



# **Citizen Energy and Democratisation of the Power Sector in BiH**

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The views expressed in this paper constitute the positions of its authors and do not necessarily reflect the views of the RESET and the OSF.

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## Acronyms

<b>Acronym</b>	<b>English term</b>	<b>Bosnian term</b>
CEC	Citizen Energy Community	Energetska zajednica građana
CF	Crowdfunding	Grupno finansiranje
ESCO	Energy Service Company	Kompanija za energetske usluge
ESC	Energy Supply Contract	Ugovor o snabdijevanju električnom energijom
FiT	Feed-in Tariff	Način subvencioniranog otkupa energije iz OIE-a
JLS	Local Self-Government Unit	Jedinica lokalne samouprave
OIE	Renewable Energy Sources	Obnovljivi izvori energije
REC	Renewable Energy Community	Zajednica obnovljivih izvora energije

## Introduction

Energy transition is a process of a complete transition from the use of fossil fuels (coal, oil, gas) as limited (non-renewable) resources, to renewable energy sources (solar, wind, water energy, etc.) to arrest devastation and reduce pollution of the natural environment, fight climate change, and transition to sustainable development. Energy transition encompasses four core processes: decarbonisation of all domains of energy generation and energy use, digitalisation of all processes to ensure efficient and effective transition, decentralisation of energy generation and supply, and a resulting democratisation of the energy sector.

Energy transition will overwhelmingly happen on the local level, which requires involvement of all local stakeholders: local authorities, small and medium enterprises, and citizens. All studies indicate that citizens' acceptance of energy transition will depend on the degree of their direct participation in the processes of enhancement of energy efficiency, electrification of the heating and transportation sectors, and construction of renewable sources. According to some estimates, by 2050, 50% of EU citizens will be generating energy, mainly for their own purposes, which will account for 50% of total consumption.

Participation in energy generation from renewable sources is of particular importance, because, besides immediate financial effects, such activities directly increase awareness about energy utilisation, energy efficiency, and energy management. Participation of local stakeholders in energy generation is called citizen energy and constitutes a key component for energy democratisation.

As BiH is on the threshold of the launch of the energy transition, the purpose of this paper is to describe the current situation and status in the field of citizen energy in BiH, highlight the impact it can and it should have in the transition process, and identify the challenges ahead, as well as to offer recommendations for policy development and management in the field of citizen energy and thereby lay the foundations for a broader social dialogue about this important topic.

## 1. On citizen energy in general

Development of renewable sources of energy technologies and the decline of equipment prices have yielded a wide range of designs of off-grid systems, mini-grid and on-grid solutions based on wind and solar energy, hydro potential, etc. that increase the number of available options to access electricity, sustainability, security of supply, competitiveness, and decarbonisation. This technology revolution has enabled citizens, companies, public institutions, and local communities to be able to generate energy for their own needs relatively simply and cost-effectively, and to store, exchange, and distribute any energy surpluses. This opportunity for the above stakeholders to participate in the generation, consumption, distribution, supply, aggregation, and storing of energy is labelled the citizen energy concept.

Owing to the EU directives, the European Union (EU) made considerable progress in the implementation of the technologies that drive the development of citizen energy and the decentralisation of the energy system. The European energy policy is not motivated solely by decarbonisation of the energy sector and by security of supply, but also by sustainable development<sup>2</sup> that citizen energy makes possible. Most importantly, the EU embraced the citizen energy concept in order to efficiently create an energy services' market which is also crucial for the energy transition process. In combination with the digitalisation of the distribution network, citizen energy may bring about a faster and more efficient decarbonisation process, which will be based on a localised development of the generation from renewable sources as well as on the creation of local energy markets and energy efficiency markets. But we must realize that this process will require the coordination of the top-down and bottom-up approaches to ensure the sustainability of this process.

The top-down approach should be based on macro-coordination mechanisms that include climate and energy, regulatory, and financial instruments. The bottom-up

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<sup>2</sup> Sustainable development: development that meets the needs of the present without jeopardizing the ability of future generations to meet their own needs.

approach should focus more on the democratisation of the energy sector<sup>3</sup> that will allow direct participation of citizens in the energy transition process and a mobilisation on the local level. However, we need to bear in mind that the democratisation process cannot be effective without the top-down approach that is needed to first create the environment and establish the conditions for active participation of citizens, businesses, and local communities in these processes.

There are two basic models for the integration of citizen energy into the process of decarbonisation of the energy sector:

- the prosumer model, and
- the energy community model (renewable energy communities).

The prosumer model implies that every citizen, business, public institution or local community may generate electricity for their own needs while storing any surplus energy they generate for their future needs or transferring it to the grid on agreed terms.

The energy community model allows these stakeholders to jointly, associated in different forms, generate electricity for own needs, store, exchange, distribute, sell or purchase it, i.e., play an active role in the market.

