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SunSharing

SunSharing- Supporting Solar Energy Communities in SEE

Report on the state of play regarding solar PV energy communities and crowdfunding initiatives in North Macedonia

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1. Executive Summary

There is high potential for solar energy in the partner countries of the SunSharing project, especially on roofs of residential buildings, schools, public utilities and municipal buildings. However, apart from some crowdfunding initiatives in Croatia and community projects in Greece, there is a lack of innovative business models that will stimulate citizens to jointly invest in renewable generation. As a result of the lack of experience and awareness, both citizens (investors) and owners/residents of the buildings (beneficiaries) are missing out on potential economic, social and environmental benefits. The main issues in all partner countries come from a lack of proper legislation on energy communities and crowdfunding. In North Macedonia, similarly to Bulgaria, there is no legislation on energy communities, while in Croatia and Greece, there is a partial and incomplete transposition of the EU directives.

Yet, the National Energy and Climate Action Plan in North Macedonia envisions over 1 GW of PV capacity in 2040, with up to 400 MW rooftop PV in 2040. In order to accelerate the progress towards this goal, but also as a measure to protect consumers against the energy crisis, changes were made to the Rulebook on renewable energy in order to increase the maximum allowed capacity of PV that can be installed on rooftops. While these changes are a step in a positive direction, they fail to unlock the potential of community energy projects, leaving interested parties (citizens, municipalities, public institutions) unable to jointly invest in community solar PV projects. However, with the announced start of North Macedonia's EU negotiation process (19 July 2022), the country will initiate the screening of the EU acquis. This momentum, in combination with the statement in EU Energy Community's, the "Decarbonisation Roadmap" of the EU Energy Community stipulates that Directive 2018/2001/EU, which regulates renewable energy communities, should be fully implemented until 2024, introduces certainty that regulatory and framework changes will have to take place to improve the conditions for energy community formation in North Macedonia in the following period. The SunSharing project helps raise awareness of this opportunity and contribute to evidence-based policymaking.

This report, which is developed within the Sunsharing project, is based on a review of relevant legal documents, reports and studies, as well as World Café style bilateral meetings with key stakeholders in the energy sector. The report gives a brief overview of the current state-of-play regarding energy communities in Macedonian conditions. Moreover, it evaluates the opportunities and the barriers for energy communities, assesses existing initiatives, studies and analyses, and discusses the role of local governments in supporting energy communities.

In the introduction, the basic terms, such as renewable and citizen energy communities, as well as jointly acting self-consumers, are discussed. In order to identify the advantages and disadvantages of each of the communities, the different types of communities are compared. The EU definitions for energy communities have not been transposed into the national legislation of North Macedonia. As a result, there are no energy communities established so far, although there are some initiatives that have occurred. These initiatives indicate a need for the establishment of a i) legal framework and ii) adequate support mechanisms for energy communities.

In the second part of the report, an analysis of the current state of the Macedonian legislation in the field of energy communities is provided. This part addresses the practical implementation of the regulation and goes over related topics, such as electricity production for the electricity demand of the common areas a residential building, ESCO models, virtual power plants and a closed electricity distribution system.

The next chapter provides an assessment of existing barriers and future opportunities for the development of energy communities at the national level, with an emphasis on business potential and legal framework, access to the electricity market, but also considers social aspects and benefits for citizens. Apart from the lack of a definition of energy communities, the other identified barriers for the development of energy communities are the lack of experience and good practices, skepticism towards social entrepreneurship, the limited hosting capacity of the electricity distribution network in times of rising interest in investing in photovoltaics, the potential conflicts of interest between key stakeholders and the relatively low price of electricity for households. On the other hand, the idea of cooperatives is part of the national collective memory in North Macedonia. Therefore, solar energy communities have notable potential, if one considers the favorable meteorological conditions in the country, the fast licensing for electricity production, the rising interest in investing in renewable energy of citizens, as well as the possibility that energy communities can be a tool for enhancing local economies, strengthening social cohesion and accelerating the realization of national energy and climate targets.

The fourth chapter is of particular importance, as it discusses the role of local governments and the mechanisms for direct and indirect support for energy communities. Municipalities and local governments will be able to support and sponsor energy communities and initiatives, but can also be a beneficiary of their services, co-invest with communities in joint projects or become members of energy communities.

