implementation of these projects will continue during 2022 as well.

Investments in low voltage network

In the entire KEDS network, there are parts of the network which require investments due to the outdated situation. In order to invest in the most critical areas, the analysis was carried out taking into account the criteria of priorities in selection of projects. Therefore, investments in low voltage in Investment Plan 2021 were directed in the regions Drenas, Podujevë, Obiliq, Skenderaj, Vushtrri, Gjakovë, Malishevë, Suharekë, Pejë and Deçan. The overall number of these projects in LV network reaches 260, including 8,363 customers.

The identification of the most urgent projects was carried out by analysing the technical criteria such as:

- Network load (electrical lines and substations);
- Number of outages;
- Voltage failures;
- Old age of the network;
- Number of customers;
- Electricity losses;

The investments in low voltage projects include:

- New transformers in the areas that require investments;
- The replacement of existing transformers with new ones; for increase of capacity;
- Rehabilitation of low voltage network;
- Reinforcement of medium voltage network within the scope of LV projects, in line with future plants of MV exits;
- Expansion of MV network for connection of transformers;
- Placement of MMOs, which means the movement of the meters outside on the pole or in the ground cabinets of the meters
- Connection of the customer to the meters located outside the house

In conclusion, for all the investments of 2021, including carried forward investments and planned investments in 2021, in MV and LV network, the following materials were used:

Tab. 6.18 Amounts of materials used in 2021

Type of material	Amount	Unit
Transformer	122	piece
Pillars	8 099	piece
Meter boxes	6 746	piece
LV Panel	73	piece
Kiosks	18	piece
Alcoves	137	piece
Cables	1 029 077	m
Conductors	245 511	m

Investments made during 2021 from the Department of System Operation

Projects and works realized during 2021 from the Department of System Operation

Investment projects for 2021 are presented in two parts, as projects at medium voltage level 10 (20) [kV] and projects at low voltage level at 0.4 [kV]. The classification of these projects is made by the nature of the project work, 10 [kV] projects include:

1. Displacements and new network in the medium voltage network;
2. Creation of new lines;
1. 3. Investments in distribution facilities for easier operation, etc.

The projects of 0.4 [kV] include:

1. Reconstruction of the low voltage network;
2. Displacement and installation of SS 10/0.4 [kV];
3. Implementation of smart meters PLC etc.

The first part of 2021 is characterized more by investments in 0.4 [kV] projects, where the reconstruction of the low voltage network and other works in these projects have been carried out. While the second half of the year is mainly related to investments in medium voltage, with works in 10 [kV] exits discharges, distribution facilities, creation of new lines, also at the end of the year was intervened in discharges of overloaded exits 0.4 [kV] and in the change of overloaded transformers.

During 2021, the Department of System Operation, on behalf of the realization of projects has invested in projects related to the following areas:

- Network maintenance and rehabilitation;
- Cleaning of distribution lines 10, 20 and 35 [kV];
- Change of overloaded transformers;
- Investments in 35 kV projects;
    - Project: SS 35/10 [kV] Zhuri
- Investments in creating ring ties
    - Project: LP 35 [kV] Lladova
    - Project: Cable lines from PZ I to PZ IV
- Investments in projects 10 [kV]
    - Project: LP 10 [kV] Hogoshti;
    - Project: Cable line 10 [kV] from SS Treska to SS Moni;
    - Project: LP 10 [kV] Railway station;
    - Project: LP 10 [kV] Isniqi;
    - Project: Line 10 [kV] Millosheva;
    - Project: Line 10 [kV] Mushtisht-Maqiteve;
    - Discharge of exits 10 [kV];
    - Project: LP 10 [kV] Shtimes in Godance village;
    - Project: Discharge of Jagoda exit;
    - Project: Cable line from Exit III to the exit S. of culture
- Displacement/Dislocation of lines 10 [kV]

- Project: LP 10 [kV] Jezerci
- Project: LP 10 [kV] Fushe Kosova1
- Project: LP 10 [kV] Grashtices

- Implementation of Distribution Facilities
  - Project: Distribution facility - Radavoce
- Investments in projects 0.4 [kV]
- Realization of projects PLC
- Projects aimed at improving power flow and improving low voltage failures
  - Project: Reinforcement of voltage in Shtime – at SS Demiri
  - Project: Reinforcement of voltage SS Biniqet
  - Project: Reinforcement of voltage in Lladrovce
  - Project: Reinforcement of voltage in SS. Drenovci IV
  - Project: Reinforcement of voltage in Lubishte
  - Project: Reinforcement of voltage in Matiqan
  - Project: Reinforcement of voltage in Rrencë village
- Realization of projects in placement of new transformers
  - Project: Installation of SS in Brezovica;
  - Project: Installation of SS in Qadak School;
  - Project: Installation of SS in Koshare
  - Project: Installation of SS in Kerrnice
  - Project: Installations of SS in Viti
  - Project: Installations of SS in Vushtrri- Bahri Kuqi
  - Project: Installations of SS in Perçeve
  - Project: Installations of SS in Klina - SS Ambullanta, Neighbourhood “te Lumi”
- Investments in metering point

During 2021, there were investments on meters as follows:

- 793 meters with direct metering with communication GSM GPRS
- 11,338 meters with direct metering PLC
- 245 meters with half indirect and indirect meter, of which 179 are new meters and 66 changed meters;
- 8,313 mechanical meters replaced by digital ones
- 29,802 meters dedicated to new connections

- Investments in SCADA system

Kosovo Electricity Distribution Company has already realized one of the most advanced smart systems SCADA.

- SCADA in existing substations

- Integration of new changes - 2021
  - SCADA in 2021
    - Phase 1 –includes the plants of the district of Mitrovica, Peja and Prizren
    - Phase 2 –Includes the plants of the district of Pristina, Ferizaj, Gjilan and Gjakova

- Installation of FIDs
- Distribution Management System (DMS)
- SCADA Integration – Kosova Net

- Installation of new transformers in substations
  - Change of the power transformer in SS 35/10 [kV] Malisheva
  - Change of the power transformer in SS 35/10 [kV] Kacaniku
  - Change of the power transformer in SS 35/10 [kV] Batllava
  - Change of the power transformer in SS 35/10 [kV] Magure
  - Change of the power transformer in SS 110/35/10 [kV] Palaj
  - Change of the power transformer in SS 35/10 [kV] Ferizaji II

6.5.2 Distribution consumption and losses

Distribution energy flows include consumption, technical and commercial losses, which are calculated by district and by month of the year.

The DSO is organized in seven districts: Prishtina, Mitrovica, Peja, Gjakova, Prizren, Ferizaj and Gjilan. Based on the reports from the DSO, the highest consumption was realized in the district of Prishtina with 30.7% of the total consumption in distribution, while the lowest consumption is in the district of Gjilan with 8.5% of the total consumption.

Distribution energy flows by districts including electricity losses are presented in Table 6.19. Data for the Mitrovica district also include consumption in the northern municipalities, which is calculated in the category of commercial losses.

Tab. 6.19 Consumption and losses in distribution by districts for 2021

Districts	Load in districts	Billed energy	Technical losses		Commercial losses		Total losses	
	MWh	MWh	MWh	%	MWh	%	MWh	%
Prishtina	1 922 723	1 581 457	235 836	12,27	105 430	5,48	341 265	17,75
Mitrovica	938 773	411 208	77 370	8,24	450 195	47,96	527 565	56,20
Peja	680 912	504 196	98 378	14,45	78 338	11,50	176 715	25,95
Gjakova	554 891	434 544	93 536	16,86	26 811	4,83	120 347	21,69
Prizren	776 809	637 381	107 059	13,78	32 369	4,17	139 428	17,95
Ferizaj	850 244	691 828	105 509	12,41	52 907	6,22	158 416	18,63
Gjilan	535 164	460 755	62 420	11,66	11 990	2,24	74 410	13,90
Total	6 259 515	4 721 369	780 107	12,46	758 039	12,11	1 538 147	24,57

The table below presents the demand (load), billed energy as well as technical and commercial losses in distribution by months.

Tab. 6.20 Consumption and losses in distribution in 2021

Months	Load	Billed energy	Technical losses		Commercial losses		Total losses	
	MWh	MWh	MWh	%	MWh	%	MWh	%
January	688 544	487 222	105 867	15,38	95 455	13,86	201 322	29,24
February	582 772	425 899	80 243	13,77	76 630	13,15	156 873	26,92
March	640 334	453 870	84 251	13,16	102 214	15,96	186 465	29,12
April	540 871	408 121	65 929	12,19	66 821	12,35	132 750	24,54
May	402 166	319 216	43 163	10,73	39 787	9,89	82 951	20,63
June	372 906	301 062	38 655	10,37	33 189	8,90	71 844	19,27
July	399 429	335 953	39 844	9,98	23 632	5,92	63 476	15,89
August	404 359	350 579	34 640	8,57	19 140	4,73	53 780	13,30
September	365 300	289 494	37 499	10,27	38 306	10,49	75 806	20,75
October	528 453	381 003	61 498	11,64	85 952	16,26	147 450	27,90
November	578 311	424 128	72 894	12,60	81 289	14,06	154 183	26,66
December	756 070	544 822	115 625	15,29	95 623	12,65	211 248	27,94
Total- realize	6 259 515	4 721 369	780 107	12,46	758 039	12,11	1 538 147	24,57
Total- acc. to	5 220 867	4 230 587	617 242	11,82	373 039	7,15	990 280	18,97

Technical losses according to the data sent by the DSO reach the value of 12.46% where the aging of the network, length of lines, quality and type of conductors and transformers, loading equipment and maintenance have an impact on the high level of these losses.

Non-technical(commercial) losses, not including losses (consumption) in the four northern municipalities, were 386 GWh and accounted for 6.16% of total distribution demand. Unbilled energy in the four northern municipalities of Kosovo was 372 GWh or 5.95%.

Therefore, the total non-technical losses to the total distribution demand, including the losses in the four northern municipalities of Kosovo, in 2021 were 758 GWh, or 12.11% of the total distribution demand.

Total losses in the distribution system are measured and represent the difference between the input energy of the distribution and the billed energy. Since technical and commercial losses cannot be measured separately, then the division of these losses is carried out through the calculation of technical losses through the relevant software, while commercial losses are further calculated as the difference between total and technical losses.

The demand for electricity at Distribution System Operator level in 2021 was realized in the amount of 6,260 GWh, while in 2020 was 5,549 GWh, which represents an increase of approximately 12.79%.

The demand in the distribution system has a continuous increase, same as the general demand, and this increase is presented in the figure below, where the data from 2011 to 2021 are presented.

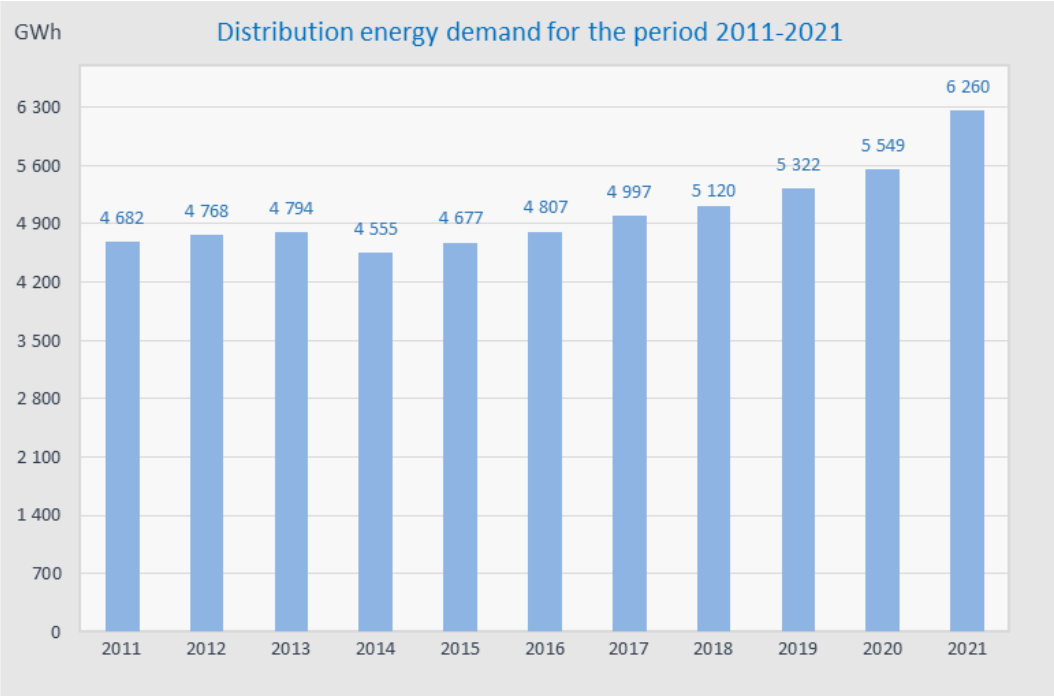


Fig. 6.15 Electricity demand in distribution system 2011-2021

Despite the investments made so far in the distribution network, electricity losses still remain high and pose a worrying problem for the electricity sector. Losses also have a negative impact on customer supply and the financial viability of supply and distribution operators, as well as the entire energy sector.

The cost of electricity losses up to the level set by the Regulator is covered by the customer tariff. The distribution system operator made continuous efforts to reduce distribution losses, but despite the reduction of losses over the years, the DSO has not managed to meet the targets set by the Regulator, which means that the cost of exceeding these targets is borne by the DSO itself.

Below is the graph with data on technical, commercial losses and total distribution losses from 2011 to 2021, which shows the trend of loss reduction but also fluctuations in the level of technical and commercial losses.

