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Ministria e zhvillimit ekonomik
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Ministry of economic development

ENERGY STRATEGY OF THE REPUBLIC OF KOSOVO 2017-2026

March 2017

Contents

ABBREVIATIONS

AI	Administrative Instructions
CG	Cogeneration
DH	District Heating
DSO	Distribution System Operator
EC	European Commission
EE	Energy Efficiency
ECS	Energy Community Secretariat
ECT	Energy Community Treaty
ENTSO-E	European Network of Transmission System Operators for Electricity
ERO	Energy Regulatory Office
EU	European Union
GoK	Government of Kosovo
GWh	Giga Watt hour
HPP	Hydropower Plant
ICMM	Independent Commission for Mines and Minerals
KEEA	Kosovo Energy Efficiency Agency
KEEAP	Kosovo Energy Efficiency Action Plan
KRESAP	Kosovo Renewable Energy Sources Action Plan
KEK	Energy Corporation of Kosovo - Public Supplier of Electricity
KEDS	Kosovo Electricity Distribution Company
KESCO	Kosovo Electricity Supply Company
KfW	KreditanstaltfürWiederaufbau (Development Bank)
kg	Kilogram
kJ	Kilojoules
KEDS	Kosovo Electricity Distribution Company
KKI	Keshilli Kombetar per Investime (National Investment Council)
km	kilometer
KOSTT	Kosovo Transmission System and Market Operator
kV_h	kilovolt hour
kW	kilowatt
kW_h	kilowatt hour
Ktoe	kiloton oil equivalent
MED	Ministry of Economic Development
MF	Ministry of Finance
MIE	Ministry of European Integration
MESP	Ministry of Environment and Spatial Planning
MLSW	Ministry of Labour and Social Welfare
MO	Market Operator
MTI	Ministry of Trade and Industry
MW	Megawatt
MW_h	Megawatt hour
NCI	The National Council for Investment
PMO	Prime Minister Office

PPP	Public Private Partnership
REPOWER	Project supporting Kosovo in the energy sector, financed by USAID
RES	Renewable energy sources
SAA	Stabilization and Association Agreement
SEE	Southeast Europe
TAP	Trans Adriatic Pipeline
TPP	Thermal Power Plant
TSO	Transmission System Operator
LFC	Load Frequency Control
WBIF	Western Balkans Investment Framework

CHAPTER I – EXECUTIVE SUMMARY

One of the main factors for the economic development of the country and the increase in social welfare is the security of the energy supply. Since the development of a sustainable energy system requires time, the right decisions for the future of the energy sector should be defined as early as possible.

The Energy Strategy of Kosovo 2017-2026 sets out the basic objectives of the Government of Kosovo in energy sector development, taking into account sustainable economic development, environmental protection, sustainable and reliable energy supply to final customers, efficient use of energy, development of new conventional and renewable generation capacities, creation of a competitive market, development of the gas system, and creation of new jobs in the energy sector.

Some of the basic challenges facing the energy sector in Kosovo include:

- delays in the construction of new coal-based electricity generation capacities and rehabilitation of existing plants;
- insufficient generation capacities to cover the peak demand in the winter season;
- lack of secondary and tertiary power reserves in the system due to lack of flexible generators, since 97% of domestic generation is based on lignite;
- limited capacities of thermal energy power systems;
- lack of natural gas infrastructure;
- significant technical and commercial losses in the electricity distribution network;
- inability to correctly manage cross-border flows by the transmission system operator (TSO) as a result of obstruction by the Serbian TSO;
- underuse of energy saving potentials;
- underuse of potential renewable energy resources;
- lack of an effective competitive market in the electricity sector.

The Program of the Government of the Republic of Kosovo 2015-2018 puts a high priority on the energy sector, particularly electricity, and provides for concrete measures related to the construction of new electricity generation capacities from fossil and non-fossil fuels, measures for efficient energy use, measures for the use of renewable energy sources (RES) and cogeneration, and measures for developing conditions to bring natural gas in to Kosovo. Special attention in the program is paid to environmental protection.

The National Development Strategy 2016-2021 adopted by the Government in January 2016 (Pillar 4: Infrastructure) provides four priority measures for the development of the energy sector: 1. Build new and sustainable power generation capacities; 2. Establish an open and competitive energy market; 3. Decrease energy consumption through energy efficiency measures; and 4. Rational use of renewable energy sources. Each of these energy objectives has concrete actions behind them. The National Development Strategy 2016-2021 was used as a basic reference for the drafting of this Energy Strategy.

The energy sector holds an important place in the Stabilization and Association Agreement (SAA) which entered into force on April 1, 2016. Under this Agreement (Article 114), Kosovo is obliged to fulfill obligations related to the integration of the regional common market, which includes the Energy Community Contracting Parties. Implementation of the energy acquis related to competition in the energy market, protection of the environment, Energy Efficiency (EE), and renewable energy sources is an important set of obligations that Kosovo must fulfill in the energy sector in the near future. The Energy Strategy 2017-2026 is addressing these challenges.

This Energy Strategy, based on the detailed energy sector analysis, has defined five strategic objectives:

1. Security of a sustainable, high-quality, safe, and reliable electricity supply with adequate capacities for stable power system operation;
2. Integration in the Regional Energy Market;
3. Enhancement of existing thermal system capacities and construction of new capacities;
4. Development of natural gas infrastructure;
5. Fulfillment of targets and obligations in energy efficiency, renewable energy sources, and environmental protection.

For the realization of the Strategy's objectives, the team of experts has conducted different analyses of the energy sector, such as: energy demand forecast based on the economic development forecasts according to the National Development Strategy 2016-2021[1] and the Economic Reform Program, measures to reduce technical and commercial losses in the distribution system, impact of thermal network expansion, use of renewable energy resources for sanitary water heating, energy efficiency measures, and market integration. All details of these analyses are given in the Annex of this Strategy.

Policies and measures to achieve these objectives are defined here. The challenge is to ensure reliable and secure energy supply through the development of adequate generation, transmission, and distribution capacities along with the full opening of the energy market, in order to reliably meet increased energy demand, taking into account the diversification of natural domestic resources, affordability for consumers, the efficient use of energy, the

[1] National Development Strategy 2016-2021, is the main policy document of the government for economic development.

maximal utilization of renewable energy resources, and the maximum protection of the environment during all energy sector activities.

Key measures to achieve the Strategy objectives are:

- Construction of new electricity generation capacities as replacements for the old ones in order to cover growing electricity demand and system reserve requirements, along with integration of the electricity market with Albania as a first step towards regional integration;
- Improvement of the operation of the distribution network by increasing efficiency and reducing costs;
- Fulfillment of the conditions for Kosovo's full integration in the common regional energy market and market opening obligations from the Energy Community Treaty and SAA;
- Expansion of the existing thermal power systems' capacities and preparation of the necessary conditions for the construction of new thermal systems;
- Preparation of the necessary conditions for natural gas infrastructure development;
- Improvement of overall energy efficiency and fulfillment of energy efficiency obligations from the Energy Community Treaty and SAA;
- Larger use of other available energy sources, mainly renewable energy sources, as well as fulfillment of RES obligations from the Energy Community Treaty and SAA;
- Improvement of environmental conditions through the rehabilitation of Thermal Power Plant (TPP) Kosovo B and replacement of TPP Kosovo A with TPP Kosova e RE in line with Directive 2010/75/EC;
- Upon adoption of this Strategy, development of a set of supporting long-term energy sector development studies up to 2050 (as defined in new EU energy policy documents) according to the decarbonisation platform.

The Energy Strategy of Kosovo 2017-2026 consists of 6 Chapters and 8 Annexes. After a short introduction given in Chapter II, the mission, vision, and strategic objectives are given in Chapter III. In Chapter IV the current status of the energy sector in Kosovo is described, while Chapter V gives a list of selected activities and measures to achieve the strategic objectives. Finally, in Chapter VI, an overview of key activities, estimated costs, and the next steps for implementation of the Strategy are presented. As usual, in the Strategy body text, energy policy objectives and measures are listed, while analytical background is given in the Annexes.

Implementation of this Energy Strategy is of the utmost importance not only for sustainable, high quality, safe, and reliable energy supply in Kosovo, but for the overall economic development of the country, as well as for national security. Knowing of all the challenges in Kosovo's energy sector, for this ultimate target it is crucial to have the strong contribution of all participants, including relevant international institutions.

CHAPTER II – INTRODUCTION

The Energy Strategy of the Republic of Kosovo 2017-2026 (hereinafter the "Energy Strategy") is a basic ten-year document for the energy sector's development. The role, importance, content, and procedures of developing this document are based on the Law on Energy and the Administrative Instruction No. 02/2012 on the Procedures, Criteria and Methodology for the Preparation and Approval of Strategic Documents and Plans for their Implementation. The Energy Strategy is based on existing policy documents and strategies of the Government of Kosovo and the result of analyses done by the Working Group as well as other studies conducted in the energy sector.

The Program of the Government of the Republic of Kosovo 2015-2018 gives priority to uninterrupted and sustainable power supply, using local fossil and non-fossil resources and encourages the diversification of sources to supplement domestic energy needs. The development of a liberalized energy market and environmental protection are also integral parts of this program.

The National Development Strategy 2016-2021 approved by the Government in January 2016 gives a special place to energy, under the four pillars of Government priority.

A high priority of the Government is the implementation of obligations as per the Stabilization Association Agreement. Energy is addressed separately in article 114, stating:

> "In accordance with the relevant EU *acquis*, the Parties shall develop and strengthen their cooperation in the field of energy consistent with the principles of the market economy and the Treaty establishing the Energy Community, signed in Athens on 25 October 2005. Co-operation shall be developed with a view to the gradual integration of Kosovo into Europe's energy markets.
>
> Cooperation may include assistance to Kosovo as regards in particular:
>
> a. improvement and diversification of supply and improvement of access to the energy market, in accordance with the EU *acquis* on security of supply and the regional energy strategy of the Energy Community, and applying EU and European rules on transit, transmission and distribution and restoration of electricity interconnections of regional importance with its neighbours;
>
> b. helping Kosovo implement the EU *acquis* on energy efficiency, renewable energy sources, and the environmental impact of the energy sector, therefore promoting energy saving, energy efficiency, renewable energy and studying and mitigating the environmental impact of energy production and consumption;
>
> c. formulating of framework conditions for restructuring of energy companies and cooperation between undertakings in this sector, in line with the EU internal energy market rules on unbundling."

The drafting process of the Energy Strategy took into account all policies and measures defined in the aforementioned documents.

