



# **Models** of reducing energy consumption in residential building



Author:  
**Rinora Gojani**

# Models of reducing energy consumption in residential building

Copyright © 2022 German- Kosovar Business Association,  
Rr. Bekim Fehmiu 110, Icon Tower, Kati 9, 10000 Prishtinë

This publication was produced by the KDWV with the support of the German Government through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of GIZ or the German Government.

This publication was produced by the KDWV with the support of the German Government through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the German - Kosovar Business Association (KDWV).

# Table of Contents

---

Table  
of Contents

Page 3

Abbreviations

Page 4

Introduction

Page 5

The Kosovo  
Energy Profile

Page 6

The Kosovo  
Energy Strategies

Page 7

Legal Framework  
in support of the  
Energy Efficiency

Page 8

What is an ESCO?

Page 10

Conclusions

Page 12

---

**Models**  
of reducing energy  
consumption in residential  
building

## Abbreviations

---

<b>EE</b>	→	Energy Efficiency
<b>EU</b>	→	European Union
<b>EnCS</b>	→	Energy Community Secretariat
<b>EPSC</b>	→	Energy Performance Savings Contracting
<b>ESCOs</b>	→	Energy Service Companies
<b>GDP</b>	→	Gross Domestic Product
<b>GHG</b>	→	Greenhouse Gas
<b>GWh</b>	→	Gigawatt hours
<b>KDWV</b>	→	German Kosovar Business Association
<b>KEEA</b>	→	Kosovo Energy Efficiency Agency
<b>KEEF</b>	→	Kosovo Energy Efficiency Fund
<b>ktoe</b>	→	kilo tonnes of oil equivalent
<b>M&amp;V</b>	→	Measurement & Verification
<b>PPA</b>	→	Power Purchase Agreement
<b>SAA</b>	→	Stabilisation and Association Agreement
<b>toe</b>	→	tonnes of oil equivalent

As signatory to the Sofia Declaration in 2020 Kosovo has pledged to play its part in making the continent carbon-neutral by 2050 together with the European Union (EU) through mainstreaming a strict climate policy and reforming energy and transport sectors.<sup>1</sup> In 2021, Kosovo has also agreed to implement the Green Agenda Action Plan.<sup>2</sup> This means that Kosovo subscribes to putting sustainable development, resource efficiency, nature protection and climate action in the centre of all economic activities, and align with the EU's objectives.

Energy Efficiency (EE) is one of the most important strategic resources for a successful energy system transformation. One of the goals of the recently published draft of the Kosovo Energy Strategy is to move toward a more efficient energy consumption pathway that results in a less energy-intensive economy. A specific Energy Efficiency objective of the Strategy is to reduce energy consumption in the building stock, given that buildings account for roughly 40% of annual national energy consumption.

The transition to cleaner energy and neutral carbon by 2050 is unthinkable without the involvement of private sector and businesses. As the green agenda advances, only the businesses that shift their products and services to be carbon neutral are likely to do well. Businesses have already invented numerous energy-saving ways. Thanks to ever increasing financial mechanisms, technological improvements and social innovations, new, smarter and more efficient ways of doing business, running an industry, or simply living, are being identified every day. As such, going green will not only be a time imperative, but it will also be the only way to stay in business and be competitive.

This paper aims to look into business opportunities from the green agenda, focusing specifically on the building sector. Whilst the building sector continues to be a problem for energy efficiency, the solution should be found precisely within the sector. The paper argues that notwithstanding access to finance and other regulatory or cultural barriers, operationalizing the ESCO market is lucrative for business and a unique opportunity to shift the private sector

towards greener economic model and climate mitigation. Furthermore, the paper will look into the strategic and legal framework of Kosovo, as well as current barriers that hold back the market development or any ESCO model. The paper concludes with a set of recommendations for Kosovo in order to ensure a viable development of its ESCO market.

<sup>1</sup>Sofia Declaration on the Green Agenda for the Western Balkans, 10 November 2020: <https://www.rcc.int/docs/546/sofia-declaration-on-the-green-agenda-for-the-western-balkans-rn>. Last checked: 14 June 2022.  
<sup>2</sup>EU-Western Balkans summit, Brdo pri Kranju, Slovenia, 6 October 2021: <https://www.consilium.europa.eu/en/meetings/international-summit/2021/10/06/>. Last checked: 14 June 2022.