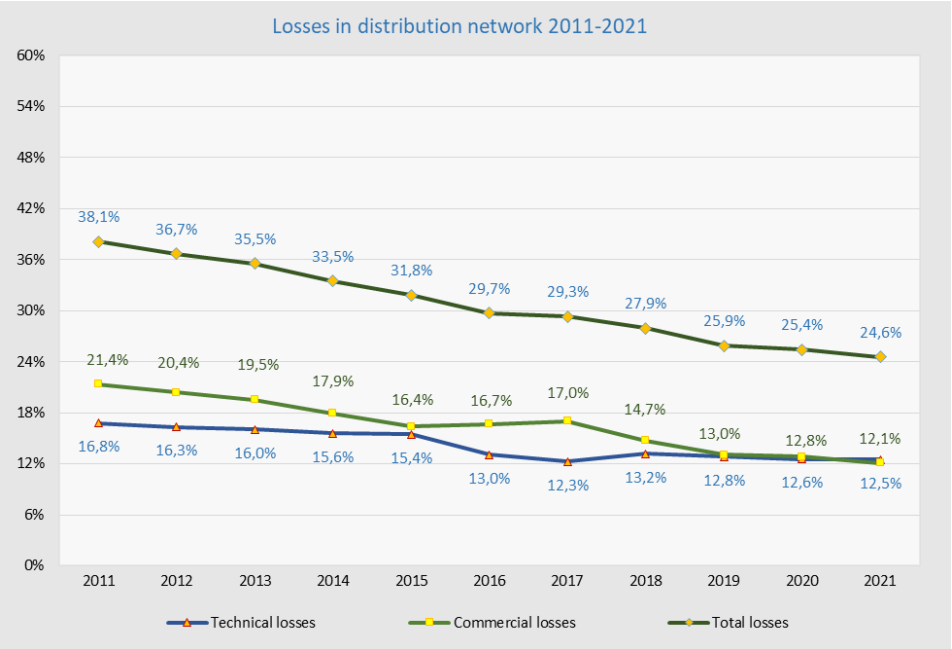


Fig. 6.16 Technical and commercial losses in distribution for the period 2011-2021

In general, electricity losses at DSO, including the losses (consumption) in four northern municipalities have decreased from 25.4% in 2019 to 24.6% towards distribution demand.

6.6 Electricity supply

Electricity supply for final customers during 2021 has continued to be realized by KESCO which is a supplier charged with the Public Service Obligation, supplying customers at regulated prices and customers at unregulated prices for whom a special account has been kept.

The share of household customers in the total billed consumption still remains dominant with about 61.19%, followed by commercial consumption with 21.67%, then by industrial consumption with 16.45%, and finally by consumption in public lighting with 0.7%. Gross demand increased by 11.65% compared to last year, household consumption increased by about 12.72%, while the consumption of commercial and industrial customers has an increase of 18.98%, namely 5.8%.

The figure below shows the share of consumption categories compared to total consumption (presented with and without losses).

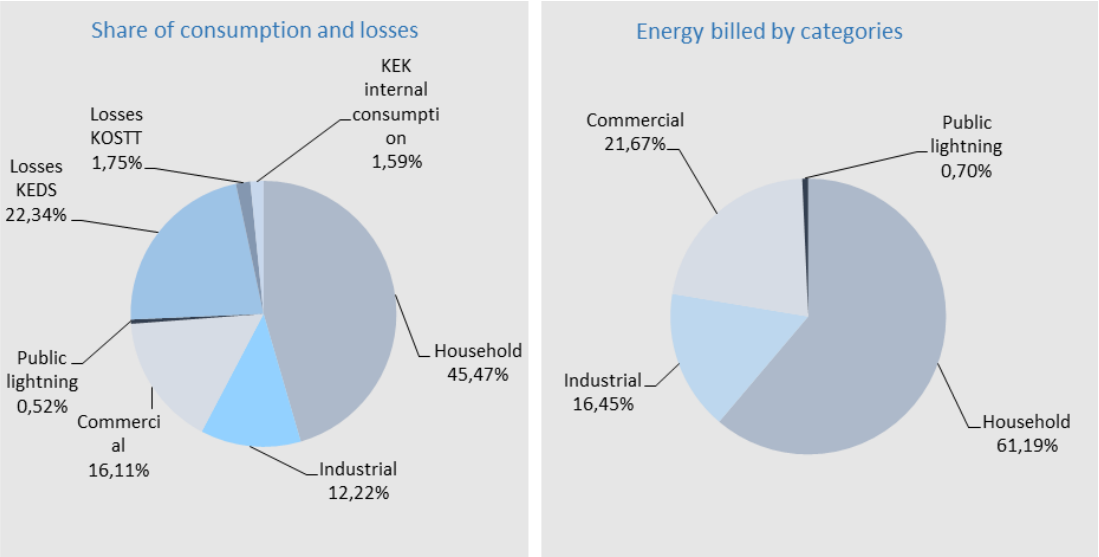


Fig. 6.17 Share of consumption categories – with and without losses 2021

6.6.1 Billing and collection

The energy billed in the distribution system in 2021 was 4,721 GWh and represents about 75.4% of the load of the distribution system, which compared to 2020 is higher by 14.04%.

The table below presents billing, energy collection and gross collection in distribution as well as the ratio between billing and collection for energy by months for 2021, which shows that in some months this ratio is higher than 100%, which means that in these months the electricity billed for the previous months was collected.

Tab. 6.21 Billing and collection in distribution by months for 2021

Distribution 2021	Load	Realization	Billing	Collection for energy	Gross collection	Coll./Bill.
	MWh	MWh	€	€	€	%
January	688 544	487 222	32 422 863	26 098 085	1	80,5%
February	582 772	425 899	28 858 121	25 575 683	1	88,6%
March	640 334	453 870	30 775 212	26 335 545	1	85,6%
April	540 871	408 121	28 082 820	25 982 286	1	92,5%
May	402 166	319 216	22 855 107	24 582 637	1	107,6%
June	372 906	301 062	22 240 439	21 230 326	1	95,5%
July	399 429	335 953	24 687 023	25 518 163	1	103,4%
August	404 359	350 579	25 873 781	23 906 306	1	92,4%
September	365 300	289 494	21 438 917	22 448 976	1	104,7%
October	528 453	381 003	27 062 207	21 627 822	1	79,9%
November	578 311	424 128	29 729 928	25 553 383	1	86,0%
December	756 070	544 822	35 963 350	30 930 249	1	86,0%
Total	6 259 515	4 721 369	329 989 767	299 789 461	11	90,85%

The billed and collected (gross) electricity in distribution as well as the ratio between billing and collection from 2011 to 2021 is shown in the figure below.

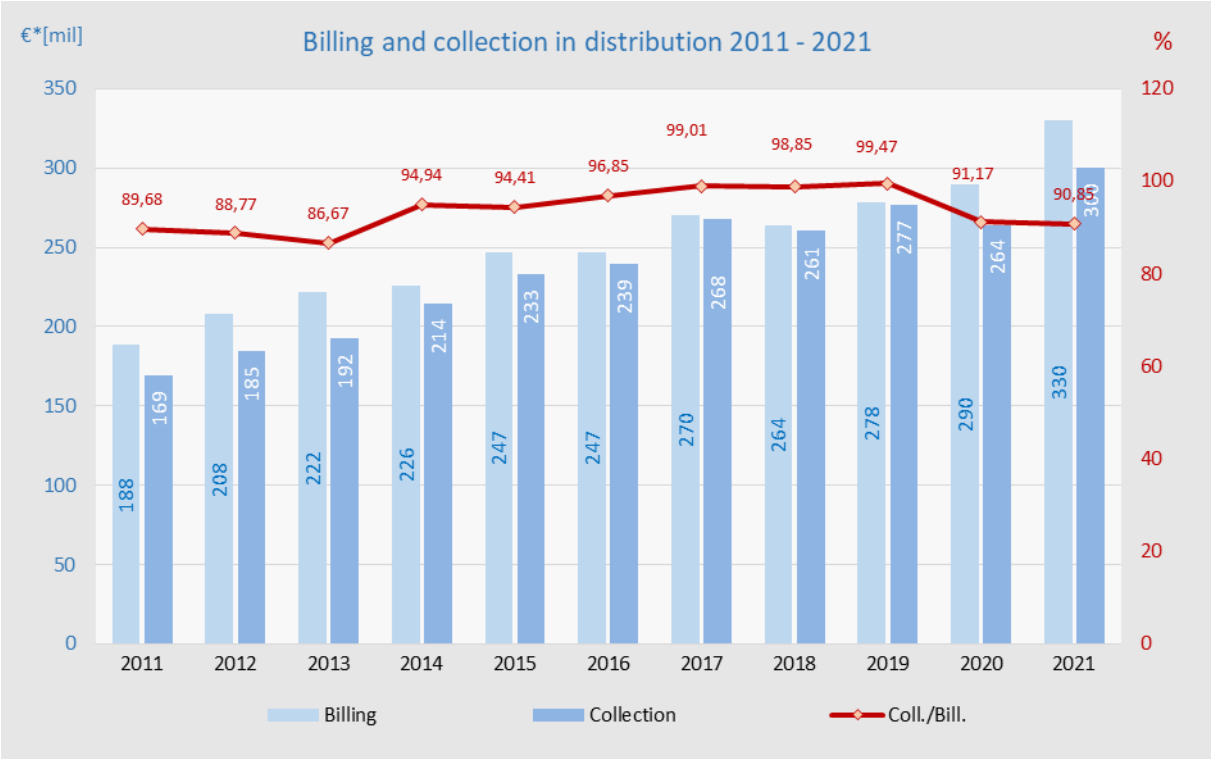


Fig. 6.18. Billing and collection in distribution through years 2011-2021

The level of collection only for the energy in distribution for 2021 was 90.85%, which is 0.32 percentage points lower than last year, and when the customers connected to the transmission network are also calculated, then the overall collection reaches 91.79%.

The consumption categorized by voltage level and groups of customers using electricity for 2021 is given in Table 6.21.

Tab. 6.22 Electricity billed according to tariff categories 2021

Categories (GWh)	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
220 kV (Ferronikeli)	315,7	35,4	31,7	36,9	34,8	30,5	35,3	35,3	36,3	30,1	7,9	0,6	0,9
110 kV (Trepça)	23,7	2,2	2,0	2,4	1,9	1,8	1,9	1,9	1,8	1,9	1,8	2,0	2,2
110 kV (Sharrcem)	56,6	2,1	1,4	1,3	4,1	5,1	6,1	6,5	5,4	6,3	6,4	6,5	5,3
35 kV	55,6	4,3	3,7	4,9	4,5	4,4	4,4	4,8	4,9	4,6	4,8	4,8	5,4
10 kV	390,2	30,7	29,2	34,4	31,0	28,8	31,0	33,1	33,7	30,1	34,1	35,8	38,1
Household	3 131,0	351,6	299,6	314,6	284,4	209,4	183,6	200,5	208,0	178,3	249,9	283,5	367,6
0.4 kV I	408,9	33,4	30,9	36,0	31,8	29,0	32,1	36,6	36,9	30,1	34,2	35,8	42,2
0.4 kV II	700,0	63,9	59,7	61,0	53,8	45,3	47,7	58,7	64,5	43,4	54,5	60,4	87,4
Public lightning	35,6	3,3	2,8	3,0	2,6	2,4	2,3	2,3	2,5	2,9	3,6	3,8	4,2
Total billed	5 117,3	527,0	461,0	494,5	449,0	356,6	344,3	379,7	394,1	327,8	397,0	433,3	553,1
KEK Consumption	109,5	9,2	8,9	10,0	8,9	9,7	7,6	8,2	8,3	7,8	9,6	10,9	10,2
DSO losses	1 538,1	201,3	156,9	186,5	132,8	83,0	71,8	63,5	53,8	75,8	147,5	154,2	211,2
KOSTT losses	120,3	14,6	11,0	11,7	9,3	6,7	6,4	7,6	8,0	8,2	10,1	11,0	15,8
Total billed	**6 885,3**	**752,2**	**637,8**	**702,6**	**600,0**	**455,9**	**430,2**	**458,9**	**464,2**	**419,5**	**564,2**	**609,4**	**790,3**

Electricity billed in the transmission and distribution system in 2021 was 5,117 GWh, which expressed in monetary value (including VAT) is 371.03 mil €, whereas the gross collection is 339.14 mil €.

The following table presents billing, collection and the ratio between collection and billing.

Tab. 6.23 Billing and collection in 2021

2021	Billing	Collection	Coll./Bill.
	€	€	%
Regulated customers	329 989 767	299 789 461	90,85%
Unregulated customers	41 035 877	39 348 118	95,89%
Total	371 025 644	339 137 579	91,41%

Average electricity price

The average selling price of electricity is based on tariffs for regulated electricity activities and varies depending on the category of customers, the voltage level to which customers are connected and the use of electricity at different tariffs according to the season and time in which energy is consumed. This average selling price (without VAT) is shown in the figure below. The average selling price also varies by districts depending on the concentration of commercial/industrial activities that use electricity in certain periods.

