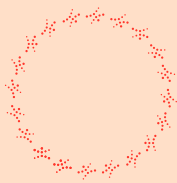


Scaling-up Energy Communities in Bulgaria

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KEY COUNTRY DATA

BULGARIA	
Population (2020) ¹	6,942,142
GDP per capita at market prices (2019) ²	EUR 8,680.00 per capita
Electricity consumption per capita (2018) ³ Electricity consumption per capita in the households sector (2018) ⁴	4.45 MW per capita: 76% of the EU average 1.55 MWh per capita: 98% of the EU average
Solar resource quality (global horizontal irradiation) ⁵	North: 1,350 kWh/m ² /year Southwest: 1,500 kWh/m ² /year Central: 1,450 kWh/m ² /year
Range of current installed costs (reported)	EUR 550 – 850 per kW
Primary energy consumption (2018) ⁶ Final energy consumption (2018) ⁷ Total net electricity consumption (2019) ⁸	18.4 Mtoe 9.9 Mtoe 34 TWh
Average electricity tariffs (2019) ⁹	Households: EUR 0.0798 kWh + taxes Non-households: EUR 0.0858 kWh + taxes

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¹ <https://www.nsi.bg/en/content/6727/population-projections-sex-and-age>

² https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10_pc&lang=en

³ https://ec.europa.eu/eurostat/statistics-explained/index.php/Electricity_and_heat_statistics#Consumption_of_electricity_per_capita_in_the_households_sector

⁴ https://ec.europa.eu/eurostat/statistics-explained/index.php/Electricity_and_heat_statistics#Consumption_of_electricity_per_capita_in_the_households_sector

⁵ <https://solargis.com/maps-and-gis-data/download/bulgaria>

⁶ https://ec.europa.eu/energy/data-analysis/energy-statistical-pocketbook_en

⁷ Ibid

⁸ <https://www.nsi.bg/>

⁹ https://ec.europa.eu/eurostat/statistics-explained/index.php/Electricity_price_statistics

KEY INSIGHTS

The overall trajectory of energy policy in Bulgaria continues to rely heavily on high-cost, large-scale technologies and projects, including expanding the role of natural gas, and doubling down on nuclear power. In the process, **the overall policy environment is downplaying the role of more sustainable and cost-competitive technologies like solar PV.** This approach risks saddling the country with outdated infrastructure as well as an increasingly uncompetitive energy system.

Despite the fact that some commercial and industrial customers in particular are starting to invest in solar PV projects directly, **projects owned by groups of citizens or by energy communities remain rare in the country.**

There is a lack of a clear and bankable policy framework for renewable energy projects in Bulgaria, and a current gap with regard to the transposition of the EU Renewable Energy Directive – II (RED-II). These policy gaps make the development and growth of energy communities in Bulgaria even more challenging than it is in other EU Member States.

There is significant potential for municipalities to play a leading role in Bulgaria's energy transition. **Municipalities can support this transition to a cleaner and more sustainable energy paradigm by spearheading energy community projects, and inviting local citizens and small businesses to participate.** In this way, the development of locally-owned renewable energy projects can contribute to job creation and economic activity, while providing a clear pipeline of local infrastructure projects that are well-positioned to benefit from EU funding.

The government of Bulgaria needs to remove many of the administrative barriers to energy communities, and create a policy and regulatory environment that will enable municipalities and local citizens to participate in the energy transition. As things stand, the barriers remain high, and the political will is lacking.

1. INTRODUCTION

Bulgaria is poised for a significant transformation of its energy system in the coming decades leading up to 2050. Among the major drivers for this are the rapidly decreasing costs of renewable energy sources, the European Union's (EU) new Renewable Energy Directive (RED II), a steady rise in retail electricity prices due in part to the liberalization of the market, and the influence of bottom-up market forces. In addition, **the 2018 Directive on the promotion of the use of energy from renewable sources (RED II) combined with the European Green Deal are fueling a fundamental re-think of both energy and climate policy and investment across the EU.**

As a Member State of the European Union, Bulgaria is required to implement RED II. As part of this process, it will need to adopt a range of new regulations to provide greater legal and policy certainty for the development of energy communities. RED II enshrines the right of households and businesses to install their own onsite renewable energy supply and establishes

a range of clear guidelines regarding the regulation of the sector. RED II also lays out a number of specific requirements to facilitate the establishment of energy communities.

Energy communities can make an important contribution to the post-COVID recovery by supporting local economic development while helping communities throughout the EU contribute to meeting energy and climate-related objectives.¹⁰

WHAT IS AN ENERGY COMMUNITY?

An Energy Community refers to groups of individuals that band together to co-finance a renewable energy project, either as a bottom-up citizens' initiative or in partnership with local municipalities.

EU Member States have until June 2021 to transpose the Renewable Energy Directive into national legislation. The transposition of these guidelines into local law should be used as an opportunity to improve the business case for investing in energy communities in the country. Based on current market trends, energy communities in Bulgaria are likely to be turning to solar photovoltaic (PV) projects.

WHY ARE ENERGY COMMUNITIES IN BULGARIA LIKELY TO CHOOSE SOLAR?



Solar PV has several important advantages over other energy generation technologies that make them particularly well-suited to energy community projects:

- Solar PV is now the **lowest cost** renewable energy technology in terms of the upfront cost.
- Solar PV is relatively **simple to site** and to install and typically does not require extensive environmental impact analyses as compared to other RES technologies.
- Solar PV is **highly modular**, which means it can be built at all sizes, and can be dimensioned to match precisely the available land area, or the financial resources that the energy community has available.
- Bulgaria has excellent solar resources.¹¹

As a result, it is likely that a growing number of prosumers and energy communities in Bulgaria will choose solar PV over other technologies like wind, biomass or biogas. However, in some cases it is possible that some of these technologies could be developed into energy community projects as well, for instance to supply renewable energy into district heating systems, where local conditions allow.