The Secretary General of the Ministry of Economic Development established the Working Group to draft the Energy Strategy. The team includes experts representing state institutions and other stakeholders related to the energy sector as follows:

- Ministry of Economic Development (MED)
- Office of the Prime Minister (OPM)
- Ministry of Finance (MF)
- Ministry of Trade and Industry (MTI)
- Ministry of Environment and Spatial Planning (MESP)
- Energy Regulatory Office (ERO)
- Kosovo Transmission System and Market Operator (KOSTT)
- Independent Commission for Mines and Minerals (ICMM)
- Energy Corporation of Kosovo (KEK)
- Kosovo Electricity Distribution Company (KEDS)
- Kosovo Electricity Supply Company (KESCO)

Drafting of the document was done through teamwork, sharing tasks for each chapter. In the process of conducting the required analysis for the preparation of the document, additional technical groups were established for each technical field: electricity, thermal energy, natural gas, renewable energy sources, energy efficiency, and the regional energy market. After agreements were reached in close groups, the results were distributed to the working group and the document was finally adopted and submitted for further approval procedures.

Structuring of the document and its drafting was done in line with the requirements of the Administrative Instruction (No. 02/2012) approved by the Government.

CHAPTER III – MISSION, VISION AND OBJECTIVES

The Energy Strategy is prepared based on the Law on Energy. The scope of the Law on Energy includes electricity, natural gas, and thermal energy. Among others, the Law defines the duties and responsibilities in determining policies and measures for renewable sources and energy efficiency which are outlined in national action plans as mandatory documents approved by the Ministry responsible for energy, and based on the strategic objectives of the Energy Strategy.

MISSION

The Energy Strategy Mission is to create the conditions for a reliable and secure energy supply for increasing energy demand, through the development of generation, transmission, and distribution capacities, taking into account the diversification of resources, the efficient use of energy, and maximal utilization of renewable energy resources, as well as environmental protection in all sector activities.

VISION

The Energy Strategy aims to create a developed energy sector, which is friendly to the environment and health, supporting economic development and social wellbeing in Kosovo, under a free and competitive market.

OBJECTIVES

The Government of Kosovo is committed to reach the following five energy sector objectives as defined in this Strategy:

1. Security of a sustainable, high-quality, safe, and reliable electricity supply with adequate capacities for stable power system operation;
2. Integration in the Regional Energy Market;
3. Enhancement of existing thermal system capacities and construction of new capacities;
4. Development of natural gas infrastructure;
5. Fulfillment of targets and obligations in energy efficiency, renewable energy sources, and environmental protection.

OBJECTIVE 1

SECURITY OF A SUSTAINABLE, HIGH-QUALITY, SAFE, AND RELIABLE ELECTRICITY SUPPLY WITH ADEQUATE CAPACITIES FOR STABLE POWER SYSTEM OPERATION

Provision of a sustainable, high-quality, safe, and reliable energy supply is one of the main conditions for economic and social development of each country. This problem has become acute in Kosovo and it requires an urgent solution, even though it is very costly due to the nature of the investments needed.

Although looking at it from the standpoint of annual generation and consumption the balance of electricity in Kosovo is not worse than the other countries of the region, it faces huge problems in terms of securing the necessary capacities to cover peak demand, particularly in the winter, and in meeting the reserve capacity requirements of the power system. One large problem for the Kosovo energy sector is the fact that interventions in the rehabilitation of the existing capacities and construction of new capacities as a replacement of the outdated plants will require nearly simultaneous investments. Despite the opening of markets and regional integration that are expected to ensure mitigation effects in terms of the supply problem, it is necessary to take measures as soon as possible to develop the appropriate generation capacities, taking into account the international obligations on environmental protection, climate change, and the fulfillment of the minimum criteria for ENTSO-E power systems states (KOSTT is in the process of a signing connection agreement with ENTSO-E[2]).

To achieve the goal of a reliable supply of electricity and required capacities for a stable power system, significant challenges must be addressed related to:

- Outdated And insufficient generation capacities to address the demand for electricity consumption (especially in the winter) and for power system reserve and balancing;
- High environmental pollution due to power generation from obsolete thermal power plants;
- Insufficient utilization of renewable energy resources for electricity generation, in addition to limited identified potential capacities;
- High technical and non-technical losses in electricity distribution network.

[2] ENTSO-E-European Network of Transmission System Operators of Electricity

OBJECTIVE 2

INTEGRATION IN THE REGIONAL ENERGY MARKET

The Government of Kosovo is committed to implement all obligations from the Energy Community Treaty (ECT) and the Stabilization and Association Agreement (SAA) related to the creation of a free and competitive energy market. Creation of a common energy trading zone between Kosovo and Albania, as a first step towards integration in a regional energy market, has been selected by the Government of Kosovo as one of the top priorities.

To achieve the objective of integration in the regional energy market, Kosovo addressed the challenges related to:

- Creating an effective competitive domestic market of energy with active participation of more than one supplier;
- Creating an integrated market between Kosovo and Albania as a first step towards integration in the regional energy market;
- Establishment of an energy stock exchange together with Albania;
- Effective implementation of requirements related to the deregulation of electricity generation prices;
- Elimination of cross-subsidies between consumers' categories as well as limiting state subsidies in the energy sector;
- Non-existing natural gas infrastructure;
- Protection of vulnerable customers;
- Operation of Kosovo electricity transmission operator (KOSTT) as independent control area;
- Access of the licensed electricity distribution operator (KEDS) to all customers in Kosovo, covering the entire Kosovo territory.

OBJECTIVE 3

ENHANCEMENT OF EXISTING THERMAL SYSTEM CAPACITIES AND CONSTRUCTION OF NEW CAPACITIES

The construction of collective housing buildings in all cities of Kosovo, particularly in the largest ones, has taken off in unprecedented high levels since the end of the war in 1999. Accordingly, the treatment of thermal energy used for space heating through district heating systems is one of the main objectives of the Kosovo energy sector.

The use of electricity for heating spaces is a high burden for the power system, particularly in a situation where large amounts of electricity are used in an unauthorized manner, on the one hand, and the generation capacities of electricity are limited on the other. Use of other types of energy such as firewood, oil and its products, etc., is inconvenient for collective residential buildings and buildings of the service sector.

To achieve this objective the following challenges must be addressed:

- Significant losses in the distribution network of thermal energy systems;
- Small exploitation of thermal power generation capacities, particularly TERMOKOS, after connection with the co-generation system, due to inadequate distribution network;
- Large non-technical losses;
- Lack of concrete initiatives for the development of thermal energy infrastructure by municipalities where there is a large concentration of collective housing facilities;
- Lack of concrete initiatives on the use of thermal systems for cooling of spaces, heating sanitary water, steam for industrial needs, etc.;
- Lack of updated and new feasibility studies;
- Securing finances for the implementation of projects.

OBJECTIVE 4

DEVELOPMENT OF NATURAL GAS INFRASTRUCTURE

The official policy of the Kosovo Government is to promote and support the inclusion of Kosovo in the regional natural gas projects. The Trans Adriatic Pipeline (TAP) project has offered great opportunities to Kosovo to connect to the international natural gas network. In this regard, depending on the regional developments of gas projects in Southeastern Europe, the Government of Kosovo remains committed to use all opportunities to be involved in joint natural gas projects in the Energy Community.

To achieve this objective the following challenges are addressed:

- Establish Gas Transport System Operator and Gas Distribution System Operator(s);
- Prepare needed feasibility studies; and
- Construct adequate natural gas infrastructure.

OBJECTIVE 5

FULFILLMENT OF TARGETS AND OBLIGATIONS IN ENERGY EFFICIENCY, RENEWABLE ENERGY SOURCES, AND ENVIRONMENTAL PROTECTION

Kosovo has committed to meet the savings target of 9% of overall energy consumption, in accordance to Directive 2006/32/EC. Kosovo has also taken the obligation to implement new EU policies deriving from Directive 2012/27/EC on energy efficiency.

In the RES sector, the goal is to develop and improve all necessary regulatory and operational mechanisms to reach the target of 25% of RES share in gross final energy consumption by 2020. After that, the Government will revise RES integration achievements and set new targets for the following period. It is expected that Kosovo will further promote RES, in line with potential, obligation, and needs, as well as European developments and experience.

As an Energy Community contracting party, Kosovo has an obligation to implement European Directives related to the environment and it will remain one of the strategic objectives of the Kosovo energy sector.

To achieve this objective with all its tasks the following challenges are addressed:

- Financing of energy efficiency and RES integration mechanisms;
- Legislative barriers that prevent establishment of the relevant funds other than the Kosovo state budget;
- Lack of experience in the application of public private partnership projects in the field of energy efficiency and RES;
- Lack of institutional municipal structures, especially for energy efficiency, as well as a lack of necessary human capacities specialized in municipal institutions.

CHAPTER IV – CURRENT STATUS OF KOSOVO ENERGY SECTOR

ELECTRICITY

The origin of the problem of reliable electricity supply in Kosovo began with the deliberate destruction of the electricity system in all its elements by the former state regime, particularly in the 1990s. Since 1984, there has been no construction of new electricity generation capacities apart from some small hydro capacities that were insufficient to resolve the problem of security of the electricity supply for the growing demand. Currently, most power plants' units are at the end of their technical lifetime. Had there been a normal development with stable power supply, virtually all capacities of TPP Kosovo A should have been either decommissioned or rehabilitated by this date, as happened in similar cases in other Southeast Europe (SEE) countries.

Despite all the problems and difficulties that the Kosovo energy system has been facing, in the last 15 years there has been a steady increase in electricity production, except in 2014 (see Figure below). A more detailed description of the situation of the energy sector is given in Annex 1, while an analysis of the projection of electric energy demand is given in Annex 2 of the Strategy.

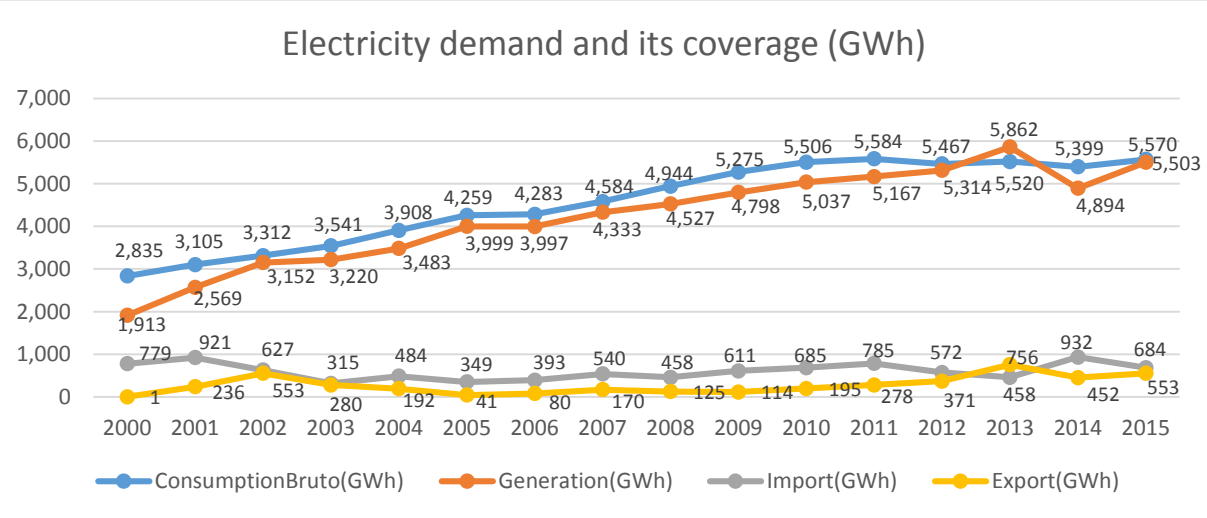

Figure 1 Evolution of the electricity demand and its coverage

Despite the increase of electricity generation over the years in existing TPPs and Hydro-power Plants (HPPs), due to growing electricity demand this situation is not sustainable. Operating with obsolete capacities and without required rehabilitation, the reliability of the generation system is far from adequate.