Although there are no energy communities at the national level, existing relevant initiatives are reviewed. In the next section, several examples are discussed, such as the collective purchase of inverter air conditioners, the installation of a photovoltaic system on a collective building to meet the needs of electricity in the common areas, and more pronounced investments at the municipal level. At the same time, two relevant analyses/reports are discussed, which assess how a building can be a jointly acting renewables self-consumer, or act as a community with a feed-in tariff. Lastly, a brief overview of several national crowdfunding platforms and initiatives, such as eCrowd, Letsfundit, MladiPretpriemaci, which can facilitate citizen initiatives is given.

2. General overview of the adoption of legislative framework for energy communities

North Macedonia is a signatory of the Energy Community Treaty, which supports the creation of an integrated electricity and gas market between the EU and the Contracting Parties. As a result, North Macedonia is obligated to transpose the relevant European directives related to the energy sector, among which are the Renewable Energy Directive (RED) and the Electricity Market Directive (EMD). The "Decarbonization Roadmap"[1] of the Energy Community Treaty stipulates that RED, which regulates Renewable Energy Communities (RECs), should be fully implemented until 2024. This introduces certainty that regulatory changes will take place to improve the conditions for energy community formation in North Macedonia in the following period. While promoting and enabling RECs is important, they represent one of the two possible types of energy communities. Hence, it is equally important to implement EMD as well, since it defines the term Citizen Energy Communities (CECs).

At the time of writing of this Report, the only entity that *de jure* enables citizens to group for a given energy project is an **energy cooperative**. According to the Law of cooperatives of the Republic of North

[1] https://www.energy-community.org/regionalinitiatives/energy.html

Macedonia[2], citizens are free to form a so-called energy cooperative. A cooperative is defined as a legal entity which is jointly and democratically owned and governed by natural and/or legal persons that have joined the cooperative voluntarily, with the aim of obtaining economic, social, cultural and other benefits. A cooperative is formed by at least five natural and/or legal persons and must have a founding board, statute and adequate organs. Although the general points related to cooperatives are defined in the Law on cooperatives, there is no further specification regarding energy cooperatives. Instead, the document states that all matters that are not defined in it, which refer to energy communities, should be adequately addressed in the laws and bylaws regulating the energy sector. It is thus *de facto* necessary to make suitable changes in the Energy Law, Energy Efficiency Law, as well as the Rulebook on renewable energy sources, Rulebook on electricity market etc in order to make energy cooperatives functional.

Given that **there is no formal definition of the terms Renewable Energy Community (REC) or Citizen Energy Community (CEC)** in North Macedonia, the following challenges are identified:

1. Uncertainty about the legal entities which citizens can use to jointly implement energy projects;
2. Lack of financial support mechanisms for the realization and implementation of energy community projects;
3. Uncertainty and lack of experience regarding the regulation around crowdfunding and/or crown-lending related to energy communities;
4. Inability to participate in energy sharing and/or collective self-consumption in buildings (as jointly acting renewables self-consumers);
5. Inability to locally share and/or trade energy (e.g. through a peer-to-peer platform) in a Renewable Energy Community;

Nevertheless, some elements in the national energy regulation can enable joint projects in the energy sector by citizens, SMEs and municipalities, if suitable adapted.

Collective electricity generation for the common areas of a residential building

Based on the Rulebook for changing and supplementing the Rulebook on renewable energy sources, based on Article 185 of the Energy Law, tenants of a multi-apartment building can install a distributed unit for electricity generation with a capacity of up to 6 kW[3] (as in the case of a household prosumer). This generation unit can be used to cover the electricity demand for the common areas of a buildings, such as elevators and lighting.

While this is a step in a positive direction, this formulation:

- Does not enable investing in a PV generator with a larger capacity than 6 kW, which can be used for collective self-consumption, i.e. to cover the electricity demand of individual tenants;
- Does not provide a clear idea on how the non-residential tenants in the building (such as offices, shops, bakeries etc.) will be treated.

[2] Закон за задругите, Службен весник на РСМ, бр. 101 од 16.5.2023 година

[3] https://www.economy.gov.mk/content/downloads/documents/izmeni%20i%20dopolnuvanje_Pravilnik%20za%20OIE%20final%2015.06.2022.pdf

Considering RED, the tenants of a building should be able to share the energy of a collective generation unit installed at the premises of the building, without forming a separate legal entity and while retaining their rights as individual electricity consumers.

