SHERPA
Rural Science-Society-Policy Interfaces

MAP Position Paper

LAND USE & CLIMATE CHANGE

SHERPA has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 862448.

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Citation: Trantinová, M. (2022) MAP Position Paper (Czechia) - Land use and climate change.
DOI: 10.5281/zenodo.7251561

Paper finalised in September 2022

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1. Summary and key messages

MAP VENUS is aimed at reducing the impacts of climate change through offering systemic support for the implementation of energy saving measures, triggering more economical use of energy sources and increasing the share of sustainable energy in the region.

According to the 2018 and 2019 European Commission regulations, Member States are obliged to support the development of energy communities as a specific form of decentralised, low-carbon and resilient energy. The regulations do not describe in detail how the Member State is to provide this support, which raises concerns among energy communities community energy advocates in the Czech Republic. Energy communities claim that the benefits of such measures will be symbolic, formal or insufficient. In view of the current situation on the energy market, the real risk of mass energy poverty, the climate crisis, and the geopolitical crisis in relations with the largest supplier of energy raw materials to the Czech Republic, it seems necessary to support any activity to strengthenthe Czech Republic's energy security. Energy communities are part of this strategy. The discussed target for the development of energy communities by 2030 should be to achieve 40% coverage of settlements, area and population (i.e. min. 2 500 municipalities, 32 000 km2 and 4 million inhabitants) and have an installed capacity of minimum 4 000 MW, with a total investment of CZK 120 billion.

In order to ensure that energy community is not just an empty concept but a reality in the Czech Republic, these communities should agree at least on the basic principles (and later also on other fundamental points). These principles should be then incorporated into the legislative process at all levels.

To move in this direction, MAP VENUS gave basis to the ENERGEKOM consulting centre. As one of the first steps, the members of MAP VENUS, working under the auspices of Local Action Group (LAG) Opavsko and the expert team of the company Prosena[1], carried out a baseline analysis called VENUS – "Vision of the Energy Saving Region of the territory of the municipalities of LAG Opavsko". This analysis assessed the RES potential on the territory of the LAG Opavsko based on the authors' knowledge of the area, studies, publicly available documents, data from distribution companies, questionnaire surveys and their own local investigations. This analysis found a variety of important information about the state of buildings (energy saving), renewable energy sources' (RES) use and potentials for improving the energy situation. For example, an overview of electricity consumption in the region showed that the highest consumption in the region is due to households.

Based on the analysis, a project plan was prepared in January 2021 for submitting an application and obtaining financial support from the Modernisation Fund. Support for new renewable energy sources (RES+) and energy community is within the framework of the VENUS Action Plan. LAG Opavsko is linked to the establishment of energy communities, which should cooperate not only on building and sharing renewable resources, but especially on the implementation of energy saving measures, sharing of professional capacities (technical assistance) and joint energy management. The management approach respects the differences of the building owner.

In the case of municipal property, the next step is to train a regional coordinator who will work with municipalities that show their interest in the topic. For example, the LAG Opavsko provides technical assistance or it registers technical assistance to other entities with the implementation of energy saving projects planned for 2021-2023. In the case of private property, another possible course of action to facilitate information, animation, education and cooperation with entrepreneurs, professional organisations, regional authorities and ministries (Ministry of Infrastructures and Transport, Ministry of Aagriculture and Ministry of

[1] The team was: MAS Opavsko: Ing. Jiří Krist, Bc. Petr Chroust, Ing. Leopold Benda jr., Libor Cenek, Martin Krupa, Mgr. Zdeněk Frélich, Prosena: Ing. Miroslav Šafařík, Ph.D., Ing. Anastasia Horáček Tarkova, Mgr. Patrik Šimůnek, Ing. Michal Čejka, Ing. Vítězslav Malý

Energy). The LAG will include the requirements for achieving energy savings and the use of RES in the preferential criteria for the selection of projects within the implementation of the Strategy for Community-Led Local Development (SCLLD) for 2021 - 2027. The LAG office will provide assistance and advice to the extent discussed. A deeper insight into the mapping of barriers that could help LAGs to implement energy communities was carried out by Green Dock within his "Evaluation of the questionnaire of barriers and aspects of adaptation of the LICHT method to the Czech Republic". The main objective was to find out what challenges LAGs face when implementing energy communities' projects. We provide here in the position paper details from this survey.

