# ZAKONSKI OKVIR U OBLASTI ENERGETSKE EFIKASNOSTI I OIE KAO JEDAN OD KLJUČNIH PREDUSLOVA ZA ODRŽIVI RAZVOJ SRBIJE

# THE LEGAL FRAMEWORK IN THE FIELD OF ENERGY EFFICIENCY AND RES AS ONE OF THE KEY PRECONDITIONS FOR THE SUSTAINABLE DEVELOPMENT OF SERBIA

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*Rad se bavi analizom dva od četiri zakona iz oblasti energetike koji su usvojeni aprila meseca 2021. godine i to: Zakonom o korišćenju obnovljivih izvora energije i Zakonom o energetskoj efikasnosti i racionalnoj upotrebi energije. U radu su prikazana istraživanja koja se odnose na novine koje ovi zakoni donose, potrebne preduslove za njihovo sprovođenje i implementaciju, prepreke i mogućnosti na putu Srbije ka većoj primeni zelene energije, smanjenju emisija CO2 i održivom razvoju, u skladu i sa novim strateškim okvirima u ovoj oblasti (NERP, Strategija niskougljeničnog razvoja). Da bi se ovo ostvarilo, potrebno je doneti niz podzakonskih akata, kojima se u startu rešavaju brojne nedoumice.*

*Rad se posebno bavi zakonskim preduslovima za sprovođenje ideje korišćenja obnovljivih izvora energije u stanovanju. Osim toga, u Nacrtu Nacionalne stambene strategije 2020-2030. ističe se da, s obzirom na činjenicu da je stambeni fond veliki potrošač energije, unapređenje energetskih svojstava ovog fonda predstavlja zadatak ne samo od nacionalnog, već i globalnog značaja (odnosi se na celokupan stambeni fond - višeporodično/kolektivno i porodično/individualno stanovanje). Prema pomenutoj Strategiji veliki udeo potrošnje energije troši se za grejanje, a sve više i za hlađenje stanova/kuća, a stalni rast ukupne potrošnje energije ukazuje na neracionalno i neodrživo korišćenja energije u sektoru stanovanja. Stoga unapređenje energetske efikasnosti i korišćenje obnovljivih izvora energije u stambenom sektoru predstavlja jedan od ključnih izazova za održivi razvoj Srbije u budućnosti. U radu se daju predlozi za permanentno, sistematsko i plansko obrazovanje, podizanje svesti građana o značaju primene i potencijalima OIE. Stimulisanje korišćenja ovog vida energije i primena energetske efikasnosti mora biti permanentna misija struke, nauke i politike. Stimulacija države kako kroz donešenu legislativu, tako i kroz praktične procedure koje neće biti previse komplikovane, i povoljne kredite, može omogućiti opredeljenje korisnika stambenih objekata i zajednica za ovaj vid proizvodnje energije.*

***Ključne reči:*** *energetska efikasnost, obnovljivi izvori energije, Zakon o korišćenju obnovljivih izvora energije, Zakon o energetskoj efikasnosti i racionalnoj upotrebi energije, stambeni sektor*

*This paper analyses two of the four laws in the field of the energy sector that were adopted in April 2021: The Law on the Use of Renewable Energy Sources and the Law on Energy Efficiency and Rational Use of Energy. It presents research related to the improvements brought by these laws, the necessary preconditions for their implementation, potential obstacles and opportunities on Serbia's path to greater and wider use of green energy, reduction of CO2 emissions, and sustainable devel-*

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*opment, following the new strategic framework in this area (NERP, Low Carbon Development Strategy). To achieve full potential and initially resolve numerous doubts, it is necessary to pass through bylaws.*

*The paper deals with the legal preconditions for implementing renewable energy sources in housing. In addition, in the Draft National Housing Strategy 2020-2030, it is pointed out that, given the fact that the housing sector is a big energy consumer, improving the energy performance of housing funds is a task not only of national but also global importance (refers to the entire housing market - multi-family/collective and family/individual housing). According to the mentioned Strategy, a large share of energy consumption is spent on heating, and more and more on the cooling of dwellings/houses. The constant growth of total energy consumption indicates irrational and unsustainable energy use in the housing sector. Therefore, improving energy efficiency and using renewable energy sources in the housing sector is one of the key challenges for Serbia's sustainable development in the future. The paper presents proposals for permanent, systematic, and planned education and raising citizens' awareness of the importance of implementation and the potential of RES. Stimulating the use of this type of energy and the application of energy efficiency must be a permanent mission of the profession, science, and politics. Stimulation of the state, both through the adopted legislation and through practical procedures that will not be overly complicated and through favorable loans, can enable the involvement of house owners and housing communities for this type of energy production.*