ESCO

Based on Energy Efficiency Law of the Republic of North Macedonia from 2020, an ESCO can be a legal entity which provides energy services or implements measures for the improvement of the energy efficiency of its customers, while accepting a level of risk, given that its financial benefit is proportional to the energy savings of the customers. The flexibility of the definition of what is an ESCO, enables citizen associations and energy cooperatives to also act as ESCOs. This unlocks a certain level of private capital for the realization of joint energy projects. However, the definitions of REC and CEC (and the criteria they have to meet in terms of governance and autonomy) impose restrictions on the role that ESCOs can play, since the primary area of operation of an ESCO is in the field of energy. Hence, although it is beneficial if an ESCO takes part in an energy community, as it brings technical and practical knowledge, it should satisfy the criteria on effective control and governance so that it does not interfere with the governance and autonomy of the energy community.

Virtual power plant

A virtual power plant (VPP) technical and administratively aggregates different producers, prosumers and energy storage operators that are connected to the power distribution system, which enables their centralized control and operation in electricity markets. The concept of a VPP is somewhat similar to CEC. However, a VPP can be established by a private profit-seeking company, without any specific requirement to integrate citizens. On the other hand, it a group of citizens which have formed a CEC with to be registered as a VPP, they must first be registered as an electricity producer or a supplier. Assuming that the group of citizens lack time, technical and human resources for this, the legislative administrative, financial and legal burdens may act as a barrier discouraging them to take actions in such a project.

Closed electricity distribution system

EMD enables EU Member States to allow Citizen Energy Communities to become operators of so called closed electricity distribution systems. However, a closed electricity distribution system must meet a number of criteria, related to geographical boundaries, ownership and use. Thus, while it can be a motivator for the formation of CEC, it can only be used in specific conditions, therefore limiting the room for use. In North Macedonia, these conditions and relevant primarily for industrial zones which own and operate their own closed distribution system.

3. Overview of the existing energy communities or cooperatives *(in case no communities are recognized)*

Due to the lack of adequate legislation on energy communities and the underdeveloped regulation on energy cooperatives, **there are no energy communities or cooperatives** in North Macedonia at the time of writing of this report. Despite this fact, different activities have taken place at the national level, which contribute to setting the stage for energy community regulation to be introduced.

One notable example is the **collective action**[4] organized as part of the Clear-X project, which is funded by the Horizon Europe programme. Within this collective action the Organization of consumers of

[4] https://www.kolektivnokupuvanje.mk/klimatizeri2023

North Macedonia coordinates a collective purchase of air-source inverter heat pumps. By timing the purchase during an off-peak period of the year and by representing a large number of interested consumers, the Organization of consumers aims to obtain a collective discount. There are several lessons to be learned from this activity, such as the fact that collective actions improve their legitimacy when consumers are represented by a trustworthy organization. Furthermore, the experience of the collective actions also shows that having an active promotion campaign and a clear web-platform is very important in extending the reach of the action and informing as many citizens as possible.

Two analytical studies stand out as useful resources which help inform policy makers about the potential benefits of energy communities. The first study, funded by Friedrich-Ebert, was conducted to evaluate the potential of energy community formation in the Municipality of Karposh[5]. It evaluates the economic and environmental benefits from an energy community which sells the electricity of a collective PV generator at a fixed feed-in price which is determined by the Energy and Water Services Regulatory Commission of the Republic of North Macedonia. The study offers value in that it presents a structural and financial model of an energy cooperative. The findings show that, under the presented assumptions, the members of the community would **return their investment in around 7 years** and provide additional financial benefits both for themselves, as well as for the public building on which the PV generator is located.

The second study was conducted as part of the REPLACE project. While Friedrich-Ebert study focused on feed-in tariffs, the REPLACE study explores the economic, technical and environmental impacts of two collective measures that can be implemented in a real building in Skopje, North Macedonia. The first measure to be implemented assumes that the tenants of the building will replace their resistive electric heaters with air-source heat pumps, while the second measure assumes that the tenants will purchase a PV generator for collective self-consumption. In a sense, the analysis evaluates the benefit of **local coupling of the heat and electricity sector** at the building level. After assessing multiple scenarios, the study reports that the financial savings for the building, after the two measures are implemented, range from 2800 – 3300 EUR and that the investment in the heat pumps and the PV generators is returned after within 4-5 years, depending on the capacity of the PV generator. Moreover, the technical and environmental impacts reported at the building level are as follows: reduction of net electricity imports by about 40%, reduction of CO2 emissions by about 40% due to the PV and additional 27% due to the heat pumps.