Such citizen models have an important role in decarbonisation, democratisation, and decentralisation of the energy sector, establishment of sustainable financing models, and in creation of local energy and energy services markets. In combination with certain types of state interventions, these models may significantly lower decarbonisation costs, but also ensure the stability of public finances and pension funds. This would contribute to the democratisation of the energy sector, but also help attract citizens' private capital, making the entire decarbonisation process acceptable in terms of cost.

Besides contributing to decarbonisation, citizen energy also contributes to the security of supply, as energy supply sources are diversified and multiplied, while also contributing to the country's energy security since locally generated electricity is, in a

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<sup>3</sup> Democratisation of the energy sector is a process of active involvement of citizens in the process of development and adoption of climate and energy policies and their active participation in all segments of the implementation of these policies.

vast majority of cases, consumed locally without the need to create supply line dependence.

## 2. Legal framework

### 2.1. EU acquis

In the directive (2018/2001) the European energy policy introduced the concept of renewable energy community (REC) exclusively focused on generation of citizen energy. To ensure efficient democratisation of the energy sector and mitigate the risks of integration of citizen energy in the internal market, the European energy policy encourages other citizen models which are in position to offer, in addition to electricity generation, various other types of energy services. Citizen energy communities are one of these models. In the Internal Markets Directive (IEMD 2019/944), the European energy policy defined the competencies of a citizen energy community (CEC), which may engage in production (including production from renewable sources), distribution, supply, consumption, aggregation, energy storage, energy efficiency services or electric car charging services.

Both these models are based on voluntary and open membership, effective control by members or shareholders who may be physical persons or local authorities, including municipalities, or small businesses.

The difference in their business policies relates to their core activities as defined by the above mentioned directives.

### 2.2 Legislation in Bosnia and Herzegovina

The legislation in Bosnia and Herzegovina that governs the domain of renewable sources and energy efficiency is based on entity laws.



In the Federation of Bosnia and Herzegovina, the laws in effect are the Law on Electricity („FBiH Official Gazette“ no. 66/13, 94/15, 54/19, and 1/22) and the Law on Utilisation of Renewable Energy Sources and Highly-Efficient Cogeneration („FBiH Official Gazette“ no. 70/13 and 5/14) and they have no significant impact on development of citizen energy. Owing to high feed-in tariffs for generation of energy from RES and to other privileges, the above legislative framework ensured considerable profits for certain privileged businesses and physical persons. The expected adoption of a new legal framework in the coming period is likely to provide a stronger boost to the development of citizen energy in the FBiH.

The Republic of Srpska has a new legislative framework that encourages development of citizen energy. The Law on Electricity („RS Official Gazette“ no. 68/20) and the Law on Renewable Energy Sources („RS Official Gazette“ no. 16/22) were adopted and they provide a considerable encouragement for the development of energy communities and prosumers. Both these laws provide for support to development of prosumer plants in the form of lump-sum financing. In fact, the RS Law on Renewable Energy Sources stipulates that the System Operator is required to transfer 10% of the revenues from the incentive charge to the RS Fund for Environmental Protection and Energy Efficiency for investment in advancing energy efficiency measures and promotion of electricity generation from RES.

These funds will be used to provide lump-sum co-financing for construction of power plants for own needs. On the other hand, the draft law in the FBiH stipulates that only prosumers from the household category will be entitled to lump-sum support for construction of prosumer plants and that at least 2% of the total funding planned by the Operator for Renewable Energy Resources and Efficient Cogeneration will be spent for these purposes. The Operator will also prepare the Prosumer Co-Financing Programme, to be approved by the FBiH Government, which will regulate procedural rules and the criteria for evaluation of co-financing applications. This programme will also define the modality of allocation and the co-financing amount. „Balanced regional distribution“ as a criterion for allocation of this assistance is also envisaged in the law.

## 2.3 Legislative framework models

### Albania

The Albanian strategic and legal framework for the energy sector is quite similar to the legislative frameworks of the entities in BiH, complemented with the state-level BiH laws. This state of affairs is a consequence of the similar historical, political, and economic heritage, but also of the fact that both BiH and Albania are member states of the Energy Community. Consequently, Albania has special laws on RES (Law no. 7/2017) and energy efficiency (Law no. 124/2015), which constitute the foundations for measures to promote development of prosumers and energy communities. Where Albania differs considerably from BiH is in consistent observance of the letter of the law regarding adoption of subordinate regulations, which are amended often and timely updated in action plans for renewable sources and energy efficiency.<sup>4</sup> To reduce the negative impact on the stability of public finances and on macroeconomic sustainability, these strategic and legal frameworks put very little reliance on public finances. Investments into the process of developing citizen energy are conceived in such a way as to draw on private sources, donors, development banks, Albanian commercial banks, international technical assistance, etc. Unlike Bosnia and Herzegovina, in Albania there are no fossil fuel-based power plants (most electricity is generated in hydropower plants). This fact may lower the costs of decarbonisation of the energy sector and increase the efficiency of the process of development of citizen energy.