# The Kosovo Energy Profile

The overall electricity production of Kosovo in 2021 was 6,207 GWh, of which 5,770 GWh were from thermal power plants, whereas 437 GWh from hydro power plants and other renewable energy sources. The overall electricity demand in the system in 2021 was 6,885 GWh, which represents an increase of 11.65% compared to the demand in 2020.<sup>3</sup> This increase was mainly fulfilled by domestic generation, with thermal power plants having the biggest share, whereas the remaining part was covered by imports.

These statistics alone are sufficient to demonstrate that the Kosovo energy sector faces many challenges. It continues to be heavily reliant on very old coal fired power plants that have limited generation capacity. The demand for energy is constantly on the rise, whilst the use of energy is often inefficient. Consecutive Kosovo governments have failed to make meaningful investment in diversifying energy sources, curbing consumption, or improving the grid.

This has led Kosovo to be a country with a very high energy intensity. Energy intensity measures the energy efficiency of the whole economy by showing how much energy is used to produce one unit of GDP. High energy intensity means a country is using inefficient technologies to produce energy, which increases cost of production and the overall consumption of energy. According to Eurostat, the energy intensity of the Kosovo was 394 toe/mEUR of GDP in year 2020.<sup>4</sup> For comparison, this is almost three times higher than the average in the European Union (average value 103 toe/mEUR).<sup>5</sup>

For the same amount of energy consumed, an average European country earns five times more national income than Kosovo. Compared to European Union countries, Kosovo has ten times lower GDP and consumes 2 (two) times less primary energy per capita. This is because the standard of living in Kosovo is low and the industry is insufficiently developed. Given that more than 40% of the total energy consumption in Kosovo is used in the residential sector, which is comparable to the EU average, reducing the energy consumption in residential buildings (both existing and new ones) is of paramount importance.

Kosovo also suffers high losses in consumption and production levels. The losses in the grid represent 22,34% of the total energy produced, whereas commercial losses (thefts) represent 16.11%. This means that a total of 38,45% of the electricity produced in Kosovo is lost.<sup>6</sup> A big share of this is attributed to construction and buildings that do not fulfil energy efficiency standards nor take energy efficiency measures. As households represent the largest sector of consumers with 45,47%, followed by industry with 12,22%,<sup>7</sup> the building sector has a crucial role to play in energy efficiency efforts and solutions.

<sup>3</sup>Energy Regulatory Office, Annual Report 2021:

<https://www.ero-ks.org/zrre/sites/default/files/Publikimet/Raportet%20Vjetor/Annual%20Report%202021.pdf>.

<sup>4</sup>Draft Energy Strategy of the Republic of Kosovo 2022 – 2031:

<https://konsultimet.rks-gov.net/viewConsult.php?ConsultationID=41426>.

<sup>5</sup>Draft Energy Strategy of the Republic of Kosovo 2022-2031:

<https://konsultimet.rks-gov.net/viewConsult.php?ConsultationID=41426>.

<sup>6</sup>Energy Regulatory Office, Annual Report 2021:

<https://www.ero-ks.org/zrre/sites/default/files/Publikimet/Raportet%20Vjetor/Annual%20Report%202021.pdf>.

<sup>7</sup>Energy Regulatory Office, Annual Report 2021:

<https://www.ero-ks.org/zrre/sites/default/files/Publikimet/Raportet%20Vjetor/Annual%20Report%202021.pdf>.

# The Kosovo Energy Strategies

The Energy Strategy 2017 – 2026 is technically still in force. However, it has long been superseded by events on the ground, making it an outdated document. The recent energy crises, the war in Ukraine, and the report of the Intergovernmental Panel on Climate Change (IPCC) alerting ‘a code red for humanity’ are all occurrences that cannot be ignored. As such, Kosovo is in the process of agreeing a new Energy Strategy 2022 - 2031.

The Energy Strategy 2017 – 2026 has five objectives. The Objective 5 refers to meeting commitments and objectives on energy efficiency, renewable energy, and protection of environment. However, in this objective, as indeed in others, Kosovo has struggled to stay on course and deliver.

Whilst energy efficiency is a goal, the Strategy is a lot more specific about projects and interventions in the public buildings than in the residential sector. Having said that, some of the concrete actions in regards to the residential sector that the Strategy foresaw are the: a) approval of administrative instructions for the Law Energy Performance in Buildings in accordance with the Directive 2010/31/EC; b) drafting and approval of the Program for mobilizing investment to refurbish various elements in residential and commercial buildings in both public and private sector; and c) approval of the Energy Code for Certification of Buildings.<sup>8</sup> Of these three actions, only one (1) has been completed. There is no program in force for mobilizing investments in the residential and private sector and the Energy Code for Certification of Buildings is still not introduced.

