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Jelena Pavlović, University of Belgrade, j.pavlovic.phd@edu.arh.bg.ac.rs
Ana Šabanović, University of Belgrade, ana.sabanovic@arh.bg.ac.rs
Nataša Ćuković Ignjatović, University of Belgrade, natasa@arh.bg.ac.rs

ENERGY EFFICIENCY IMPROVMENTS OF THE BUILDING STOCK: REPUBLIC OF SERBIA LEGISLATION COMPLIANCE TO THE EUROPEAN UNION

Abstract

The paper analyses the notion of improving energy efficiency, as a means of increasing sustainability by lowering energy demand in the building sector globally, also acknowledged in Serbian law-making through regulations aimed towards its advancement. EU Candidate Country status imposes changes to the existing legislative and strategic framework regarding following its directives, which then become incorporated into the laws, regulations, and standards of the Republic of Serbia. By means of descriptive content analysis, official documents related to energy efficiency in architectural design and construction are reviewed in order to determine its scope and raise awareness of the levels and opportunities of upgrading the building stock that such legislative framework supports.

Keywords: sustainability, directives, regulations, energy efficiency, building stock

УНАПРЕЂЕЊЕ ЕНЕРГЕТСКЕ ЕФИКАСНОСТИ ИЗГРАЂЕНОГ ФОНДА: УСКЛАЂЕНОСТ ЗАКОНОДАВСТВА РЕПУБЛИКЕ СРБИЈЕ СА ЕВРОПСКОМ УНИЈОМ

Сажетак

Рад анализира појам унапређења енергетске ефикасности, као глобалну меру унапређења одрживости кроз смањење потражње енергије у грађевинском сектору, какав је препознат и у српској легислативи. Статус земље кандидата за приступање ЕУ намеће измене постојећег законодавног и стратешког оквира пратећи њене директиве, које се потом инкорпорирају у законе, прописе и стандарде Републике Србије. Дескриптивном анализом садржаја врши се ревизија званичних докумената који се односе на енергетску ефикасност у архитектонском пројектовању и изградњи у циљу утврђивања његовог обима и подизања свести о нивоима и могућностима унапређења грађевинског фонда које такав законски оквир подржава.

Кључне ријечи: одрживост, директиве, прописи, енергетска ефикасност, грађевински фонд

1. INTRODUCTION

The Long Energy Crisis or "oil embargo" occurred in 1973 causing a shock, followed by the second oil crisis in 1979 and global political and economic effects. The events forced a change of attitude towards energy production and consumption. [1] As a result, during the last half-century, the world has made significant gains in energy productivity, since the oil shocks brought energy demand and vulnerability to energy supply disruptions into focus. [2] They incited a variety of policies at the global, European, national, regional, and local level, as well as actions performed by governments, companies, and non-profit organizations.

The overall influence of energy sector has brought up major concerns, and in addition to these challenges the world started to notice other environmental problems. Responsible management of resources, and energy efficiency as its specialized part, has been identified at an early stage as a key strategy for energy saving and raising energy self-reliance. [3] The energy challenges the world has faced from the 1970s to the 1990s provided experiences and lessons to be applied in the following decades. Energy efficiency concept is a vital source and guide to any future global, European, or national energy-saving strategy.

Current increase in emissions within the building sector is happening due to a continued use of coal, oil and natural gas. Combined with high activity levels in regions where electricity remains carbon-intensive, it results in a steady level of direct emissions, but also growing indirect emissions (i.e., electricity). Electricity consumption in building operations represents more than a half of global electricity consumption. [4]

Since the building sector is accountable for 40% of consumption of total energy generated [5, 6], the requirement for energy efficient improvement of envelopes and systems for new buildings was introduced with a goal of minimizing primary heat losses. A set of parameters was defined in order to assess if a building was fit for use. New buildings consume less energy according to code, but are outnumbered by the existing ones, which need a significant amount of energy resources for operating. Hence, energy efficiency improvements of the existing building stock are inevitable in the process of minimizing current energy demands. In that sense, even the United Nations proposed an implementation plan for sustainable urban development within the New Urban Agenda [7] which focused on improving energy efficiency and sustainable land use in its several sections. Also, a significant part of the present building stock represents built heritage, not primarily considered for energy performance enhancements due to constraints regarding the preservation of their cultural value.