2. Introduction

- *What are the needs of the area covered by the MAP in relation to (topic)?*

It emerged the need to support the establishment of energy communities. Given the mandatory non-profit character of such entities, the state should offer 100% subsidies for at least 10 years for the establishment and start-up of community energy entities, most often associations, cooperatives, etc. This support could be conditional on the fulfilment of standards based on the current European Union (EU) and Czech legislation (once established) and could also embed the specific conditions and situation in the Czech Republic (for example ownership of grids outside municipalities, or specific RES potential etc.).

Regarding the non-profit character, we foresee investment and operational support for the facility. The share of self-financing and support is not clarified but is under discussion. In the context of the European Commission (EC) Regulation's requirements, the energy community's sector should be favoured mainly in allowing access to the grid and prohibiting access restrictions, lower payments for distribution, lower taxes, reduced circuit breaker rates to 60% of today's rates, etc.

The possibility to enter the energy and energy services market is also discussed, the obligation to be a member of an energy community and the obligation to have a metering and a regulation system (consumption, time control of consumption according to local production) is foreseen.

- *What are the policy interventions already in place, and what are examples of actions taken by local actors addressing these needs implemented on the area covered by the MAP?*

NN LAGs has established a platform for energy communities at the national level. This helped NN LAGs' plan to establish about 40 energy communities in 2022, following the example of MAP VENUS, which had 3 energy communities in its action plan. Today, the transformation of VENUS into a functioning consultancy service called "ENERKOM Opava" has become the first example for rural communities. In this respect, the MAP VENUS activity is the first energy community's experience in the Czech Republic. Therefore, MAP VENUS (now ENERGEKOM) is interested in discovering other experiences from abroad, within SHERPA and beyond.

The description of the development of the situation and naming the problems that hinder the development of shared energy in the Czech Republic was and is important for communication with partners and governing authorities. This issue was investigated in the Green Dock's study. According this study, that was conducted in cooperation with NN LAGs and LAG Opavsko (VENUS team), interesting and unique results have emerged. Overall, 70 respondents were contacted to provide their views through questionnaires and 40 participants participated in thematic workshops.

Key findings from the survey:

1) The active participation of civil communities in the production, sharing, storage and sale of electricity offers many benefits for citizens, businesses and the state. These include a faster transition to renewable energy sources, lower prices for consumers, and greater stability and flexibility in RES.

2) LAGs of the Czech Republic have the potential to become key players in the Czech energy community's field. This potential is eased by their local and community-based nature, existing links to local government and potential investors, established organisational structure and experience in project management.

3) In most LAGs interviewed (87% of respondents), several discussions have already taken place on the topic of energy community. However, a significant majority (70%) have not yet set a concrete commitment and plan.

4) Emerging energy communities are currently facing a number of challenges that are slowing down their implementation.

5) Of the 18 activities related to the establishment of the energy community, the representatives of the LAG identified 16 as difficult. MAS perceived the most difficult activities as operating the energy community in accordance with current legislation, obtaining the agreements of land and property owners to implement the energy project, creating a passionate project team, securing experts and gaining the support of residents.

6) Organisations and institutions can support the creation of energy communities. Possible avenues include developing programmes to develop legislative and information infrastructure, building the image of community energy as a desirable social movement, developing the knowledge and skills of energy community members, and supporting the motivation of energy community members.

7) High quality evaluation is a prerequisite for designing effective support programmes. Robust evaluation methods such as randomised experiments allow organisations to design programs that are proven to work. Evaluation methods also help to revise activities that do not lead to the stated goals.

- *Which policy interventions (i.e. instruments, measures) are recommended by MAP members to be implemented at the local, regional, and/or national level? How can the EU support these interventions?*

There is still no clear technological and legislative model for the involvement of energy communities in the energy distribution and trading system in the Czech Republic. Although the idea of a model have already been tested in other countries, there is a huge amount of work missing that has not been addressed by past governments.

- *What are the knowledge gaps and what research projects are needed?*

There is a big lack of relevant legislation, lack of experience, lack of people with expertise in energy communities. Insufficient capacity for project preparation and implementation was also identified, as well as low awareness of resource resilience and sustainability, and a prevailing sense of unlimited consumption among citizens. Therefore, the challenge for research projects is to establish functional energy communities. To monitor the effects and impacts of the activities of energy centres and community energy associations.