***Key words:*** *energy efficiency, renewable energy sources, Law on the Use of Renewable Energy Sources, Law on Energy Efficiency and Rational Use of Energy, the housing sector*

## 1 Introduction

Energy efficiency with the use of renewable energy sources is one of the basic postulates of contemporary sustainable development, promoting the energy use for heating and cooling reduction, reduction of $CO_2$ emissions, with minimal use until the complete cessation of the use of fossil fuels. Renewable energy sources (RES) and new technologies for their use have become a significant segment in solving global environmental problems and current climate change [1,2]. The challenges of achieving energy sustainability have triggered economic, socio-political, and urban activities to conceptualize future energy strategies that meet the sustainable development goals. Energy policy, as one of the most important political issues tied to climate change, is one of the topics with the highest priority within the EU [3]. In that regard, many European energy policy documents have been adopted: Kyoto Protocol (adopted in 1997), the European Union Emissions Trading System (the world's first and largest emissions trading scheme, launched as a pillar of EU climate policy in 2005), the Paris Agreement on fighting climate change (from 2015, first-ever universal legally binding global climate deal), the European Green Deal (adopted in 2019 by EU Commission, as an agreement aims to make Europe climate neutral by 2050), the European Climate Law (adopted in 2020 by European Parliament, it sets a more ambitious 2030 emissions reduction target to 60%).

Regarding Serbia, low-carbon emission sustainability is still at an early stage of development. In the Freedom House report, Serbia has been marked as one of the biggest consumers and polluters in the Western Balkans as the intensity of carbon emission was 6.6 times more than the world average [4]. In 2008, three major energy sources were coal (51%), oil (27%), and natural gas (13%) [5]. Serbia has a large amount of RES: 61% of total RES is biomass, hydropower potential is estimated at 25TWh per year, while wind energy is estimated at 2.3 billion kWh per year [2,6]. The practice so far has shown the continuous combustion of fossil fuels with minimal use of RES available in the own territory. In 2010, the contribution of RES in total energy consumption amount was less than 1%, excluding hydropower [7]. According to the World Resources Institute Climate Analysis, GHG in 2013 was dominated by emissions from energy, which accounted for 80% of the total emissions [8]. From 2015 progress has been made in the use of RES, primarily with the construction of wind farms with a capacity of 398MW, whereby in 2019, the share in gross final energy consumption was about 21.5% [9]. According to the European Union Directive 2018/2001/EC, the member states of the European Community, including Serbia, have set a goal to achieve 32% of green energy in total energy consumption by 2030 [10]. The primary problem existed in a small number of valid legal documents

which comprehensively offer a legislative and strategic framework for the energy policy based on climate change and environmental protection.

On March 23, 2021, the newly adopted Law on Climate Change was published in the Official Gazette, which entered into force a week later. It regulates, among other things, the system for limiting GHG emissions, monitoring and reporting on low-carbon development strategy, issuing permits for GHG emissions to the plant operator, and other issues relevant to limiting GHG emissions and adapting climate change [11]. On March 30, 2021, the Government of Serbia adopted four laws in the field of energy, the Law on Mining and Geological Research [12], the Law on Energy [13], the Law on Renewable Energy Sources [14], and the Law on Energy Efficiency and Rational Use of Energy [15].

The paper examines the changes that legislative documents bring in the field of achieving energy efficiency and the use of RES in Serbia, with special reference to the analysis of the Law on the Use of Renewable Energy Sources and the Law on Energy Efficiency and Rational Use of Energy. Data for 2018 shows that renewable sources accounted for a share of 20.32% of gross final energy consumption, which is well below Serbia's national renewables target set at 27% for 2020. The adoption of these laws is extremely important, given that Serbia consumes more energy and less from RES then the European Union [16]. That is why the improvement of energy efficiency and the use of RES is one of the key challenges for the sustainable development of Serbia. In addition to the analysis of laws pointing out the importance of certain novelties, the paper aims to compare the laws in Serbia with the laws of the same character in other countries of the Western Balkans. The legal framework in the field of energy efficiency and RES in the paper is also focused on adopted strategies NERP and Low Carbon Development Strategy, analyzing the possibilities to improve the energy policy in the housing sector.