When considering sustainability within architecture and construction, and its practical regulation, we consider the determinants of the United Nations above all, but the Candidate Country status of the Republic of Serbia for accession to the European Union brings further rules in the form of preconditions that must be met in order to complete the process. A number of them presume changes to the existing legislative and strategic framework, as well as its adjustment and harmonization with current EU policies. They are initially introduced into national strategies, which then became incorporated in laws, regulations, and standards of the Republic of Serbia.

As a research method, descriptive content analysis was used for official documents from the field of environmental studies and sustainable development that are related to the discipline of architecture and construction, and in which the concept of energy efficiency was identified. Within the actual analysis, the sources are arranged primarily grouped in two segments, according to the hierarchy of document issuers – European Union and the Republic of Serbia, in order to determine the notion of compliance. The first segment of the analysis contains directives and other relevant legislative documents of the European Union that became mandatory for Serbia through the conditions of the stabilization and association process. They are arranged chronologically according to the development of the concept and implementation mechanisms of energy efficiency. The second segment contains the analysis of legislative documents of the Republic of Serbia set according to the rule of legality, from general to specific: strategic documents, laws, regulations, and standards. After reviewing all the individual documents, concluding remarks were made.

2. RECOMMENDATIONS OF THE EUROPEAN UNION ON ENERGY EFFICIENCY

According to the Stabilisation and Association Agreement with the European Union, the Republic of Serbia is obliged to harmonize its own regulations with the EU directives and development strategies. Therefore, this chapter provides overviews of EU documents that introduce changes and the creation of Serbian legislation in the field of energy efficiency in architectural design and

construction. Reviews are given in order to show their individual role in the development of Serbian legislation on the matter, which is presented in chapter 3.

2.1. EU DIRECTIVE ON THE ENERGY PERFORMANCE OF BUILDINGS

This Directive [5] was adopted by the European Parliament and the Council in 2010, as a modification of a previous version from 2002, in order to both clarify the notion of buildings' energy performance and to amend its content. The aim of the document was promoting improvements of the energy performance of buildings in the European Union by laying down requirements for calculations and their minimum values that are to be applied in new buildings, existing buildings, building elements and technical systems. Its implementation requires introduction of national plans by Member Countries for nearly zero-energy buildings, energy certification, regular inspection, and independent monitoring.

Specifically, the document states that a reduction in energy consumption, along with the use of renewable resources, is critical for a decrease in greenhouse gas emissions. Therefore, it is important to reduce building energy needs by enhancing their energy efficiency, as their share of consumption is as high as 40% in energy generated.

Thermal characteristics, followed by heating and cooling calculations, energy from renewables, passive heating and cooling, shading, air quality, natural lighting, and overall design – are all to be included in methodology of determining the energy performance of buildings. According to existing EU standards, annual energy performance represents all the energy needs of a building that is to be used for temperature maintenance and domestic hot water throughout a year. Based on this estimation, building certification is organized along with procedures for its implementation and control.

In accordance with local conditions, a minimum of requirements is to be set for energy performance in new structures, as well as buildings undergoing major renovations, apart from protected structures. Recommendations for energy efficiency improvements are to be applied especially to public buildings, in order for public authorities to "lead by example" to promote the concept. European funds, transmitted through national, regional, and local funds, serve to support green technologies and development of energy efficient systems.

2.2. EU DIRECTIVE ON THE ENERGY EFFICIENCY

The Directive 2012/27 [8] was adopted in 2012 by the European Parliament and the Council to ensure the achievement of saving 20% of the Union's primary energy consumption by 2020, with defining thoroughly the notion of energy efficiency as a means of mitigating climate change and securing energy supply. For all Member States, implementation is required on a national level through strategic targets.

Document considers the fact that energy efficiency primarily decreases energy consumption, thus decreasing energy imports. Also, it lessens the effects of climate change by directly reducing emissions, and innovation development that follows it provides new business opportunities that strengthen economic growth. In computational sense, energy efficiency represents the ratio of performance, services, goods, or energy to energy intake. Elements that form the building envelope are the ones particularly important for setting energy performance requirements.

It is noted that there is an evident need for an investment strategy in the renovation of residential and commercial buildings to improve the energy performance of the building stock, because of the high share of buildings' energy consumption in the European Union. There is a need of introducing annual renovation rates of at least 3% for publicly owned buildings larger than 500m2 (or 250m2 starting from 2015), so that they meet the minimum requirements. Furthermore, the directive requires that energy efficiency is introduced as one of the preconditions for public procurements. Also, the citizens are to be included in the development and application of energy efficiency and informed about the progress by their local governments. Certain measures of implementation are energy audits, smart meters, and consumption-based charging for at least 80% of consumers, as well as certification arrangements for energy efficiency improvements. Heritage buildings, defence facilities and places of worship do not necessarily fall under this rule.