Energy Efficiency features as a strategic objective in the draft Energy Strategy of Kosovo 2022 – 2031 too. The current draft foresees a specific energy efficiency objective for buildings, and provides specific indicators and targets for the period till 2031.

Although the draft Energy Strategy 2022 – 2031 is still under public consultation process, its specific energy efficiency objectives and targets indicate that Kosovo is set to embark on a major reshaping of its construction and building sector. The anticipated regulatory and legislative framework to make such targets happen, and the mobilization of finance represents a unique opportunity for businesses, old and new, to offer innovative and more efficient solutions to energy performance and consumption. ESCOs represent a nascent, but an inevitable such business opportunity (more on ESCOs below).

<sup>8</sup>Energy Strategy of the Republic of Kosovo 2017-2026:  
[https://me.rks-gov.net/repository/docs/Energy\\_Strategy\\_of\\_the\\_Republic\\_of\\_Kosovo\\_2017\\_-\\_2026.pdf](https://me.rks-gov.net/repository/docs/Energy_Strategy_of_the_Republic_of_Kosovo_2017_-_2026.pdf)

## Legal Framework in support of the Energy Efficiency

As a signatory party to the Energy Community Treaty, and the Stabilization Association Agreement (SAA), Kosovo is obliged to transpose and implement the EU Directives related to energy, including Directive 2018/2002 on Energy Efficiency. This is of paramount importance, as - amongst other things - it sets obligations for energy efficiency targets at the country level; obliges governments to proactively mobilise investment and set up EE obligation schemes; defines the exemplary role of public buildings in regards to EE performance, and foresees energy audits and management systems. Energy Efficiency targets for contracting parties to the Energy Community Treaty are expected to be formally adopted at the Energy Community Ministerial Council in December 2022.<sup>9</sup>

According to the Implementation Report of the Energy Community Secretariat for 2021, implementation in the energy efficiency sector of Kosovo is well advanced.<sup>10</sup>

In this regard, Kosovo approved the Law on Energy Efficiency (06/L-079) in December 2018, which tried to decrease energy intensity in the national economy and reduce the negative impact to the environment from activities related to the energy sector. This law is now being amended. The new draft specifically addresses the issue of EE improvements in the residential sector too. One of its objectives is to increase EE in housing and construction by improving the energy performance of buildings.

Furthermore, Kosovo currently is in a process of revising the Law on Energy Performance in Buildings. The Law on Energy Performance in Buildings aims to create the legal framework for improving the energy performance of buildings, taking into account the local and climatic conditions of the country, the conditions of internal comfort of buildings, as well as cost-optimal levels.<sup>11</sup> In 2018, Kosovo approved the Regulation for Minimum Requirements for the Energy Performance in Buildings and currently is in the process of developing the regulatory framework e.g. Building Code, regulation on labelling and eco-design, etc. to meet energy efficiency requirements. Furthermore, with the purpose of meeting abovementioned EE targets in buildings, Kosovo has already certified around 190 energy auditors.

Kosovo was also the first country in the Western Balkans to launch the Kosovo Energy Efficiency Fund (KEEF) in 2019, with a starting capital of €1m from the Kosovo Government, and €10m from the World Bank and the EU.<sup>12</sup> KEEF has already signed 150 agreements for energy services with municipalities.<sup>13</sup> To

<sup>9</sup>Energy Community Secretariat, 'Informal Ministerial Council concludes negotiations on 2030 energy and climate targets', <https://www.energy-community.org/news/Energy-Community-News/2022/07/14.html>, Last checked: 18 June 2022.

<sup>10</sup>Energy Community Secretariat, Annual Implementation Report, November 2021.

<sup>11</sup>MMPHI, Draft Concept Document on the Field of Energy Performance in Buildings; Updated version of the consultation document, 14 January 2022: <https://konsultimet.rks-gov.net/viewConsult.php?ConsultationID=41288>.

<sup>12</sup>Kosovo Energy Efficiency Fund, Kosovo Launches Energy Efficiency Fund: <https://fkee-rks.net/en/kosovo-launches-energy-efficiency-fund/>, Last checked: 14 June 2022.