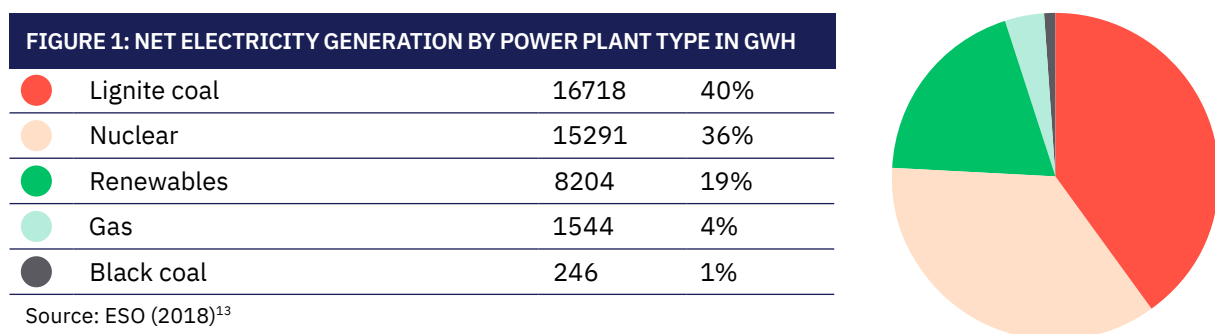
¹⁰ IRENA 2021. https://coalition.irena.org/-/media/Files/IRENA/Coalition-for-Action/IRENA_Coalition_Stimulating_Investment_in_Community_Energy_2020.pdf?utm_source=All+IRENA+contacts&utm_campaign=2a804cccdc-EMAIL_CAMPAIGN_2020_12_08_12_44&utm_medium=email&utm_term=0_29b5801035-2a804cccdc-66944902

¹¹ <https://solargis.com/maps-and-gis-data/download/bulgaria>

In light of the growing attractiveness of onsite solar projects, even the introduction of modest measures such as simplifying the administrative procedures and clarifying the tax treatment of energy communities could help in galvanizing the market and mobilizing investment.

2. OVERVIEW OF THE ELECTRICITY SECTOR IN BULGARIA

The chart below shows Bulgaria's current electricity mix.¹²



As can be seen above, coal and nuclear power dominate Bulgaria's power mix. Moreover, **the latest version of Bulgaria's National Climate and Energy Plan (NCEP) continues to envision a prominent role for both nuclear power and fossil gas in the country, despite the fact that these technologies are costlier, riskier, and slower to build than renewables.**

The NCEP sets a modest target for the share of renewable energy in the electricity sector at 30% by 2030, which represents a 7% increase from the current level.¹⁴ The latest plan indicates a target of roughly 2.000MW of new solar PV by 2030, although recent analyses suggest that Bulgaria has a potential of well over 5.000MW of cost-effective solar PV, or more than four times current deployment levels.¹⁵ Another key shortcoming is that the current NCEP does not have a separate RES objective or projections for renewable energy produced by cities, energy communities or by prosumers.

BULGARIA'S CURRENT RENEWABLE ENERGY TARGETS:

30% by 2030

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¹² For a more detailed overview of Bulgaria's electricity system and electricity rates, please see the first report in this series, which can be downloaded at <https://www.e3analytics.eu/>.

¹³ Note that we have used 2018 data for the time being, because there are some significant discrepancies in the 2019 data available.

¹⁴ <https://www.nsi.bg/en/content/5062/electricity-generated-renewable-sources-share-gross-electricity-consumption>

¹⁵ See: <https://irena.org/events/2020/Oct/Launch-of-CESEC-Report>

At the same time some positive regulatory changes have occurred in Bulgaria in recent years.

<p>POSITIVE DEVELOPMENTS FOR ENERGY COMMUNITIES IN BULGARIA</p>	<ul style="list-style-type: none"> • From an administrative perspective, amendments to the Spatial Development Act in 2019 removed the requirement for solar PV systems with a total installed capacity of up to 1 MW mounted on rooftops and façades to have an approved investment plan in order to obtain a building permit for the installation. • Systems up to 1MW that are not connected to grid do not require a formal commissioning, which enables them to avoid some administrative hurdles and delays. • Also, producers with installations that are connected to the grid after 2021 and do not receive feed-in tariffs are no longer be required to pay a 5% levy on their revenues that was introduced on FIT projects in 2015 as a measure to fund the Energy System Security Fund.¹⁶
	

With regard to electricity rates, **Bulgaria currently has the lowest household electricity prices in the EU**, with households paying approximately EUR 0,10/kWh. However, prices have increased by 17% between 2009 and 2019, and it is expected that retail prices for households will continue to rise in the years ahead.¹⁷ This is likely to make it even more economically attractive to invest in solar power, both for individuals as well as for energy communities.

3. WHAT IS AN ENERGY COMMUNITY?

In 2018, as part of the Clean Energy for All Europeans package, the revised Renewable Energy Directive 2018/2001/EU (RED II) and Directive 2019/944/EU on the Internal Market for Electricity (IMED) were introduced. A key element of the revised directives is the introduction of a legal framework according to which **prosumers are given the right to consume, store or sell renewable energy produced on their premises**. Prosumers can do this either on an individual level (as a household or a small company) or as part of an Energy Community.