2.3. EU DIRECTIVE ON THE ENERGY PERFORMANCE OF BUILDINGS AND ENERGY EFFICIENCY

The document [9] was adopted by the European Parliament and the Council in 2018 as an amendment to the previous Directives in order to review the measures needed for reaching projected targets, since an estimation was made that they were not on track at the moment.

With the security of energy supply of the European Union, its competitiveness and sustainability in mind, the most important commitments are the reduction of greenhouse gas emissions by 40% compared to 1990 before 2030, increase of renewable energy share in consumption, energy savings, and other activities. The building stock, being responsible for 36% of all carbon dioxide emissions in the Union, is to be decarbonized by ultimately obtaining all energy from clean sources by 2050. Goals and actions for energy efficiency are to be prepared by each Member State individually, with setting long-term renovation strategies and expected results.

The directive demands that both energy efficiency and the use of renewables are enhanced, because buildings take up to 80% of all energy used for heating and cooling (which sums to 50% of energy spent in the EU). Increasing the number of deep renovations with clear guidelines and measurable activities has the aim of transforming existing structures into “Nearly Zero Energy Buildings”. The document restates the significance of promoting skill development and education in energy efficiency and building in general, as well the need for an annual renovation rate of 3%. Energy performance certification transparency and providing all necessary parameters for calculation is required, but we are not to focus only on the envelope. Instead, we are to include all relevant elements and technical systems to improve thermal and visual comfort in a building, such as passive elements for reducing the energy needed for heating or cooling, lighting, and ventilation. Self-regulating systems and innovations that integrate renewable energy sources into smart supply networks and smart buildings are encouraged. Decarbonized, energy-efficient building stock and the transition to almost energy-neutral buildings is the goal, encouraged even when protecting and preserving cultural heritage.

2.4. EUROPEAN GREEN DEAL

An ambitious response to raising concerns about the environmental problems and climate changes comes in form of “The European Green Deal” [10], adopted by the European Commission in 2019, still leaning on the basis of the Paris Agreement [11] while setting a new path for sustainability. Zero net greenhouse gas emissions by 2050 and estimating economic growth apart from the use of resources, these are the two direct goals that have been defined, but they cannot be achieved by Europe acting on its own. The document introduces inclusive growth into sustainability objectives through collaboration with its neighbouring countries.

Climate neutrality requires smart infrastructure for integrating renewables, energy efficiency and other sustainable solutions to help achieve decarbonization at minimal cost. Since significant amounts of energy and mineral supplies are necessary during the processes of building and renovating, they are to be executed in an energy-efficient way. As said before, buildings consume a considerable amount of total energy produced, and the rate of renovations of the building stock in the European Union is between 0.4 and 1.2%, so it needs to be at least doubled to reach planned targets. However, since around 50.000.000 consumers struggle financially, maintaining their homes at an appropriate level requires tackling energy efficiency and affordability at the same time. The “renovation wave” of public and private buildings, primarily schools, hospitals, and social housing, brings focus on these issues. Reducing bills and, consequently, energy poverty, are expected outcomes along with enhancing local entrepreneurship and the building sector. Simultaneous implementation of regulations on energy performance, national strategies for renovation, and regulations on construction products are to guarantee that the ever-improving building stock management respects the notion of circular economy.

Sustainability of contemporary industries, smart mobility, food supply systems, preservation and restoration of ecosystems and biodiversity, as well as reducing pollution, are also reviewed in the document. All the needed changes require research, innovation, and education, along with financing possibilities. The document announces the coming of "The Green Agenda for the Western Balkans", further cooperation with China and Africa, and also the "European Climate Pact". The overall aim is for the European Union to achieve sustainable future through a transition with equal opportunities for all.

2.5. STEPPING UP EUROPE'S 2030 CLIMATE AMBITION

In the year 2020, the European Commission adopted this document, further titled "Investing in a climate-neutral future for the benefit of our people (The 2030 Climate target plan)" [12], in order to clarify the setting of the aim of climate neutrality by 2050 and discusses possible new aspects for its achievement.

According to the document, the whole energy system is aimed to be transformed – transport, industry, and the building sector. Since 75% of the EU building stock is still inefficient in terms of energy and heating with fossil fuels is common, the renovation has great potential, but its current rates are to be increased at least two-fold by 2030. Due to need for improving building envelope, smart systems, and integration of renewables, "deep renovations" are most advised.