## 2 Experiences of the EU and the naighboring countries

### *2.1. European Union*

In October 2020, the European Union published the Renovation Wave Strategy for the mass-energy renovation of buildings [17] with the ambition to at least double the renovation rate in the next ten years. In the Guidelines for the Green Agenda for the Western Balkans, the European Commission proposed a program to be extended to that region, and the countries accepted the agenda signing the Sofia Declaration [18].

The European Commission has published the Renovation Wave Strategy in the EU to reduce emissions by 60% and energy consumption by 14% in the coming decade [17]. Energy renewal should help in starting the economy after the pandemic crisis of Covid 19. As in the EU, more than two-thirds of buildings are energy inefficient (cca 35 million), their renovation is of great importance and will create 160 new jobs. The three priorities of the strategy are decarbonization of heating and cooling, reducing energy poverty, and solving problems in the most inefficient buildings, and energy renovation of public buildings. EU legislation does not use the definition of prosumers exactly but is more focused on the term *self-consumption* as is seen in some countries' laws after. In the EU Directive, 2018/2001, self-consumer is defined as the final customer, who generates renewable electricity for its consumption, and who may store or sell self-generated renewable electricity to a non-household renewables self-consumer, emphasizing that it is not for primary commercial or professional activity [19].

### *2.2. Laws on Electricity in Federation of Bosnia and Herzegovina and in the Republic of Srpska*

The Government of Bosnia and Herzegovina adopted the Law on Electricity in 2019 in which does not use a word similar to prosumer but defines a producer for self-consumption as an individual or legal entity who produces electrical energy for own consumption [20].

The Government of the Republika Srpska adopted the Electricity at the beginning of 2021 and has draft version of the Low on Renewable Energy Sources in the procedure in the parliament [21,22]. Stimulating generation of electricity from RES, these documents define *buyer-producer*. The

prosumer is defined as buyer-producer of electricity from RES who operate within its premises located within a limited area, which produces electricity from RES for own consumption, and which can store or sell electricity that he produced, whereby for customers who do not they belong to the household category the activities must not represent their main commercial or professional activity. Prosumers can be a group or at least two persons positioned in the same building or complex. Buyer-producers can obtain benefits following the regulations governing the RES and efficient cogeneration and the current draft version of the Law on RES strengthens the position of the prosumers [21,22].

### *2.3. Energy Law in Montenegro*

Montenegro's Energy Law defines the term *buyer - self supplier* and later introduces *the buyer-producer* term (mentioned in Article 96) that can generate electricity from RES and have the right to exchange electricity that it delivers to the system and takes from the distribution system [23]. The terms are non-consistent through and marginalize the importance for the prosumers, which is more precisely written in the two laws of Republika Srpska.

### *2.4. Law on RES and High Efficiency Cogeneration in the Republic of Croatia*

The Council of the President of the Republic of Croatia for Energy Transition was established to organize and conduct expert discussions on issues in the field of energy transition (transition to clean and sustainable energy sources and climate protection) to prepare and communicate expert bases and guidelines in the energy transition as well as the development of a strategic platform of interest to the Republic of Croatia [24]. The Law on Renewable Energy Sources and High-Efficiency Cogeneration with last changes in 2018 present the prosumer defined as an "end buyer with its production" who has a system for the production of electricity from RES or high-efficiency cogeneration, which primarily serves for its own electricity needs, with the possibility of delivering excess electricity to the transmission or distribution network. Comparing to others countries, this law allows the status of a privileged producer to be acquired by the "end customer with his production" whose production the plant meets the requirements. That means that in this case, the prosumers can be privileged producers of electricity (feed-in on market premiums) [24].