Although energy communities have existed in different EU Member States for decades, this concept is relatively new both to Bulgaria as well as to many other countries in the region, and several important barriers remain.

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¹⁶ https://www.capital.bg/biznes/energetika/2020/10/24/4130766_otpada_edna_ot_golemite_prechki_za_novi_vei_moshnosti/

¹⁷ See: https://ec.europa.eu/eurostat/cache/metadata/en/nrg_pc_204_esms.htm

IN-DEPTH: HOW TO DEFINE AN ENERGY COMMUNITY?

While there is no widely accepted definition of an “energy community”, most definitions include the following requirements:

- The projects must be powered by **renewable energy sources** (RES)
- The projects must be **directly owned by citizens, cooperatives, or local authorities** (such as municipal governments),
- The projects must have a **purpose beyond strictly making a profit**, such as contributing to the fight against climate change, increasing control over local energy resources, and promoting energy democracy.

In its definition, the EU legal framework defines Energy Communities as follows:

“A legal entity which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity; the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities; the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.”*

*The term SME refers to “small and medium-sized enterprises”.

Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN>;

Energy communities have existed in different forms long before their formal recognition in EU legislation. As a result, energy communities vary widely from country to country. Table 1 below provides a list, organized from the most bottom-up to the most top-down:

TABLE 1: LIST OF LEGAL FORMS OF ENERGY COMMUNITIES

1/2

	Different legal forms of energy communities	Characteristics
MORE BOTTOM-UP	Co-operative	Co-operatives are legal entities intended to primarily benefit their members. Participation is voluntary. A core principle in most cooperatives is that every member has one vote regardless of their investment. Benefits depend on the nature of the cooperative – they can include profits from generated energy to lower energy bills, as well as access to advice and expertise provided by the cooperative or its members. Additionally, members can actively participate in the governance of the cooperative.
	Partnership	Under a partnership model, community members (individuals, small and medium-size companies, or local governments) join forces to provide energy to a community. In a partnership voting power is determined by the stake that each individual/partner puts into the venture. Partnerships that generate a profit can decide whether that profit should be reinvested back to the community or distributed to the investors or project partners.

TABLE 1: LIST OF LEGAL FORMS OF ENERGY COMMUNITIES

2/2

	Different legal forms of energy communities	Characteristics
MORE BOTTOM-UP	Trusts, foundations and NGOs	Trusts, foundations and other non-profit organizations are legal entities usually established with the goal of delivering a social benefit rather than profit. Communities, citizens and municipalities can choose to set up not-for-profit entities that can legally represent their interest in and manage energy communities' projects. These entities can use proceedings from the projects to provide benefits to the whole community even when there are individuals who cannot afford to participate.
MORE TOP-DOWN	Community Choice Aggregators (CCAs)	Under a CCA, municipalities themselves (independently or in partnership with an agency that runs the CCA) aggregate their residents' electricity demand and seek out offers from utilities or project developers to procure electricity for all participating customers in the region through direct contracts with energy producers. ¹⁸ By enabling local communities to procure their own electricity, CCAs can be an attractive option for cities and regions that want more local control over their electricity mix. By aggregating electricity demand across their region, cities and local governments are negotiating better rates with suppliers and locking in contracts for higher shares of renewables, including 100%.
	Public utility company	Utility companies run by municipalities which invest in and manage the utility on behalf of taxpayers and citizens. They are not as common as the previously discussed forms.
	Public-private partnership (PPP) with local partners	Municipalities and other local authorities can decide to enter into public-private partnership agreements with citizen groups/local companies in order to provide (cheaper) energy and other benefits for a community. PPPs are gaining momentum and becoming more attractive to both municipalities and businesses.

Source: Renewable Energy Communities, A Policy Brief from the Policy Learning Platform on Low-carbon economy (August 2018)¹⁹

A recent report by the European Commission's Joint Research Center identifies several criteria to set apart the different forms and models energy communities can take. While they may differ in structure, energy communities share a number of similarities as well.

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¹⁸ See: Solar United Neighbors, "Solar for Municipalities," Accessed November 6 2020, <https://www.solarunitedneighbors.org/go-solar/solar-for-municipalities/>

¹⁹ Renewable Energy Communities, A Policy Brief from the Policy Learning Platform on Low-carbon economy, August 2018, Interreg Europe (<https://www.interregeurope.eu/news-and-events/news/385/policy-brief-on-low-carbon-economy/>)

FIGURE 2: LIST OF ORGANIZATIONAL FORMS AND MODELS OF ENERGY COMMUNITIES

Activities	Energy Technology	Organizational structure	Geographic scope	Socio-economic innovation
<ul style="list-style-type: none"> • Generation • Supply • Consumption and energy sharing • Distribution (electricity and heating) • Energy savings services 	<ul style="list-style-type: none"> • Solar • Wind • Small hydro • Biomass • District heating 	<ul style="list-style-type: none"> • Cooperative • Associations/ Trusts/Foundations • Partnerships (public-private) • Private company 	<ul style="list-style-type: none"> • Local • Regional • Nationwide 	<ul style="list-style-type: none"> • Bioenergy villages • Co-housing communities • Agricultural cooperatives

Source: Energy communities: An overview of energy and social innovation, JCR (2020)²⁰

The increase of energy community projects in Europe is largely driven by the introduction of various support mechanisms and incentives such as feed-in tariffs, tax exemptions, and grants. These mechanisms enable energy communities and prosumers to actively participate in the production of renewable energy and benefit from it. Recent studies, however, show that the decline in support schemes negatively impacts the development of energy communities across Europe. Cuts in feed-in tariff schemes in Germany and Denmark, for example, have led to a significant slowdown in establishing energy cooperatives in recent years.