Future projects should develop knowledge and experience by sharing and supporting collaboration across research, labour and policy makers to build sustainable and self-sufficient regions. For instance, it would be necessary to develop projects on monitoring the impacts of shared and renewable energy from a societal perspective. In addition, projects tracking the economic impacts are also much needed to determine equitable levels of support for energy communities as well as the economic impacts of increased renewable energy. There is also practical assistance, for example with activities such as coordination, studies, energy assessments, project documentation, tendering, grant management, implementation phases, operational phases, monitoring and evaluation, transfer of community energy experience into legislative proposals, policy discussions and lobbying. Research projects should also address the technical aspects of building a network of energy suppliers and consumers, tuning production and consumption for the community and beyond.

3. Current situation based on background research and evidence

It is important to know the initial conditions of the area, its potential and, if necessary, the situation in the country and the EU. Table 1 shows the evolution of the electricity consumption distribution by sector.

Table 1 Distribution of electricity consumption in 2015, 2017, 2019 by sector of the national economy (sectoral breakdown by CZ-NACE) in [MWh]

Sector of the national economy /year	2015	2017	2019
Energy	444	571	521
Industry	72 205	77 365	71 963
Construction	1 847	1 444	1 615
Transport	748	879	1 006
Trade, services, education, health	28 282	29 503	29 040
Households	81 622	86298	86 223
Agriculture and forestry	8 469	7 303	6 872
Other	–	–	–
Total	**193 616**	**203 363**	**197 000**

Study Prosena 2020

According to the survey, there was a slight decrease in energy consumption in all sectors except for transport. On the consumption side, buildings that have been renewed and insulated in the Opava region leading to a reduction of energy consumption.

The situation is different in households where energy consumption has been rising slightly. Data on energy consumption (except for electricity above) are unknown for the territory of MAS Opavsko. The nearest source of data for comparison is the regional energy concept.

Table 2 Final consumption in the household sector [GJ] on the territory of MSK

Fuel	2014	2016
Black coal	876 087	991 818
Lignite	2 261 810	2 490 705
Natural gas	7 917 310	9 379 231
Heat from the heat supply system	7 244 525	8 258 759
Electricity	4 469 304	4 834 285
Biomass	4 361 273	4 897 274
Liquid fuels	58 919	67 168
Other RES	423 020	512 911
Total	**27 612 248**	**31 432 151**

Source: MIT and ENVIROS

The theoretically achievable energy savings from the application of insulation, replacement of windows, etc. were calculated for the Opava region based on calculations and experience with the results of the questionnaire survey. When assessing, it is important to note that the vast majority of houses that are about 20 years old or more do not even meet category C, and many falls into categories EF and G. At the same time, most new buildings do not even reach the A label (extremely energy-efficient house). Therefore, it cannot be assumed that by applying energy-saving measures to houses older than 20 years, it is possible to simply achieve category AB. Estimation of the savings potential for heating of houses and flats was carried out in individual municipalities using an experimental method. In each municipality, the level of selected building elements that theoretically reduce the energy consumption of the building. The classification into 4 defined categories (classes) was carried out by the brigade according to a reference verbal description of the relative energy of the building (table 3).

Table 3 Number of family houses classified in each category according to the estimated energy performance of the building

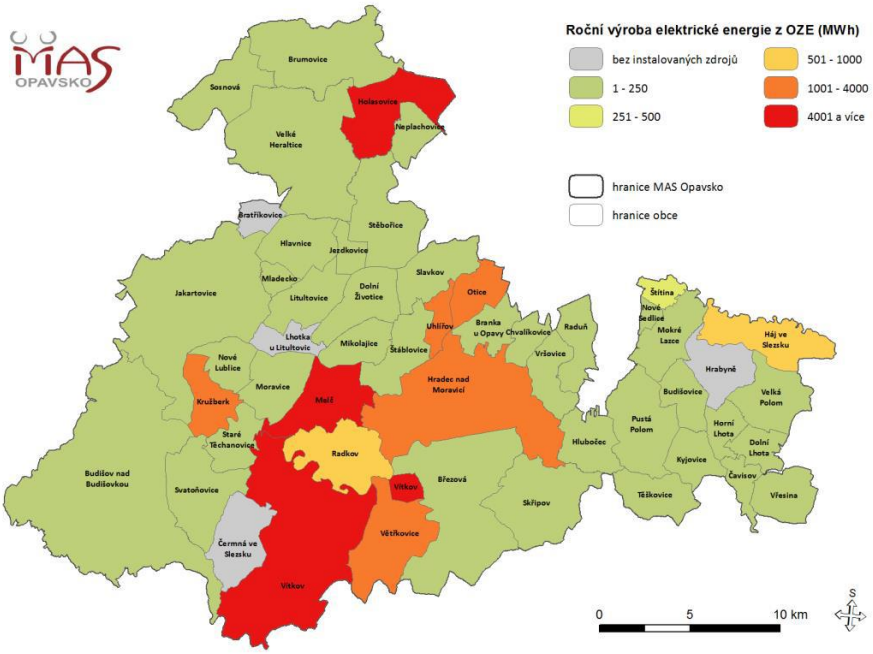
Categories (survey 2020)	Number of family houses	Share (%)
AB - economical	1 774	13
CD - satisfactory in energy saving	4 322	31
EF - uneconomic	5 863	42
G - extremely uneconomic	2 142	15
Total	14 101	100