A low level of citizen awareness about the need to introduce citizen energy and about the possibilities it offers are a major problem for Albania. This problem is caused by the fact that citizens have poor information, low level of civic-mindedness, hatred of the RES project due to the abuse of the FiT subsidisation system, and the still low price of electricity

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<sup>4</sup> This statement refers primarily to three consecutive national energy efficiency action plans (NEEAP)

## Greece

In terms of past history, the energy policy of Greece had been everything but liberal. All market activities were strictly regulated by a legislative framework that did not permit citizens to generate electricity (independently or in association) for own consumption. This was not permitted to entrepreneurs either. Fortunately for the economy and households in Greece, things started changing immediately with the accession of Greece to the European Union, so even the liberalisation of the Greek energy market proceeded in lockstep with the liberalisation in the European Union.<sup>5</sup>

The energy market in Greece was regulated by Law 4001/2011.<sup>6</sup> At the time of its adoption (in 2011), this law was harmonised with the contemporary EU energy packages, i.e., with the directives 2009/72/EC and 2009/73/EC (the third energy package). Pursuant to the above directives, the law did not even aim to define citizens' energy communities. This step was taken subsequently, through Law 4513/2018 (adopted on 23 January 2018), which introduced the concept of „energy communities“ into the Greek legislation,<sup>7</sup> even though at the time the European Union had only a draft of the proposed RED II EU Directive.<sup>8</sup> Thus Greece became the first EU Member State to have an official definition of energy community in its legislation. The peculiarity of the Greek legislation is that it does not distinguish between „citizens' energy communities“ and „renewable energy communities.“ With this approach, Greece granted energy communities the right to be market actors not only in the market for renewable energy sources, but in all segments of the energy sector. Consequently, the definition of the energy community needed to ensure compatibility with both EU directives, RED II and ED 2019. In the very first article of law 4513/2018, energy communities were defined as citizen communities created solely to achieve the following objectives: strengthening of social economy, solidarity, and innovation in the energy sector to reduce energy poverty; promotion of energy sustainability; popularisation of generation, storing, own consumption, distribution, and supply of

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<sup>5</sup> Vlado, C.; Chatzinikolaou, D.; Kapaltzoglou, F. Energy Market Liberalisation in Greece: Structures, Policy and Prospects. *Int. J. Energy Econ. Policy* 2021, 11, 115–126

<sup>6</sup> <https://www.globallegalinsights.com/practice-areas/energy-laws-and-regulations/greece>

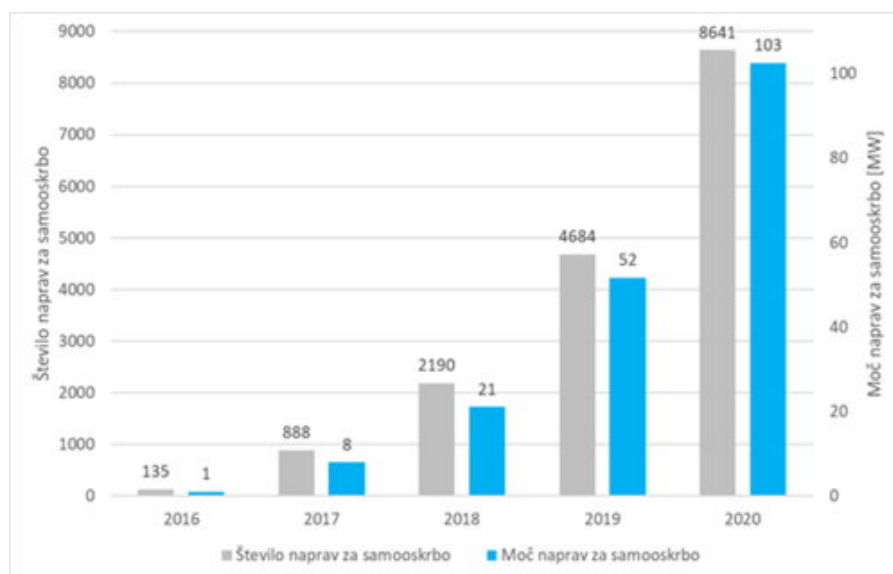
<sup>7</sup> Ibid.

<sup>8</sup> Douvitsa, I. The New Law on Energy Communities in Greece. 2019. Available at: <https://revistas.webs.uvigo.es/index.php/CES/article/view/1385/1367>

energy; promotion of energy independence and security of supply for island settlements; enhancement of energy efficiency in final consumption, and promotion of rational use of energy and sustainable transportation. This law specifically defines who and under what conditions can be a member of energy communities. These are all physical and legal persons, including public institutions – local government units (municipalities and prefectures). The share of any single member in the total capital of a community may not exceed 20%.