The realization is dawning in both Germany and Denmark is that in order to maintain the pace of renewable energy development required to achieve energy and climate goals, citizens and community support are critical. The cases of Germany and Denmark carry important lessons for the emergence of energy communities in other parts of Europe where they are just beginning to form.

Benefits of Energy Communities

Energy communities can bring a number of benefits for society, as shown in Table 2.

TABLE 2: BENEFITS OF ENERGY COMMUNITIES

1/2

Socio-Economic Gains	<ul style="list-style-type: none"> • Local investment and job creation • Improved welfare
Energy and Financial Security	<ul style="list-style-type: none"> • Energy community projects generate financial returns that are shared among community members • Reduces energy poverty by providing lower energy costs and greater price certainty

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²⁰ https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119433/energy_communities_report_final.pdf

TABLE 2: BENEFITS OF ENERGY COMMUNITIES

2/2

Energy Citizenship	<ul style="list-style-type: none"> • Enables citizens to participate directly in local decision-making • Increases direct participation in the energy system
Awareness and Mobilization	<ul style="list-style-type: none"> • Expands awareness and acceptance of renewable energy • Empowers citizens to take actions against climate change
Social Cohesion	<ul style="list-style-type: none"> • Creates a feeling of common trust and support • Creates a greater sense of ownership

Sources: IRENA (2021), JRC (2020)

Community energy projects enable people to be active participants in the energy system, foster decentralization of the energy system and reduce the overall reliance on fossil fuels, thus contributing to the reduction of greenhouse gas emissions. Moreover, the concept of energy communities represents a social innovation that can simultaneously provide solutions to the problem of energy poverty that affects several different regions throughout the EU, not only in eastern and central Europe, but also in countries like Spain, Portugal, Italy, and Ireland. Many energy communities allow for socially and economically vulnerable groups of society to take part and benefit from the projects without financially contributing to them. Social cohesion and a mutual feeling of belonging and trust are byproducts of such projects and significantly contribute to strengthening local communities.

Efforts to reduce energy poverty are particularly timely: approximately 40% of households in Bulgaria struggle to pay their energy (electricity/heating) bills.²¹ However, the lack of a standardized definition of energy poverty hinders attempts to develop a coherent strategy to address the problem.

HOW CAN ENERGY COMMUNITIES HELP TACKLE ENERGY POVERTY?



Thus far, Bulgaria's primary efforts to address the problem of energy poverty have focused on keeping electricity rates for households artificially low. One of the downsides of this approach, however, is that it undermines the incentive to invest in energy efficiency, or to purchase more efficient end-use appliances.²² This is one of the areas in which energy communities could potentially help, offering solutions to reduce energy bills, providing direct access to onsite and lower-cost renewable energy supply, and helping households that are part of the energy community to improve their energy efficiency.

²¹ <https://csd.bg/bg/publications/publication/development-of-small-scale-renewable-energy-sources-in-bulgaria-legislative-and-administrative-chal/>

²² In many jurisdictions worldwide, households spending more than 10% of their monthly income on energy are considered to suffer from energy poverty – such a benchmark could provide one metric with which to begin to address the problem more systematically in Bulgaria. See: https://ec.europa.eu/energy/eu-buildings-factsheets-topics-tree/energy-poverty_en?redir=1

Energy communities are part of the democratization of the energy system and provide a way for citizens to be active participants in it rather than just passive consumers. In light of the expected liberalization of the electricity market in Bulgaria by 2025, energy communities offer an effective way for communities (especially socially and economically vulnerable ones) to meet their energy needs in a sustainable and affordable manner.

Business and Investment Models for Energy Communities

As part of efforts to encourage more direct citizen involvement and engagement in the energy transition, there are several new business and investment models emerging to make it easier for individuals, businesses, and local municipalities to develop their own energy community projects. Financing renewable energy projects (especially community-based ones) is a challenging task not only in Bulgaria.²³ Innovative financing methods have been developed in order to overcome these difficulties, such as crowdfunding.

HOW CROWDFUNDING IS BEING USED TO DEVELOP SOLAR PROJECTS: THE CASE OF KRIZEVCI, CROATIA

Overview: Križevci is a town located in central Croatia with a total population of 21,122. In 2018, it started the first pilot project in Croatia for citizens' crowd funding for a renewable energy project.¹ The goal was to install a solar PV power plant on the rooftop of the municipality's Development Center and Technology Park's administrative building. The municipality of Križevci provided administrative and financial support during the preparation phase of the project.

Funding: A fundraising campaign was organized; it resulted in 53 investors with an average investment of €500, raising a total of €31,000 for a 30 kW PV plant. The campaign managed to collect the total amount of money needed in only 10 days. A follow-up campaign was launched for a second PV plan. The €23,000 target budget was raised in only 48 hours.

How it works: The PV system, with a capacity of 30 kW, was installed on the rooftop of a municipal business support center. The first goal was to ensure that the electricity produced meets the needs of the users in the building. Any excess energy is sold back to the grid. The municipality covers the cost of the electricity consumption and pays back the citizens that have invested in the project through the monthly savings obtained. The cooperative works with the municipality as the main implementing partner, involving citizens through micro-loans and paying them back with a fixed interest of 4.5%. In the second campaign the interest rate was brought to 3%, as the main driver to investments from citizens was contributing to community development rather than profit. The estimated time for the return on investment is 10 years, after which the PV system ownership will be transferred to the municipality.