Both of these studies provide theoretical estimates of the various benefits that energy communities can offer and while they cannot replace practical experience, they can be useful for informing policy makers and key stakeholders about the opportunities.

When it comes to practical experience, interesting information can be drawn from the ADORA FLATIRON building in Skopje. ADORA FLATIRON is the first building to install a PV generator for supplying the energy demand of the shared areas in the building (elevator, lighting etc.). It should be noted that this project was not an initiatives led by the tenants but was instead a feature provided by the building development company. Nevertheless, the project stands out as a testament of innovation which **adds value to existing buildings** and send a signal to the community about the environmental and social awareness of the tenants of the building as well as the building development company.

[5] А. Најдовска, Т. Манолева, Д. Миновски, Љ. Димов, И. Вучкова, "Електроенергетски независен и самоодржлив Карпош", Фондација "Фридрих Еберт", Канцеларија во Македонија, 2020, ISBN 978-9989-109-96-6

4. Assessment of obstacles and potential for development of ECs

There are a number of obstacles and potential for the deployment of energy communities that are noted in Macedonian conditions, which have been mapped using RESCoops Guideline for the assessment of barriers and potentials for the development of renewable energy communities[6].

More specifically, the following **potential and obstacles** were noted:

Business potential and legal framework

- ✓ Suitable meteorological conditions at a national level and a fast-growing ecosystem of solar PV installer, developers and engineers;
- ✓ Existing experience with giving subsidies and defining effective financial support measures for individual projects; the experience can be adapted to support energy communities;
- ✓ GEFF provides grants for a group of individuals, housing associations and ESCOs of up to 25% for the purchase of a single technology and 35% for the purchase of a combination of technologies;
- ✓ Clear energy and climate targets at a national level, toward which energy communities can contribute;
- – Lack of support mechanisms for collective actions and energy community projects;
- – Lack of national, regional and local targets for supporting, stimulating and implementing energy communities;
- – Lack of stimulation of significant investments in renewable energy for self-consumption, due to relatively low electricity price paid by households.

Access to electricity markets

- ✓ Clear rules for obtaining a connection access to the distribution grid;
- ✓ Fast procedures and rapid issuance of licenses for electricity producers by the Energy and Water Services Regulatory Commission of the Republic of North Macedonia;
- ✓ Potential for collaboration between energy communities and the public sector, for instance for reducing energy poverty, installing PV generator on public buildings etc;
- ✓ Potential for joint action with the private sector in large-scale energy projects, which may support a more just energy transition;
- – Significant interest in connecting new PV generator which may use-up the hosting capacity of the distribution grid;
- – Lack of a clear definition of energy communities and their treatment in electricity markets;
- – Lack of expertise which puts energy communities at a disadvantage compared to energy companies;
- – Potential for conflicting interests between different stakeholders in the energy sector.

Wider social context

- ✓ Cooperatives are an integral part of the national history and there is experience with cooperatives (especially agricultural cooperatives);
- ✓ Clear energy and climate targets can be used as a basis to support energy community development;
- ✓ Existing interest in investing in the energy sector and lack of NIMBY, which can be further reinforced by allowing citizens to systematically participate in the energy transition;

[6] https://www.rescoop.eu/toolbox/model-assessment-template

- Risk aversion of citizens in taking part and/or investing in project that are novel and considered risky;
- Inertia of citizen initiatives and low trust in public institutions;
- Lack of information and awareness among citizens about energy communities and collective action.

5. Local government's role in energy communities and citizen energy initiatives

The role of local governments in relation to energy communities is also not clearly defined. At the time of this report, municipalities can form public utilities which can become licensed electricity producers. This enables municipalities to invest in renewable energy sources for their own self-consumption. In case the municipality lacks own funds to undertake and implement energy projects, it can unlock private capital from citizens through different crowdfunding models (loans, grants, shares, bonds etc.). Municipalities are forming such utilities in order to reduce their own electricity costs. Nevertheless, the utilities provide an opportunity for collaboration with energy communities and citizen initiatives in the future.