The seats of most members of an energy community must be in the municipality where the community is registered. Still, it is most important to note that this law restricts the possibility of structuring an energy community exclusively to the cooperative format, unlike the EU directives, which permit member states to recognize a wide range of possible existing forms of legal persons as energy communities.

## Slovenia



Graph 1. Increase in the number of prosumer plants and their total installed power in Slovenia. *Source:* Energy Agency of the Republic of Slovenia

As of end-2020 (most recent available data accessed from the website of the Energy Agency of Slovenia), there were 8,641 plants (with a total installed power of 103 MW) connected to the distribution grid in Slovenia, and the installed power of an average plant was around 12 kW. With the exception of three wind power plants and 24 mini hydropower plants, all other plants were solar-powered. As the curve in the graph

illustrates, the development of prosumer plants in Slovenia was exponential. An examination of the legal conditions for this development offers some important revelations. The vast majority of these plants was planned and connected even though the Slovenian legislative framework stipulated that the maximum connection power can be no more than 80% of the connection power the investor has as a final customer for electricity. The net metering scheme was set up so that the end of a calendar year (31st December) is the last day for a prosumer to spend their energy credit (unlike 1st April as in the rest of the region). And lastly, investors in prosumer plants received absolutely no financial support by the state.

The process of building up the citizen energy sector in Slovenia was strongly influenced by Slovenian environmentalists, who won the right to be consulted on the development of all public policies. Their first choice was to use solar energy, in contrast even with wind power, which is widely accepted throughout Europe. Therefore, it is not surprising that the entire energy transition of Slovenia until 2020 was based exclusively on energy efficiency and on utilisation of solar energy. The construction of the first wind power plant in Slovenia was approved only in 2020.

## Croatia

Construction of prosumer plants in Croatia, pursuant to very similar regulations as in Slovenia, began as late as 2019. This occurred as a result of the new RES law adopted by Croatia in 2018. When this new law was adopted, a comment was made in the Croatian Parliament that (the Slovenian city of) Maribor had more solar-powered plants (the total installed power at the time was 53 MW) than all of Croatia with 52.4 MW. After one year of the implementation of the new law, which permitted registration of self-supply plants (the law was adopted in 2018), in their 2019 annual report the HERA Agency recorded 146 plants (all solar), with 1 MW of total installed power, while one year later the total number of prosumer plants was 851, with the total installed power

of 5 MW. Although the increase is considerable, the total figures show that this is only one-tenth of all prosumer plants in Slovenia, which is demographically only about half the size of Croatia.

Exactly this example of Slovenia and Croatia, two neighbouring and close states, with nearly identical laws in this sector, demonstrates that the success of transition, in the segment of citizen energy, can be achieved only under the conditions of evident equality of terms for all participants and of high awareness of citizens, which requires investments over a longer term. Moreover, success also requires a total absence of politics in the segment of administrative implementation of the adopted laws, as well as the dedication and competence of bodies entrusted with the laws' enforcement. In addition, to ensure full security of the implementation of reform laws that require citizens' personal participation and a degree of financial risk, any failures in policy implementation must entail political accountability.

### 3. Goals of citizen energy

#### 3.1. Contribution to decarbonisation and democratisation of the energy sector

From the perspective of the society and to attain the decarbonisation objectives, the significance of citizen energy in Bosnian-Herzegovinian conditions is exceptionally high. According to the BiH 2019 energy balance, as much as 82% of all energy originated from fossil fuels, with coal accounting for between 60 and 72% of electricity generation, depending on the hydrological situation, and for 48% of the total heat energy output. Under such conditions, development and implementation of the citizen energy model based on the exploitation of RES, and primarily of solar power, may have a very important role in the decarbonisation process of both the power sector and the heating sector.

According to the report of the International Renewable Energy Agency (IRENA),<sup>9</sup> the total cost-effective, i.e., economically viable solar energy potential in BiH is 2,955 MW of installed power, with potential output of 4,126 GWh of electricity. If all this potential were to be utilised, it would meet more than 85% of the total electricity consumption of households. When the ascertained solar energy potential is combined with the wind power potential of 10,618 MW of installed power, with potential to generate

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<sup>9</sup> <https://www.irena.org/publications/2017/Jan/Cost-competitive-renewable-power-generation-Potential-across-South-East-Europe>

22,892 GWh, the conclusion is that BiH could generate more electricity from solar and wind energy than its current and future needs are<sup>10</sup> in all consumption sectors which would constitute an efficient decarbonisation of the power sector. A transition to heat generation from solar collectors, thermal plants, green hydrogen, and heat pumps also permits decarbonisation of the heating sector, along with the implementation of energy efficiency enhancement measures.