In the last 30 years there has been no adequate new electricity generation capacities constructed to follow growing demand and to ensure the security of supply. Currently, most power plants' units are at the end of their lifetime. As a result, Kosovo has been facing occasional load shedding. Clearly, there is an urgent need for new generation capacities. This urgent need is compounded by serious environmental considerations, due to high level pollution from the existing old generation technology and high demanding environmental protection obligations.

During recent years, the electricity demand has mostly been covered by domestic generation, while peak demand occasionally has been covered by electricity imports. In cases of the power system overloading and/or insufficient imports available at reasonable cost, there has been planned load shedding in Kosovo (according to the ABC plan). Load shedding has been in decline in recent years due to increased production from the existing plants. Although not cancelled entirely, this plan is not currently being applied.

From 2000 until 2015, 538.25 million EUR were spent on electricity imports. In some cases, there was Government intervention to subsidize imports, but since 2012 import subsidies have been discontinued. After the privatization of the electricity distribution and supply company, the cost of imported electricity has fallen significantly as a result of more efficient procedures of purchasing electricity.

Infrastructural capacities of the electricity distribution network have not kept step with electricity production output, primarily as a result of low investments in the distribution network. Consequently, the distribution system has been consistently overloaded at peak times, especially during the winter.

In May 2013, the electricity distribution and supply system was privatized. By the end of 2014 the process of the legal unbundling of the distribution system operator (DSO) and supply company was completed. In the years following the privatization, significant investments were made in the distribution network (20 million EUR per year) and the distribution system operator has planned further investments.

Despite improvements in recent years, technical and commercial losses in 2015 were 31.8%3. A more detailed description of the situation of the energy sector is shown in Annex 1 of this document. Due to the inability to control the distribution and supply system in some municipalities in northern Kosovo, around 5% of electricity remains unbilled. A positive indicator is the fact that the Public Supplier KESCO has managed to continuously improve its performance (see Annex 1, item 1.1) in billing and revenue collection.

The soundest link of the chain of the energy system in Kosovo is the transmission system. Due to significant investments in this system, today it is considered as one of the most efficient and stable systems in the region. Unfortunately, for political reasons, KOSTT is still not

[3] Source: KEDS

a member of the ENTSO-E and it is unable to control, allocate, and get paid for its cross-border flows. Thus, it has been an ongoing challenge to successfully carry out all of the mandatory operational duties as a transmission system operator in its own territory, while formally it is still treated as a third-party's responsibility.

Lignite for generation of electricity[4]

Natural resources are abundant in Kosovo. Kosovo possesses around 12.5 billion tons of lignite in geological reserves, which places Kosovo as the country with the second largest lignite reserves in Europe and fifth largest in the world. Lignite is the most important energy resource of Kosovo, supplying 97% of total generation of electricity (TPP Kosovo A and TPP Kosovo B). As shown in Figure 2, the most important lignite reserves in Kosovo are located in:

- Kosovo Basin;
- Dukagjini Basin; and
- Drenica Basin.

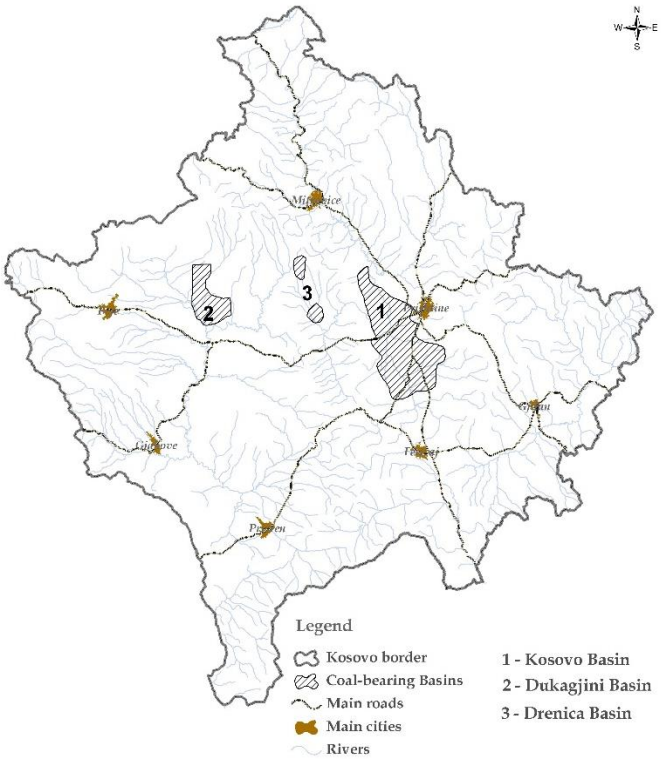

Figure 2. Lignite basins in Kosovo

[4] Energy Strategy 2013-2022, updated by KEK.

Estimated lignite resources[5] in all of Kosovo are given in Table 1.

Table 1. Lignite reserves in the Republic of Kosovo[6]

Lignite basins	RESERVES (t)		
	Geological	Balance[7]	Non-balance[8]
Kosovo	10, 091, 000,000	8,772,000,000	1,319,000,000
Dukagjini	2, 244, 830,000	2,047,700,000	197,130,000
Drenica (f. Skenderaj)	106, 631,000	73,188,000	33,443,000
Total	**12,442,461,000**	**10,892,888,000**	**1,549,573,000**

Coal supply from the existing mines supplying the existing power plants will be exhausted by 2024, according to the mining plan and capacity. To safeguard future supply to both existing and new generation capacities, a new mine must be opened by 2024 with a capacity of over 430 million tons which would allow for the supply of existing power plants in the next 30 years.

The opening of the new mine will ensure safe and sufficient supply for existing as well as new generation capacities. The Government made a priority decision for the opening of South Sibovc Field with a capacity of 430 million tons of coal. This project was approved by both the Keshilli Kombetar per Investime (National Investment Council) (KKI) and the Government of Kosovo9.

From the entire quantity of coal generated in the mines, 97.5% of the total amount is used to supply Kosovo's power plants, whereas the remaining 2.5% is dedicated to the market for consumption needs in the industry, households, agriculture, and services. Coal demand projections in the electricity generation scenarios are given in more details in Annex 4.

THERMAL ENERGY

Space heating in Kosovo is largely realized from firewood. District heating accounts for only 3-5% in the heating of spaces. The household and the services sectors are major consumers of energy for heating, whereas the agricultural sector accounts for very little share of heating energy consumption. Annex 1, item 1.2 shows an overview of the energy consumption of the household and services sectors, as per the data of the Energy Balance 2015 published by the Kosovo Statistics Agency.

[5]Revising clause No. 152, University of Prishtina, 2008, on –"Study to assess researches and geological coal reserves in Kosovo", Kosovo Basin, Prishtina 2007, p. 81. Institute INKOS,
[6] Source: Mining Strategy of the Republic of Kosovo for the period 2012-2025,
[7] Balance reserves are the reserves where the caloric power of coal is over 5.450 kJ/kg,
[8] Non-balance reserves are reserves the caloric value of coal is below 5.450 kJ/kg,
[9] Single Project Pipeline of Infrastructural Investments - Energy, Project No. 1

Currently, district heating sector in Kosovo consists of four systems:

- *DJ Termokos, Prishtina;*
- *DH Gjakova;*
- *DH Termomit, Mitrovica; and*
- *DH Zveçan.*

Altogether it has limited coverage, meeting roughly 3-5 % of the total heating demand in Kosovo. Accordingly, Objective 3 of this Strategy to enhance district heating systems is very challenging and important for energy sector development in Kosovo.

After the war, several projects were developed in the heating sector which have improved the quality of supply (DH Termokos). The co-generation project of thermal energy supply from TPP Kosovo B and the rehabilitation of thermal network and substations has enabled a higher quality of supply for existing consumers and possibilities for connection of new ones. The following Table shows the data of the district heating systems of Prishtina and Gjakova, including total losses in both systems (for more details see Annex 1.2).

Table 2. Presentation of indicators of both obtained heating systems (district heating)[10]

	2010	2011	2012	2013	2014	2015
Generation of heating (GWh)	83.15	52.68	54.20	58.62	69.20	201.08
Own consumption (GWh)	8.25	6.63	5.35	5.35	8.96	2.33
Losses in transmission and distribution (GWh)	12.56	10.70	8.84	10.58	12.90	37.33
Available for final consumption (GWh)	62.57	40.00	40.00	42.68	47.33	161.42
Consumption in household (GWh)	40.70	23.03	26.05	27.68	30.70	104.90
Consumption in services (GWh)	21.86	13.33	14.07	14.88	16.51	56.52

Figure 3 shows losses in the thermal energy system in both district heating (Prishtina and Gjakova) for which there are available data. In 2012 MED financed a project for a study in district heating in Peja, Prizren, Gjilan, and Ferizaj[11].

[10] Source: Annual electricity balance for respective years. This excludes district heating of Mitrovica and Zvecan.
[11] Study on district heating in Peja, Gjilan and Ferizaj financed in 2012 by MED.

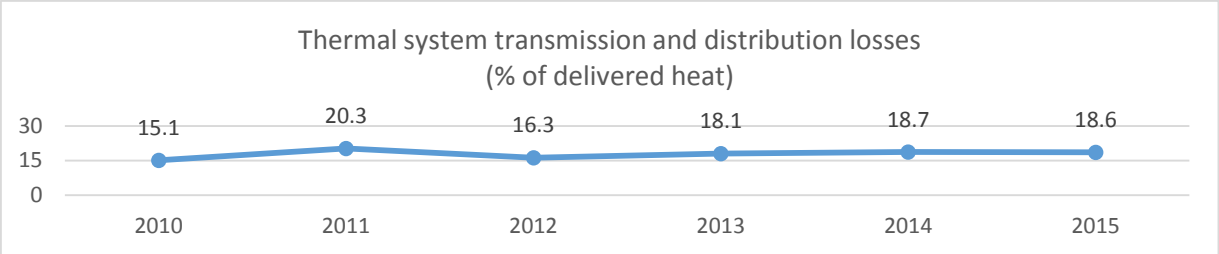

Figure 3. Presentation of technical losses in TERMOKOS and DH Gjakova[12]

NATURAL GAS

Kosovo has no natural gas infrastructure. However, the legal framework for natural gas in Kosovo was adopted in line with the Third Package of EU legislation. It was approved by the Assembly of Kosovo in June 2016 and ERO is entrusted to regulate the natural gas sector.