¹ <https://energy-cities.eu/best-practice/crowd-investing-for-solar-roofs-in-krizevci/>

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²³ IRENA 2021. https://coalition.irena.org/-/media/Files/IRENA/Coalition-for-Action/IRENA_Coalition_Stimulating_Investment_in_Community_Energy_2020.pdf?utm_source=All+IRENA+contacts&utm_campaign=2a804cccdc-EMAIL_CAMPAIGN_2020_12_08_12_44&utm_medium=email&utm_term=0_29b5801035-2a804cccdc-66944902

Such projects illustrate the environmental, social and economic benefits of community-based energy projects. Municipalities and local residents and businesses can work together and create innovative solutions and partnerships to common problems. While crowdfunding is popular and accessible method to raise finances, it comes with many administrative challenges and difficulties. It requires significant expertise and know-how to navigate through the network of administrative and regulatory procedures. This is why many potential investors either feel too discouraged or overwhelmed to get involved.

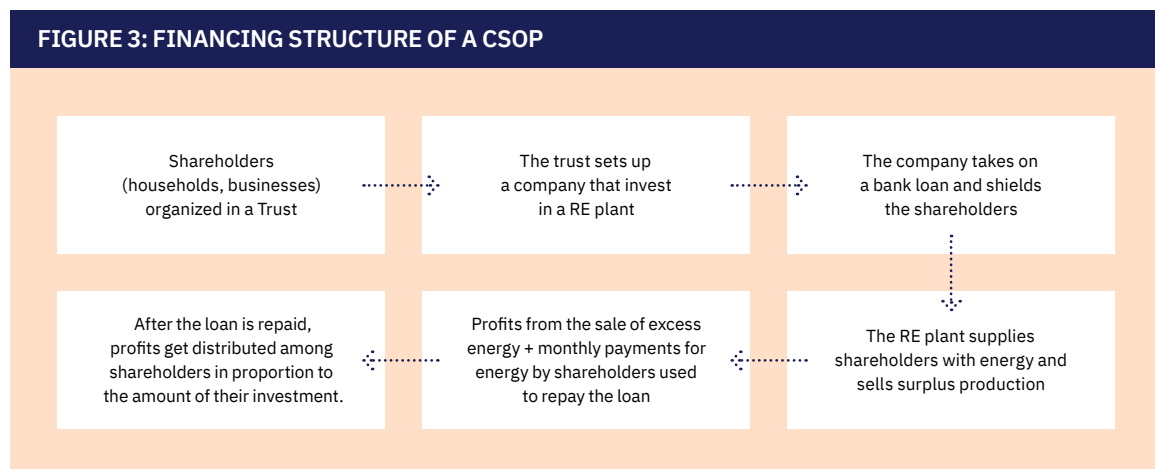
Other innovative forms are being created to make it easier for individuals, businesses and municipalities to form energy communities. Consumer stock ownership plans (CSOPs) offer one possible solution.²⁴ CSOPs enable consumers to acquire an ownership stake in a utility or local renewable energy project and to become prosumers in the process.

CAN CONSUMER STOCK OWNERSHIP PLANS (CSOPs) HELP CITIZENS IN BULGARIA SET UP AN ENERGY COMMUNITY?

Consumer stock ownership plans are a consumer-centered investment model that provides both participation in terms of finance and a role in decision-making. CSOPs entail the creation of an intermediary entity that is established to invest into new or existing RES projects and operates on behalf of co-owners. They have several attractive characteristics:

1. CSOPs have a low threshold to enter, making it easy for low-income families and vulnerable groups to participate;
2. They are easily scalable, and can grow as the pool of financial resources grows;
3. They offer participants a secure supply of energy and a reliable return on investment.
4. They allow participants to avoid personal liability;
5. CSOPs are open to co-investments from municipalities, small and medium-sized businesses and other local stakeholders;

The figure below provides an overview of how the CSOP model works in practice:



Source: <https://www.score-h2020.eu/csop-financing/csop-step-by-step/>

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²⁴ <https://www.score-h2020.eu/about-us/>

Another model worth mentioning is the “**solar garden model**”, which is expanding in jurisdictions such as the U.S. and Australia.²⁵ Solar gardens allow community members without a suitable rooftop of their own to purchase (or subscribe to) a certain number of solar panels from a solar garden constructed near the community. Participants are then provided with a monthly or yearly credit for the value of the electricity produced by their plot in the solar garden, which enables them to reduce their electricity bill.

SOLAR GARDENS: ANOTHER VIABLE MODEL FOR ENERGY COMMUNITIES

The solar garden model has several advantages:

- It allows people who are renters, who live in an apartment, or who are overwhelmed by the idea owning and taking care of their own solar system to participate;
- By enabling larger solar PV systems to be built, it enables participants to benefit from even lower solar prices due to economies of scale;
- If a participant moves to another city, or village, they can take their “virtual solar garden plot” with them to reduce their bill at their new home (as long as they remain with the same electricity retailer);
- Solar gardens take care of all the maintenance associated with solar power, including trimming grass and plants around the site, snow removal, technical maintenance, etc;
- Solar gardens can also provide direct benefits for the local community: local people are in effect investing in the local community, and become directly involved in the energy transition in their area.

The “solar garden” model illustrates how innovation can make solar energy accessible and affordable for community members with different backgrounds and circumstances.