Certainly, all this potential cannot be activated solely through the citizen energy model, but it is telling that there is considerable room to activate a good part of this potential through this model. According to the BiH Typology of Residential Buildings,<sup>11</sup> in 2016 there were a total of 861,965 residential buildings. If we assume that a solar power plant of only 3 kW can be installed on each of these residential structures, the total installed power from these individual systems would be 2,586 MW, with total annual generation of 3,362 GWh per year. In this manner, households in BiH could cover as much as 70%<sup>12</sup> of their own needs from own generation through citizen energy models. Naturally, this is just an illustration of potential, which omits public, commercial, and agricultural buildings on which solar systems can also be installed, which would further advance the decarbonisation process.

To utilise this potential efficiently and effectively, first the energy sector democratisation needs to happen by introducing the citizen energy model into legislation and by creating an environment and implementation mechanisms. To achieve this in a sustainable and efficient way requires dispelling the fallacy widespread in BiH and among decision makers that state-owned power utilities will be the engines of transition and of the decarbonisation process and that they have the capacity to on their own. All experiences of countries that are far advanced in the transition process reveal that large power companies did not lead the transition, but instead they were more likely to hinder and block the process.

The above considerations suggest that the citizen energy concept should be viewed as both the cause and consequence of the democratisation of the energy sector, which should involve citizens, local government units (LGUs), businesses, but also

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<sup>10</sup> The total gross domestic electricity consumption in BiH in 2020 was 11,330 GWh.

<sup>11</sup> [https://www.giz.de/en/downloads\\_els/Typology\\_of\\_Residential\\_Buildings\\_in\\_Bosnia\\_and\\_Herzegovina.pdf](https://www.giz.de/en/downloads_els/Typology_of_Residential_Buildings_in_Bosnia_and_Herzegovina.pdf)

<sup>12</sup> Electricity consumption in BiH households was 4,795 GWh in 2020, see more at: <https://www.derk.ba/ba/godinji-izvjetaji-derk-a>

other levels of government. While the prosumer model empowers citizens and businesspeople to generate electricity for their own needs and thereby individually contribute to the decarbonisation process, energy communities have a wider impact, because they promote introduction of social innovation and cooperation between citizens and other stakeholders (leading to increases in their own human and social capital). So, it stands to reason that energy communities generate also considerably synergistic effects both in terms of promotion, education, and inclusion and with regard to the efficiency of this process. As energy communities, in addition to social innovation and cooperation, also support local development, which can affect economic growth,<sup>13</sup> the above energy stakeholders may influence the interest of higher-level governments to implement the democratisation of the energy sector. Thus, we conclude that energy communities can be a „**cohesive force**“ that affects both the bottom-up, but also the top-down approach in the implementation of this process.

### 3.2. Contribution to the preservation of standards and to economic growth and development

During an energy and an economic crisis, with consequently rising prices of energy sources and of all other costs of living and doing business, citizen energy provides a possibility to mitigate these negative effects. Empowering citizens, businesses and LGUs to generate electricity for their own needs through the prosumer model reduces their dependence on other sources of supply, and thereby the risks of potential price increases. This is particularly important for the business sector and LGUs and their public enterprises and institutions, because of the price of electricity they pay. The effect that production for own needs can have on household budgets should also not be underestimated. In effect, with a relatively small lump-sum investment, citizens may expect to cover a considerable share of their own consumption in the long term (for over 20 years), which would mean lower current costs and energy outlays, and increase security of supply, which is very important under inflationary circumstances.

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<sup>13</sup> European Economic and Social Committee, „EESC Study on the Role of Civil Society in the Implementation of the EU Renewable Energy Directive“, 2015.



From the standpoint of LGUs and their institutions and enterprises, generation for own needs may considerably reduce budget expenditures for energy, which makes it possible to spend saved budget funds to meet other needs or to lower the cost of local utility and other services.

Under the conditions of low competitiveness of the domestic businesses in the domestic and foreign markets and of limited funds available for subsidies, the concept of citizen energy allows business people to actively control their energy costs and thereby maintain control of their own overall business costs and preserve their market position.

The development of an efficient and effective concept of prosumers and energy communities, if supported by other models of subsidisation of investments, will result in productive employment of considerable savings citizens keep in the banks. The total household deposits in BiH are nearly BAM 15 billion (approx. EUR 7.6 billion), and if only 10% of this potential were to be channelled into citizen energy projects, it could lead to creation of 750 MW of new solar power capacity, which would be as much as 13 times greater than the current installed capacity of 56.51 MW. Such a considerable level of investment activity over a relatively short period would bring positive effects for the economy as a whole, result in new employment and economic growth for BiH, and increase government tax revenues.

In addition to the above considerations, development of citizen energy would also have positive effects for business results of all power utilities in BiH, as they would be able to channel additional surpluses of electricity, which would emerge in the local market under these circumstances, due to reduced consumption due to generation for own needs by their consumers, and they would be able to export these surpluses at the current very high prices, thereby gaining additional profits which could be generated into their own development, decarbonisation of their own production, and just transition of mining regions.