2.6. A RENOVATION WAVE FOR EUROPE

This document [13], adopted by the European Commission in 2020, focuses on renovations as one of the key strategies for achieving climate neutrality. It repeats the findings from previous documents regarding current state of the building stock in terms of not meeting minimal energy efficiency requirements and their responsibility for the overall energy use. It asserts that the overall renovation rate of 11% in the EU does not involve energy performance improvements, which is estimated only at around 1%. The renovations that actually reduce energy consumption by over 60%, "deep renovations", take up to only about 0.2% of the building stock per year. They are much needed in order to reduce the stress on greenfield building, help preserve nature, biodiversity, and agricultural land.

Energy efficiency remains the primary principle, along with affordability, decarbonization and integration of renewables, circularity, health and environmental protection, green and digital transition, as well as the respect for aesthetics and quality of design. Existing regulations are to establish the minimal requirements, and effective targeted investments are to be determined. There are three particular areas in focus of said renovations: worst-performing buildings, public buildings, HVAC and water heating systems.

The document also announces "Long-term Renovation Strategy", which is to provide assessment for implementing general decarbonization of the building stock planned until 2050.

2.7. AN ECONOMIC AND INVESTMENT PLAN FOR THE WESTERN BALKANS

Adopted in 2020 by the European Commission, the document [6] firstly acknowledges the importance of the Western Balkans to the European Union and thereby transmits its "European Green Deal" recommendations to neighbouring countries, along with the help from the EU through planned investments and support. The aim is to encourage forming of a single regional market in order to bring it closer to the market of the European Union by implementing much needed reforms, which would enable fostering a long-term recovery. Green and digital transitions thus would eventually lead to sustainable economic growth.

The Annex [14] primarily examines roads, renewable energy, transition to green energy sources as investment priorities for the dual "green" and digital transition in the Western Balkans. The building sector of the Western Balkans accounts for over 40% of consumption in total energy produced as well, so the Renovation Wave remains just as important as it is within the EU, and its principles remain the same. The renovation of buildings with meeting the minimum requirements of energy performances will contribute to improving both human health and their living standards.

3. ENERGY EFFICIENCY WITHIN THE REGULATIONS OF THE REPUBLIC OF SERBIA

The subject of energy efficiency in the sector of architecture and construction is recognized in the legislation of the Republic of Serbia in two ways, as directives and goals – a part of national development and specialized sector strategies, and as mandatory laws and standards. Most national strategies [15, 16, 17] refer directly to international [3, 7, 11] and European [10] documentation. This need for harmonization is visible within the constant updating of laws and standardization. Further in this chapter reviews of the existing Serbian legislation regarding the matter are presented.

3.1. REPUBLIC OF SERBIA'S NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT

This document [16], adopted in 2005, and amended in 2007 by the Serbian Government, was eventually replaced by a more recent document, but it was important for this research due to the fact that it marks the beginnings of identifying the concept of sustainable development in Serbia officially, which subsequently became a broader setting for the energy efficiency notion, that is of current interest. Sustainable development principles and priorities are introduced into Serbian regulations primarily through this Strategy. Sustainability demands all-level, interdepartmental harmonization on different development aspects, since it is a long-term process affecting all life aspects. The economy, socio-economic conditions, environmental protection, and conservation of natural resources are primarily considered. In practical sense, institutional framework, sources of funding, and methods for performance monitoring are thereby defined.

Interventions that would halt the deterioration of the housing stock and enable better quality of housing conditions are cleaner technologies, increased energy efficiency, renewable energy resources, also directly reducing environmental pollution. The greatest single potential recognized is reducing the use of thermal energy for heating of housing by improving their thermal insulation.

Due to economic and technological factors, energy efficiency is low, and energy is largely wasted regardless of the energy deficiency. Resulting resource depletion is one of the biggest environmental problems.

Disappointingly, the document excludes the building sector both from its Scheme of the institutional framework as an actor for its implementation, and from the institutions - indicators for monitoring, despite its identification as of great influence on the environment and high potential for improvement by all relevant documents.

3.2. SUSTAINABLE URBAN DEVELOPMENT STRATEGY UNTIL 2030

Leaning on the New Urban Agenda [7] and in accordance with a large number of EU strategies, in 2019 the Government of the Republic of Serbia adopted a new national Strategy [15] that deals with the issue of sustainability, Goal 11 - sustainable cities and communities in particular.