### *2.5. Energy Law in Slovenia*

Energy Law in Slovenia aims to transpose the laws from the package of the European Union - Directives: 2009/72/E3, 2005/89/E3. The last addition was adopted in July 2021. The law regulates guarantees of origin, the status of prosumers, energy communities, and incentives. It brings changes related to the implementation of national and local government policies for the use of RES, defines goals, and measures, and financial tools for their achievement. The regulation introduces significant changes in the production sector for own consumption. Prosumers will have to pay a network fee for energy taken from the network, and at the same time, they will receive money for the surpluses they deliver to the network [25,26].

## 3 Overview and novelties ofthe legal framework in energy efficiency and RES in Serbia

Energy policy in Serbia has been continuously developed and improved in previous years, following the goals and requirements set in the context of climate change in the EU. Table 1 gives a chronological overview of the most important documents adopted within the energy sector in the period from 2005 to 2020 in the field of energy efficiency and RES.

On April 22, 2021, the National Assembly of the Republic of Serbia adopted the Law on the Use of Renewable Energy Sources (RES) and the Law on Energy Efficiency and Rational Use of Energy. A complete novelty is the adoption of Law on RES, given that RES were previously only part of the Law on Energy. In addition to the adoption of these laws, the establishment of a special national fund for energy efficiency has been announced [13,14].

*Table 1: Chronological overview of national documents in the field of energy efficiency and RES adopted between 2005 and 2020 in Republic of Serbia*

| Year | Document name | Year | Document name |
|---|---|---|---|
| 2005. | *Energetics development strategy until 2015 (Official Gazette RS 35/05)* | 2013. | *The 2nd action plan for energy efficiency of the Republic of Serbia for the period from 2013 to 2015(Official Gazette RS 98/13)* |
| 2006. | *Energy Sector Development Strategy of the Republic of Serbia until 2015(Official Gazette RS 35/05)* | 2014. | *Law on Energy (Official Gazette RS 145/14)* |
| 2009. | *Feed-in tariff system adoption and status of privileged electricity producers* | 2015. | *National strategy for the development of the energy sector until 2025 with projections until 2030 (Official Gazette RS 101/15)* |
| 2010. | *The 1st action plan for energy efficiency of the Republic of Serbia for the period from 2010 to 2012 (2009/05/MS-Enc)* | 2016. | *National Renewable Energy Action Plan of the Republic of Serbia* |
| 2011. | *Rulebook on energy efficiency of buildings (Official Gazette RS 61/11)* | 2017. | *Program for the implementation energy strategy for the period from 2017 until 2023 (Official Gazette RS 104/2017)* |
| 2013. | *Law on energy efficiency (Official Gazette RS 25/13)* | 2017. | *The 3rd action plan for energy efficiency of the Republic of Serbia for the period to 2018 (Official Gazette RS 01/17)* |
| 2013. | *National Renewable Energy Action Plan of the Republic of Serbia (Official Gazette RS 53/13)* | 2018. | *Law on Energy (Official Gazette RS 95/18)* |

### *3.1. The Law on the Use of Renewable Energy Sources*

The Law on the Use of Renewable Energy Sources (RES) enables the public sale of electricity from RES following the guidelines on state aid. This document regulates the use of energy from RES, the method of determining the share of RES in the gross final energy consumption, integration of energy from RES into the market, incentive systems for electricity production from RES, guarantees of origin of electricity, production of electricity from RES for own consumption, use of RES in heat and transport, special procedures related to the construction and connection of energy facilities using RES, and other issues of importance for RES [14]. Details related to this issue are elaborated within the framework of bylaws.

The Law introduces the term *a community of renewable energy sources*, which, by definition, is a legal entity established on the principle of open and voluntary participation of its members. A member of the Association can be a natural or legal person, and local self-government units and other types of local self-government. A member of the Association retains the status of the end customer, with the rights and obligations he has. The primary goal of establishing a community is to use RES to meet the energy needs of community members in a sustainable manner that encompasses environmental, economic, or social benefits for members, and for the local community and society. To achieve its primary objective, the Community develops, invests, and implements RES and energy efficiency projects.