### 3.3. Fighting energy poverty

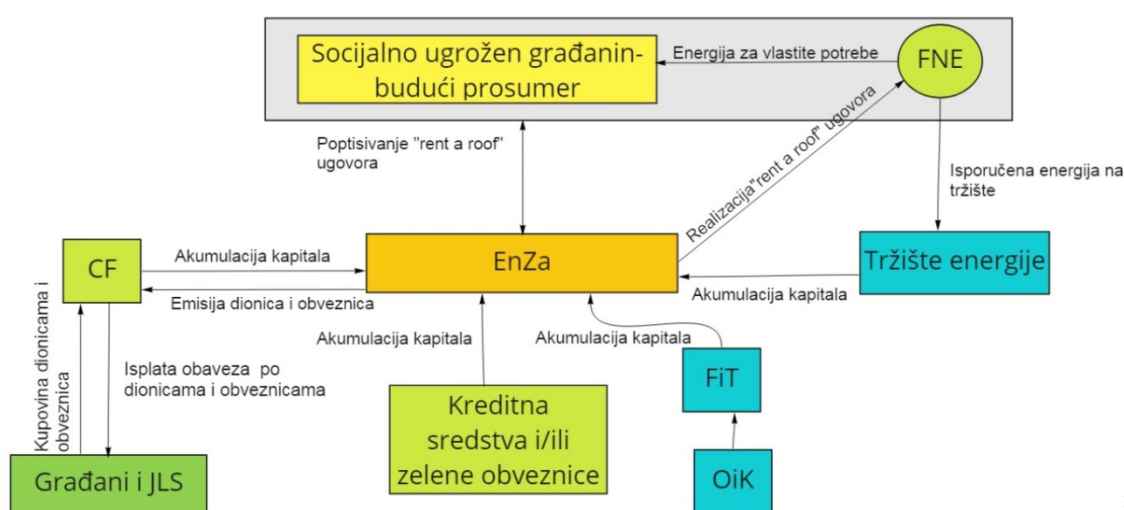
Energy poverty is a major obstacle to effective introduction of the citizen energy model and to ensuring sustainable economic growth. At present, energy poverty is a reality even in the wealthiest states, in the „old“ European Union Member States, while it is far more widespread in the „new“ Member States, whose economies have not even reached the level of the average EU GDP. It is for this reason that in 2019, through the EU Clean Energy Package (CEP) (4 regulations and 4 directives), the European Commission (alongside the previously established energy regulatory framework) imposed on its Member States a requirement to monitor and report on implementation of energy poverty mitigation measures. In this package, the Directive 2019/944 on joint rules for the internal electricity market and on the amendments to the Directive 2012/27/EU is the main guideline on fighting energy poverty. Certain factors which should be considered when developing the criteria to measure energy poverty were identified in this directive, and these include primarily low incomes, large energy consumption, poor energy efficiency of residential buildings, etc. In addition, the Directive 2019/944 also proposes an integrated approach to addressing this problem, which should include combining the measures of the energy and social policies. With regard to energy policy measures, improving buildings' energy efficiency was accorded high priority to ensure that vulnerable and energy poor citizens can be supplied with sufficient quantities of energy.

A transition society, such as BiH, includes many poor and unemployed citizens, which may cause a greater risk in the energy transition process – energy poverty. This phenomenon may negatively affect already difficult social and economic position of citizens but also cause insufficient involvement of citizens in the energy sector democratisation process, which would considerably undermine the effectiveness of the energy transition process.

Ensuring competitiveness in local energy markets and financial sustainability of energy communities may create efficient mechanisms to pre-empt this risk. If they accumulated sufficient financial capital through borrowing, crowdfunding platforms, green bonds and/or subsidies, energy community can create a mechanism for fighting energy poverty based on the **„rent a roof“ model**. In other words, this

means that socially vulnerable citizens receive a generator (most often a photovoltaic power plant that is installed on the building's roof). Electricity generation from such a plant can meet basic electricity needs of socially vulnerable citizens, who are in this way compensated for the use of their roof.

Energy communities dispose with energy surpluses, which may generate significant profits in local energy markets. The graph below depicts the mechanism for fighting energy poverty based on the „rent a roof“ model which was described above.