The main cause of low energy efficiency is the application of regulations, standards, and mandatory energy studies only on new buildings, while the vast majority of the building stock consists of buildings built before regulations became stricter in 2012. Also, a large number of buildings already built illegally in Serbia represent a huge problem, as well as the acting mechanism of their legalization. In that procedure, a reduced volume of documentation is prescribed in relation to new construction - the obligation to apply the minimal conditions of energy efficiency and the preparation of the Energy Efficiency Study is disregarded. Generally, a problem is recognized – an excessive complexity of procedures and regulations obstructs achieving the goal.

The document proposes incentive programs to improve energy efficiency in the existing building stock. Great potential for the development of cities by revitalizing brownfield sites and recycling the existing architectural heritage has been noticed. The need to use the existing urban capital can be met through the improvement, adaptation, or conversion of the existing, in order to reduce the pressure on greenfield sites.

One of the important purposes of the strategy is the creation of a strategic framework that includes the participation of stakeholders in solving key problems and identifying areas of urban development.

3.3. ENERGY DEVELOPMENT STRATEGY UNTIL 2025

Although energy efficiency is not the focus of this Strategy [17], the document adopted by the National Assembly of the Republic of Serbia in 2015 is analysed based on the fact that it states that improving its aspects within buildings can reduce the pressure on the energy sector significantly. The data within the Strategy point out that the full application of energy efficiency measures to the housing stock has the potential to save 16% of final energy consumption. This strategy also recognizes the economic potential that the improvement of energy efficiency of the existing building stock could achieve through opening of a market aimed at rehabilitation of these buildings. As in most strategic documents, the important role of further harmonization of existing regulations and standards with those applied in the EU has been recognized.

3.4. LAW ON PLANNING AND CONSTRUCTION

This is the fundamental mandatory legislation in the Republic of Serbia, regarding all planning and construction adopted in 2009, amended in 2010, 2011, 2012, 2013, 2014, 2018, 2019, 2020, and finally in 2021 [18]. The Law regulates particulars relating to planning, design, construction of buildings, terms for issuing professional licenses, determines responsibilities, supervision, and penalties in the field of building construction in Serbia.

The principle of sustainable development through integrated planning is recognized as one of the basic principles for organizing and using space. It is interpreted as harmonization of all development aspects, rational use of non-renewable resources and providing larger use of renewable ones. By applying technical measures, standards, and requirements during all stages of planning, design, construction and use of structures and spaces, sustainable construction is ensured. It is recognized that energy savings are made by reducing the consumption of all types of energy with proper management of buildings' energy properties.

3.5. RULEBOOK ON ENERGY EFFICIENCY OF BUILDINGS

Adopted in 2011 on the basis of Serbian standards previously in force, as well as European recommendations, this particular Rulebook [19] specifies technical requirements and parameters related to the energy properties of buildings, new and existing, as well as their comfort conditions. It includes the method for calculating thermal properties, using defined terms and their determined values to calculate all aspects of energy properties and consumption. An energy efficient building is defined as "a building that consumes a minimum amount of energy while providing the necessary comfort conditions". An Energy Efficiency Study is stated as an obligatory part of documentation for building, and the Energy Passport displays the energy properties of the building after the inspection finishes.

Energy rehabilitation is introduced in order to increase the energy efficiency of buildings. It is defined as a process that does not affect the stability and safety, does not affect fire and environmental protection, and, with obtaining the necessary approvals can allow for alterations to the building's external appearance.

Extensive renovation is defined as adapting or rehabilitating with an estimate of the value of works of at least 25% of the price of the building with land, or if the envelope is subjected to energy rehabilitation in at least 25% of its surface.

Energy properties of buildings are specified in this document: comfort conditions, hygrothermal properties, thermal properties and air tightness properties, heat losses, thermomechanical systems, central heating systems, mechanical air preparations, hot water distribution networks, etc. It also gives instructions on thermal properties calculations, Energy Efficiency Studies and its contents, CO_2 emissions, and more.

3.6. RULEBOOK ON THE CERTIFICATE ON ENERGY PERFORMANCE OF BUILDINGS

This is a more recent document from 2018 that is focused on detailed conditions, content, and means of issuing Certificates on Energy Performance of Buildings which is issued after inspecting the building in order to obtain a Use Permit. [20]

A standardized form of energy passport contains indicators of energy performance of buildings that utilizes the concept of energy classes for all structures that use energy. It is mandatory for all new structures, with noted exemptions. "C" or higher class is obligatory for new buildings, whereas all the improvements proposed for existing structures need an increase of one class minimum.