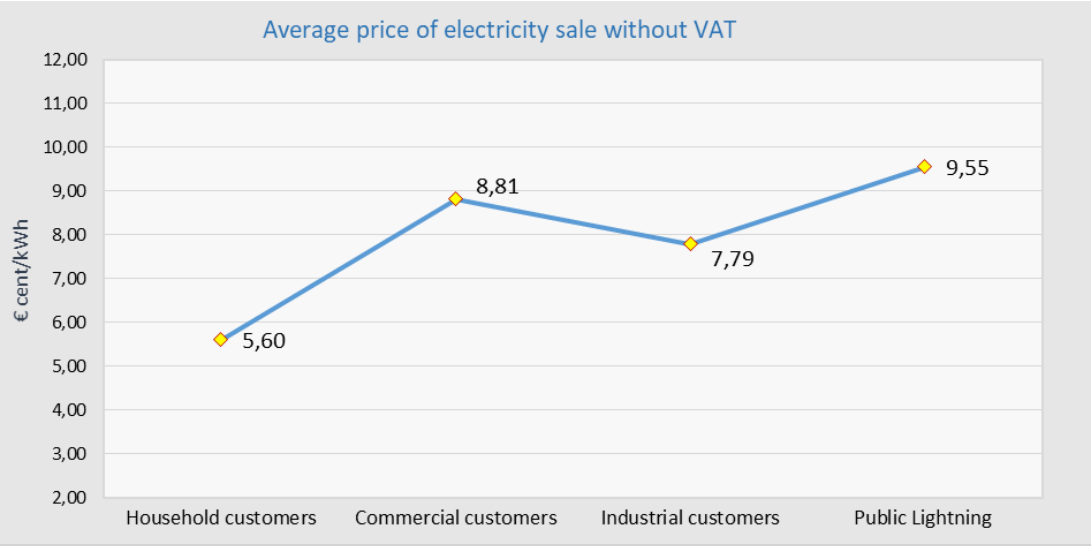


Fig. 6.19 Average price of electricity sale 2021 (without VAT)

For the category of household customers, the average energy price is 5.60 € cents/kWh which is slightly lower than in 2020 when it was 5.66 €cents/kWh, while for non-household customers the average energy price is 8.39 € cents/kWh which is also slightly higher than the average price in 2020 which was 7.30 €cent/kWh.

The figure below shows the average electricity prices for household and non-household customers for the last ten years; prices which do not include VAT.

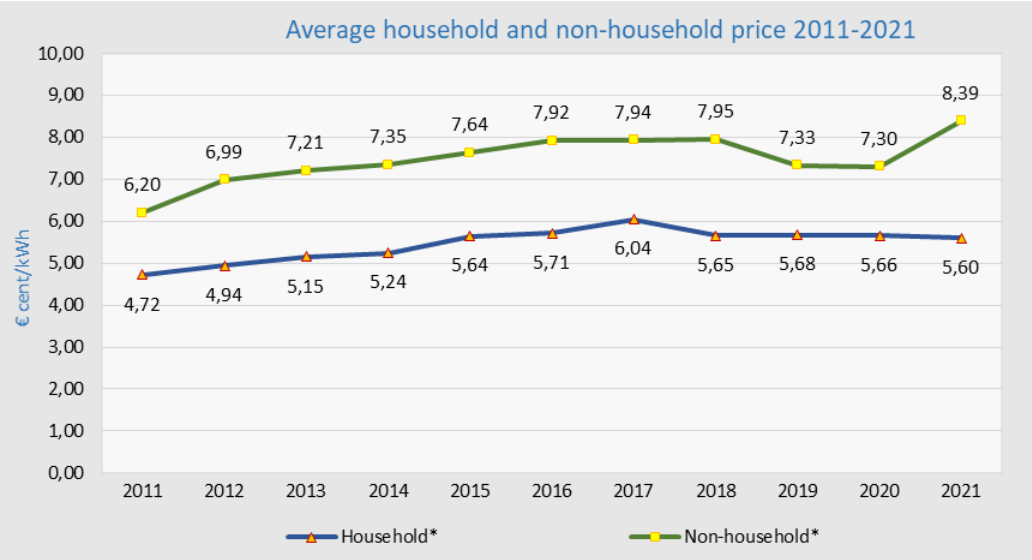
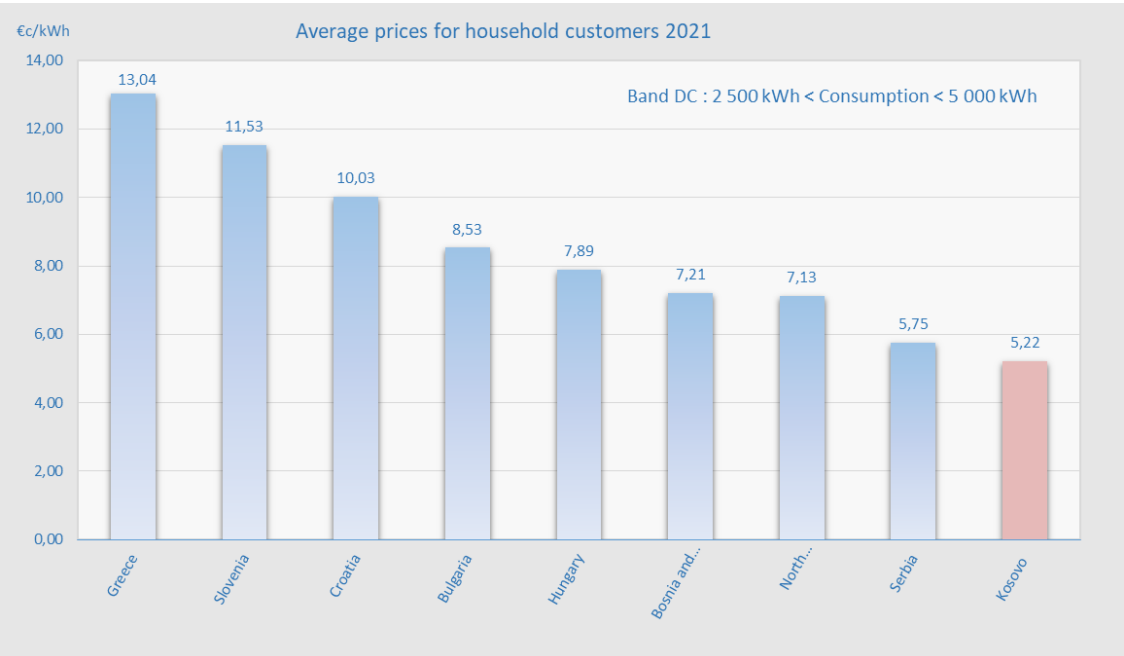


Fig. 6.20 Average price of electricity sale (without VAT) through years

Compared to the countries of the region and based on data released by Eurostat for the first half of 2021, Kosovo has the lowest average price without VAT for household customers. Eurostat data categorized by household consumption 2500-5000 kWh/year, for the first six months of 2021 for some countries, as data for the second half are still missing, are presented in the figure below.



**Source of data: EUROSTAT*

Fig. 6.21 Average prices for household customers for the first six months of 2021 (without VAT)

6.7 Electricity import and export

In general, most of the total demand for electricity in the Kosovo power system is covered by domestic generation dominated by power plants, while the rest is provided by imports which are realized through cross-border lines.

The share of imports in the total energy demand was 19.04 %, marking an increase of about 5.43 percentage points compared to last year, which was about 13.61%.

Through interconnection lines from the regional system to the power system of Kosovo, 3,336,095 MWh have entered, while -686,826 MWh presents the difference between entry-exit, which is divided in net import and deviations towards regional system.

The following table presents electricity flows in the interconnection lines with neighbouring countries.

Tab. 6.24 Electricity flows in interconnection lines in 2021

Flow in interconnection lines MWh	400 kV		220 kV		110 kV		Total	
	Receipt	Dispatch	Receipt	Dispatch	Receipt	Dispatch	Receipt	Dispatch
Albania	72 521	685 001	823 229	79 290			895 750	764 291
Macedonia	354 341	727 996					354 341	727 996
Montenegro	483 966	823 084					483 966	823 084
Serbia	1 518 664	59 689	71 938	143 580	11 437	130 630	1 602 038	333 899
Total	2 429 492	2 295 770	895 166	222 871	11 437	130 630	3 336 095	2 649 270
Balance	-133 723		-672 296		119 193		-686 826	

The import realized for 2020 was 1,311,461 MWh, with which the energy deficiencies were met, especially at peak times in the winter season when the demand was unbearable for the domestic generation.

This amount includes the electricity imported for regulated and unregulated customers, the losses in the transmission network and losses in the distribution network, which is provided through commercial contracts and through the exchange of energy for energy between KEK and KESH.

Electricity import for 2021 was for 472,252 MWh higher than in 2020 which was 839,209 MWh.

Average price of electricity imported under commercial contracts during 2021 was 119.29 €/MWh, which compared to the previous year that was 51.47 €/MWh, this year the average import price is higher for 67.82 €/MWh.

Data on electricity imports and exports are presented in the following table.

Tab. 6.25 Electricity import and export in 2021

Import/Export MWh	Import with contracts	Import as an exchange	Total import	Export with contracts	Export as an exchange	Total export	Net Imp/Eksp
January	199 119	0	199 119	18 851	0	18 851	-180 268
February	134 314	185	134 499	25 577	706	26 283	-108 216
March	232 116	550	232 666	28 430	0	28 430	-204 236
April	84 777	0	84 777	75 744	0	75 744	-9 033
May	27 786	0	27 786	173 822	0	173 822	146 036
June	40 160	0	40 160	169 540	0	169 540	129 380
July	94 812	0	94 812	86 194	0	86 194	-8 618
August	113 409	0	113 409	80 525	0	80 525	-32 884
September	73 907	0	73 907	62 889	0	62 889	-11 018
October	69 811	0	69 811	60 214	0	60 214	-9 597
November	56 889	0	56 889	42 770	0	42 770	-14 119
December	177 326	6 300	183 626	9 376	0	9 376	-174 250
Total	1 304 426	7 035	1 311 461	833 932	706	834 638	-476 823

Average price of electricity exports with commercial contracts during 2021 was 76.70 €/MWh. In addition to contracted export, an amount of energy was exported as an exchange (energy for energy) between KEK and KESH. The amount of energy exported as an exchange is 706 MWh therefore the total export of electricity for 2021 was 834,638 MWh.

As seen from the data presented above, in 2021 Kosovo was a net importer of electricity in the amount of 476,823 MWh, presented by months in the figure below.

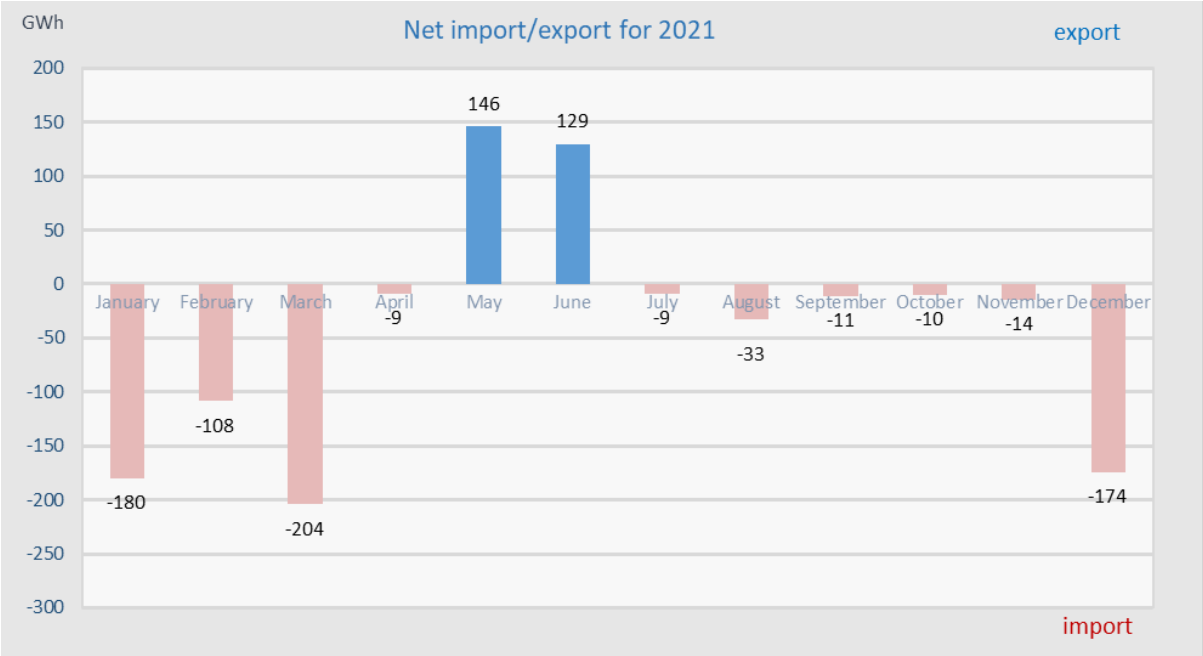


Fig. 6.22 Electricity import and export in 2021

There are electricity surpluses mainly at night hours (at low tariff times), when even in regional systems surpluses appear, which affects the export prices to be significantly lower than import prices.

The price of electricity import and export during the years 2011 - 2021 has increased and decreased. The figure below shows the import and export prices from 2011 to 2021.