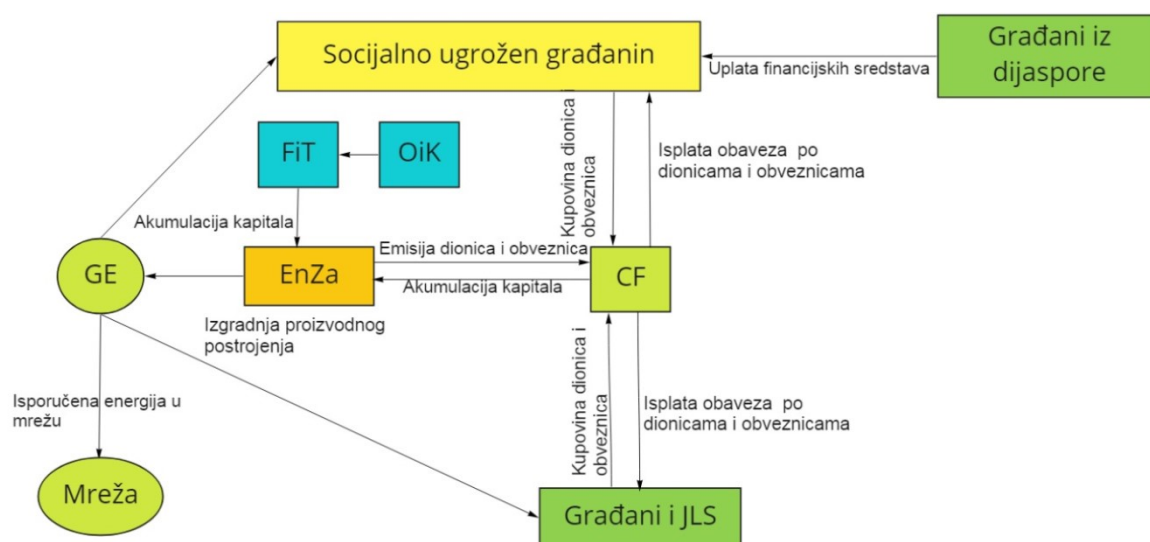


Graph 2. A mechanism to fight energy poverty based on the „rent-a-roof“ model

Besides the above model, energy communities which include LGUs may subsidise certain categories of socially vulnerable citizens with their own funds, or transfer portions of energy they are entitled to as owners in the energy community to users free of charge, to mitigate energy poverty on their territory. Subsidies can also be used to create new generation plants or to provide energy efficiency services. For an energy community to freely transfer a portion of generated electricity to beneficiaries in the category of energy poor citizens, subordinate regulations must stipulate the option of so-called virtual net metering, which permit transfer of a certain quantity of generated electricity that is considered as own generation to energy poor citizens, regardless of the fact that the citizens from this category are not co-owners of the energy community. Allowing virtual net metering is also important for those citizens without the option to install solar power plants on their own roofs and thereby attain

prosumer status, but who are willing to invest in such plants in other locations and thereby exercise the rights of prosumers.

Diaspora-based citizens may recognise the development of the citizen energy concept in Bosnia and Herzegovina as a suitable form of additional assistance to recipients of their remittances. By investing some funds into citizen energy projects, citizens from the diaspora may reduce the dependence of the recipients of remittances, which may reduce the number of (energy) poor citizens. In this context, it is important to ensure that legislative solutions offer BiH citizens in the diaspora an opportunity to actively participate in the development of citizen energy and in the energy transition more broadly.



Graph 3. Mechanism for fighting energy poverty by including citizens from the diaspora who assist (energy) poor citizens by purchasing direct shares in the energy community.

To ensure that energy communities provide a greater contribution to local development and economic growth, an effective macro-coordinated approach needs to be combined with additional mechanisms for fighting energy poverty. If these mechanisms positively affect the reduction of energy poverty (from the group of socially vulnerable and poor citizens), then they will also affect the effectiveness and fairness of the energy sector transition process.

### 3.4. Boosting the resilience and efficiency of the energy system through digitalisation and creation of local markets.

Citizen energy encourages consumption at the site of generation, thereby lowering transmission and distribution losses, and lowering the need for investment in new generation, but also transmission, capacities. Along with the digitalisation of the distribution grid, the development of energy markets and energy efficiency is left to competition mechanisms, which undermines the influence of the macro-coordinated approach and government expenditures. Energy communities, prosumers, as well as other energy-generating entities licenced for energy trading may trade in the energy markets. Digitalisation of the distribution grid may enable peer-to-peer trading,<sup>14</sup> which gives energy communities with efficient business policies the opportunity to create their own local energy markets and by competition affect the energy costs for final consumers. This approach offers an opportunity to construct effective mechanisms to implement energy efficiency measures, which enhances the system's resilience, but also security of supply for final consumers.

## 4. Conclusion and recommendations

The process of energy transition in Bosnia and Herzegovina is already notoriously behind both developed countries and the countries in the Western Balkans. This delay is currently greatest in the field of development and implementation of the citizen energy concept, which all countries of the region implemented in their legislation and practice with more or less success.

This fact reveals the lack of preparedness of decision makers to seriously embark on the process of energy transition and democratisation of the energy sector and a lack of understanding and awareness of all the benefits that could be derived from the development of citizen energy in BiH.