Along with Albania, Kosovo has applied for a joint natural gas project. A grant of 300,000 EUR for the pre-feasibility study for this project has been secured under the Western Balkans Investment Framework (WBIF) platform. The project was approved in the Project of Energy Community Interest List (PECI)[13] in October 2016 at the Energy Community's Ministerial Council meeting. General data for this project are presented in Annex 6 of this Strategy.

Kosovo currently has no natural gas infrastructure, but the legal framework for natural gas is in place. Along with Albania, Kosovo has applied for a joint natural gas project as a connection to the TAP pipeline. Kosovo's gasification project is ranked 7th on the list of Projects of Energy Community Interest (PECI) and it is already approved by the National Investment Council and by the Government.

RENEWABLE ENERGY SOURCES

Renewable Energy Sources (RES) represent an important source of energy in Kosovo, with a highly underutilized potential. The use of RES in energy generation represents a long-term target for the implementation of three energy policy milestones of the country: support of overall economic development; increased security of energy supply; and environmental protection. In view of these milestones, it is necessary to apply fiscal and financial incentives for all types of RES including the implementation of the support scheme based on the mechanism of the certificates of origin.

[12] District heating in Mitrovica and Zvecan are yet to submit data.
[13] Single Project Pipeline of Infrastructural Investments - Energy

To encourage the use of RES, Kosovo has defined a support scheme through feed-in tariffs for hydropower, wind energy, photovoltaic energy, and biomass. This incentive measure for RES aims to fulfill the planned energy targets for RES for 2020, as a requirement of Directive 2009/28/EC, the transposition and implementation of which shall be subject to monitoring by the Energy Community.

RES contribute to heating, namely the generation of thermal energy. As such, they have become part of the Heating Strategy. Since there is a need to minimize the use of wet lignite and the unsustainable use of wood for heating purposes, the use of solar energy, municipal waste, and wood waste are seen as the most promising sources for space heating and sanitary water.

Support for a greater use of RES was provided by development policies of the forestry sector, designed and implemented by the Ministry of Agriculture, Forestry and Rural Development, which continues to treat wood as an important source of thermal energy. For this reason, the Forestry Development Strategy (2010-2020) has given priority to supporting the appropriate use of systems and methods that lead to better utilization of forests for energy production. The results achieved in implementation of the first RES Action Plan 2014-2015 are presented in the Progress Report[14].

The energy sector laws, in particular the Law on Energy, aim to promote RES in terms of the optimization of their use, including the setting of annual and long-term energy generation targets from RES and facilitating their access to the market. To support and promote the use of RES, Ministry of Economic Development (MED) has drafted a ten-year Action Plan for RES, as a policy document. In accordance with the legal obligations and those taken under the Energy Community Treaty (ECT), MED has set RES targets for 2011-2020, considering the possibilities and potentials of RES available in Kosovo. The fulfillment of these targets is monitored by MED, which is responsible for reporting progress on the Energy Community Secretariat in Vienna.

MED also has adopted secondary legislation concerning specific measures to promote greater use of RES.

An important role for the promotion of RES lies with the Transmission System Operator and the Distribution System Operator. They are mandated by the Law to give priority to RES generation, in line with the limits specified in the Grid Code. System operators establish and publish rules regarding the costs for technical adaptations required for the integration of RES into the system. These rules are approved of by the ERO. Also, ERO ensures that transmission and distribution tariffs for RES generation are non-discriminatory, especially to those from peripheral regions. By the Law on Electricity, ERO is also responsible for issuing certificates of origin for electricity generated from RES.

An incentive measure for RES is the legal obligation of the Market Operator to purchase RES generation with the regulated feed-in tariff, as defined by ERO. It takes into account the

[14] https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/4480397/45A9DE97127B6AABE053C92FA8C0A790.pdf

compensation to the Market Operator needed to cover additional costs of purchasing RES generation.

ERO is legally responsible for regulatory activities in the field of RES, developing methodologies for regulated feed-in tariffs and issuing licenses for energy activities and authorizations for the construction of RES capacities as well as issuance of certificates of origin for energy produced by RES.

ERO is also obliged to issue certificates of origin for district heating from thermal energy generated from RES or energy generated in a co-generation of electricity and thermal energy. Thermal energy generation that is issued certificates of origin has priority to be purchased by the public supplier rather than other generation issued right-to-sell green certificates.

RES support schemes

To meet the RES integration goals, a special rule has been established by ERO. It determines:

- the level of required RES capacity;
- the criteria and procedures for admission to the support scheme;
- rights and obligations of RES generators for which a certificate of origin was issued;
- rights and obligations of the distribution system operator in connection with electricity for which a certificate of origin has been issued;
- rights and obligations of transmission system and market operator;
- financing of the RES support scheme;
- integration of electricity generated from RES in the electricity system.

Primary sources of energy admitted in the RES support scheme are: water, wind, biomass, and photovoltaics. RES projects with capacities within the level of planned targets are based on the feed-in tariff scheme determined by the ERO. Currently, feed-in tariffs vary from different technologies as follows:

- small hydro power plants: 67.3 EUR/MWh
- wind power plants: 85 EUR/MWh
- biomass power plants: 71.3 EUR/ MWh
- photovoltaics: 136,4 EUR/MWh

Upon review of the incentive feed-in tariff scheme for hydropower and wind power in 2016 the ERO has increased the feed-in tariff for small hydro power plants from 63.3 to 67.3 EUR/MWh, whereas for wind power plants the support scheme period has been extended from

10 to 12 years. The 12-year support scheme period also applies for photovoltaic energy, while for small HPP energy it is set to 10 years.

Renewable Energy Sources represent an important source of energy in Kosovo, with a highly underutilized potential. To encourage the use of RES, Kosovo has set up a legal framework as well as a support scheme through feed-in tariffs for hydropower, wind energy, photovoltaic energy, and biomass.

As a member of the Energy Community, Kosovo is obliged to meet mandatory RES targets for 2020 defined and approved by EnC Ministerial Council in 2012. For Kosovo it assumes 25% of RES share in the final gross energy consumption, as it is set by the National Action Plan. An even higher target of 29.47% was set by Kosovo Administrative Instruction in 2013. RES share in final gross consumption in Kosovo in 2015 was 19.7%.

Starting from 99.5 MW of RES installed in 2017 this Strategy aims to 401-470 MW in 2026, depending on the development scenario.

Annex 1, point 1.3 gives a more detailed description of the policies and measures applied by Kosovo's institutions to promote the use of RES. Annex 7 provides projections for the development of small HPPs which are taken into account upon the analysis of covering the demand for electricity by 2025.

ENERGY EFFICIENCY

Along with the need and efforts to ensure sufficient energy generation from existing power plants and other alternative sources, energy efficiency in Kosovo is considered by the GoK an essential component of strategic planning and the economic development of Kosovo.

Important political, legal, and institutional steps have been already taken in energy efficiency promotion. The Kosovo Agency for Energy Efficiency has been established as well as the Certification Commission of Energy Auditors and Managers. Also, there have been significant investments in improving energy efficiency.

In addition to the basic laws of the energy sector, since 2012 the Law on Energy Efficiency is in force, as well as a number of Administrative Instructions (AI) and various regulations, including:

- Administrative Instruction for the promotion of energy efficiency of end users and energy services;
- AI on Labeling of Energy Use;

- AI on Energy Audit;
- Technical Regulation on Energy Audit;
- Regulations on internal organization of the Kosovo Energy Efficiency Agency;
- Regulation on the establishment of the Commission for Certification of Energy Auditors and Managers.

The Kosovo Energy Efficiency Action Plan (KEEAP) 2010 - 2018 was approved and envisages energy savings of 9% or around 92 ktoe by 2018. The first medium-term action plan of the Kosovo Energy Efficiency (KEEAP) 2010 - 2012 is already implemented and foresees energy savings of 3% or around 31 kiloton oil equivalent (ktoe) by 2012, which has been achieved. The second mid-term National Energy Efficiency Action Plan (KEEAP) 2013-2015, envisaged savings of 3% or about 31 ktoe. The third intermediary plan for Energy Efficiency 2016-2018 is in the process of finalization with a savings target of 3% or 31 ktoe by 2018.

So far 27 municipalities have drafted Municipal Energy Efficiency Plans 2014-2020 and have also approved them in their respective municipal assemblies.

A draft-law on the Eeergy performance in buildings was adopted by the GoK, while a draft-law on Energy Efficiency is being developed for submission in the GoK.

Relevant projects financed from the budget of the Republic of Kosovo in the period 2011 – 2016 are divided in two groups:

- Energy audit of public service buildings: 144,000 EUR/year
- Public Campaign on Energy Efficiency and RES: 50,000 EUR/year

Besides projects financed from the state budget, there have been many valuable projects funded by donors and/or borrowings, such as:

- Supervision, monitoring, verification, and evaluation of energy efficiency measures in schools and hospitals in Kosovo (funded by the European Commission with 15.6 million EUR). The project started and these measures will be implemented in 63 schools and 2 hospitals.
- The study and implementation of energy efficiency measures in central public buildings (funded by WBIF / WB with 31 million USD). Negotiations between MED-MF-WB were completed in May 2014 and in June 2014 the WB Board approved the loan. After the signing of the agreement between the MF and the WB, the project was ratified by the Kosovo Assembly. For 19 buildings the project design was completed together with bidding documents for implementation of Energy Efficiency (EE) measures.
- Implementation of energy efficiency measures in municipal buildings (funded by WBIF, the German Government and KreditanstaltfürWiederaufbau (Development Bank) (KfW) with 7.5 million EUR). The respective funding and the agreement credit were approved by the Assembly of the Republic of Kosovo.

- Support for the private and residential sectors with EE measures (funded by the European Bank for Reconstruction and Development (EBRD), with 12 million EUR). The emphasis will be given to the private sector (Small and Medium Enterprises (SMEs)), where the first contracts were already made with a commercial bank, TEB (5 million EUR) and Kosovo Rural Crediting KRK (1.5 million EUR). The project is in the implementation phase. Thus far 8.2 million EUR has been spent, with 4 million EUR for SMEs and 4.2 million EUR for the household sector.
- Through UNDP a series of projects have been developed to promote EE and two municipalities have been helped in drafting Municipal EE Plans 2014 - 2020 as well as with concrete measures in public lighting in the municipality.
- The German Government has supported MED through GIZ Open Regional Funds (ORF) in the development of a web-platform for the monitoring and verification of the implementation of National Energy Efficiency Plans (NEEP).
- Three municipalities have developed Sustainable Action Plans for EE supported by the German Government through GIZ ORF for Modernisation of Municipal Services (MMS), ORF EE, and Swiss Agency for Development and Cooperation. Two municipalities have already joined the initiative Covenant of Mayor (CoM).

Other details for activities in the field of energy efficiency are described in Annex 1, item 1.4.

Kosovo, as a signatory of the Energy Community Treaty, has an active role in meetings of the Energy Community in Vienna, actively participating in the Coordination Group for EE, harmonizing its legitimacy with the relevant EU Directives. Annex 1, item 1.4. gives a more detailed description of the activities in the field of energy efficiency.