The next novelty is the term *buyer-producer*. That is, by definition, the end customer who has connected his facility for the production of electricity from RES to the internal installations, whereby the produced electricity is used to supply his consumption and the surplus produced electricity is delivered to the transmission system, distribution system, or a closed distribution system. The buyer-producer has the right to independently or through an aggregator 1) produce electricity for its consumption, 2) store electricity for its needs, 3) to deliver the surplus produced electricity to the transmission system, distribution system, or closed distribution system, 4) and other rights and obligations following this law and the law governing the field of energy. The installed power of the production facility of the customer-manufacturer cannot be higher than the approved power of the end customer's connection. The housing community may have the rights and obligations of the buyer-producer following this law by connecting the power plant owned by the housing association if it is built on common parts of the residential building [14] (Figure 1).

Further, the law *prohibits the construction of hydropower plants in protected areas*. In the next preamble of this law, possibilities are opened for the Government to, at the proposal of the Ministry

of mining and energy, with the previously obtained opinion of the Ministry of environmental protection, allow activities, and projects on construction of hydropower in the protected area, in the case of projects of public interest, and projects of national importance for the Republic of Serbia [14]. Thus, space is opened for unwanted actions and the consequences.

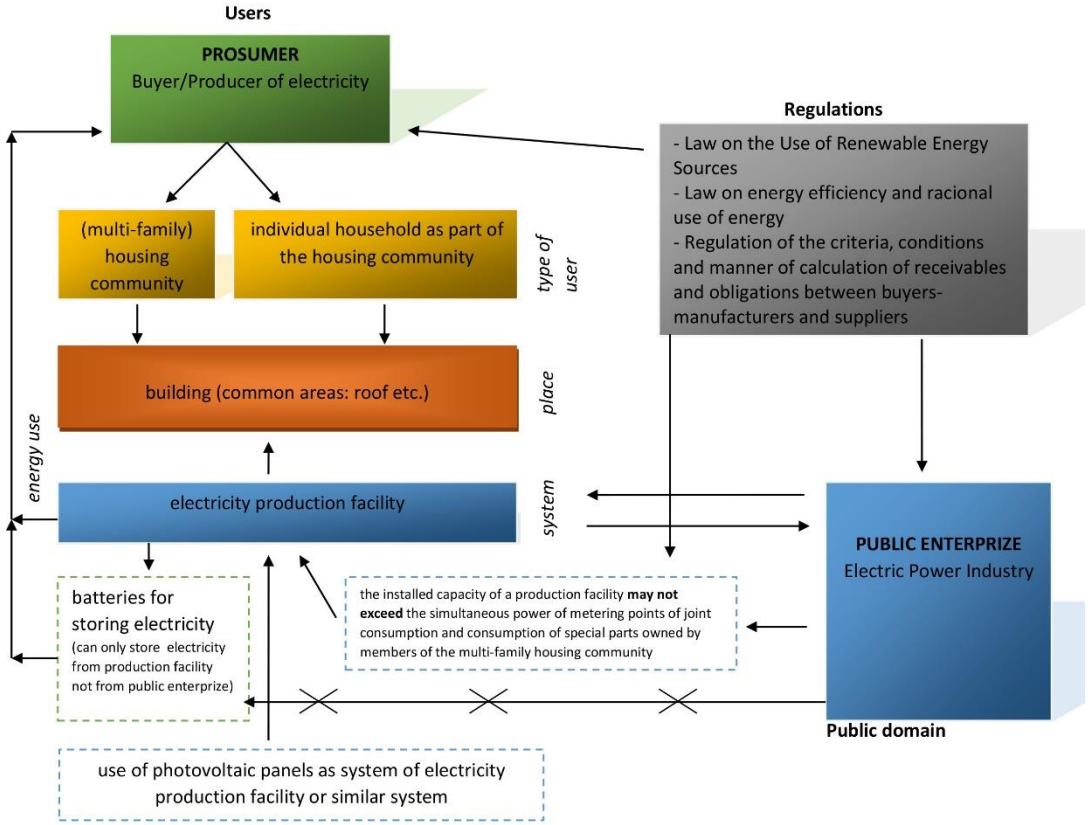


*Figure 1 - Scheme of the prosumers production of electricity presented by the law on RES and new Regulative (Source: Authors)*

The Law on the Use of RES describes in detail *the system of incentives*. It is a set of incentive measures related to a particular energy production technology from RES, applied to achieve national goals regarding the use of electricity. Only one part of these measures mentions the use of innovative technologies in order to increase the use of energy from renewable sources. It is said that early development technologies that use new renewable sources, such as renewable hydrogen and other energy sources, can be encouraged.