<sup>13</sup>Bujiqi, N. Acting Managing Director of KEEF, Main speaker at the 'Challenges and opportunities for energy transition in the housing/private sector' held on 10 June 2022.



date, KEEF has had a limited scope of work, focusing its investments only in public buildings and street lighting. However, the fund is getting ready to extend financing for the residential sector soon.<sup>14</sup>

The last piece to complete the legislative framework is the Administrative Instruction on Energy Services (ESCO) which was approved in December 2021, which defines rules and procedures for the operation of energy service companies (ESCOs). This regulation will be a key piece of document for businesses that are interested to seize the opportunity to increase EE in buildings, as per the targets set out in the Energy Strategy.

To conclude, the legal and regulatory framework for EE in Kosovo was sufficiently developed, and is constantly improving to reflect the needs of time. The Energy Community Secretariat has confirmed that Kosovo rules for energy efficient public procurement, ESCOs, and energy performance and supply contracts are in line with the acquis.<sup>15</sup> Energy auditing and building energy certification provisions has started, and the construction market offers both the materials and services necessary for EE renovation. The new draft Energy Strategy's ambitious targets for EE in buildings is only going to strengthen the legislative framework to enable more efficient operationalization of ESCOs. All energy laws are expected to be amended by the end of 2023.

<sup>14</sup>Bujupi, N., Acting Managing Director of KEEF, Main speaker at the 'Challenges and opportunities for energy transition in the housing/private sector' held on 10 June 2022.

<sup>15</sup>Energy Community Secretariat, Implementation Report, November 2021.

# What is an ESCO?

An ESCO is an organization that provides a full range of services to energy users to design and implement energy efficiency options. ESCOs offer services for implementation and financing of energy efficiency projects, including energy auditing, design and engineering, equipment procurement, construction, installation, commissioning, measurement and

verification of energy and cost savings, operations and maintenance, facility management, and energy services.

Bearing in mind the targets for EE in all buildings (not only public but also residential ones), and the existence of an advanced legislative framework in Kosovo for EE, businesses should seize the opportunity to specialize and registered as ESCOs, to capitalize on the inevitable growing market of ESCOs. However, Kosovo should learn from experience of other developing countries to avoid the mistakes they have made in developing their ESCO markets.

ESCOs function based on several models: 1) Shared savings; 2) Guaranteed savings, or 3) Outsourced Energy Management.

**Shared** saving model allows the customer to keep the EE investment off its balance sheet. The customer pays ESCO for an energy service agreement, whilst ESCO sources financing and delivers EE improvements. For the duration of the contract, the energy cost savings are shared between the customer and ESCO, and they are reaped 100% by the customer once the contract is over.

**Guaranteed** saving model means the customer makes the financial investment in the EE project, hence the investment figures in customer's balance sheets. ESCO conducts works and guarantees EE performance. ESCO receives service payments from the customer once performance guarantees are satisfied. The customer repays the loan from generated energy saving.

**Outsourced** energy management model means ESCO does the investment and sells the energy output to the customer under a long-term contract for an agreed price. The ownership of equipment installed in such EE project remains with ESCO if the agreement is build-own-operate; or is transferred to the customer if the agreement is build-own-operate-transfer.

ESCOs function based on several models: 1) Shared savings; 2) Guaranteed savings, or 3) Outsourced Energy Management.

For the uninitiated, ESCO development is a complex affair. All ESCO models require strong legal, financial, accounting and business infrastructure. That is why the World Bank recommends developing countries who are interested to build an ESCO market incrementally

to: (i) start with simple models (e.g. standardized products, equipment leasing or one year contracts with simplified energy service agreement); (ii) facilitate ESCO financing; (iii) implement supportive legislative, regulatory and policy initiatives; and (iv) creating a stable demand for ESCOs in the private sector.<sup>16</sup>

In some countries that have had difficulties with operationalizing ESCOs, super ESCOs have emerged. A super ESCO is established by the government and supports not only the public sector (hospitals, schools, municipalities, government buildings and other public facilities) but also private sector ESCOs through capacity building, project development and facilitation.<sup>17</sup>

The reason why the model of a government backed Super ESCO would be pertinent in Kosovo, is because Super ESCOs help build trust between private ESCOs and the public sector end users, mitigate risks, and facilitates interaction between all parties involved. The Kosovo Energy Efficiency Fund already operates as an ESCO for its client municipalities.<sup>18</sup> As such it may have a role to play in the development of private ESCO market and standards, as its remit becomes wider than public buildings only, and as Kosovo starts making concrete steps in meeting its EE Strategy targets.