Source: LAG own survey, 2020

It is therefore calculated that it is possible to move the building up a class by applying energy saving measures. The willingness to invest up to EUR 14,5 million in these measures is estimated at EUR 1,5 million. CZK and this without subsidies. The potential is therefore further increased by the possibility of drawing on subsidies, up to twice that amount.

Electricity production from RES on the territory of MAS Opavsko is 54,7 GWh. The calculation includes only electricity production, whereas heat production is not included. The share of RES in the gross electricity consumption of the territory of MAS Opavsko is around 27%.

Picture 1 Total annual production of electricity from RES (MWh) on the territory of LAG Opavsko



Source: LAG own survey, 2020

Energy Community

In the Western and Nordic countries of Europe, energy communities have a long history, as well as Spain and Greece are also very advanced. Contrariwise, in the least economically developed countries of Eastern Europe this process is relatively new. The development of energy communities is expected to be helped by the transposition of the so-called "Winter Energy Package" and the subsequent directives: on "Common rules for the internal market in electricity" (2019/944) and on the "Promotion of the use of energy from renewable sources" (2018/2001), both of which use the term energy community. In contrast, the term energy community is still not anchored in the Czech legal environment (effective since December 2021). This is expected to happen in the context of the new Energy Act. The Modernisation Fund has also helped to intensify the discussion on energy communities. As a result, one of the programmes is directly aimed at supporting energy communities and several other programmes also allow for the involvement of energy communities in the Czech Republic.

A study of the potential of community energy in municipalities and apartment buildings of the Czech Republic (EGU Brno 2021) was prepared. It aimed to determine the technical and economic potential of selected technologies and measures suitable for managing electricity flows for the types of community energy addressed. This study is unique in its nature because it investigates on an unexplored area both in the Czech Republic and abroad. In this study, the economic potential is conceived as the maximum potential for curtailment given by the cost-benefit balance. In some cases, the necessary costs and benefits have been calculated, and in many cases, the proportion of technical potential used has been reduced to the economic level expertly, either because costs or benefits could not be determined, or because costs and benefits do not play a decisive role in the reduction from technical potential.

Today, energy community projects in the Czech Republic are mostly connected to municipal and city activities, both in terms of the number of projects and in terms of the size of the share in total electricity and heat production. According to the DUHA study from January 2021, 37 Czech municipalities and towns operate a municipal heat source from RES. The dominant fuel is biomass. As for electricity production from RES, approximately 130 municipalities operate biomass with a total installed capacity of around 25 MW.

The recently established Association of Community Energy of the Czech Republic (AKE CR) has as its main goal the promotion of energy decentralisation and the creation of energy communities across the Czech Republic. AKE CR is a voluntary association of members who are supporters of community energy. In addition to its main objectives, which include contributing to the achievement of energy decentralisation and creating conditions for the creation of energy communities, the new association wants to raise awareness on community energy. This is based, among other things, on the use of E through photovoltaic power plants.