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<sup>14</sup> Directive 2018/2002, defines **peer-to-peer trading** (or **P2P**) in renewable energy as sale of electricity between market participants in the market under previously agreed terms that govern automated execution and settlement of transactionis. Trading may be conducted directly between market participants or indirectly, through a third party – a certified market participant, such as an aggregator.

The governments will embrace the concept of citizen energy if they understand its advantages in terms of economic growth, energy security, and stability of public finances, and if they manage to free themselves from the pressure of various lobbies with significant interest within the current makeup of the power sector. However, the entity governments must realise that energy transition can be sustainable only if a sustainable and effective citizen energy sector is established, with their efficiency dependent on citizen awareness, trust in government institutions and on the macro-coordinated approach that will bring together climate, energy, and financial instruments.

In this process, affirmation and promotion of the concept of citizen energy is the first order of business to permit all interested parties to estimate costs and benefits of the concept and their role in it.

Democratisation of the power sector is technical, technological, and economic inevitability and obstruction and blockades, whether for political, monopolistic or narrowly private interests are causing huge social and individual damage. On the other hand, development of citizen energy permits significant acceleration of the process of democratisation, decarbonisation, and decentralisation of the power sector, and enables all stakeholders to take part in this process in a transparent manner, which creates the preconditions for just transition and distribution of transition benefits to all stakeholders.

The enormous price increases of all energy products in the world market, and consequently in the domestic market as well, created preconditions in which citizen energy can have a very important role in reducing negative pressure on economic and social living and business conditions in the country, in initiating a new investment cycle, and, as a result, in creating more favourable conditions for faster and more just economic growth and development.

The financial potential of the diaspora and of domestic savings can be activated most effectively through citizen energy as, in addition to obvious economic and transition benefits, citizen energy may serve as an instrument for gradual restoration of citizens' trust in the system, which is a core prerequisite for future investments, not just in the energy sector.

Therefore, BiH has to adopt all laws and subordinate regulations as soon as possible to launch this entire process. A particular attention here needs to be dedicated to subordinate and implementation regulations to prevent them from becoming the main obstacle for an accelerated and comprehensive development of citizen energy in its full capacity. Unnecessary and excessive administration, combined with discretionary decision points, constitutes a recipe for a potential disaster for the concept of citizen energy, a disaster of the same kind as the one that occurred in implementation of the previous laws on renewable energy sources through a series of illegal acts, discrimination in favour of investors, and of corruption acts without any benefits for attainment of the adopted goals. As an example of well-developed and efficient procedures and subordinate regulations, the model applied in Serbia can be used, and with minor modifications this model should be adopted in BiH as well.

In the conditions of an unrealistically low price of electricity for households, the authorities should set aside considerable funds to subsidise the first wave of citizen energy, because the funds allocated by the new legal solutions are insufficient for successful implementation. Nevertheless, subsidies should be exclusively lump-sum and pro-rated to the investment amount.<sup>15</sup>

BiH could generate additional funds to subsidise citizen energy by issuing green bonds on the international financial market, as Serbia had done, or by introducing CO<sub>2</sub> taxation, with a portion of collected revenues allocated for these purposes. In addition, electricity producers in BiH generate enormous profits from exports and taxing these exports could secure additional funding for subsidising citizen energy. Besides, lawmakers could consider subsidisation of citizen energy projects also through abolition of customs duties and the return of the VAT, since the equipment of this kind is subject to these levies.

Instead of obstructing it, all three public power utilities in BiH should strongly support<sup>16</sup> the development of citizen energy, as in that case a large share of

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<sup>15</sup> The Republic of Croatia subsidises installation of solar panels through its Environmental Protection Fund with 40 to 80% of the value of an investment, depending on the given region's level of development. The Republic of Serbia subsidises prosumers with 50% of the value of the investment, with 25% of the subsidy provided by the state level, and the other 25% by local authorities.

<sup>16</sup> See the example of the Montenegrin Elektroprivreda and the Solari 3000+ project, <https://www.epcg.com/media-centar/saopstenja-za-javnost/objavljen-javni-poziv-za-projekat-solari-3000-i-solari-500>

development of new RES would not fall upon them, that they will be able to export electricity surpluses that are generated to foreign markets and thereby improve their financial position, while available funds can be utilised for gradual decarbonisation of their own portfolio and for just transition. The development of citizen energy is also an opportunity for public power utilities to carry out their own transformation and shift from being exclusively energy producers and suppliers to modern energy services providers and aggregators.

From the standpoint of attainment of the final objective, which is a decarbonisation of society and sustainable development, citizen energy is the only reliable instrument for decarbonisation of domestic consumption, as most of generated electricity is consumer on the site where it is produced. In all other cases, investors in renewable energy sources in BiH are not required to decarbonise domestic consumption, which makes citizen energy the prime tool for decarbonisation of the country.