Energy efficiency in Kosovo is considered by the GoK as an essential component of strategic planning and the economic development of Kosovo. Important political, legal, and institutional steps have been already taken in energy efficiency promotion, followed by concrete activities, plans, and implementation measures. It resulted in a significant reduction in consumption and expensive energy imports. It certainly enables better strategic planning, energy policies, and more effective implementation. However, this is only the beginning as a lot more remains to be done. There are significant potentials for the implementation of energy efficiency in Kosovo, along with the need for savings and improving the quality of life of the citizens of Kosovo, primarily in the household sector.

ENVIRONMENT

Considering that electricity is generated from power plants with an obsolete technology, designed at a time when there weren't significant environmental protection requirements, Kosovo is in a dire situation in terms of environmental protection. This is clearly shown in the

following table with concrete indicators of pollution compared to allowed levels by EU requirements. Annex 1, point 1.5 gives a more detailed description of the environmental situation of the thermal power plants.

Table 3. Emissions from Kosovo power plants in the last two years[15]

TPP Kosova	Dust (mg/Nm³)		SO_2(mg/Nm³)		NO_2 (mg/Nm³)		CO_2(mg/Nm³)	
	2015	2014	2015	2014	2015	2014	2015	2014
TPP Kosovo A	44	57	289	418	725	714	259.67	262.91
TPP Kosovo B	645	860	327	511	821	814	220.7	216.04
EU* criteria	50		400		500			

* Current emissions [(mg/Nm³) 6 (%) dry] and limits as per the European Commission

Emission measurements from Kosovo power plants in the last two years prove that the level of dust from TPP Kosovo A has significantly decreased due to large investments by KEK in 2013. Also, there have been additional improvements in hydraulic transportation of ash, thanks to government investments and foreign donations (World Bank).

However, there is still hard work and investments needed to bring the other parameters to the desired level while also ensuring adequate security of the power and heat supply.

COMPARISON OF THE CURRENT SITUATION OF THE ENERGY SECTOR WITH THE COUNTRIES IN THE REGION

Relevant comparative data and indicators of the other South East European countries are given in Annex 1, point 1.6. In general, it can be concluded that almost all SEE countries face similar problems in covering energy demand, especially electricity demand. All SEE countries are dependent on imports, since electricity market prices are lower than local generation prices.

MAIN ISSUES AND CHALLENGES IN KOSOVO ENERGY SECTOR

Based on the above mentioned current status and specifics, as well as other contributing factors, the main issues and challenges of the Kosovo energy sector are given below and need to be covered and resolved in this Strategy:

[15] Environmental Status Report, KEK

1. **Lack of investment in electricity-generating capacities:** Even though Kosovo has one of the largest lignite-based energy resources in the world, since 1984 there has been no investment in the construction of new generation capacities or substantial rehabilitation of existing ones that would enable a stable electricity supply. Moreover, existing generation technology doesn't meet the environmental criteria defined by EU legislation. TPP Kosovo A and TPP Kosovo B have a joint installed capacity of 1478 MW, but due to their age, their operational capacity currently is about 915 MW or 62% of total installed capacity. Existing generation capacities are outdated, need constant repairs, and are operating with inefficient technology[16]. Although the Energy Strategy of Kosovo 2009 - 2018 envisaged the construction of new generating capacities and replacement of TPP Kosovo A, for various reasons the process was delayed and finally in 2015 the selection of the bidder for the construction of TPP Kosova e Re took place and the process is now ongoing. A new updated feasibility study for the rehabilitation of TPP Kosovo B is underway (funded by the EU), while the previous one was conducted in 2010 (funded by USAID[17]).
2. **Lack of investment in the distribution network system:** Insufficient investments in the electricity distribution system have led to a critical situation in which the system cannot withstand an increasing load, particularly in the winter. This has led to load shedding and a high level of technical losses which is further deteriorating the system.
3. **Large level of non-technical power losses:** Non-technical losses are a result of unauthorized use of energy, as well as unpaid electricity delivery to certain municipalities in northern Kosovo, where the DSO and the supply company have no control. It has led to severe problems in the distribution and supply system. At the same time, the transmission system operator continues to have no control of its cross-border electricity flow, which has also impacted the ability of suppliers to achieve favorable contracts for electricity import. In 2015, KOSTT signed a connection agreement with ENTSO-E, but this agreement has still not been put in force.
4. **No competitive electricity market:** Although the legal framework for the energy sector, adopted in 2010, has enabled the gradual opening of the electricity market, thus far there is no competitive electricity retail market in Kosovo. Three suppliers were recently licensed, butare still being passive most likely due to a low level of existing final consumer prices. By adopting new legislation for the energy sector, all barriers in terms of an effective market opening have been removed. ERO is currently working in harmonizing the secondary legislation with the new primary legislation. There is only one supplier who supplies all customers with regulated prices and has long-term power purchase agreements from all domestic producers. If there were more suppliers in the energy market in Kosovo, the power supply would be more stable.
5. **Large share of electricity used for heating:** Electricity has a significant share in the heating of living spaces, water, cooking, and sanitation. This is due to the lack of alternatives to supply other energy products. Consequently, the household sector is the largest electricity consumer. When the uncontrolled and unauthorized use of electricity are added, the problem becomes even worse. It is estimated that 450 GWh of electricity has been used for space heating in 2016.
6. **Non-rational use of energy:** Despite the considerable potential for energy savings, so far this potential is not being used sufficiently in Kosovo.
7. **Insufficient use of RES potentials:** Although the share of RES in the final gross energy consumption, including thermal energy from such sources, is around 19%, the electricity generated from RES continues to remain low in the consumption of electricity. The use of solar energy is also modest in meeting the needs of sanitary water heating particularly in the household and services sectors. In addition, there is no use of forms of biomass for this purpose, including urban

[16] National Development Strategy (2016-2021)
[17] TPP Kosova B investment, requirements and rehabilitation feasibility study, 2010

and rural waste. If the energy-saving potential and RES were exploited in a better way, the power system would be in a better position and therefore the problems would be mitigated.

8. Low share of district heating in final consumption: Despite significant improvements in the heat supply from the cogeneration units, the district heating in final energy consumption is still very low compared to the available potential.
9. Lack of natural gas infrastructure investments: Despite the opening of real opportunities for the inclusion of Kosovo in regional natural gas projects, Kosovo still has no feasibility study for the construction of a natural gas infrastructure. Further steps are expected upon the finalization and adoption of the feasibility study.

MAIN ONGOING ACTIVITIES UNDER EXISTING ENERGY SECTOR POLICIES

Before going into the detailed strategic objectives of energy sector development in the following period, it is important to note which activities have already been undertaken. The GoK, with the support of other state and international institutions, has already undertaken a range of activities to improve the situation in the energy sector in Kosovo. The main activities developed by the GoK and other institutions of Kosovo include:

- Harmonization of secondary and primary legislation. After approvals in June 2016 of laws on the energy sector, which have transposed the requirement of the Third Package of EU legislation on the energy sector, within nine months the secondary legislation is expected to be prepared for implementation;
- Significant effort has been taken in supporting the construction process of TPP Kosova e Re;
- Significant effort has been taken in supporting the process of rehabilitation of TPP Kosovo B;
- Activities have been undertaken in the implementation of soft measures[18] to open the energy market under the guidelines of the Energy Community Secretariat;
- Approval of the list of priority investment projects in the energy infrastructure sector[19] has issued and it includes 13 projects of strategic importance;
- Application to the list of projects of common interest for the Energy Community for the natural gas project (along with Albania) has been submitted;
- Developing the process for the establishment of a common energy market with Albania is underway, as a first step towards integration in a regional energy market;
- Approval of action plans for RES and EE and measures for their implementation have been issued;
- Activities have been undertaken in the process of transposing EU legislation for energy efficiency, with a focus on efforts to finding modalities for the establishment of the Energy Efficiency Fund;

[18] Guideline for implementation of soft measures is based on Berlin process requirements
[19] Single Project Pipeline of Infrastructural Investments

- Intensive activities have been undertaken in the establishment of One Stop Shops to facilitate the development of projects in the field of RES;
- Implementation of Decision No. 04/156 for decommissioning and dismantling of gasification facilities, fertilizer, heating, and other facilities that do not impede the normal operation of active units of TPP Kosovo A is underway;
- Implementation of measures set out in the National Development Strategy 2016-2021 for the energy sector is underway.

SWOT ANALYSIS

As a final step in the evaluation of the current status of the Kosovo energy sector, as well as the main issues and challenges, a SWOT analysis has been undertaken and presented as follows:

Strengths	Weaknesses
• Large lignite reserves with wide opportunities for electricity generation with competitive prices • Industry experience in production and exploitation of the lignite in Kosovo • Sufficient transmission interconnection capacities to provide for cross-border trade • Sufficient human resources for recruitment and development of skilled staff which may cover the needs of the sector • Legislative framework in accordance with EU directives • Kosovo is a contracting party of the Energy Community • Adequate institutional mechanisms for the functioning of the energy sector, in particular independent regulatory authority, independent transmission system and market operator • Relatively favorable RES potentials, which enables the diversity of energy sources • Development of a common Kosovo-Albania electricity market • High potential in energy efficiency	• Current generation capacities are old and do not provide reliable and sustainable energy generation • High level of technical and commercial losses in the distribution system • Lack of access to manage the energy sector in the northern part of Kosovo • Limited access for self-financing of investments • Delays in investments in modernizing and developing generation and distribution capacities • Irregular supply with electrical and thermal energy • Low RES share in electricity generation • Partial dependence on electricity imports • Low efficiency in power generation and energy use • Undeveloped market and low participation of the private sector in financing of EE measures • Environmental pollution from lignite mines and electricity generation • High use of electricity for heating • Lack of KOSTT control over cross-border electricity flows
Opportunities	**Threats**
• Increased demand for electricity in Kosovo and the region with opportunities for fast sector development • Restructuring and full reforms of the energy sector in line with EU Directives • Liberalization of the market regionally and the development of the sector with private capital • Potential for attracting strategic investors • Construction of new lignite-based generation capacities • Construction of district heating systems in larger cities • Reduction of technical losses and increased investments in distribution • Increased EE in energy generation and efficient use of energy by end-consumers • Development of renewable energy resources with private capital • Establishment of the energy efficiency fund • Development of RES projects with private capital • Kosovo's access to international financial mechanisms for increased EE	• Unexpected increases of prices of imports of liquid fuel and unforeseeable obstacles in oil products supply • Possible global financial crisis, with negative impacts in foreign investments • Continued obstructions by Serbia in the energy sector • Increased prices of electricity and increased demand for imports, until the development of new generation capacities • Lack of electricity available in the region • Non-functioning of open and competitive electricity market in the region • Non-fulfillment of strategic objectives on time, particularly in construction of sufficient capacities for electricity supply • Failure of establishment of the common market Kosovo-Albania as a first step towards integration in a regional energy market

CHAPTER V – SELECTED ACTIVITIES AND MEASURES FOR ACHIEVING STRATEGY OBJECTIVES

There are several ways to achieve strategy objectives. Based on the local specifics, available inputs, and analyses the following aspects were selected for achieving the Kosovo Energy Strategy objectives defined in Chapter III:

1. The objectives and measures already set out in the National Development Strategy 2016-2021;
2. Kosovo's obligations to international agreements in the field of energy;
3. The level of overall economic development in Kosovo;
4. The existing situation of the energy sector outlined in Chapter IV;
5. Kosovo's natural energy resources and their rational use;
6. Security of a continuous electricity supply, regarded as a matter of high overall national interest;
7. Demand for electricity is variable and requires a more flexible power system, while natural energy resources in Kosovo are dominated by coal;
8. The list of projects of interest to the Energy Community (PECI list 2013 and PECI list 2016);
9. List of priority infrastructural projects approved by the National Council for Investments and the Government of Kosovo;
10. High level of electricity import dependency of countries in this region[20];
11. Very early stage of an effective opening of the energy retail market on one side and limitations in control systems and the transmission and distribution of electricity from the relevant operators on the other side;
12. Lack of natural gas infrastructure and the challenge of introducing a new and highly complex sector for countries like Kosovo that have no existing infrastructure, and a lack of necessary technical studies;
13. Very early stage of development of heating systems in cities that previously did not have such infrastructure and the lack of necessary studies;
14. The current pace of project developments in the sector of RES and energy efficiency;
15. The current level of meeting the targets for RES and energy efficiency;
16. The obligation to develop a new plan for RES for the period of ten years after 2020 and the need for a feasibility study;
17. The obligation to develop a new long-term plan for energy efficiency for the period of ten years after 2018 and the need for a feasibility study;
18. Developments in the Energy Community towards advancing the RES and energy efficiency policies for the contracting parties;
19. Analysis of electricity demand[21];

[20] See Annex 1, point 1.6.1
[21] See Annex 2

20. Long-term planning of the existing district heating companies[22]; and
21. Analysis of electricity generation adequacy, with some alternatives supported by other analyses[23].

Based on this, detailed activities and steps for each of the five strategic objectives are given as follows.

OBJECTIVE 1

SECURITY OF A SUSTAINABLE, HIGH-QUALITY, SAFE, AND RELIABLE ELECTRICITY SUPPLY WITH ADEQUATE CAPACITIES FOR STABLE POWER SYSTEM OPERATION

The basis for the Energy Strategy development is the model of energy demand projection. After several rounds of analyses the Energy Strategy drafting team has adopted the model of projections of electricity demand based on the existing experience, economic growth forecast, gradual reduction of technical and commercial losses, expected industrial development, future energy efficiency measures, district heating system development, and solar energy for sanitary water heating. Electricity demand projections are prepared in four different scenarios. The methodology used in each scenario is described in Annex 3. Table 4 and Figure 4 show the electricity demand scenarios used in this Strategy[24].

Table 4: Scenarios of electricity demand

Electricity Demand (GWh)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Scenario 1 (LOW)	5634	5464	5662	5591	5694	5700	5706	5715	5741	5751	5776	5809	5849	5897
Scenario 2 (BASE)	5634	5464	5662	5620	5784	5826	5902	5955	6024	6084	6156	6238	6330	6455
Scenario 3 (HIGH)	5634	5464	5662	5735	5942	6041	6164	6253	6361	6461	6577	6706	6848	7010
Scenario 4 (HIGH 1)	5634	5464	5662	5892	5990	6120	6280	6410	6610	6870	7080	7319	7522	7731

The Low Scenario of electricity demand growth (Scenario 1) assumes an average annual growth rate of just 0.35% the in given period 2013 – 2026 (please note that in the period 2013 – 2016 there was a slight decrease in electricity demand (-0.08%)).

The Base Scenario is made up of the average annual growth rate of 1.05%, while the High Scenarios (Scenarios 3 and 4) are based on the average annual demand growth of 1.7% and 2.46%, respectively.

[22] See Annex 5
[23] See Annex 3
[24] Demand analyses details are included in Annex 2

The difference of total electricity demand predicted for 2026 between Base Scenario 2 and Low Scenario 1 is 558 GWh, or 8% of the Base Scenario's demand. The difference of total electricity demand predicted for 2026 between Base Scenario 2 and High scenario 4 is 1,28 TWh, or 19% of the Base Scenarios demand. More details on the analysis of electricity supply alternatives are given in Annex 3.

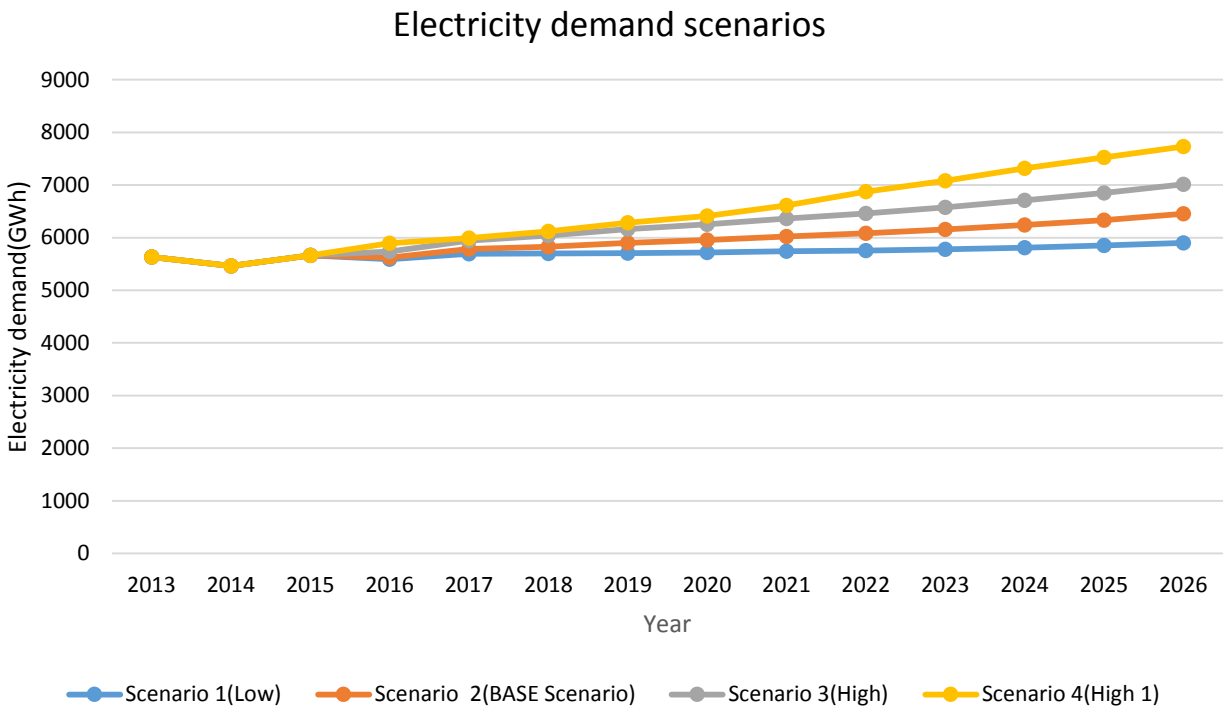

Figure 4. The curved lines of electric energy demand in Kosovo in 2013-2026

All four scenarios predict different electricity demand growth depending on: the annual rate of economic growth, efficiency measures either on the part of the consumer or on the distribution network, and the diversification of energy sources[25].

Alternative strategies[26] were analyzed against three criteria: 1) the security of a continuous electricity supply; 2) the operating criteria of ENTSO-E for an independent control system; and 3) environmental impact.

[25] Annex 2 provides a description of the methodology of electricity demand, factors that were considered and the demand for each type of costumers

[26] See annex 3

*The strategy selected for achieving **Objective 1** is based on the following 14 measures:*

1. *The construction process of the new TPP Kosova e Re will continue, following the environmental criteria set in the Industrial Emissions Directive and the possibility for co-generation use of at least 10% its net capacity. The target for its commissioning is set to the beginning of 2023 at the latest. Furthermore, this capacity will enable an intensive integration of RES generation and will encourage regional market integration.*
2. *To prevent endangering the security of electricity supply, TPP Kosovo A will operate until its replacement by TPP Kosova e Re.*
3. *TPP Kosovo B will continue to carry the main burden of security of electricity supply.*
4. *The process of rehabilitation of TPP Kosovo B will take place in two phases:*
    a. *The first phase will include interventions in environmental components in all the elements that do not affect the production of electricity;*
    b. *The second phase includes the complete rehabilitation that begins after the start of operation of TPP Kosova e Re.*
        - *Both phases will be developed by completing the rigorous requirements of Directive 2010/75/EC on industrial emissions.*
5. *To facilitate and complete the rehabilitation of TPP Kosovo B as soon as possible, the GoK will decide on financial models for this project during the first half of 2017.*
6. *Uninterrupted coal supply for operational needs will be ensured by opening a new coal mine (Sibovc South). These measures will be defined in the Action Plan for Mines and Minerals.*
7. *After starting the operation of TPP Kosova e Re, the process of decommissioning TPP Kosovo A will begin according to a previously prepared plan.*
8. *Continuous support will be ensured on the developments for electricity generation as determined by the National Action Plan on RES (PKVBRE), throughout the next ten-year period, based on policies mandated by the Energy Community.*
9. *Technical and commercial losses in the electricity distribution system will be reduced according to the DSO Master Plan with a target of 12% until 2025.*
10. *Measures will be taken to promote the involvement of local enterprises throughout the process of building TPP Kosova e Re, the rehabilitation of TPP Kosovo B, and projects related to the decommissioning of TPP Kosovo A and other projects designed to achieve other strategic objectives.*
11. *Measures will be taken to adapt University programs with labor market needs arising in the process of building TPP Kosova e Re, the rehabilitation of TPP Kosovo B, the decommissioning of TPP Kosovo A, the development of natural gas infrastructure, and the development of district heating in large cities.*

12. *In order to mitigate the upward pressure on prices that will occur as a result of generation capacity construction or rehabilitation with clean coal technology, the Government will develop a program for protection of vulnerable customers based on a detailed study and in line with Energy Community requirements.*
13. *In order to mitigate the adverse consequences of the new power projects and associated mine development, the Government will, with the support of other state institutions, international institutions, and donors, implement the best practices of countries similar to Kosovo, for the treatment of communities affected by the electricity activities.*
14. *Taking into account a range of regional and European initiatives that are based on very long-term visions for the development of the energy sector, a comprehensive set of studies of different energy sector aspects covering the period through 2050 will be undertaken on behalf of the Government. A detailed list of supporting documents that will be developed upon adoption of this Strategy is given in Annex 8*.

All the above measures will be included in Program for Energy Strategy Implementation which is a mandatory policy document approved by the Government.

OBJECTIVE 2

INTEGRATION IN THE REGIONAL ENERGY MARKET

Full integration into the regional energy market by all Energy Community contracting parties, including Kosovo, implies de facto as well as de jure implementation of the *Acquis Communautaire* on energy as defined in the Third Package of EU energy legislation including Directives on the:

- internal electricity market;
- internal natural gas market;
- energy efficiency;
- renewable energy; and
- environmental protection.