4. STATUS OF ENERGY COMMUNITIES IN BULGARIA

There is currently little information on energy communities in Bulgaria. The idea has been sporadically mentioned by environmental NGOs over the years but has so far failed to receive high-level attention from either policymakers or stakeholders in the country. Discussions with various stakeholders indicate that a combination of factors including the lack of support, of awareness, and of a clear governing framework for energy communities is responsible for the absence of momentum on energy communities in Bulgaria.

However, a few examples exist:

One example that is similar to an energy community is a 117-unit apartment complex in the “Hristo Smirnenski” district of the capital Sofia, the owners of which have pooled their resources to install a 28kW rooftop PV installation on their building. Organized via the property owners’ association

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²⁵ <https://onestepoffthegrid.com.au/australias-biggest-solar-garden-opens-for-membership-in-nsw-riverina/>

(a legal entity required by law for every condominium building in the country), it took the entity 3 years (from 2010 to 2013) to successfully complete the project.²⁶ The community-owned PV installation brings a regular monthly income to the entity which is used to pay common bills and building expenses. All of the electricity produced is sold back to the grid under the country's feed-in tariff policy.

In the seven years since the project was completed, the number of similar projects remains small. And although there have been efforts to reduce some of the administrative obstacles related to renewable energy installations in the country, the near absence of similar projects elsewhere in the country indicates that the measures adopted to date have not been enough to fuel widespread interest.

HOW STRALDZHA MUNICIPALITY IS TAKING THE LEAD

The municipality of Straldzha is located in south-eastern Bulgaria and is part of Yambol Province. It is a small municipality with an established agriculture and food industry, and a population of 12,014. In 2016, the Municipality started a project "Utilization of the local potential of geothermal energy in heating installations for schools and kindergartens in the town of Straldzha".¹ The grant financing is 772 109,23 BGN (€394 773.18). The project is funded by the BG04 Energy Efficiency and Renewable Energy Program as part of the Financial Mechanism of the European Economic Area (EEAFM). The project was completed in 2016.

Additionally, in 2018 the municipality installed a system of street lights that runs entirely on renewable energy. Currently, the municipality continues to work on building on and expanding its portfolio of renewable energy projects. With the right framework conditions, municipalities like Straldzha could position themselves to develop a range of energy community projects, providing a template that other municipalities in the country could follow.

¹. shorturl.at/zNR17

MUNICIPALITY-LED PROJECTS IN CITY OF BURGAS

The municipality of Burgas is one of the most active regional authorities working on advancing renewables through a range of municipality-led projects. Located in the southern part of Bulgaria along the Black Sea Coast, Burgas is the fourth largest city in the country with a population of 202,694 people. As part of an EU co-funded energy efficiency project in 2019, the renovation of the municipality building also included the installation of a 30 kWp rooftop solar PV system configured for self-consumption. The whole project cost BGN 2.28 million (EUR 1.16 million), with 65% coming from EU's Regional Development Fund (ERDF), and the remaining 35% came from the municipality's own budget. Through other ERDF co-funded projects, five kindergartens across the city were equipped with rooftop solar PV installations entirely for self-consumption. Residential buildings have also benefited from municipality-led projects promoting energy efficiency that includes renewables.

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²⁶ <https://bnt.bg/bg/a/kolko-kilograma-dokumenti-sa-nuzhni-za-rabotata-na-dva-solarni-panela-v-balgariya>

A significant obstacle highlighted by the Burgas Municipality, however, is that the installation of any rooftop system requires the consent of all apartment owners. Interviews suggest that due to the lack of awareness and the inherent skepticism over the benefits of such systems, some apartment owners refuse to give their consent, hindering the realization of more such projects.

In accordance with the Renewable Energy Sources Act, the Burgas Municipality has drafted a plan for the promotion of renewables and biofuels for the 2020-2030 period. The plan envisions the share of renewables and biofuels on the territory of the municipality to reach 32% by 2030.¹

¹. https://www.burgas.bg/uploads/posts/2021/burgas_res_longterm1.pdf

As these few case studies attest, Bulgaria still has a lot of work to do in order to create a stable and investable framework for energy communities. According to the latest Assessment of the National Energy and Climate Plan (NECP):

“As regards enabling renewable self-consumers and renewable energy communities, the final plan still provides no details on the form of support it intends to provide. It only refers in general terms to unspecified legislative changes that should be made to optimize the current regulatory framework and to regulate the rights of self-consumer in a more satisfactory way, with a view to encouraging and facilitating the development of self-consumption of renewable energy.”²⁷

Households, small businesses, farmers, municipalities could all potentially benefit from the development of energy communities in Bulgaria, but the interviews conducted as part of this analysis indicate that it will take time, sustained support, and a clear policy framework to drive change. One clear policy that is missing in Bulgaria is Net Metering, or Virtual Net Metering, a policy that enables customers to develop a renewable energy project (or co-invest in one) and use the generation to offset their own consumption from the grid. In the case of Virtual Net Metering, customers can generate power elsewhere on the grid and use it to offset their onsite demand in their home or business, a policy option that can be useful in establishing energy communities featuring a large number of different members.

HOW CAN VIRTUAL NET METERING HELP IN ESTABLISHING ENERGY COMMUNITIES? THE CASE OF GREECE

In 2016, Greece introduced a law on virtual net metering, the scope of which was extended to include energy communities in 2018. The law defines energy communities as urban partnerships with the aim of strengthening the sharing economy and innovation in the energy sector.¹ By law a percentage of the profits made by an energy community needs to be used to reduce energy poverty within the community. In this way, vulnerable customers can benefit from energy community projects without actually participating in them.