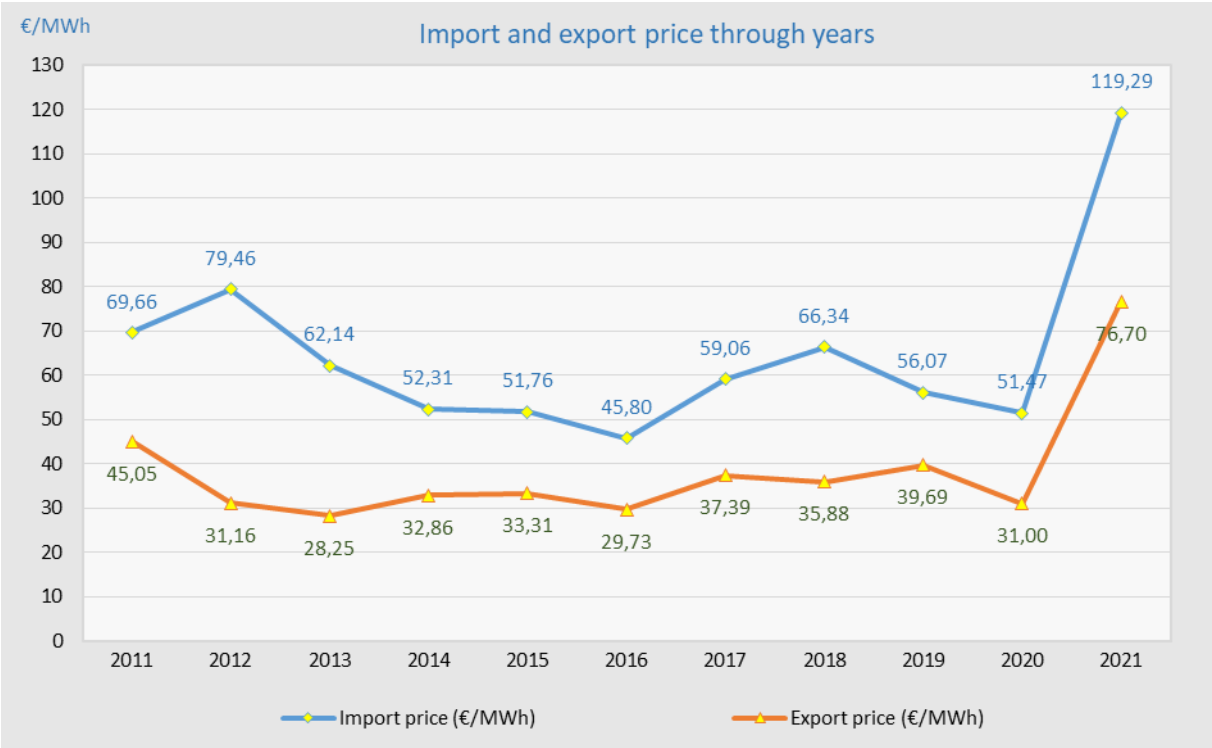


Fig. 6.23 Average price of import and export through the years

6.8 Electricity supply and service quality standards

The standards of electricity supply and service quality are regulated in the Rule on Electricity Service Quality Standards, which was approved by the Board of ERO on 05.06.2019. The purpose of the Rule is to determine the quality indicators of electricity service for customers, related to the services provided, uninterrupted electricity supply and voltage quality.

The electricity supply services included in this rule are:

- service quality;
- uninterrupted supply; and
- voltage quality.

The Rule on Electricity Service Quality Standards presents individual and general indicators of the quality of electricity service, uninterrupted supply indicators, as well as voltage quality indicators.

It should be noted that the quality standards of electricity supply and service are an important element of the energy sector regulation. These standards are set so that the quality of electricity supply and service, as well as the quality of voltage to customers is continuously improved by the energy enterprise.

During this reporting year, the standards of electricity supply and service quality were monitored according to the following areas:

- Continuity of supply;
- Voltage quality; and
- Commercial quality.

6.8.1 Continuity of supply

Continuity of supply is related to the availability of the power system, respectively displays the number and duration of interruptions per customer within a year.

Power interruptions are recorded by the Transmission System Operator (TSO) and the Distribution System Operator (DSO). Based on the Rule on Electricity Service Quality Standards, power interruptions are classified as short and long interruptions. Any interruption of power supply lasting up to 3 minutes is classified as a short interruption, and any interruption longer than 3 minutes is classified as a long interruption. It is worth noting that according to the Rule in question and international standards, only long interruptions are registered and reported by system operators. Long interruptions are classified as planned and unplanned.

Continuity of supply is measured by indexes:

- SAIDI - System average interruption duration index;
- SAIFI - System average interruption frequency index;
- ENS - Energy Not-Supplied; and
- AIT – Average Interruption Time

During 2021, the continuity of electricity supply was monitored by the Regulator for both system operators: Transmission System Operator (TSO) and Distribution System Operator (DSO).

6.8.1.1 Measuring indexes reported by TSO

According to the Rule on Electricity Service Quality Standards, the general supply indicators that the Transmission System Operator must record and report are:

- Average time of interruptions – AIT;
- Energy not-supplied- ENS.

The average interruption time (AIT) in the transmission network represents the cumulative duration of power interruptions per customer.

The energy not-supplied (ENS) is the energy that would have been supplied by the system if there had been no power interruption.

The overall metering indexes reported by the TSO for electricity supply and service quality standards for 2021 are presented below.

- AIT – for planned interruptions was 18 minutes or 0.3 hours;
- AIT – for unplanned interruptions was 44 minutes or 0.73 hours;
- ENS - for planned interruptions in the transmission system was 0.335 GWh; and
- ENS - for unplanned interruptions in the transmission system was 0.81 GWh.

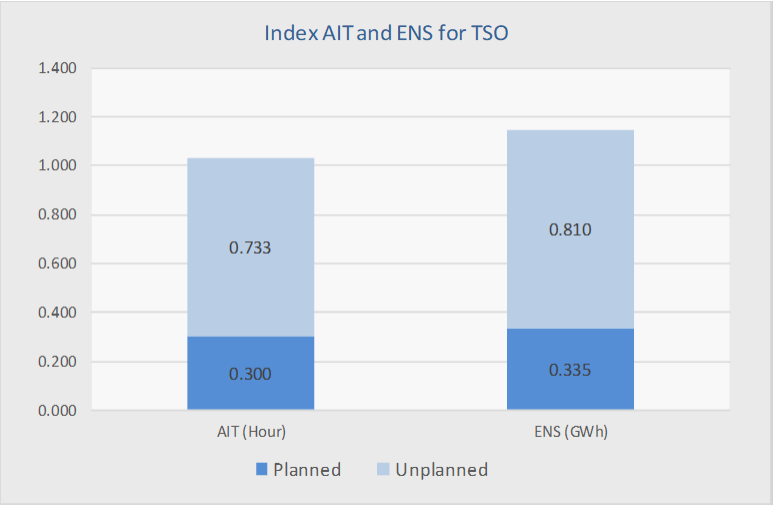


Fig. 6.24 Measuring indicators AIT and ENS for KOSTT for 2021

The figure below shoes the measuring index reported by TSO on electricity supply and service quality standards, namely on energy through 2015-2021.

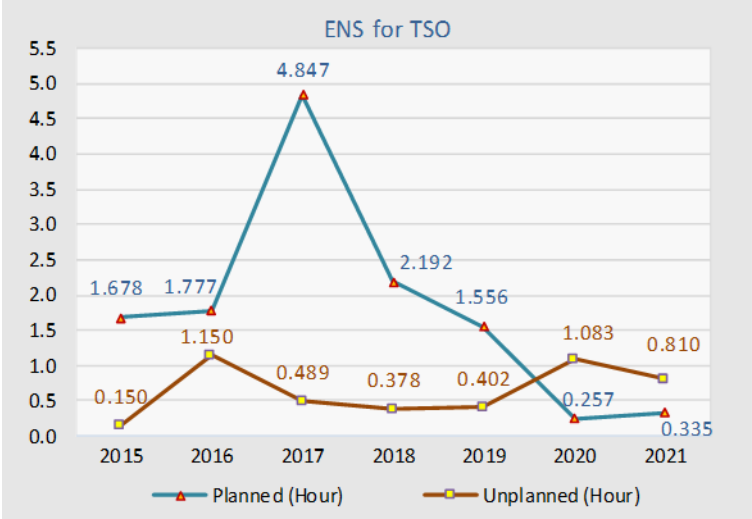


Fig. 6.25 Measuring index ENS for TSO for the period 2015-2021

According to the data reported for the ENS measuring index, during 2021 there is a decrease or improvement of this index by -14.55% compared to 2020, respectively there is an increase of 30.35 % in planned interruptions, while a decrease of -25.20% in unplanned interruptions.

6.8.1.2 Measuring indexes reported by DSO

The measuring indexes reported by the DSO on quality standards of electricity supply and service for 2021 are presented below.

- SAIDI - for planned interruptions in the distribution system was 20.89 hours;
- SAIDI - for unplanned interruptions in the distribution system was 59.94 hours;
- SAIFI - for planned interruptions in the distribution system was 6.98;
- SAIFI - for unplanned interruptions in the distribution system was 51.99;
- ENS - for planned interruptions in the distribution system was 27.73 GWh; and
- ENS - for planned interruptions in the distribution system was 47.80 GWh.

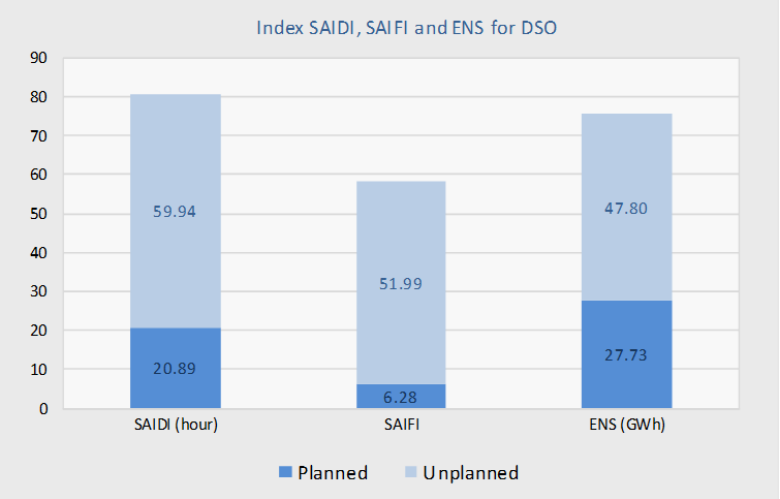


Fig. 6.26 Measuring indexes SAIDI, SAIFI and ENS for DSO for 2021

The following figures show the measuring indexes reported by the DSO for electricity supply and service quality standards during the years 2011 - 2021 for the SAIDI and SAIFI index, while for the ENS index through the years 2015 - 2021.

Fig. 6.27 Indicators SAIDI, SAIFI and ENS for DSO for the period 2011-2021 and 2015-2021

Based on the data presented above, it is noticed that the measuring indexes SAIDI, SAIFI and ENS in general did not have any improvement in 2021 compared to 2020.

According to the data reported for the SAIDI measuring index during 2021, it is noticed that there has been no improvement of this index compared to 2020, which means that in 2021 there is an increase of interruptions of 6.9% compared to 2020. During a more detailed analysis in relation to SAIDI index, it is noticed that in 2021 there is a decrease of planned interruptions of 5.69% compared to 2020, as well as an increase of unplanned interruptions of 12.12 % in 2021 compared to 2020.

From the analysis of the SAIFI measuring index, it is noticed that during 2021 there is no improvement of this index compared to 2020, there is increase compared to 2020. It is worth mentioning that during the more detailed analysis of the SAIFI index, it is noticed that in 2021 there is an increase of 4.78% in the frequency of planned interruptions (SAIFI) per customer, compared to 2020, as well as an increase of 9.56% in the frequency of unplanned interruptions per customer, compared to 2020.

During 2020, in general there has been no improvement of energy not-supplied (ENS) compared to 2020, which according to data it is noticed that in 2021 there is an increase of 28.04% compared to 2020. During the more detailed analysis of the ENS index, it is noticed that in 2021 there is an increase of 86.98% of energy not-supplied for planned interruptions, compared to 2020, whereas an increase of 8.24% in energy not-supplied for unplanned interruptions, compared to 2020.

6.8.2 Voltage quality

The voltage quality is related to the technical aspect of the power system and is compared to the nominal voltage, which during this period was mainly monitored through registry of customer complaints regarding voltage quality.

During 2021, the number of complaints submitted by costumers to the DSO regarding the voltage quality was 163 complaints, out of which 103 or 63.19% were resolved whereas 60 or 36.81% are under the review process.

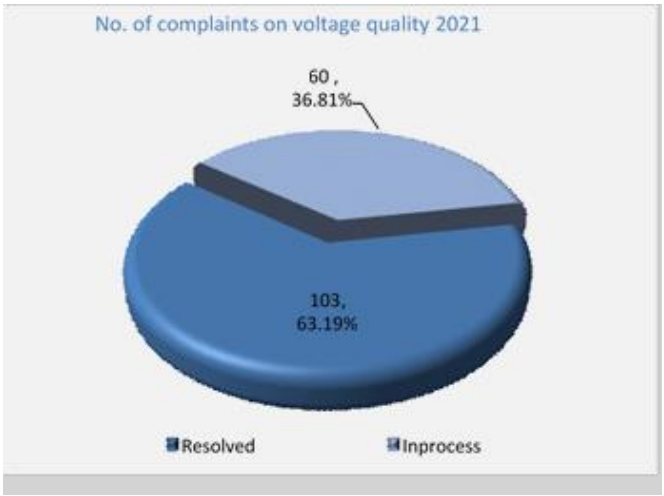


Fig. 6.28 Customer complaints on voltage quality in 2021

Below is presented the figure on data of the status of resolved customer complaints on voltage quality in DSO for 2021.

Fig. 6.29 Status of resolved customer complaints in 2021

So, the figure above shows that DSO, from 103 resolved customer complaints on voltage quality, has approved 99 or 96.12 % of complaints in favour of customers whereas has refused 4 or 3.88%.

The figure below shows customer complaints on voltage quality by years, where it is seen that until 2017 there has been a continuous increase of customer complaints regarding voltage quality,

whereas from 2018 it is noticed that there is a decrease of customer complaints on voltage quality, and that in 2021, compared to 2020 there is a decrease of complaints on voltage quality of 85.28%.