According to the World Bank study 'Transforming Energy Efficiency Markets in Developing Countries: The Emerging Possibilities of Super ESCOs' the ways in which a super ESCO can help the create an enabling environment for private sector ESCOs is through:

- Directly engaging ESCOs as contractors in the implementation of large projects in public facilities (such as for installation, commissioning, and performance monitoring), thereby helping to build their capacity through either shared or guaranteed savings;
- Arranging access to or guaranteeing/de-risking financing for small, private ESCOs to help them implement projects and build their capacity and credentials;
- Demonstrating ESPCs' viability to public sector decision makers and investors, and helping these actors become more familiar with shared and guaranteed savings models and PAYS schemes;

<sup>16</sup>Hofer, K, Limaye, D, Singh, J, Fostering the Development of ESCO Markets for Energy Efficiency. World Bank Group.

<sup>17</sup>Sarkar, A, Moin, S, Transforming Energy Efficiency Markets in Developing Countries: The Emerging Possibilities of Super ESCOs, World Bank Group.

<sup>18</sup>Communication with Sekiraca, B. Head of Planning Division at KEEA.

- Standardizing technical specifications and transaction templates and tools (e.g., ESPC and M&V protocols, risk-sharing platforms) and making these available to private ESCOs (e.g., to be used for public energy efficiency projects) and end users, thereby reducing the perceived risk of working with ESCOs;
- Raising consumers' awareness of energy efficiency concerns, resulting in increased demand for energy efficiency investments to be met by the private sector ESCO industry.

## Conclusions

The challenges of developing ESCO market are real. However, so are its economic, financial, environmental and human benefits. To ensure economic operators in the building sector see business opportunities from embarking on the green agenda, rather than perceive it as a constraint on them, the Government of Kosovo should address the general energy efficiency challenges. They relate, but are not limited to: the Energy Efficiency Fund currently not covering the private sector; fiscal measures to support energy efficient technologies and/or finance the extra costs of renewables; addressing the current skills gap and lack of knowhow through partnerships with academia and the private sector; investing in awareness raising for the benefits of EE amongst citizens, and initiating programmes or mechanisms to facilitate the energy transition and zero-carbon emission goal.

In relation to ESCOs specifically, the Government should consider taking the following steps:

- Complete the legal framework in regards to EE and energy performance in buildings, to include residential buildings as well, and create an enabling environment for public and private ESCOs to emerge and develop.
- Make generating energy efficiencies a mandatory criterion for all public institutions, through the distribution of EE targets for buildings fairly across them. Help them with
- energy audits and hold them accountable for their progress, or lack thereof. Make such data public in an energy efficiency platform for monitoring and verification purposes.
- Develop and promote simplified models and standardized tools and templates for the public sector to manage their EE contracts.

- Raise awareness of engineers, public procurement officials, and stakeholders in the building and construction sector about energy efficiency requirements and the potential role of ESCOs.
- Facilitate access to finance for EE projects, through raising the awareness of commercial banks about ESCO or user loans for energy performance contracts. Designed a revolving mechanism of funding for residential and private sectors to ensure long-term sustainability of the Energy Efficiency Fund.
- Develop skills of private ESCOs and facilitate their contracts with public agencies.
- Support public institutions in aggregating similar buildings to create larger projects to reduce time and transaction cost e.g., master contract for EE in all hospitals, schools or Government owned buildings.

Business on the other hand should consider taking the following steps:

- Keep up to date with the green agenda, and EE requirements, especially the operationalization of the Regulation on ESCOs.
- Invest in their human capital to understand how to take advantage of the green agenda.
- Make use of existing financial mechanisms to implement EE projects.
- Differentiate their business from others through their regard for environment and climate, starting from their procurement choices and procurement offers.

*The best way to unlock this potential is through discussing business opportunities, within the framework of an organized Network. Therefore, the German-Kosovar Business Association (KDWW) jointly with GIZ-KEEP has launched the Network for Clean Energy Businesses N4CEB, in 2019. In order to unlock market opportunities for clean energy business and Energy Efficiency, N4CEB aims to give the private sector a strong voice, mutual exchange, stimulating public debate and also to emphasize increasingly the recommendations to the authorities for appropriate conditions of legal framework to increase market development.*

*German-Kosovar Business Association; Str. Bekim Fehmiu 110  
Icon Tower, kati 9, Prishtinë/Kosovë  
Tel.: +383 38 600 880; E-Mail: [info@oegjk.org](mailto:info@oegjk.org)  
Web: [www.kdww.org](http://www.kdww.org) /[www.oegjk.org](http://www.oegjk.org)*

**Models  
of reducing energy  
consumption in residential  
building**



---

## **Models** of reducing energy consumption in residential building

●  
Author:  
**Rinora Gojani**



Implemented by  
**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