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²⁷ https://ec.europa.eu/energy/sites/ener/files/documents/staff_working_document_assessment_necp_bulgaria.pdf

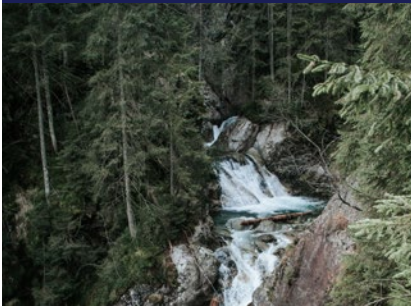
A couple of other important elements of the law are worth mentioning:

- **Locality:** at least 51% of the members of the energy community must be related to the place where the headquarters of the energy community is located. This means that individuals must have full or minor ownership on a property located within the region of the energy community or to be municipal residents of that region and the legal persons to have their headquarters in the region of the energy community.² The reasoning is to stimulate local economy and provide added value for the community.
- **Financial incentives** and support measures aiming at the development of local renewables power plants. Financial incentives include an exemption from bidding procedures for projects up to 6 MW for wind projects and 1 MW for solar PV projects. Energy community projects are also exempt from the obligation to pay an annual power generation licensing fee, while benefitting from preferential conditions to participate in the country's auction-based subsidy scheme.

¹. <https://www.compile-project.eu/>

². http://enercommunities.eu/wp-content/uploads/2019/06/INFO-PACK_By_Innopolis_%CE%95%CE%9D.pdf

HOW ENERGY COOPERATIVES IN POLAND HAVE ADOPTED RENEWABLES



Poland's energy system is notorious for its reliance on coal. *Spółdzielnia Nasza Energia*²⁸, the first energy cooperative in Poland, was established in 2014. It has 300 members and its main activity is the generation of renewable heat and electricity from local biogas installations. It was established to tackle energy security and high electricity prices by tapping into the potential of a network of agricultural biogas plants. The cooperative is a public-private government initiative created with the aim to supply electricity and heat to meet the needs of public buildings as well as households in the community.

5. KEY BARRIERS AND RECOMMENDATIONS

There are many barriers to developing energy communities in Bulgaria:

- **1 Policy and regulatory barriers**
Prosumers and renewable energy communities are not yet legally defined in the current energy legislation. This is expected to change with the transposition of the Renewable Energy Directive. However, in formal and informal conversations energy experts express their skepticism

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²⁸ <http://nasza-energia.org/>

this will help make prosumers and energy communities widespread. One reason is that transposing the Directive into Bulgarian legislation is not enough: there are many laws, bylaws and ordinances that need to be updated and synchronized in order to make these concepts work in practice. This is likely to require coordinated efforts from many different government agencies and ministries – a task that has proved to be challenging. Additionally, stakeholders are rarely consulted or invited to actively take part in the process of transposition and the development of the governing framework, which is another reason that the current regulatory framework contains so many gaps.

Another important component of the functioning of an energy community is the ability to sell surplus power to the grid. The absence of clear regulations governing these aspects remains a major gap.

2 Lack of Awareness

A major obstacle to developing energy communities in Bulgaria is the low level of awareness in the country. Potential participants like households, municipalities, small and medium-size businesses are often overwhelmed by the amount of administrative work associated with the development of a renewable energy project; developing such a project with the cooperation and joint contributions of many different parties, as is the case with energy communities, represents an even greater challenge.

3 Access to finance

Access to affordable financing is one of the biggest barriers to developing renewable energy projects, particularly for energy communities.²⁹ Only a small share of individuals and households have sufficiently high disposable income to invest in renewable energy installations. This makes the ready availability of bank financing (i.e. loans) and/or grants essential to the success of many energy communities. However, banks have not been active in lending to small scale distributed PV/RES and community energy projects in Bulgaria. For example, a commercial bank based in Austria with extensive business operations in Bulgaria which provides financing for energy community projects in other countries throughout the EU does not currently offer any similar loan products in Bulgaria.

4 Legal issues

There is currently a lack of a clear legal definition and specific legal provisions regarding energy communities both at national and municipal levels in Bulgaria. This lack of regulation and systematic approach discourages potential investors to take the risk to develop an energy community.

5 Culture and history

History and local culture play an important role in shaping the willingness or interest of individuals to participate in an energy community. These issues are especially relevant to citizens in post-communist countries where community and cooperative forms often evoke memories

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²⁹ IRENA 2021. https://coalition.irena.org/-/media/Files/IRENA/Coalition-for-Action/IRENA_Coalition_Stimulating_Investment_in_Community_Energy_2020.pdf?utm_source=All+IRENA+contacts&utm_campaign=2a804ccdc-EMAIL_CAMPAIGN_2020_12_08_12_44&utm_medium=email&utm_term=0_29b5801035-2a804ccdc-66944902

of the forced collectivization that occurred under communist rule.³⁰ Northern countries like Denmark and Germany have long traditions of cooperative ownership and governance, a factor that helps explain the success of community energy projects in these countries.

6 Tax and VAT Issues

The lack of clear rules governing tax rates, and how individual members of an energy community will be taxed, makes it hard to build momentum. Owners of renewable energy installations are subject to numerous taxes, fees, and administrative charges (for more details, see the recently-published report on distributed solar PV in Bulgaria: <https://www.e3analytics.eu/>). Accumulated, these can in some cases exceed the profits of selling the excess electricity.