### *3.2. The Law on Energy Efficiency and Rational Use of Energy*

The Law on Energy Efficiency and Rational Use of Energy has created a framework for subsidizing citizens [15]. It aims to create conditions for efficient energy use and improve energy efficiency, which will contribute to energy savings and security of supply, reduce the impact of the energy sector on the environment and climate change, increase the competitiveness of the economy and improve conditions for economic development. This document regulates the conditions and manner of efficient use of energy and energy sources, energy efficiency policy, prescribes energy efficiency measures - energy use in buildings, energy activities, and end customers, for energy facilities and energy services, regulates financing, incentives, and other measures in this area and other issues of importance for the rights and obligations of individuals and legal entities related to energy efficiency. Further, this document envisages the establishment of the Directorate for Financing and Encouraging Energy Efficiency within the Ministry of Mining and Energy, instead of the current Budget Fund for Improving Energy Efficiency. The Law provides for several forms of financing and incentives (subsidies) to improve energy efficiency. Subsidies will also be able to be used by households for the installation of efficient biomass and gas boilers, insulation systems, and carpentry. Citizens' participation in these activities will amount to 50%, while the remaining amount will be

financed by the Government and local self-government units, with 25% each. With this Law, the Republic of Serbia harmonizes its regulations in the field of energy with the new EU directives in this sector, which, among other things, includes the introduction of regulations for eco-design, which concerns the way of marking devices found on the market, energy consumption, as well as regulations for highly efficient cogeneration [15]. It is planned to launch a pilot project after the formation of the Administration in order to examine the planned mechanism and to prepare the simplest possible procedure for citizens.

## 4 Strategic and legislative framework as preconditions for the adoption of the laws

Here are some strategic documents that represent important starting points in the adoption of previous laws are mentioned:

- NERP - National Plan for Reduction of Emissions of Major Pollutants from Old Large Combustion Plants [27] (Official Gazette of the Republic of Serbia No. 10/2020) provides a list of combustion plants with an outline of the measures envisaged to be applied to plants to ensure compliance with the emission limit values;
- The draft Low Carbon Development Strategy [28] (adoption is expected during 2021 or 2022) adopts mitigation scenarios for climate change adaptation, in line with European Directives and agreements on the reduction of GHG emissions;
- Draft National Housing Strategy 2020-2030. [29] points out that, given the fact that the housing stock is a large consumer of energy, improving the energy performance of this fund is a task not only of national but also global importance (refers to the entire housing stock - multifamily/collective and family/individual housing);
- Energy development strategy of the Republic of Serbia until 2025 with projections until 2030 [30] and the Decree on determining the Program for the implementation of the Energy Sector Development Strategy of the Republic of Serbia for the period until 2025, with projections until 2030, for the period from 2017 to 2023 [31] have identified the area as a new energy source, which with the least investment can provide additional energy with multiple benefits;
- An important segment in the implementation of these laws is the Integrated National Energy and Climate Plan (NECP) [32]. It will define goals for increasing energy efficiency and the share of RES in energy consumption, reducing GHG emissions by 2030, and policies and measures to meet them. National energy and climate plans have been introduced as an obligation for its members by the EU under the Clean Energy for All Europeans package, which was adopted to help the EU achieve its energy and climate goals for 2030 - reducing emissions by at least 40%, increasing share of renewable energy to 32% and energy efficiency improvement of 32.5%;
- The Sofia Declaration signed in November 2020 [18] obliges Serbia to transpose the EU ETS (EU Emissions Trading System) directives and introduce carbon prices. Some of the measures envisaged by the Sofia Declaration are: harmonization with the EU climate law after its adoption, which aims to make the EU climate neutral by 2050; continued alignment with the EU Emissions Trading Scheme (EU ETS), as well as the introduction of other emission taxation models, to promote decarbonisation in the region; analysis and revision of all regulations that support the progressive decarbonization of the energy sector and their full implementation, primarily through the Energy Community; prioritizing energy efficiency; increasing the share of renewable energy sources and providing the necessary conditions for investment, in line with the acquis communautaire and the Energy Community; reduction and gradual abolition of the coal subsidy, in strict compliance with state aid rules.