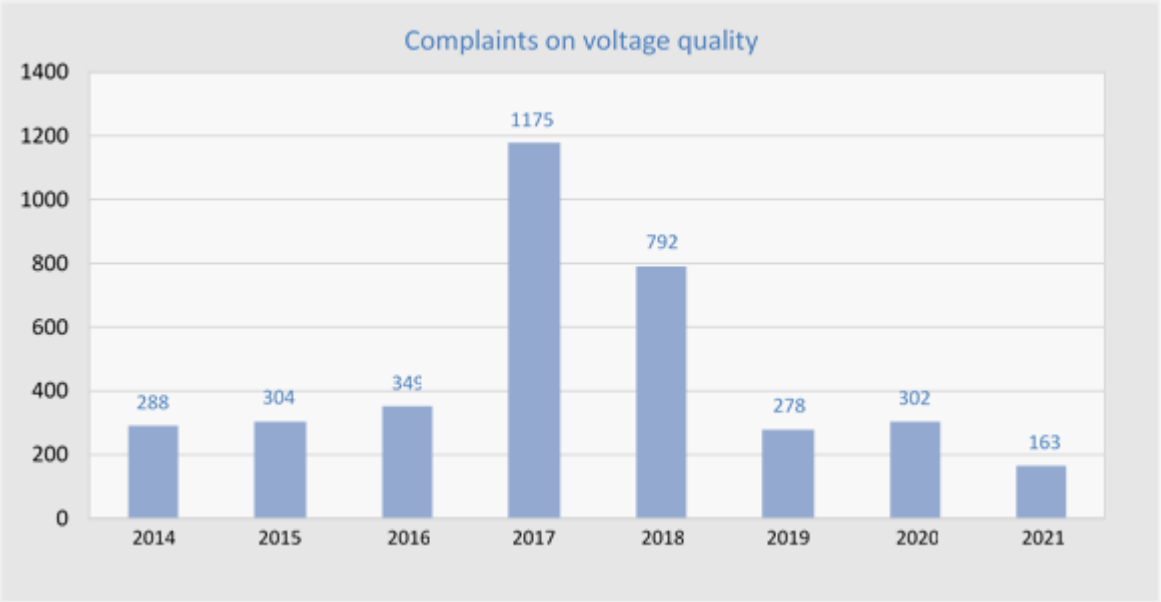


Fig. 6.30 Complaints on voltage quality by years

Voltage quality standards are defined in the Rule on General Conditions of Energy Supply, the Distribution Code and the Distribution Metering Code.

6.8.3 Commercial quality

Commercial quality determines the efficiency and accuracy of customer complaints and requests. The regulation of commercial quality takes into account the mutual relationship between customers and suppliers.

For the purpose of analysing commercial quality, the data obtained from the licensee are presented in three categories that directly affect customer issues. These categories are:

- New Connections;
- Electro-Energetic Consents; and
- Customer Complaints

6.8.3.1 New connections

In commercial quality standards, among other things, new connections are also incorporated, through which is recorded how quickly the energy enterprise takes measures for execution of new connections.

During 2021, a total of 28,382 regular requests for new connections were registered for tariff groups 4, 5, 6, 7 and 8, while 27,836 or 98.07% requests for new connections were approved, whereas the rest is in the registration process. It should be noted that there were 3,307 requests for new connections transferred from the previous year.

From the data of KESCO, it can be seen that from the total number of requests for new connections, the highest demand was from household customers (tariff group 5 and 6) with 24,635 or 86.79%, followed by 3,401 or 11.98% requests for new connections of the commercial tariff group 0,4 kV Category II - tariff group 4, whereas there were 346 or 1.22% of requests for tariff group 8 - Public lighting.

Of the total number of applicants' registrations as customers in the "CCP" billing program, household customers amount for 25,558 or 86.25%, followed by tariff group 4 (0.4 kV category II - commercial) with 3,701 or 14.48% of registrations, as well as the tariff group 8 (public lighting) with 374 or 1.26% of registrations.

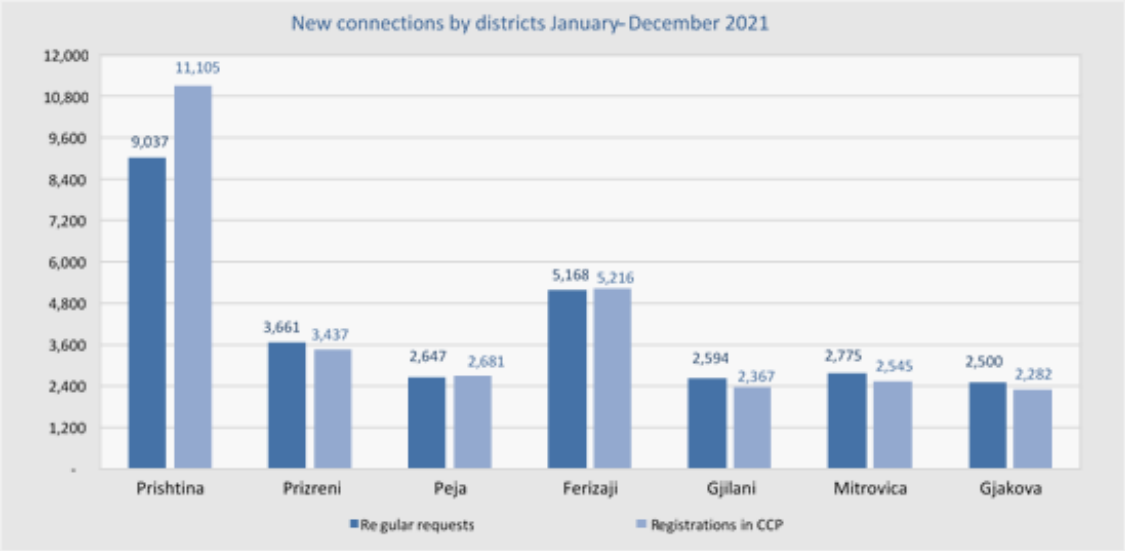


Fig. 6.31 New connections by districts for 2021

From the chart above, it is noticed that during 2021, from the total number of requests for new connections, most requests were registered in the Pristina district with 9,037 or 31.84% of requests, followed by Ferizaj district with 5,168 or 18.21 %, whereas the lowest number of requests for new connections were registered in the district of Gjakova, respectively 2,500 or 8.81%. It should also be emphasized that in relation to the registration of requests in the Customer Care Package, from the overall number, the highest number of registrations were in the Pristina district with 11,105 or 37.48%, followed by Ferizaj district with 5,216 or 17.60%, whereas the lowest number of registrations was recorded in the district of Gjakova with 2,282 or 7.70 %.

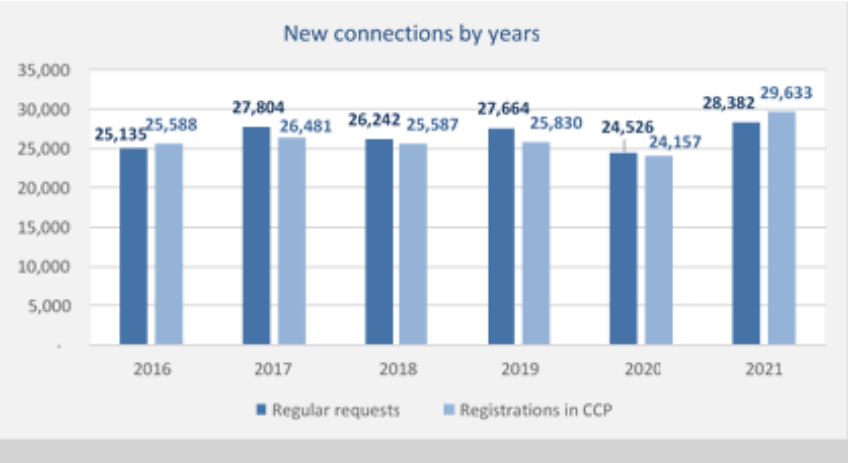


Fig. 6.32 New connections by years

The chart above shows that during 2021 there were 15.72% less requests for new connections than in 2020, and 22.67% more customer registrations than in 2020.

6.8.3.2 Electro-Energetic Consents

From the presented data, it can be seen that during 2021, 1,942 requests for electro-energetic consents were submitted to KEDS, whereas 51 requests were transferred from 2020.

Tab. 6.26 Electro-energetic consents in 2021

Districts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Prishtina	28	36	46	49	32	59	42	50	39	30	49	50	510
Mitrovica	13	4	16	5	4	16	11	9	16	14	17	23	148
Peja	16	15	28	27	22	25	15	21	19	33	31	30	282
Gjakova	14	20	25	23	11	16	21	11	11	21	18	7	198
Prizreni	18	17	23	22	8	15	11	14	14	19	24	20	205
Ferizaj	18	37	47	30	28	27	32	50	32	56	41	37	435
Gjilani	8	7	14	14	9	14	19	16	19	9	16	19	164
Total	**115**	**136**	**199**	**170**	**114**	**172**	**151**	**171**	**150**	**182**	**196**	**186**	**1,942**

From the table above, it is noticed that from the total number of requests for electro-energy consents for 2021, most requests were registered in Prishtina district, namely 510 or 26.26%, followed by Ferizaj district with 435 or 22.40%, whereas the lowest number of request was in the district of Mitrovica, respectively 148 or 7.62%.

Tab. 6.27 Electro –energetic consents by districts for 2021

Districts	Requests for EEC 2020	Reviewed - EEC	Reviewed-Information	Reviewed-Response	Sent to other departments	In process
Prishtina	510	394	52	22	32	26
Mitrovica	148	105	19	9	10	10
Peja	282	210	13	41	15	9
Gjakova	198	122	35	12	32	5
Prizreni	205	148	33	9	2	14
Ferizaj	435	333	60	21	21	11
Gjilani	164	124	20	4	12	8
Total	**1 942**	**1 436**	**232**	**118**	**124**	**83**

The table above shows that from 1,942 applicants' requests for electro-energetic consents for 2021 and 51 transferred from 2020, 1,436 requests were reviewed and the electro-energetic consent was issued, 232 requests were reviewed and the parties were provided information on their request for electro-energetic consent, whereas according to KEDS data, 124 other requests were also reviewed, but according to the Department of electro-energetic consents, within KEDS, it was concluded that these requests should not be issued the electro-energetic consent, but they were delegated to other departments; the remaining part of the requests is under review.

Below is the chart of applications for electro-energetic consents for the period 2014-2021, and the chart clearly shows that in each year there has been an increase of requests for electro-energetic consents from applicants for connection, which compared to 2020 shows an increase of 525 or 37.05% applications.

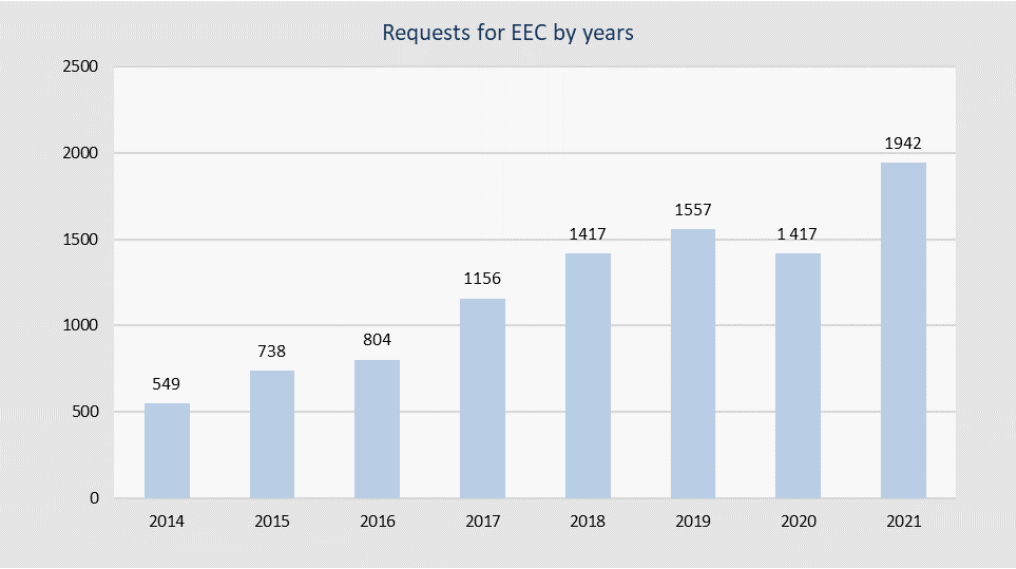


Fig. 6.33 Requests for electro-energetic consents for the period 2014 – 2021

6.8.3.3 Customer complaints to the supplier - KESCO

According to KESCO's reported data, during 2021, there was a total number of 5,528 customer complaints registered at KESCO's Costumer Department and 1,918 complaints transferred from the previous year, whereas 4,900 were resolved/completed.

Below is a presented a graph of registered and resolved customer complaints for 2021 by districts.

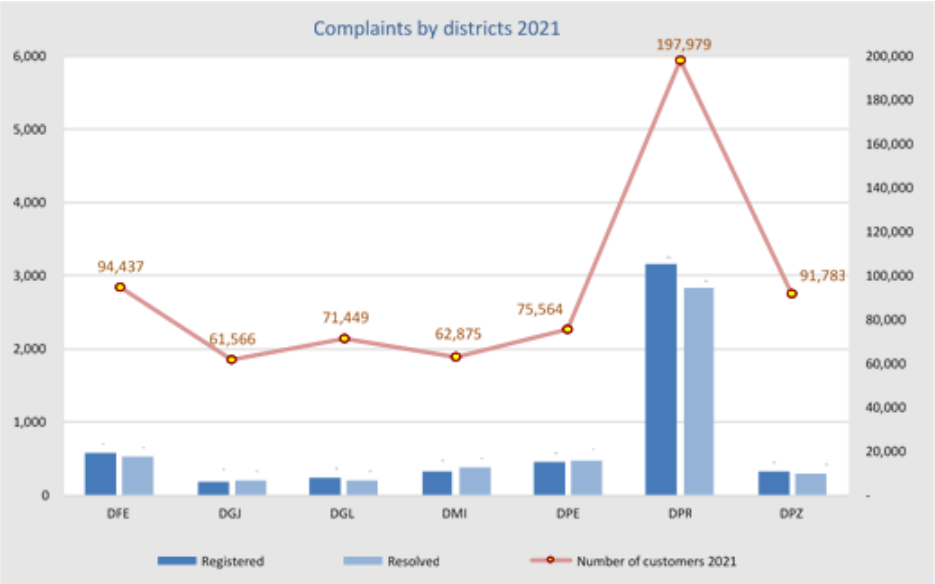


Fig. 6.34 Complaints and the number of customers by districts, 2021

The figure above shows that the highest share of customer complaints registered in KESCO during 2020 is in the district of Pristina with 60.14%, followed by the district of Ferizaj with 10.92%%, while the lowest share is in the district of Gjakova with 3.63 %. It should be emphasized that the largest number of complaints in the district of Pristina is mainly due to the fact that the district of Pristina has the largest number of customers in Kosovo. Also from the figure above it is seen that the highest share of customer complaints resolved by the Customer Department in KESCO compared to the total number of complaints resolved at the country level is in the district of Pristina with 57.68%, followed by the district of Ferizaj with 10.69%, whereas the lowest share is in the district of Gjakova with 4.11%.