Investors with installations that are connected to the grid are required to pay a variety of fees and taxes such as an access fee, a 5% tax on the revenue of selling excess electricity, and/or a 10% corporate tax on the income generated from electricity sales. Unless specific tax provisions are introduced for energy communities, the latter will likely face the same, or similar, issues.

The revised Renewable Energy Directive 2018/2001/EU has set the stage for the widespread development of community-led renewable energy projects in countries throughout the EU. The many positive economic and social benefits of energy communities can be seen in hundreds of projects across the continent. Bulgaria is in a position to take advantage of the lessons and best practices gained from other jurisdictions across the EU, and to tap into valuable know-how and funding.

In order for that to happen, a number of changes need to happen.

Recommendations

- 1 **A comprehensive policy framework for energy communities is needed in Bulgaria**, one that is aligned with the EU's RED-II Directive, and creates policy and regulatory certainty for the sector. This includes the implementation of clear grid-connection procedures, clear rules with regard to tax treatment, a legally sound definition of energy communities, and **a one-stop-shop** for all energy community projects (see below).³¹
- 2 With regard to the role of RED II in shaping Bulgaria's policy framework for energy communities, the legislative framework developed in Bulgaria has to specify exactly what legal forms will be allowed, and what administrative and tax rules will apply. In addition, the regulations should define, among other aspects:
 - **How energy communities** will interact with the country's existing electricity market
 - **The types of activities they can engage in** (Generation, Supply, Consumption and

³⁰ One easy step would be to promote the development of energy communities rather than cooperatives (in the years before the revised RED II in Bulgaria "cooperative" (кооператив) was used as a collective term of community projects). While there are still cooperatives operating today (mainly in the field of agriculture, tourism and industry), the word is somewhat antiquated. Community (общност) is a more modern term; it conveys notions of inclusion, equality and a shared sense of belonging.

³¹ See: https://proseu.eu/sites/default/files/Resources/PROSEU_Transposition%20Guidance%20for%20REDII%20and%20EMD.pdf

- energy sharing, Distribution (electricity and heating), Energy savings services, etc.)
- **The role of municipalities** and in particular, the extent to which they can engage, initiate, or participate in energy communities.
- 3 Clear rules for the **compensation and remuneration** of net surplus generation from energy community projects such as **Surplus Power Tariffs are needed in Bulgaria**. Surplus power tariffs provide a simple, LCOE-based price for the purchase of surplus electricity output that is exported to the grid.³² They can help de-risk the business case, and help bring banks and other financial institutions onboard.
 - 4 **Participants in energy communities need to be able to erase their own electricity bill by drawing on the electricity supplied by the energy community project.** Erasing the bill in this way is commonly done by allowing **Virtual Net Metering**. All surplus that cannot be consumed by the participants in the energy community project should be purchased at the Surplus Power Tariff (see above).
 - 5 Develop a “**one-stop shop**” (on a national or regional level) for the establishment and siting of energy community projects, including electronic and online services to ease the administrative burden. Forms should be able to be submitted online, and it should also be possible to pay fees online as well to reduce the burden on energy community participants.
 - 6 Introduce **preferential tax treatment** for potential participants in a community-based renewable energy projects. This could include an exemption on income taxes, clarity with regard to the applicability of corporate tax, or a “tax-free amount” that can be earned per individual, per year (e.g. EUR 2.500).
 - 7 Establish a series of “**solar gardens**” nationwide in partnership with municipalities, on municipally-owned land, as a proof-of-concept for energy communities. Such solar gardens would be ideal candidates for the use of EU Recovery Funds.
 - 8 Bulgaria should introduce financing instruments to improve **access to finance**, specifically in order to help lower and middle-income households, as well as small and medium-sized businesses, to be able to participate in energy communities in their area. This could involve a special **renewable energy credit facility** providing preferential loan terms for energy community projects, or the channeling of EU funds either directly in the form of **grants**, or via municipalities to reduce the upfront cost of projects.
 - 9 Invest in **building capacity, awareness, and administrative expertise in the siting, development, and connection of energy community projects**. One way to overcome the problem of the lack of awareness and professionalization in the development of energy communities is **the establishment of a dedicated agency** either at the local or at the national-level focused on renewable energy projects and able to help anyone interested in setting up an energy community. In many cases local authorities are not interested in building this type of internal capacity if they are not required by law or

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³² See: <https://proseu.eu/resources>

by the central authorities. Developing internal capacity requires a long-term vision and investments in human capital by the local authorities – two important elements that authorities often lack.

Another opportunity for municipalities in particular is to actively participate in learning programs, workshops and knowledge exchange programs with representatives from other countries. These may include on- and offline courses, onsite visits of pilot projects, conferences and seminars to share experience and know-how, etc. The national government could support municipalities by establishing a dedicated fund to support capacity building at the municipal level.

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Bulgaria should ensure that public and EU funds are channelled to support investments in energy communities. The Government's latest National Recovery Plan³³ outlines investment in solar PV systems as a national priority. Energy community projects, either developed bottom-up or in partnership with municipalities, can become an important focal point for these investments.

Communication is an essential ingredient to promote the concept of energy communities. The next few years will be crucial to raise awareness of the concept and build momentum. Municipalities, households and businesses all need relevant, reliable and useful information about the topic that is easily available and understandable in one place. Transposing the renewable energy directive into the national legislation is just one step of the process.

The national government needs to consider developing a wide-reaching information campaign to inform and educate citizens, businesses, and municipalities about the benefits of energy communities and to make resources available to enable them to flourish.

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³³ <https://www.nextgeneration.bg/14>

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