## 5 The need for bylaws

The necessary preconditions for the implementation and enforcement of these laws, obstacles, and opportunities on Serbia's path to greater use of green energy, reduction of $CO_2$ emissions, and sustainable development, following the new strategic framework in this area (NERP, Draft Low Carbon Development Strategy) is adoption. Experience suggests that delays in the adoption of bylaws governing law enforcement contribute to creating legal uncertainty that discourages investors.

It is necessary to point out the important Regulation on criteria, conditions, and manner of calculation of receivables and liabilities between buyer-producer and suppliers [33] (Prosumer = producer + consumer), adopted by the Government of Serbia, which refers to households, residential buildings, and individual apartments in buildings, as well as companies. The possibility for citizens to become prosumers is one of the main conditions for the democratization of energy, which means that citizens become active participants in the market because they produce energy themselves and the power of large energy companies is reduced. Democratization of energy is an integral part of the energy transition, which should bring the transition from fossil to renewable energy sources, and thus reduce the negative effects of climate change [34].

## 6 The use of RES in Housing sector

Housing is a specific problem in energy consumption. Up to 70% of existing buildings are mostly poorly insulated and often built of poor material (consume up to five times more energy than the European Union average). Considering that in Europe, including Serbia, only 1% of new buildings are built annually, it is necessary to energy retrofit the existing buildings and prolongs their lifespan [29].

As stated, in the Draft National Housing Strategy 2020-2030. [29], improving the energy performance of this built fund is a task not only of national but also global importance (refers to the entire housing stock - multi-family/collective and family/individual housing). According to the mentioned Strategy, a large share of energy consumption is spent on heating, and cooling, and the constant growth of total energy consumption indicates irrational and unsustainable energy use in the housing sector. Therefore, the improvement of energy efficiency and the use of renewable energy sources in the housing sector is one of the key challenges for the sustainable development of Serbia in the future. The mentioned legislation creates legal preconditions for the implementation of the idea of using RES and the application of energy efficiency measures in housing. Table 2 shows the overview of the terms and parts of the law that are important for the future prosumers in the housing sector (Table 2).

### *6.1 Potential problems and how to solve them*

Potential problems are not only in the sphere of law enforcement but also in the im-portance of enabling the parallel implementation of these laws with the Law on Housing and Building Maintenance [35]. Bylaws and other documents need to address issues such as:

- the question of the financing system - how much money is invested; how much is a res-idential building and how many tenants are there - Article 66 of the Law on Housing and Building Maintenance.
- issue of tenants' consent and goodwill for EE improvements in a residential building - Excerpt from the Law on Housing and Building Maintenance, Article 8: Owners of special parts of the building have the right to joint indivisible ownership over common parts of the building under with the law.
- the issue of future maintenance of devices for the use of RES, prices, availability of re-pairers (this, along with healthy competition, could be convenient);
- the issue of use and access to common areas of the building and space for installation of photovoltaic panels (roof and other spaces next to it);
- number of apartments/tenants and the issue of consent within the housing community (previously it is necessary to stimulate and promote this type of use of RES in housing);
- the question of which residential buildings are the most adequate for installing photo-voltaic panels in terms of criteria: financing, number of members of the housing com-munity (consensus on issues within the housing community is easier to reach when the number of community members is smaller), and spatial conditions on the roof and position.
- should it be possible to upgrade the prosumer benefits to become privileged producers of electricity (although currently taking prosumer into account in Serbia is a really big step forward).

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*Table 2 - Selected terms and measures from two laws regarding the renewable energy resources and electricity production in housing (Source: Authors, Law on the Use of RES, Law on energy efficiency and rational use of energy)*