Kosovo is committed to implement all obligations deriving from the Energy Community Treaty and from the SAA. Kosovo has made substantial steps towards transposition of EU legislation as well as reforming the energy sector, through:

- the privatization of electricity distribution and supply, and legal separation of these activities to open the way for open access for interested third parties to the distribution network;
- ownership unbundling of the TSO as per the requirements of the Third Package of EU legislation and the process of certification is underway by the ERO;

- operationalization of an independent Energy Regulatory Office and development and consultation on a complete regulatory framework compliant with EU requirements; and
- statutory establishment of the State Aid Office.

However, there is still much work to be done towards the full liberalization of the energy market and the implementation of environmental criteria for electricity generation.

*The following milestones are still to be achieved before **Objective 2** can be fully realized:*

1. *Approval and implementation of secondary legislation for the implementation of energy sector laws approved in June 2016 by the Assembly of Kosovo (Law on Energy, Law on Energy Regulator, Law on Electricity, Law on Natural Gas).*
2. *Phased deregulation of generation prices.*
3. *Appointing and licensing of the supplier of last resort.*
4. *Licensing of more suppliers in the energy market following due process.*
5. *Preparation and approval of the Action Program for the protection of vulnerable customers.*
6. *Implementation of "soft measures'' according to the EnC guidelines.*
7. *Creation of an integrated electricity market between Kosovo and Albania as a first step towards integration into a common Energy Community market.*
8. *Strengthening the capacities of the ERO, the Competition Authority, and the State Aid Office to monitor the liberalized energy market.*
9. *Adherence to the energy exchange that is currently being established in Albania.*
10. *KOSTT certification by ERO and full membership in the ENTSO-E.*
11. *Obtaining full membership of ERO in ACER*
12. *Undertaking a comprehensive supporting studies for the energy sector further development till 2050, including, but not limited to, electricity and gas market studies.*

All the above measures will be included in the Program for Energy Strategy Implementation which is a mandatory policy document approved by Government.

OBJECTIVE 3

ENHANCEMENT OF EXISTING THERMAL SYSTEM CAPACITIES AND CONSTRUCTION OF NEW CAPACITIES

Prior to setting out the measures that the Government will take to achieve this strategic objective, it is necessary to define the heating demand projection scenarios[27]. It is given in the following Table and Figure.

Table 5: District heating demand scenarios till 2026

District heat demand (GWh)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Scenario1	292	328	381	406	427	444	462	479	497	515
Scenario 2	292	338	397	432	461	486	506	527	548	568
Scenario 3[28]	292	349	414	481	522	557	587	611	636	661

Scenario 1 of district heat demand growth assumes an average annual growth rate of 6.51% in the given period of 2017 – 2026. Scenario 2 assumes an average annual growth rate of 7.67%, while Scenario 3 assumes an average annual demand growth of 9.5%.

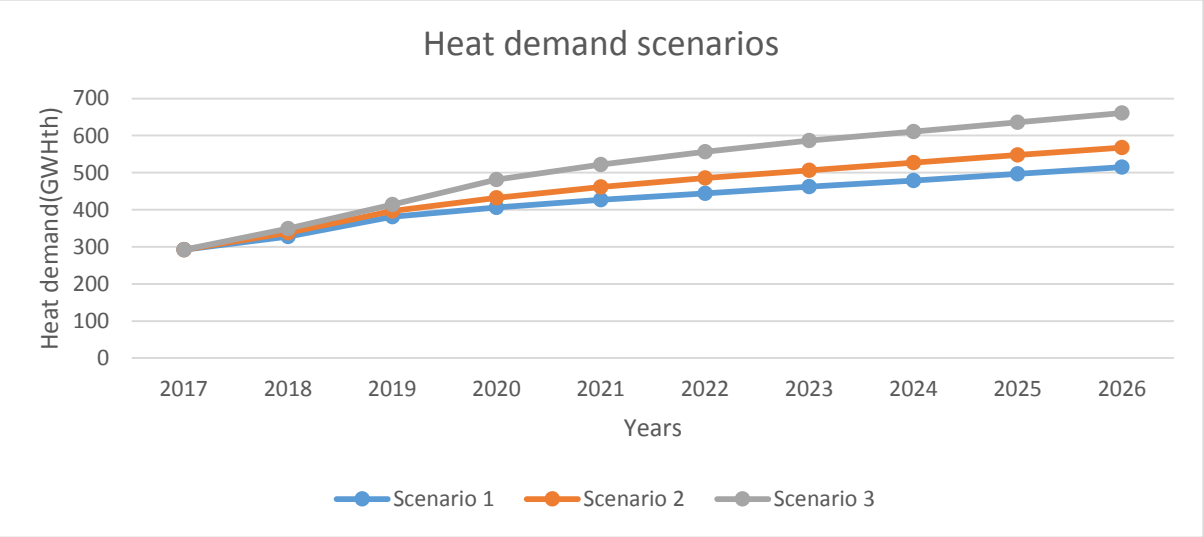

Figure 5. Heat demand scenarios in Kosovo in the period 2017 - 2026

The increasing urbanization of Kosovo's population has created the need for an adequate energy supply for heating the spaces of collective buildings. Installation of cogeneration in TPP Kosovo B and the plan to develop a similar system in TPP Kosova e Re has created the opportunity to provide a stable thermal energy supply for a significant portion of citizens and small enterprises not only in Prishtina, but also in other areas in the vicinity of the power plants. This Strategy supports the full utilization of the thermal energy potential of TPP Kosovo B and TPP Kosova e Re for new thermal installations, as deemed cost-effective.

[27] Detailed data are provided in Annex 5.

[28] Scenarios 1 and 2 correspond with planning scenarios of enterprises, while scenario 3 is developed in the framework of analyses for an aggressive scenario for reduction of electricity demand. Measures for the period of extending the existing capacities correspond with scenario 1.

Obsolete thermal systems in cities such as Gjakova, Mitrovica, and Zveçan need comprehensive rehabilitation in order to expand services to new and planned buildings. This Strategy also supports the improvement of existing systems and expansion of their capacity.

The study conducted by MED analyzed financing options for the construction of thermal power systems in several developed cities in Kosovo. Cases of the cities of Peja, Prizren, Gjilan, and Ferizaj have proven their cost-effectiveness. This Strategy therefore supports its development. In order to limit the burden on the public purse, the projects will be undertaken with the involvement of private capital through public-private partnerships.

*To achieve **Objective 3** of the enhancement of existing thermal system capacity and the construction of new capacities, the Government will implement the following measures:*

1. *Expansion of the TERMOKOS network in line with the existing Master Plan for expansion, connecting municipalities neighboring Prishtina to optimize use of co-generation capacities provided by TPP Kosovo B and TPP Kosova e Re.*
2. *Construction of a new thermal energy generation plant in the existing Djakova City network, together with strengthening the existing network for optimal usage of new planned thermal energy capacity.*
3. *Upgrades to the thermal energy systems in the cities of Mitrovica and Zvecan.*
4. *Reduction of the technical losses up to 8% in 2026 in all networks.*
5. *Preparation of conditions for the start of construction of thermal energy systems in large municipalities of Kosovo (Peja, Prizren, Gjilan, Ferizaj). It is based on the project approved by KKI, subject to pre-feasibility and feasibility studies that will be conducted prior to this measure.*
6. *Feasibility study on the use of existing systems for the provision of other thermal energy products (in addition to space heating).*
7. *Reduction in energy losses arising from technological processes of production of foundries by the utilization of heat produced by smelting for space heating of buildings in local urban areas.*
8. *Carrying out of a comprehensive study for the energy sector through to 2050, which will encompass district heating in details.*

All these measures will be included in the Program for Energy Strategy Implementation which is a mandatory policy document approved by the Government.

Annex 5 shows the development projections of existing district heating systems (TERMOKOS and DH Gjakova), and a general description of the Project: *Improvement of district heating in Kosovo through the implementation of the district heating system in municipalities with a high heating potential* approved by the KKI[29].

[29] Project no. 2 The list of priority infrastructure projects adopted by the National Investment Council was established on the basis of the Berlin Process for the Western Balkans countries WB6

OBJECTIVE 4

DEVELOPMENT OF NATURAL GAS INFRASTRUCTURE

The development of the natural gas infrastructure for a small market such as Kosovo is a major challenge. However, being a part of the larger market as the EnC Contracting Party, the development possibilities are certainly more open. However, even though Kosovo in cooperation with Albania has applied for the common gas project, being selected as a project of Energy Community interest, it is not likely that the preparation for a natural gas infrastructure in Kosovo will happen in the near future. Annex 6 gives a more detailed description of the application for the Natural Gas project, submitted together with Albania (ALKOGAP).

*Given the lack of studies, infrastructure, concrete agreements, etc., the Energy Strategy for the mid-term period envisages some of the following measures for **Objective 4**:*

1. *Development of secondary legislation to implement the law on natural gas, approved in June 2016.*
2. *Development of institutional capacity for managing activities necessary for the process of developing a natural gas infrastructure.*
3. *Carrying out of a feasibility study for the construction of natural gas system infrastructure.*
4. *Developing a master plan for gasification of Kosovo.*
5. *The preparation and adoption of the necessary model agreements.*

Depending on the findings of the studies mentioned above, other detailed measures will be taken to enable the construction of a natural gas infrastructure in Kosovo.

OBJECTIVE 5

FULFILLMENT OF TARGETS AND OBLIGATIONS IN ENERGY EFFICIENCY, RENEWABLE ENERGY SOURCES, AND ENVIRONMENTAL PROTECTION

Considering:

- Unsatisfactory level of security of energy supply and in particular of electricity in Kosovo;
- Unaffordability of the energy costs for a significant number of customers;
- High untapped potential for energy savings;
- Unsatisfactory results of private financial institutions' programs in the field of energy efficiency;
- Lack of functioning of energy services as a multilateral profitable business;
- Lack of adequate institutional organization at the central and local level for the effective implementation of national and local plans on energy efficiency;
- Kosovo's obligations as a Contracting Party to the Energy Community and obligations to the SAA for energy efficiency and climate change; and
- The Government priorities as set in the National Development Plan 2016-2021.

For the achievement of Objective 5 of this Strategy a series of measures need to be taken: legal, fiscal, financial, educational, and other.