In the context of rising energy prices, renewables are considered as one of the most relevant solutions that could help significantly in the current situation. Photovoltaic power plants are most often mentioned, but there are also other sources of green energy. These include wind energy, which is often overlooked in the Czech Republic. We often encounter opinions that the Czech Republic does not have suitable weather conditions for wind energy. However, this argument does not correspond to the truth. Because wind power can be used efficiently in Central Europe. For instance, a study by the Institute of Atmospheric Physics (IAP) of the Czech Academy of Sciences has shown that wind energy would have its relevance in the Czech Republicand that the current one per cent share of wind in the Czech energy mix represents an untapped opportunity. According to the ÚFA report, this figure could increase up to ten times by 2040. In addition, a study on the potential of energy communities in municipalities and residential buildings in the Czech Republic assessed the potential installed capacity of community-managed photovoltaic power plants. It found that the potential is over 4 GW, which by comparison is almost twice as much as all existing photovoltaics resources in the country. In the case of wind, the existing capacity could increase up to ten times with full municipal involvement. Thus, from these two technologies alone, community energy could cover one eighth of the total current electricity consumption in the Czech Republic.

Systemic changes will be crucial for the development of community energy and they **need to be implemented as soon as possible**. This includes the new energy law and other legislations, but also subsidies – "tens of billions of crowns will be available for community energy from European funds," said Anna Michalčáková, analyst at the Frank Bold expert group.

4. Position of the Multi-Actor Platform

4.1. Identified needs

Identify the needs and challenges encountered within the MAP area

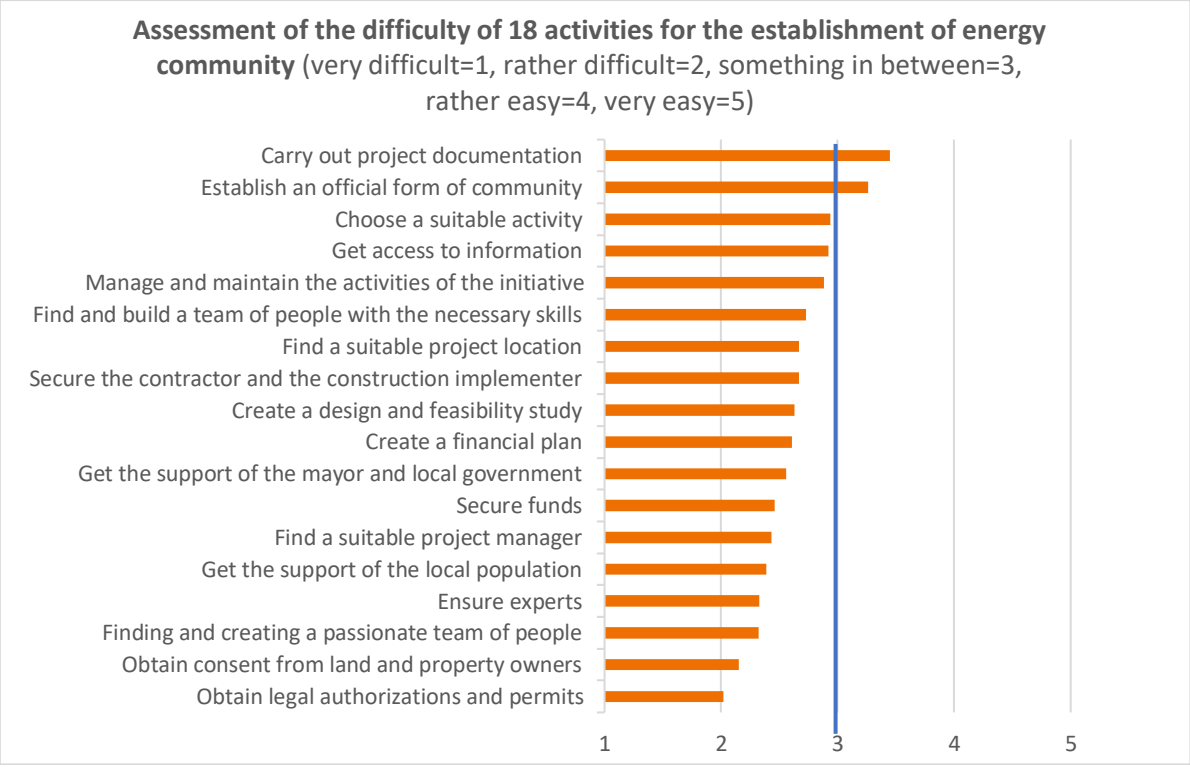
Conclusions of the Green Dock study, which conducted a survey in 70 LAGs on Community Energy Aspects of the adaptation of the LICHT[2] method to the Czech Republic. The Green Dock solvers cooperated with Petr Chroust (MAP VENUS monitor), who focuses on community energy, renewable energy and energy savings in the Opava region. Data collection was conducted online in the period 22 October - 7 November 2021. The aim of the survey (questionnaire) was to find out how the topic of community energy is perceived by the representatives of LAGs in the country. The barriers that hinder the implementation of community energy were mapped. The investigation showed that for the majority of the LAGs surveyed (70%) several discussions on the topic of community energy have already taken place, but no concrete commitment or plan has been set out yet. Less than one-fifth of the respondents (17%) have already made a formal decision to pursue a community energy project. None of the groups have a functioning project yet.