Moreover, municipalities play an important role in the process of installing distributed generation units for self-consumption by prosumers. When a prosumer installs a PV generation unit for own self-consumption, they are obliged to inform the municipality by providing two written notifications: the first notifications informs the municipality that the PV generation unit is installed at the premises of the prosumers and contains information about the capacity of the PV generator, the location of the building and the installer; the second notification informs the municipality about the commissioning of the PV generation unit. While these procedures are dedicated for individual prosumers, they can easily be adapted to suit the needs of energy communities.

When it comes to the relationship between local governments and energy communities and citizen energy initiatives, local governments can, in general, act as:

- **Promotors/supporters:** Even if municipalities are not directly linked to energy communities, they can still support their activities by promoting them, enhancing their visibility and supporting them in the pursuit of external financing;
- **Beneficiaries:** Municipalities need to procure energy services (energy supply, energy efficiency measure, renovation etc.). This can be done in cooperation with energy communities;
- **Co-investors in energy community projects:** Municipalities can be co-investors in energy community projects and form long-term partnerships;
- **Members in energy communities:** Municipalities can be members of energy communities and together with citizens and SME implement joint energy projects.

Furthermore, municipalities can support energy communities by providing **technical support, administrative support and office space**, which are very important for the initiation of energy communities in the early phases. If possible, they can also **provide grants** that should cover the initial costs for licenses, project documentations, feasibility studies, thus motivating more citizens to take part in community projects by de-risking them.

6. Overview of the recent crowdfunding initiatives

In North Macedonia, only one crowdfunding initiative for a solar energy project, titled 'Accumulating Solar Heat Project'[7] has been identified. The initiative is posted on the GoGetFunding platform, with a target of 15 000 $. The initiator of the crowdfunding call is interested in using the finance to test a pilot project in which the electricity generated by a solar generator is used for seasonal storage of heat. Potentially due to the lack of clear value proposition and established credibility, the project failed at gathering the required funding.

Apart from this initiative, there have been a number of other activities which may be more relevant since they contribute to setting the ground for future crowdfunding initiatives to take place. For example, 'InnoFinRes - Innovative Financial Models to Support A Transition To Renewable Energy Sources' is a project financed by EIT Climate-KIC, which aims to co-create a novel financing model for local governments and stakeholders. Within this project, a Handbook on co-creating crowdfunding models[8] has been developed. The Handbook is a useful resource, which can be used as a manual for municipalities and public institutions in North Macedonia that are interested in alternatives modes of finance such as donations, rewards, loans, shares and municipal bonds.

7. Assessment of the availability and effectiveness of the crowdfunding initiatives in forming of the citizen energy projects

Considering the lack of national experience with crowdfunding initiatives for citizen energy projects, one cannot conduct a proper assessment of the availability and effectiveness of such initiatives. Nevertheless, it is worth noting that despite the lack of crowdfunding of citizen energy project, there is no lack of crowdfunding of other types of activities. In North Macedonia, there are a few different national digital platforms than are used to crowdfunding:

- eCrowd[9]: eCrowd is a national crowdfunding platform for citizen organizations which enables financing projects in the following fields: science, economy, arts, health, disadvantaged groups of citizens, inclusions, environment, sport, humanities, innovations, youth, education, animals etc.
- Letsfunit[10]: Letsfunit is a crowdunding platform which aims to improve the entrepreneurial spirit of young people by giving them access to financial assets that are necessary for the realization of their innovative ideas. The platform aims to contribute to the employment rate and self-employment rate of young people.
- MladiPretpriemaci[11]: the web-platform is intended to be a tool for funding the establishment of social entrepreneurship ideas in North Macedonia. The web-platform should therefore be seen as a resource for existing and new initiatives for social entrepreneurship, given that it offers information on supporting, upgrading and sharing of knowledge, as well as establishing networks.

[7] https://gogetfunding.com/accumulating-solar-heat-project/
[8] https://www.innovationlab.mk/wp-content/uploads/2023/06/handbook_co-creation-crowdfunding-models.pdf
[9] https://ecrowd.mk/
[10] https://www.letsfundit.mk/
[11] https://mladipretpriemaci.mk/