The GoK will also undertake the following measures to achieve ***Objective 5*** *for* ***energy efficiency****:*

1. *Implementation of the third intermediate plan 2016-2018.*
2. *The transposition of the European Directive on Energy Efficiency 2012/27/EC through the review of the existing Law on Energy Efficiency.*
3. *Drafting and approval of sub-legal acts of the new Law on Energy Efficiency.*
4. *Completion of the establishment of KAEE with required staff and development of capacities at central and local levels for implementation of the energy efficiency policies.*
5. *Development of an Action Plan for energy efficiency for the period 2019 and beyond according to the requirements of the Directive 2012/27/EC and the previous study.*
6. *The adoption of secondary legislation for implementation of the Law on Energy Performance in Buildings in line with Directive 2010/31/EC.*
7. *Drafting and approval of the Program for the mobilization of investments for the renewal of the stock of residential and commercial buildings in the public and private sector, according to the Ministerial Council Decision of the EnC.*
8. *Establishment of the Energy Efficiency Fund in consultation with the financial institutions and in line with best practices.*
9. *Completion of the EE-RES project funded by a WB loan, along with the reporting.*
10. *Completion of the project of EE - RES funded by KfW loan, along with the reporting.*
11. *Approval of the Energy Code for the energy certification of buildings.*
12. *Implementation of the energy efficiency measures outlined in the Paris Declaration in relation to the Charter of Sustainability of the Western Balkans (WB6).*

Energy efficiency measures will be extended to all sectors of energy consumption (households, industry, transport, services, agriculture). A roadmap will be developed for the public sector for the implementation of energy efficiency measures. The GoK will put in place support measures to ensure achievement of the strategic objectives, including instruments of fiscal policy and financial mechanisms, and adequate programs and projects listed in the national action plans on energy efficiency. These programs and plans will be delivered to stimulate economic development and add value.

The above mentioned set of comprehensive studies for energy sector development until 2050 will also include the energy efficiency sector. All these measures will also be included in the Program for Implementation of the Strategy.

Renewable Energy Sources also comprise an important segment of Kosovo's energy sector, which improves the security of energy supply, increases economic growth, diversifies sources of usable energy, and reduces CO_2 emissions, thus protecting the environment. The use of such

resources for energy generation is a long-term objective, which must take into account the obligations arising from the Energy Community Treaty and the SAA. As a party to this Treaty, Kosovo is obliged to meet targets for the share of energy from RES in the gross final consumption of energy for the period up to 2020, pursuant to Directive 2009/28/EC and in accordance with the Decision of the Council of Ministers of the Energy Community D/2012/04/MC-EnC. This share is in line with the required target of 25% which is projected to be completed by available resources: hydropower; solar energy; solid biomass and other forms of biomass; wind power; and biofuels used in transport for consumption.

When planning RES generation capacities, a major potential source is taken into account, as well as the lower cost of its use (such as HPP). Whereas with regard to the feed-in tariffs, the further analyses will consider the issue of its financial and economic sustainability, as well as other aspects of the evaluation of RES impact to the society as a whole.

Since the process of issuing authorization permits by ERO is a very dynamic process, there is no need to indicate in the Strategy a table of issued permits of authorization for RES. Development of RES projects to maximize their use in the economic development and environmental protection in the period covered by this Strategy will be based on the economically and technically exploitable renewable energy potential of Kosovo. In terms of long-term development perspective, the use of RES will be based on the opportunities offered by the development and advancement of technologies of each type of the resource.

In practical terms, GoK will establish a coordinating and information body in line with a Decision of the National Council on Economic Development taken in December 2015. It will continue to pursue a process of harmonization and streamlining of the administrative procedures that underpin access of RES to the electricity network, facilitating RES projects.

In specific terms, therefore, GoK will implement the following measures to achieve Objective 5 on RES:

1. *Continued implementation of the Action Plan for Renewable Energy 2011-2020 and its revision by 2018 in order to achieve the target set at 25% for gross final consumption, based on the strategic objectives defined in this strategy for new electricity generation capacities from RES.*
2. *Implementation of new EU policies for meeting the target with more cost reflective in accordance with the rules of ECT for RES with a focus on the application of supporting schemes suitable to attract investments.*
3. *Development of the Action Plan for RES for the period from 2021 and onwards in compliance with the requirements of the RES Directive and based on previous studies.*
4. *Simplifying authorization procedures for RES projects and harmonization of the legal terms of approvals and permits required in consonance with the longevity of technologies.*
5. *Promote the development of the woody biomass market, considering its use format such as pellets and briquettes.*
6. *Establishment and functioning of One Stop Shops for RES.*
7. *Supporting generation projects for thermal energy systems using RES as fuel.*
8. *Implementation of measures for RES as set out in the Paris Declaration concerning the Charter of the Western Balkan Sustainability (WB6).*
9. *Carrying out of a comprehensive study for energy sector through 2050, which will also include a study on RES.*

All these measures will be included in the Program for Implementation of Strategy which is a mandatory policy document approved by the Government. In the financial term, consideration will be given on the implementation of incentive schemes in form of feed-in tariffs, or a feed-in premium as necessary.

Finally, the implementation of environmental protection obligations arising from the Treaty establishing the Energy Community and those reflected in the SAA, represents one of the more complex and costly challenges facing Kosovo's energy sector.

The construction of new generation capacities, rehabilitation, or eventual reconstruction of existing ones, must be consistent with the obligation set by the decisions of the Ministerial Council of the Energy Community.

The drafting of national plans and programs for the reduction of environmental pollution from large combustion plants, such as thermal power plants and thermal generators, is a short-term priority.

In order to improve the environmental conditions of all energy activities and to implement international obligations under the ECT and SAA in the environmental field, the following measures are envisaged under ***Objective 5****:*

1. *Completion and harmonization of legislation with the applicable environment acquis and its implementation within the period 2018-2027, ensuring that the construction of new plants' environmental policies are harmonized as much as possible with security of supply policies in a more affordable fashion.*
2. *Approval of plans on the reduction of emissions from large combustion plants under the requirements laid down by the Energy Community for the period 2018-2027.*
3. *Decommissioning and dismantling of gasification facilities, fertilizer, heating, and other facilities that do not impede the normal operation of active units of TPP Kosovo A, in accordance with the decision of the GoK, no. 04/156 "The use of lignite, in accordance with all environmental protection requirements (construction, rehabilitation and reconstruction of new power plants) must meet environmental criteria as defined within the Energy Community which are a reflection of the EU criteria); 04/156."*
4. *Development and adoption a master plan for rehabilitation of the environment from impacts of the operation of KEK.*
5. *The carrying out of a comprehensive study for energy sector through 2050, which will also include a study on environmental impact deriving from the policies recommended by the study.*
6. *Implementation of environmental measures set out in the Paris Declaration concerning the Charter of the Western Balkan Sustainability (WB6).*

All these measures will be included in the Program for Energy Strategy Implementation.

INSTITUTIONAL FRAMEWORK STRENGTHENING

An important aspect of the implementation of Strategy objectives is institutional framework strengthening. For the period 2017 – 2026 it assumes the following:

1. *Strengthening of capacities of ERO in the field of natural gas and thermal energy;*
2. *Strengthening of capacities of the Energy Efficiency Agency of Kosovo;*
3. *Strengthening of capacities of municipalities for the energy sector;*
4. *Strengthening of capacities of the State Aid Office;*
5. *Establishment of transmission and distribution operators for natural gas ;*
6. *Establishment of a fund for Energy Efficiency;*
7. *Establishment of new district heating enterprises on municipalities in which are expected the construction of district heating systems;*
8. *Establishment of a One Stop Shop for RES;*
9. *Establishment of ESCO.*

CHAPTER VI – OVERVIEW OF KEY ACTIVITIES, ESTIMATED COSTS AND NEXT STEPS

For the implementation of the Energy Strategy of the Republic of Kosovo 2017-2026 the Energy Law requires MED to prepare a three-year implementation program, approved by the GoK. Accordingly, the Implementation Program of the Energy Strategy shall be developed for the period 2017-2019. This document will be developed as a separate document, after the approval of this Energy Strategy by the Assembly of Kosovo.

The Program for the Implementation of the Strategy will specify all actions under each measure, indicating timelines of implementation, responsible institutions and supporters of the implementation of actions, time of the action and the overall cost of the plan for the period, as well as the source of funding. Monitoring of the implementation of the program will be conducted by MED, through regular annual reports.

Finally, the following Table gives an overview of key activities in the Kosovo energy sector in the period 2017 – 2026 as foreseen in this Energy Strategy of Kosovo.

Table 6: Overview of key activities in Kosovo energy sector in the period 2017 - 2026

Period	2017-2019	2020-2023	2024-2026
Generation capacities	Coal fired PP similar to 2016 RES capacity to increase for additional 65 MW, compared to 2016	TPP Kosovo A to be shutdown and replaced with TPP Kosova e Re RES capacity to increase for 85 MW, compared to 2019	To rehabilitate TPP Kosovo B To put TPP Kosova e Re in operation RES capacity to increase for 54 MW, compared to 2023 New flexible generation capacities (up to 200 MW) for system regulation needs
Reduction of total network losses	4.6% reduction of losses compared to 2016	6.2% reduction of losses compared to 2019	2.3% reduction of losses compared to 2023
Net import	Around 16% of the SEE demand will be a net-importer	Net-importer, in the same level of the volume of imports (16%)	After 2024 SEE will be a net exporter
Implementation of "soft measures"	All soft measures not reliant to the KOSTT-EMS Agreement to be implemented		
Heating surface area from thermal systems	1.620.539	1.955.539	2.180.530
Natural gas infrastructure			All preparation activities to be completed to initiate the natural gas infrastructure construction

RES Targets	23%	25%	According to new targets
EE targets	9% (92 ktoe)	According to new targets	According to new targets
Environmental targets	To resolve legal consequences in the facilities near TPPs	Defined targets as per ECT to be completed	Defined targets as per ECT to be completed
Long-term policy orientation document on the de-carbonization	To be approved		

The following Table shows an overview of preliminary estimated costs for the implementation of measures to meet the Strategy objectives. More precise estimation of the overall cost and the sources of funding will be given in the Program of the Energy Strategy Implementation.

Table 7: Overview of estimated costs for the implementation of measures to meet the Strategy objectives

Estimated cost of measures to achieve objectives of ESRK 2017-2026	
Objective 1	**Cost (million EUR)**
Construction of TPP Kosova e Re	1000
Rehabilitation of TPP Kosovo B	350
Decommissioning of facilities around TPP Kosovo A	65
New Coal Mine [30]	150
Reduction of technical and commercial losses in the electricity distribution system	200
HPP for regulatory needs of the electricity system	200
Total Objective 1	1965
Objective 2	
Action program for protection of consumers in need	45
Total Objective 2	45
Objective 3	
Expansion of existing capacities of thermal energy (district heating)	50
Construction of new thermal energy systems in larger cities of Kosovo[31]	150
Total Objective 3	200
Objective 4	
Gas pipeline Albania-Kosovo(ALKOGAP)[32]	150
Total Objective 4	150
Objective 5	
Energy efficiency measures[33]	100
HPPs, wind plants, solar plants, photovoltaic plants	600
Total Objective 5	700
OVERALL TOTAL	3060

[30] Project of the list of priority infrastructure projects approved by the National Investment Council and the Government

[31] Investments costs are based on Projects of the list of priority infrastructure projects approved by the National Investment Council and the Government.

[32] Project of the list of priority infrastructure projects approved by the National Investment Council and the Government. Estimation of costs is taking into açount only the transmission of gas, and not the costs of distribution.

[33] In addition to ongoing projects (World Bank and KfW project) the EE project listed in the list of priority infrastructure projects approved by NIC and Government was included.

ANNEX