Below is the report of customer complaints filed at KESCO with the number of invoices/customers by months.

Tab. 6.28 Reporting of complaints and number of customers by months for 2021

Month	Complaint	Number of invoices/ customers	Ratio complaints/customers
Jan	601	631,106	0.10%
Feb	565	631,854	0.09%
Mar	554	633,798	0.09%
Apr	572	635,942	0.09%
May	406	637,409	0.06%
Jun	334	639,963	0.05%
Jul	328	642,408	0.05%
Aug	309	644,673	0.05%
Sep	363	646,401	0.06%
Oct	360	649,414	0.06%
Nov	390	652,159	0.06%
Dec	476	655,653	0.07%
Total	**5,258**	**7,700,780**	**0.07%**

From the data reported by the supplier KESCO, the number of complaints registered during 2021 is 5,258, representing 0.8 % of the total number of customers, namely 0.07% of the total number of annual bills.

The figure below shows the number of registered and resolved complaints by nature of complaints for 2021.

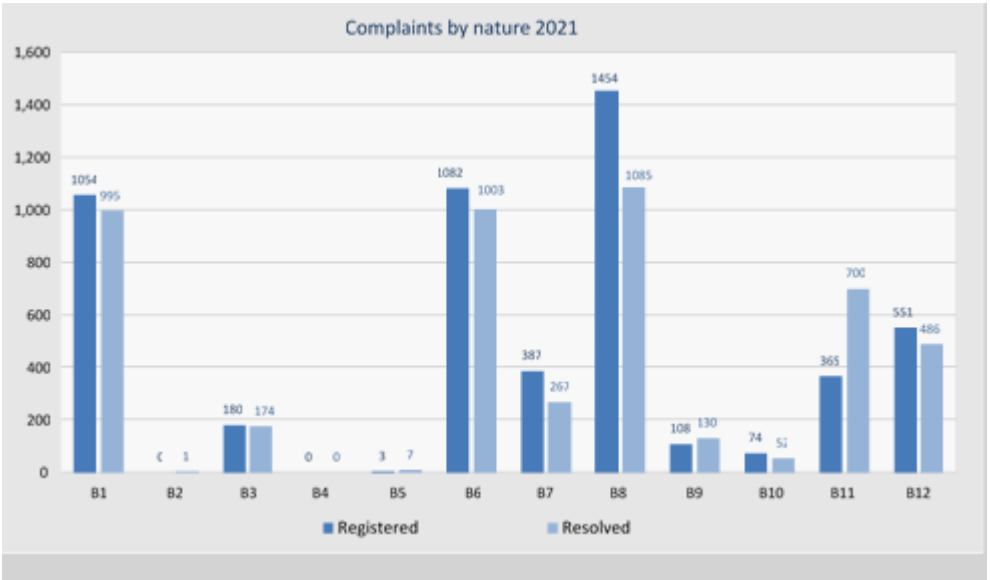


Fig. 6.35 Customer complaints by nature for 2021

Below are presented the descriptions of the nature of complaints submitted to the supplier- KESCO:

***B1* -. *Unregistered payment* –** this nature of complaints concerns if the customer notices that the payment made by him/her is not registered in his/her account (his / her code), then the customer must address KESCO, and file a complaint for unregistered payment, attaching his receipt and other evidence.

B2 - Error in initial balance **-** this nature of complaints concerns when the customer has noticed that an error has been made during the transfer of the initial data, and as such seeks to improve the initial balance.

B3 – Non-receipt of invoice **-** this nature of complaints has to do with the fact that electricity bills are not received properly or are not received at all, then based on this, the customer must submit a complaint of this nature at KESCO so that this does not happen in the future.

B4 –Over the limit **-** this nature of complaints is related to the customer complaining on being billed over the limit due to reading or billing errors.

B5 - Change of the lump sum **-** this nature of complaints has to do with the fact that in cases when the customer has been billed without being metered for a while, now upon the instalment of the electric meter, the customer wants to be billed according to the metering recorded on the meter.

B6 - Incorrect reading **-** this nature of complaints occurs when the metered electricity consumption (kWh) of the customer does not match the billed electricity consumption. In such cases, the customer must file a complaint of this nature.

B7 - Irregular reading **-** this nature of complaints has to do with the fact that the electricity meter that records the energy consumed is not being read regularly, month by month, and consequently there is an accumulation of electricity consumption in only one bill.

B8 - Inaccurate meter - In case the customer suspects that the meter is providing inaccurate metering, then such customer must address KESCO and file a complaint for inaccurate metering of the metering point.

B9 - Request for debt settlement **-** this nature of complaints relates to the fact that if a customer has privatized an enterprise and in the transactions of the privatized enterprise is a debt that belongs to the old enterprise, then such debt should be required to be settled and the name changed, then in such cases, the customer must submit all the documents of the privatization process and the data of the enterprise, in order to proceed with the complaint.

According to a court decision, KESCO JSC. is obliged to settle a debt in the customer's transactions, then the customer must address KESCO with all relevant documentation.

In cases when the customer has property, and such property has been occupied by other people and there is debt accumulated by other people, then the customer must address KESCO and submit the documents issued by the Kosovo Property Agency, which prove that the property has been occupied, then based on the provided documents the customer requests that the disputed debt be settled, however the undisputed debt must be paid.

B10 - Disconnection without notice **-** this nature of complaints has to do with whether the customer estimates that an outage has taken place without notice.

B11 - Others –when none of the above points is applicable to the nature of customer complaint, then the customer has to describe his own complaint.

B12 –Unauthorized use of electricity (Return of losses) **–**this nature of customer complaints deals with the complaints which are related to the unauthorized use of electricity, such as uncontracted use of electricity and electricity theft.

From the data reported by KESCO for 2021, it is noticed that from the total number of customer complaints, the highest number of complaints were related to the inaccurate meter, namely 1,454 or 27.65%, followed by complaints about incorrect reading, with 1,082 or 20.58 %, whereas the lowest number of complaints were related to the change of the lump sum, respectively only 3 complaints or 0.06%.

According to KESCO data, in 2021 the number of registered customer complaints related to reading errors at the metering point (incorrect reading and irregular reading) was 1,469 or 27.94% of the overall number of filed customer complaints; in 2020 the number of complaints that were related to errors in reading the metering point was 2,246, in 2019 there were 1,589 complaints, in 2018 there were 1,500 complaints, and in 2017 there were 3,955, whereas in 2016 the number of complaints was 4,504. From the reported data it is noticed that in 2020 there is a decrease of complaints regarding reading errors at the metering point (incorrect reading and irregular reading). In general, it should be noted that the number of customer complaints on errors in the reading of the metering point is declining, and this is owning to the new way of reading at the metering point by hand-held unit, which has significantly improved the reading of the metering points and has reduced the possibility of errors while reading the metering point, because the reading and billing are done at the same time.

Below is presented the figure with the data of complaints resolved by KESCO in 2020, or more precisely the status of resolved complaints.

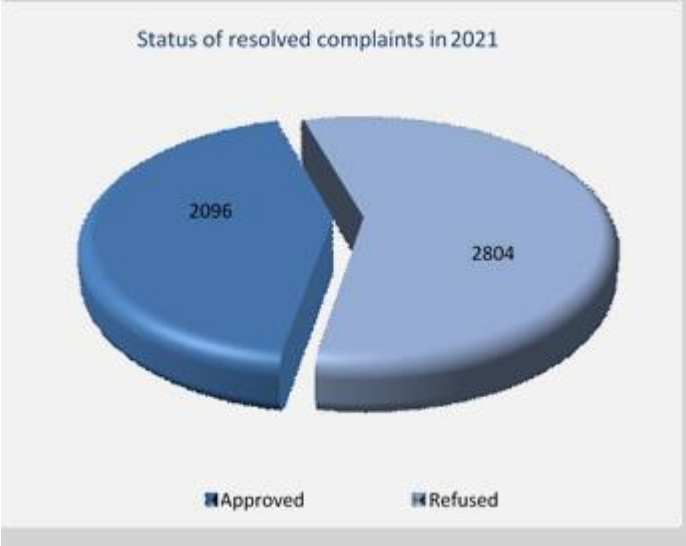


Fig. 6.36 Status of resolved customers complaints for 2021

Therefore, from the figure above it is noticed that KESCO, out of 4,900 resolved customer complaints, approved 2,096 or 42.78% in favour of customers and refused 2,804 or 57.22%.

Below is presented the chart with the ratio of filed and resolved complaints to the supplier KESCO by years 2014-2021.

Fig. 6.37 Customer complaints in KESCO by years

7. THERMAL ENERGY SECTOR

The thermal energy sector in Kosovo consists of four systems: DH Termokos - Prishtina, DH Gjakova - Gjakova, DH Termomit - Mitrovica, and Zvecan. This sector has a very limited coverage locally, which meets approximately 3-5% of the total heat demand in Kosovo.

7.1 Technical characteristics of thermal energy sector

The Kosovo thermal energy sector consists of 4 thermal energy (district heating) systems with an installed generation capacity estimated to be around 289 MW_{TH}. The district heatings Termomit, Mitrovica and Zvecan, due to known circumstances, do not meet the licensing/regulation and monitoring requirements of ERO, thus preventing the provision of the relevant updated data; therefore, detailed data for DH Termokos and DH Gjakova are provided below.

7.1.1 Thermal energy production plants

The thermal power plants of DH Termokos are comprised of the main heating plant with a total installed capacity of 120 MW_{TH}, and supporting heat plant at the University Clinical Center with a capacity of 14 MW_{TH}. Upon the connection of the thermal energy extraction station in units B1 and B2 of TPP Kosova B, to this capacity is also added the installed capacity of the 140 MW_{TH} cogeneration. It should be emphasized that the heating boilers at DH Termokos are not decommissioned but they will serve as a reserve capacity to be activated in the event of any eventual breakdown in TPP Kosova B units.

The new biomass heating plant of the city of Gjakova is equipped with two units for production of thermal energy only with an installed capacity of 2 x 5.5 MWTH respectively 11 MWTH, and a cogeneration unit with a capacity of thermal energy production of 4 MWTH and a production capacity of electricity 1.12MWEL. Therefore, with the new heating plant DH Gjakova has a total installed thermal capacity of thermal energy production of 15 MWTH.

7.1.2 Thermal energy distribution systems

Kosovo thermal power distribution systems are made of a primary distribution network which is extended up to the substation supply point, and from a secondary network which is extended from the substation to the end-users.

The primary distribution network of DH Termokos has a track length of about 42 km, respectively pipeline length of 84 km. An integral part of the distribution network is also the pumping station and heat exchangers located in the Sunny Hill and 471 active substations, which are the dividing point between the primary and secondary grids. In addition to the existing distribution network, in 2014 the thermal energy transportation network TPP Kosova B - DH Termokos was built in the length of about 10.5 km.

The primary distribution network of DH Gjakova is extended in a length of about 15.5 km of track, respectively with a pipeline length of about 31 km. An integral part of this network are also about 180 active substations, which are dividing points between the primary and secondary networks.

A summary of the technical characteristics of the district heating systems of DH Termokos and DH Gjakova is presented in the table below.

Tab. 7.1 Technical data of thermal energy systems

Company (City)	Installed capacity [MW_{TH}]	Operational capacity [MW_{TH}]	Thermal energy network	
			Network length (track) [km]	No. of substations
TERMOKOS (Pristina)	2 x 58 = 116	2 x 49.3 = 98.6	Dis. network	
	2 x 7 = 14	2 x 6.3 = 12.6	42,0	481
	1 x 4 = 4	3,6	Trans. Network	(active-471)
	[Cogeneration] 2 x 70 = 140	2 x 68.7 = 137.4	10,5	
Sub-total	274,0	252,2	52,5	481
DH GJAKOVA (Gjakovë)	2 x 5.5 = 11	2 x 5.5 = 11	Dis. network	302
	[cogeneration*] 1 x 4 = 4	[cogeneration*] 1 x 4 = 4	15,5	(active-180)
Sub-total	15,0	15,0	15,5	302
Total	**289,0**	**267,2**	**68,0**	**783 (Active - 651)**

** Cogeneration unit of DH Gjakova has the thermal capacity of 4MW_{TH} and electrical capacity 1.12 MW_{EL}*

7.2 Main developments in thermal energy sector

Regarding the development of the thermal energy sector in general, it is initially important to note that, in October 2021, the Feasibility Study for new thermal energy systems (district heating) has started in eight cities of Kosovo. This study, which is conducted within the WBIF platform where the leading financial institution is the European Investment Bank, will analyse the economic-financial and technical reasonability for the creation of thermal energy systems in 8 cities of Kosovo - Peja, Prizren, Gjilan, Ferizaj, Mitrovica, Drenas, Obiliq and Zvecan.