3.7. STANDARD FOR CONSERVATION OF CULTURAL HERITAGE

European Standard from 2016, a non-mandatory document fully titled "Conservation of cultural heritage - Guidelines for improving the energy performance of historic buildings" [21], arose from the need to adopt appropriate procedures as an addition to the existing energy performance standards, considering values that these structures possess as cultural heritage. In order to reach the optimal solution and selection of appropriate measures for each individual case, a systematic approach is used to form an assessment of the impact of selected measures, which are invariably in accordance with heritage charters, standards, and guidelines in force.

Architectural and conservation planning are executed along with energy performance assessments, evaluations of technical systems, internal and external conditions, financial considerations, as well as evaluating the heritage and considering practical application of selected measures. The process is iterative in order to review needs for improving energy performance, potentials, and limitations.

Inappropriate measures are eliminated until satisfactory measures are determined. One of the possible outcomes can even be the exclusion of any measures recommended for a particular case.
The document introduces checklists for assessing the appropriate categories and criteria for potential measures, and the basic matrix of the iterative process. Detailed recording of all phases is needed for creating a valid assessment, as well as for future use of knowledge already gained. Additional supervision is needed due to increased possibility of unforeseen circumstances while implementing selected measures. After the execution, proper evaluation is performed in order to ensure the realization of objectives previously set.

4. DISCUSSION AND CONCLUSION

The depletion of energy sources and crisis during the previous century were merely a symptom of environmental decay due to an era of intense industrialization based on extensive use of resources which were used as a measure of economic success. However, the energy sector possesses the most potential to aid the remedy of our planet, if taken care of promptly and properly, with substantial decrease in energy needs. Energy efficiency thus becomes a global effort. It is the most prominent aspect of potential for energy savings regarding architecture and construction, which are proved to have a large impact on the consumption of energy in total. It is suitable both for new construction and existing building stock, being an immediate strategy for improvement.
Energy efficiency legislatives that have a direct impact on Serbia's national policies include European directives and regulations. In accordance with the hierarchy of competencies and the principle of legality, these are incorporated in national strategies and further, harmonized with the regulations of the Republic of Serbia, as their signatory. Laws and regulations thus provide a legal framework for the implementation of European Union requirements and recommendations in practice.
Current principles of saving energy resources in construction, prescribed by the European Union through directives primarily dealing with energy efficiency, transferred to us through national strategies, the Law on Planning and Construction and Regulations on Energy Efficiency and Energy Performance of Buildings, are given in a way that enables their direct application to new construction and, to a certain degree, to the existing building stock. Unfortunately, the problem remains that they still have not made a significant overall impact on the improvement of the building sector, and it prevented the realization of larger effects. Identifying the causes for low implementation of existing strategical documents represents a considerable possibility for future research. As higher levels of legislations, such as UN or EU documents, are quite broad, lower levels and narrower perspectives are to provide better operationalization, so the key regulatory framework for the implementation might be found on regional and national level. Some issues can already be addressed, regarding national particulars.
There is a noticeable lack of overall estimation of the number and extent of improvements needed in Serbia, due to practical reasons of older building stock data deficiency and illegal construction still present and uncharted. Further steps for ensuring better outcomes on the matter would have to encompass estimations for establishing national annual rates for building stock renovations. Also, in terms of public financing for energy efficiency improvements, relatively small funds are provided for enhancing building envelope and window replacements for a limited number of private owners, while the public buildings have means of securing more funding through public procurements. This is closely related to the overall procedure of accession to the European Union and chapters closed until certain progress is made. In order to further operationalize existing regulations for energy efficiency implementation, there should be an effort made to develop national implementation strategies and action plans, as found in the Economic and Investment plan for the Western Balkans.
The obligation of performing complex procedures for achieving energy efficiency in construction is currently highly emphasized through the regulations of the Republic of Serbia, while the many benefits for health, environment, comfort levels, or even reduced monthly bills are not advertised enough through planned activities in order to promote the concept. As a result, the average member of the general public in Serbia understands this primarily as a mandatory financial expense during construction one should try to avoid, and not as a means of enhancing the quality of their life and health, nor a contribution of science and research progress on the matter.
In practice, we recognize an ultimate need for educating the public and promoting the concept of energy efficiency, while ensuring stricter permit issuing and supervision over the execution of works. In addition, more substantial funding, clearer goals, and procedures for implementation, especially for building stock that was built prior to 2012, would not only help dealing with energy

poverty, but also ensure better health standards and life quality for individuals, as well as environmental benefits and energy supply security for the Republic of Serbia.

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