| Terms and measures (focus on housing and prosumers) | Definition of selected terms and measures presented in two laws (Law on the Use of RES; Law on EE and rational use of energy) and new Regulation | Summary of the 2 new laws (of RES and on energy efficiency) and the new Regulation |
|---|---|---|
| **Prosumer** | final customer who has connected to the internal installations its own facility for the production of electricity from renewable energy sources | -produce electricity for own consumption<br>-store electricity for own needs<br>-deliver the surplus produced electricity to the distribution system |
| **Multi-family housing community** | legal entity established in accordance with the law governing housing and maintenance of building(s) that can become a prosumer of electricity | Allowed to be a prosumer (production facility must be in common areas) |
| **Household** | community whose members live together, eat together and spend the earned income | Allowed to be a prosumer, or part of the prosumers as a whole community |
| **Building** | building with a floor, roof and external walls, built as an independent use unit in which energy is used to achieve certain internal climatic conditions, and is intended for housing | Prosumer's production facility is intended to be part of the building's common spaces |
| **Technical system of the building** | technical equipment of the building or parts of the building for heating, cooling etc., including systems using energy from RES | Production facility of electricity is part of the building's technical system |
| **Financing** | Financial encouraging the production of electricity and heat from renewable sources for own needs | - the budget of the R. Serbia or the autonomous province and LSUs<br>- European Union and other funds<br>- donations, gifts, contributions, aid<br>- loans from international financial institutions |
| **Market premium** | A type of operating state aid that is a supplement to the market price of electricity that market premium users deliver to the market | Not allowed for prosumer |
| **Feed-in tariff** | aid granted in the form of an incentive purchase price guaranteed per kWh for delivered electricity-only legal entity or entrepreneur that produces electricity from renewable sources and is entitled to a feed-in tariff or market premium | Not allowed for prosumer |
| **Storing electricity** | storage of produced electricity until the moment when it will be used (batteries etc.) | prosumer can store produced electricity in batteries (which cannot store the electricity prom the public enterprize) |
| **Penalties** | Penalties consist of money penalty for not abiding the Law on the Use of RES | No penalties for the prosumers<br>- important notice - there is penalty for building small-scale hydro power plants in protected areas |

Neighboring countries' legislation integrates the prosumer as a necessary part of the RES but every law has it a little bit different, and the definitions are quite fluid. Concerning that Table 3 shows the differences in few topics concerning the housing sector and the prosumers (Table 3).

## 7 Conclusion

It can be concluded that, with the adoption of these sets of laws, preconditions have been created for the implementation of the idea of using RES, especially in the housing community. Stimulating the use of RES and the application of energy efficiency must be a permanent mission of the profession, science, and politics. The importance of small producers of electricity not only builds electric

"backup" network but also shows the benefit and importance of the use of RES in every household. Considering that one residential block that becomes a prosumer in the future can be a role model and a good practice that can be passed on.

*Table 3 – Overview of important terms and measure in neighbor countries regarding the Laws on renewable energy resources and position and importance of prosumers (source: Authors)*

| Selected terms and measures (with focus on housing areas and prosumers) | Serbia | Bosnia and Herzegovina | Republic of Srpska* | Montene-gro | Croa-tia | Slove-nia |
|---|---|---|---|---|---|---|
| **Prosumer (as an option for users)** | + | (+) | + | + | + | + |
| **Residential complex/housing (mentioned as an area for producing electricity)** | + | - | + | - | - | + |
| **Financing (financial incentive)** | + | n/a | + | + | + | + |
| **privileged producer status for prosumer** | - | n/a | + | n/a | + | n/a |
| **Penalties for prosumers** | - | (+) | + | + | + | + |

**Part of Federation of Bosna and Herzegovina, but legislative has different view on some parts on RES and prosumers*

(+) not explicitly noted as the term of a prosumer

Having in mind that electricity production systems are today more affordable and approachable, it is also necessary to work permanently on promotion and proposals for systematic and planned education, raising citizens' awareness of the importance of the potentials and benefits of using RES and the application of energy efficiency. Stimulation of the state both through the adopted legislation and through practical procedures that will not be too complicated, as well as through favorable loans, can enable easier determination of users of housing facilities and housing communities for this type of energy production.

This set of laws in Serbia should also improve the investment environment and enable employment growth. Further work on energy transition, decarbonization, and climate-neutral development at the same time lead to energy stability.

As emphasized in the paper, it is necessary to further adopt a series of bylaws, which will initially resolve numerous doubts and simplify the procedure. For the implementation of these laws to be successful, the participation of multidisciplinary teams consisting of power engineers, civil engineers, architects, economists, and environmental experts is necessary. It is necessary to issue brochures with simple and practical instructions and tips, as well as to encourage the purchase of devices with a better energy class.

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