This project will have a positive impact on Kosovo's energy stability in the first place by significantly reducing the use of electricity for heating, as well as will have a positive effect on environmental protection by contributing to achieving energy efficiency and renewable energy sources targets.

7.2.1 Developments in DH Termokos

In order to meet the growing demands for connection to the system of DH Termokos, during 2021 a number of rehabilitation and expansion projects have been developed, mainly in the distribution network, which are at different stages of development. Despite the obstacles caused by the COVID-19 pandemic, significant progress has been made in the development of these projects.

In April 2021, the European Commission Project IPA 2015 was completed: Rehabilitation of the network and substations, as well as expansion of the network and new substations. Within this project the following are realized:

- Rehabilitation of the distribution network (replacement of old pipelines with new pre-insulated pipes)- around 3.28 km track respectively 6.5 km pipeline; rehabilitation includes the regions: Center: 1 km track, Dardani: 0.79 km track, Sunny Hill: 1.18 km track, Ulpiana 0.24 km track and Kalabria, a very short segment of only 0.07 km.
- Rehabilitation of 121 thermal substations of residential, commercial and institutional buildings - Dardania: 37, Ulpiana: 31, Center: 29, Sunny Hill: 19, UCCK: 5. The rehabilitation also includes the installation of control valves of differential pressure.
- Expansion of the network in total 3.96 km track, respectively 7.92 km of new pipeline - Center: 0.66 km track, Sunny Hill: 0.048 km track, 0.574 km track, Dardania: 0.617 km track, Kalabria: 1,028 km track and Mati: 1,035 km track.

- 51 new thermal substations – Center: 12, Ulpiana: 5, Kalabria: 29, Mati: 4 and 1 thermal substations of the facility of Kosovo Customs Directorate Facility.

Fig. 7.1 Views from works in rehabilitation of the network and substations

Upon the finalization of this project, there is expected to be a reduction of losses of the thermal energy distribution network and improvement of the quality of heating in some most problematic parts; also, the expansion of the network has increased the number of customers who benefit from thermal energy supply (district heating), respectively increased the area for heating of spaces covered by the district heating supply service of Termokos.

Following the financial agreement between the German Government and the Government of Kosovo for financial support under the Program for the energy sector VIII and IX – in May 2021 the project for rehabilitation and expansion of the network of DH Termokos started. This project led by the German Development Bank (kFW) is in the preparatory phase and contains these main components:

- Rehabilitation of the distribution network of DH Termokos: Rehabilitation of the network (replacement of pipelines) in the length of 6.5 km of route, in the neighbourhoods of Center, Ulpiana and Sunny Hill;

- Expansion of the network with new segments in total length of 16.15 km track: Mati 1 7.15 km, Center east 3 km, Arberia 3 km, and network densification in different parts of the city 3 km track;
- Rehabilitation and modernization of 235 existing substations in the neighbourhoods of Ulpiana, Dardania, Sunny Hill and Center;
- Installation of 320 new substations in almost all neighbourhoods of the city - where the network expansion and densification is expected; it should be emphasized that the largest number of new substations (141) are planned in the Mati 1 neighbourhood.
- Construction of heat storage tank with a capacity of 800 m^3.
- Improvement of the pressure maintenance system in the primary network, including the installation of new pumps, and the remote control system - SCADA.

This project, which is in the implementation phase, is expected to be financed in large part as a donation from the German Government in the amount of €10 million and the Government of Luxembourg €2.3 million; funds that will be allocated and managed through KfW, as well as smaller amount of € 1.5 million is planned as self-financing from Termokos.

Due to delays in the tendering process for the supply and installation of meters, even during 2021, the execution of the works of the MCC-USA project ("Millennium Challenge Corporation") 'Measurement of district heating' within the Program 'Spectrum of Reliable Energy' did not commence. However, in addition to the completion of the tendering phase, preparatory and assistance activities have been developed within this project.

By installing individual heat meters at the apartment level, billing based on metered consumption will be facilitated, and by creating a modern billing system for Termokos, the aim is to achieve efficient use of thermal energy. Otherwise, the project 'Metering of District Heating' in the estimated value of $ 10.9 mil, as a donation from MCC - USA, contains the following components:

- - Installation of individual thermal energy meters respectively heat allocators;
- - Installation of thermostatic valves and circulating pumps;
- - Development of software for billing and reading of thermal energy consumption;
- - Assistance in improving billing services based on metered consumption.

The complete realization of this project will enable the metering of consumption and the implementation of billing based on the registered metering of consumption, which will achieve the saving of thermal energy that will release the capacities for expansion of the customer base, respectively will enable the connection to the heating system of a significant number of customers who currently use electricity for heating their areas.

Regarding development projects, it should be noted that these projects are included in the ten (10) year Development Plan of DH Termokos, approved by the Board of ERO. The Development Plan presents the effective measures that will be taken to guarantee the suitability of the system and to ensure the best possible supply of thermal energy (district heating), including plans for rehabilitation projects and expansion of district heating system infrastructure in the Municipality of Prishtina, during the next ten (10) years.

7.2.2 Developments in DH Gjakova – Fuel Change and Cogeneration Project

The main development project of DH Gjakova is the construction of a new Biomass Heating Plant that includes the electricity and thermal energy co-generation unit. During 2021, the works with the test phase of the cogeneration unit, that took place in the period 27 May - 7 June 2021, were completed, while the testing phase of thermal energy generation units was completed earlier in January 2021. This project in the value of about €13.5 million, is financially supported by the European Commission - Kosovo Office through IPA-2015 funds

Main data:

- 2 thermal energy (heat) only production units: with a capacity of 2 x 5.5 MW_{TH}
- 1 cogeneration unit of electricity and thermal energy with thermal capacity: 4 MW_{TH}; and Electrical Capacity: 1.2 MW_{EL}
- Total thermal capacity: 15 MW_{TH} and electricity capacity 1.2 MW_{EL}

The project, among others, includes the installation of relevant equipment for the new heating plant and connection to the thermal energy distribution network, respectively electricity.

Fig. 7.2 New biomass heating plant

This project will enable an operational and financial sustainability of DH Gjakova, where concretely the main impact is the replacement of fuel – heavy fuel oil (which due to the high cost has been subsidized by the Kosovo budget to a large extent) with biomass. In addition to quality supply of customers with district heating, this project also has a positive impact on increasing energy efficiency and environmental protection.

Following the efforts for rehabilitation of the district heating system and the improvement of the system performance, respectively the enterprise, at the end of 2021 the realization of the project “Improving the performance of the district heating system of Gjakova” has started; This project is financially supported by the State Secretariat for Economic Affairs of Switzerland (SECO), in the

amount of € 5.5 million and by the Municipality of Gjakova in the amount of € 500.000 (five hundred thousand).

This project, which is the initial phase and aims to rehabilitate the distribution system and increase energy efficiency, as well as increase the operational and financial performance of the enterprise; contains 4 main components:

- Corporate development of the enterprise – district heating of Gjakova;
    - Rehabilitation of the distribution network and substations: it is planned to replace about 9.7 km of pipeline, where for the most part the replacement of 6.2 km of old steel pipes is forecast; rehabilitation of 342 thermal substations including installation of pressure/temperature/flow control equipment (instruments) and measuring equipment;
- Rehabilitation of the internal network (secondary network) and 14 thermal substations of the Gjakova Regional Hospital; and
- Connection of 13 new facilities to the district heating system– mainly public, including the installation of new substations;

7.3 Performance of thermal energy enterprises

In the 2020/2021 season, DH Termokos has continued with the positive trend of sustainable production and supply of thermal energy, providing uninterrupted supply 24 hours, which is mainly due to sufficient production from cogeneration plants in TPP Kosova B, but also the realization of network rehabilitation projects and thermal substations.

Regarding DH Gjakova, it should be mentioned that in the 2020/2021 season it operated only in the testing periods, so, except for the test period of the start of thermal energy production facilities, it did not provide thermal energy supply. Consequently, the relevant data on production, thermal energy supply and other data for the 2020/2021 season are not presented in this chapter.

7.3.1 Production, supply and losses in DH Termokos

- **Thermal energy production**

DH Termokos has based the production of thermal energy on the cogeneration plants in TPP Kosova B; in fact, during 2020/2021 season, the entire generation of thermal energy was from cogeneration plants in TPP Kosova B, so it was not necessary to activate the heavy fuel oil boilers in Termokos Heating.

The amount of thermal energy extracted from cogeneration in the 2020/2021 season was 288,653 MWhTH, which is 41,920 MWhTH or 17% higher than the amount of thermal energy in the previous season (246,733 MWhTH). While the amount of thermal energy received at the heat exchange station in DH Termokos was 282,881 MWhTH, which also represents an increase of 40,852 MWhTH or 16.88% compared to last season (242,029 MWhTH).

The summarized data on generation of thermal energy from cogeneration are presented in the following table:

Tab. 7.2 Thermal energy production from cogeneration

Thermal energy from cogeneration –DH Termokos, Season 2020/2021			
Month	Unit	Extracted thermal energy (metered in TPP Kosova B)/Gross production	Received thermal energy (metered in DH Termokos)/Net production
October 2020	MWh_{TH}	15 501	15 191
November 202	MWh_{TH}	39 184	38 400
December 202	MWh_{TH}	49 193	48 209
January 2021	MWh_{TH}	53 622	52 550
February 202	MWh_{TH}	45 308	44 402
March 2021	MWh_{TH}	50 273	49 268
April 2021	MWh_{TH}	35 572	34 861
Total	**MWh_{TH}**	**288 653**	**282 881**

- **Thermal energy supply**

DH Termokos, in the 2020/2021 season, has continued to provide sufficient amount and proper quality of thermal energy supply, which is mainly due to continuous improvement of the thermal energy generation and improvement of network maintenance and repairs.

The supply of customers with thermal energy (district heating), in this season is estimated to be 253,210 MWhTH, which represents an increase of 33,293 MWHTH or 15.14% compared to the previous season 2019/2020 (219,917 MWhTh). This supply is quite satisfactory and has met the plans and objectives for a sufficient and quality supply.

- **System losses**

The thermal energy system of DH Termokos has its own specifics in terms of system losses, due to the integration of thermal energy from cogeneration. So, network losses include two components: losses in the transmission network TPP Kosova B - DH Termokos and losses in the primary distribution network.

Losses in thermal energy transmission network TPP Kosova B - DH Termokos, in the length of 10.5km, are determined by the measurements carried out at the thermal energy extraction station at TPP Kosova B and at the thermal energy receiving station at DH Termokos. From the measurements carried out in the period October 2020 - April 2021, it results that the quantitative losses in this period are 5,772 MWh_{TH} respectively 2%, which represents a very small increase of 0.09% compared to the previous season. The following table provides details on losses in the thermal energy transmission network.

Tab. 7.3 Thermal energy and losses in transmission network TPP Kosova B – DH Termokos – season 2020/2021

Losses in trans. Net. of ther. Ene. Season 2020-2021	October	November	December	January	February	March	April	Total
Extracted thermal energy - metered in TPP Kosova B [MWh]	15 501	39 184	49 193	53 622	45 308	50 273	35 572	288 653
Received thermal energy - metered in DH Termokos	15 191	38 400	48 209	52 550	44 402	49 268	34 861	282 881
Amount of energy losses [MWh]	310	784	984	1 072	906	1 005	711	5 772
Share in [%]	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%	2,00%

Losses in primary thermal energy distribution network are normally determined by measurements of thermal energy at the entry of the distribution network and by the supply of thermal energy to customer substations. However, in the absence of a complete measurement of the thermal energy supply (in substations), for the calculation of supply, some approximations have been made using in the first place parameters such as: specific requirement for heating capacity (W/m2) and full load hours respectively specific consumption (kWh/m2). The estimated value of consumption is 253,210 MWh_{Th}. Subtracting this value of consumption from the amount of thermal energy introduced in the distribution network (282,111 MWh_{Th}) results that the quantitative losses in the distribution network for the 2020/2021 season are 28,901 MWh_{Th} or 10.24%. This level of losses represents an increase of 1.36% compared to last season (8.88%); This increase in losses is due to network rehabilitation works that have been carried out during a part of the heating season, where it was necessary to conduct hydraulic tests in certain segments of the network, as well as when new substations were installed, initially the secondary network is filled with water from the primary network.

The following table presents the summarized data on production, supply and total losses in the network - the thermal energy transmission network and distribution network:

Tab. 7.4 Energetic performance of DH Termokos – season 2020/2021

DH Termokos - Heating Season 2020/2021		
Description	Unit	Value
Gross production in heating plants	[MWh_{th}]	0
Gross production in coogeneration plants	[MWh_{th}]	288 653
Amount of losses in transport network (TPP Kosova B - DH Termokos)	[MWh_{th}]	5 772
Share of losses in transport network	[%]	2,00
Self-consumption	[MWh_{th}]	770
Net production of thermal energy	[MWh_{th}]	282 111
Amount of losses in distribution network	[MWh_{th}]	28 901
Share of losses in distribution network	[%]	10,24
Supply of customers with thermal energy	[MWh_{th}]	253 210

7.4 Billing, collection and heating area

7.4.1 Billing and collection

With respect to billing, it should be mentioned that in the 2020/2021 season, the billing of thermal energy costumers was mainly based on the heating area (per square meter) whereas a smaller number of customers were billed based on the metered consumption. Concretely, at DH Termokos, 125 customers were billed with metered based consumption, mainly commercial and institutional customers.

DH Termokos, in the 2020/2021 season has marked an increase in billing compared to last season, which is mainly due to the continuous improvement of supply. In fact, the billing in the 2020/2021 season was €7,212,260, which represents an increase of €830,458 or 13% compared to the 2019/2020 season (€ 6,381,802). This represents a significant increase in billing which is due to the increase in the number of customers, i.e heating area and also due to the extension of the heating season until 27 April due to low atmospheric temperatures.

From the total billing realized in the 2020/2021 season in an amount of € 7,212,260, the metered-based billing was € 2,702,609 while unmetered € 4,509,651; the ratio of metered and unmetered billing as well as the respective values are presented in the chart below.

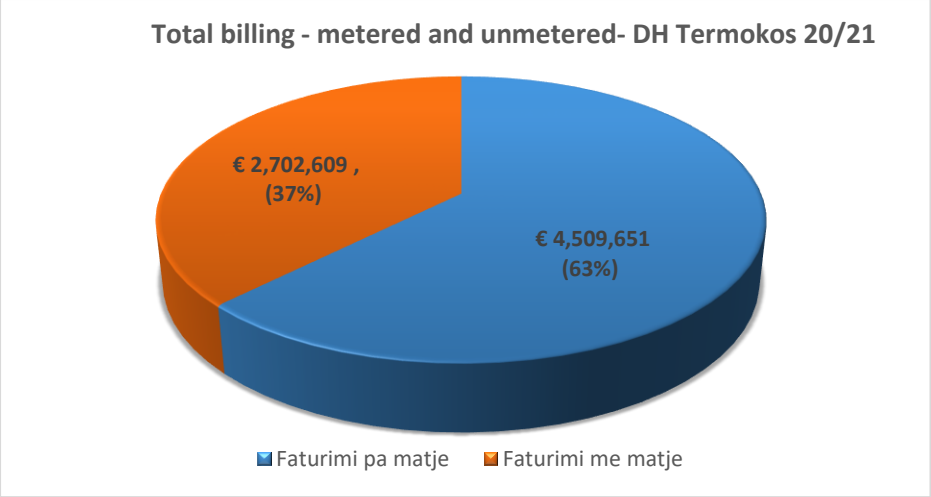


Fig. 7.3 Share of metered and unmetered values of billing in total billing

DH Termokos in the season 2020/2021 has collected the amount of € 4,576,880 which represents the total collection rate of 63.46%. It should be noted that the level of collection has increased by 1.18% compared to last season 2019/2020 where the collection rate was 62.28%. It should be mentioned that in this season the collection of payments from the group of household customers is significantly lower (51.69%); while the collection of payments of commercial and institutional customers was 75.00%.

Details related to billing and collection are shown in the following table and chart.

Tab. 7.5 Billing and collection – season 2020/2021

Heating season 2020/2021	Heating area [m^2]	Share	Billing [€]	Collection [€]	Collection rate [%]
DH "Termokos" Prishtina					
Household	856 269	58,88%	3 571 198	1 846 124	51,69%
Commercial&institutional	598 036	41,12%	3 641 062	2 730 756	75,00%
Total	1 454 305	100,00%	7 212 260	4 576 880	63,46%

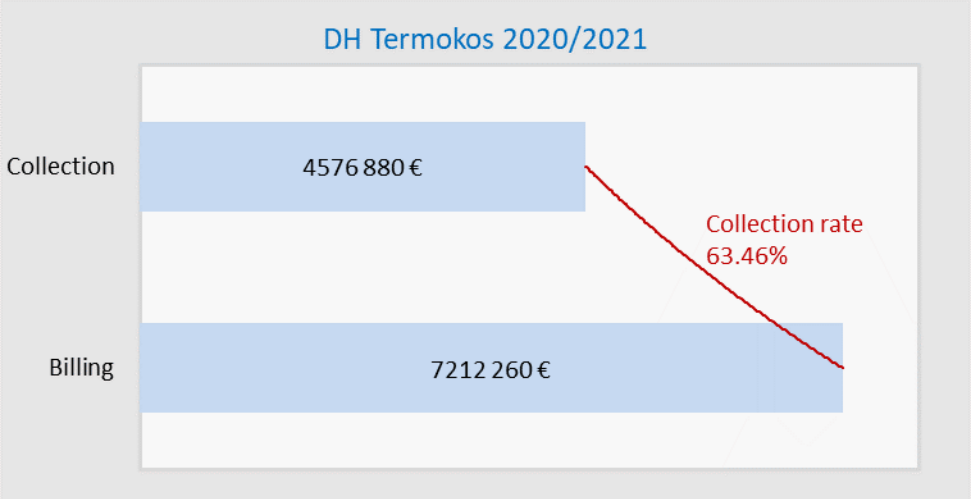


Fig. 7.4 Billing and collection of DH Termokos – season 2020/2021

7.4.2 Heating area

In the season 2020/2021 DH Termokos had the total heating area of customers of 1,454,305 m2, which represents an increase of 120,657 m2 or 9.05% compared to the heating area in the season 2019/2020 (1,333,648 m2). This is mainly the result of projects for network densification and expansion, where the main one has been the EU-funded project.

The following graphs show the heating area of DH Termokos, divided by customer groups.

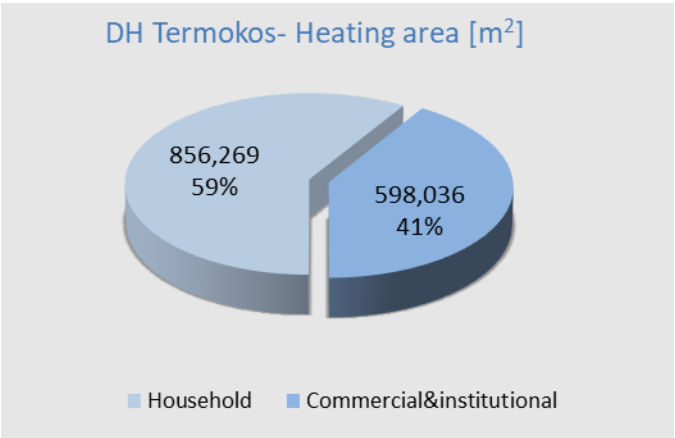


Fig. 7.5 Heating area by customer groups for the season 2020/2021

8. NATURAL GAS SECTOR

8.1 Perspective of development of natural gas sector in Kosovo

In order to open the prospect of developing the natural gas sector and meeting the obligations that Kosovo has towards the Energy Community Treaty, the Assembly of Kosovo, in June 2016, within the package of energy laws, has adopted the Law on Natural Gas, No. 05 / L-082.

This law has transposed the third package of relevant European legislation on natural gas, mainly:

- Directive no. 2009/73 / EC on the Common Rules on the Internal Market for Natural Gas; and

- Regulation no. 715/2009/EC on the Criteria of Access to Natural Gas Transmission Networks.

The Law on Natural Gas lays the groundwork for the legal and regulatory framework for the transmission, distribution, storage and supply of natural gas and the operation of gas transmission and distribution systems. Consequently, this law determines the organization and functioning of the natural gas sector and access to gas networks and market.

Kosovo's Energy Strategy 2017-2026 in Objective '4' included the development of natural gas infrastructure through connection to gas infrastructure projects in the South East Europe region, in particular with the TAP pipeline project ("Trans-Adriatic Pipeline") and with the Energy Community Gas Ring. In this regard, it should be emphasized that the gasification project, respectively the development of gas infrastructure is listed as a priority in infrastructure projects - energy field, approved by the National Investment Council and the Government of Kosovo.

It is estimated that the TAP pipeline project will have a positive impact on the development of gas infrastructure in the Energy Community respectively in the South East Europe region, providing opportunities for linking the planned regional projects such as the Ionian-Adriatic Pipeline (IAP), ALKOGAP and the Interconnection North Macedonia- Kosovo, projects that fulfil the so-called 'Energy Community Gas Ring'.

Upon the operationalization of the Trans-Adriatic Pipeline (TAP) along 878 kilometres of its trajectory in Greece, Albania, the Adriatic Sea and Italy, were enabled the first gas flows from gas sources "Shah Deniz II" in Azerbaijan. The initial capacity of TAP is planned to be 10 billion cubic meters (bcm) per year, with the possibility of increasing up to 20 bcm per year. TAP will allow interconnections along the pipeline to supply gas to other regional projects. Thus, with the state agreements with the "host" countries (Greece, Albania and Italy), the connection places and the amounts, respectively the gas capacities, are pre-determined.

In this context of regional developments in the gas sector, in the last 2-3 years a number of activities have been undertaken related to current regional pipeline projects such as the Pre-Feasibility Study for the Albania-Kosovo Pipeline project (ALKOGAP) and the North Macedonia – Kosovo Pipeline:

Fig. 8.1 Projects of regional infrastructure of gas and options for connection of Kosovo (including ALKOGAP and interconnection of gas North Macedonia – Kosovo)

The main development during 2021 was the beginning of the drafting of the National Gas Sector Development Plan and the Review and Assistance for the Regulatory Framework, funded through the WBIF platform, where the leading financial institution is the EBRD. This plan will address the development of a comprehensive mid-term plan and the identification of key gas projects, with the main objective of developing the relevant gas infrastructure within the country. There is also a review of the regulatory framework, organizational and institutional assessment and Environmental Impact Assessment (EIA).

This plan includes main components as follows:

- Long-term gas demand projections, which include: household and service sectors, industry, district heating sector and electricity generation.
- Evaluation of the most favourable options for supply (import) of natural gas through regional interconnectors and relevant assessments for the development of the internal natural gas network.
- Determination of technical parameters of the pipeline and relevant stations and equipment, as well as hydraulic analysis of the pipeline as well as system configuration and optimization.
- Economic and financial analysis including estimation of investment costs and operating and maintenance costs, as well as cost-benefit analysis.

It should be emphasized that ERO has been involved in the 'Project Steering Committee' which has the task of following the drafting of the study and also to contribute by providing relevant comments and inputs.

In terms of regional cooperation, ERO this year has continued the regular participation in the work of the Gas Working Group of the Energy Community Regulatory Board (ECRB) and the Gas Forum, as well as in other regional events organized within of the Energy Community.

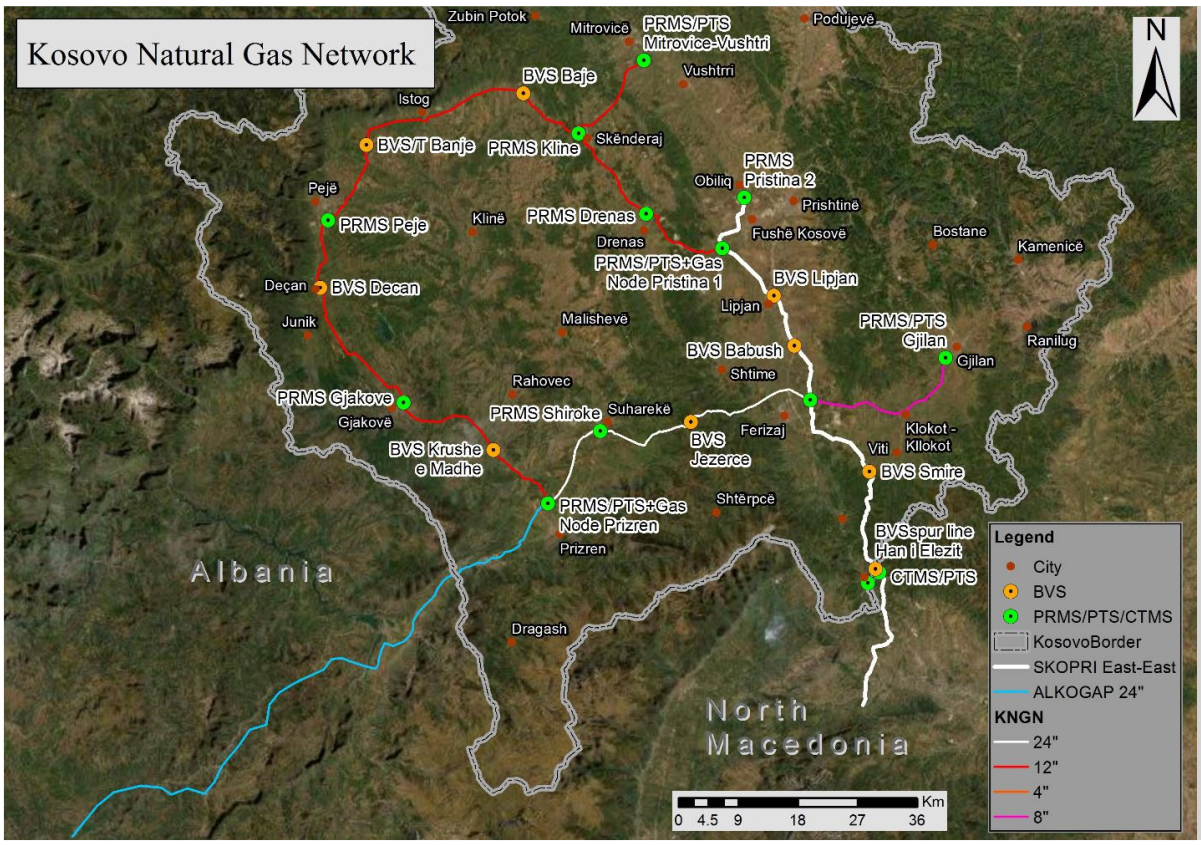


Fig. 8.2 Map of gas infrastructure development in Kosovo - source: MCC Pre-Feasibility Study: Development of the gas sector in Kosovo

It should be noted that ERO was involved in the 'Project Stakeholders Group' which followed the drafting of the study and contributed by providing relevant comments and inputs.

In terms of regional cooperation, ERO this year has also continued regular participation in the Gas Working Group of the Energy Community Regulatory Board (ECRB) and the Gas Forum, as well as in other regional events organized within the Energy Community.

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