A better understanding of the barriers will enable the LAG to implement its own energy community projects. **The development of a list of 18 activities that are associated with successful implementation of community energy projects was identified**:

[2] LIGHT = local, initiative, cooperation, Hernieuwbare (sustainable), transformation

1) Obtain legal authorisations and permits
2) Obtain consent from land and property owners
3) Find and build a passionate team of people
4) Secure experts
5) Get the support of local residents
6) Find a suitable project leader
7) Secure funding
8) Get the support of the mayor and the municipality
9) Create a financial plan
10) Create a proposal and feasibility study
11) Secure a contractor and construction manager
12) Find a suitable location for the project
13) Find and build a team of people with the necessary skills
14) Manage and maintain the activities of the initiative
15) Gain access to information
16) Choose an appropriate activity
17) Establish a formal form of community
18) Carry out project documentation

In the questionnaire, respondents from LAGs assessed how easy or difficult they found each of the following 18 activities.



The description of the necessary activities is important for the implementation of energy community for a wide range of stakeholders. A description of related activities is needed for new entrants to community energy, but also for policy and research, for example how to calculate transaction costs.

Obtaining authorisations and permits is perceived by the interviewed LAGs as the biggest barrier that slows down the establishment of energy community projects. Interviewees perceive that there is a lack of appropriate legislation and no clear rules in place in the field of energy community. Some mentioned that it is the legislative "unwillingness" of energy community that may reduce the willingness of the public and local governments to participate in the establishment of energy community. Respondents also felt that there is a need to provide in-depth information to potential interested members from the public.

Obtaining agreement from landowners or suitable buildings to locate an energy source proved to be the second most difficult activity for respondents. Some respondents mentioned that if they could quantify the economic viability of the project for the owners (in terms of savings and efficiency of the investment), it would be easier to obtain their consent.

For the proper functioning of a team around a energy community project, it is necessary to find a suitable leader who can effectively motivate and manage the group. Some respondents directly mentioned in open-ended responses that finding someone who is able to lead, plan and implement everything is crucial. It is important that people in the team have skills such as working together constructively, preventing internal conflict, attending meetings and taking responsibility for individual tasks.

There is little experience in getting experts yet, so where they are already involved in implementing energy community they are finding a shortage. Elsewhere, respondents reported that they had not yet approached anyone, mainly due to lack of funds to pay for their activities. LAGs welcome being able to collaborate in this area and share information and suitable experts.

Awareness of the topic is generally low among the public, but information on energy savings and innovative and decentralised ways of obtaining energy has accelerated in the light of the increase in energy prices. An economic analysis of central and community energy use in the region needs to be documented. Some respondents also stated that LAGs need to have sufficient expertise in issues related to the energy community in order to build trust with the public.

Establishing dialogue with mayors and public administration was seen by respondents as key to the successful implementation of energy community. In this regard, some mentioned the importance of experts and team leaders who would be able to communicate effectively and persuasively with local governments. There are mayors who reject energy community.

It is possible to obtain the necessary funding for an energy community, for example from calls for grant, private investors, banks or the municipality, but it can also present considerable difficulties.

Every energy community has the obligation to be legally established, whether in the form of a registered association or other form of civil organisation. Some interviewees mentioned that there is not much interest in establishing more energy communities in their local area. Others added that they were considering a cooperative or association and that they did not consider the establishment to be a big problem. There is a need to carry out the necessary project administration, which may include concluding contracts, taking minutes of meetings or documentation for donors.

There is currently a lack of specialists and designers for project preparation and implementation of energy community. However, almost none of the LAGs interviewed are yet at the stage of securing a contractor and implementer for construction.

The energy community needs to be coordinated to function properly. In this regard, respondents repeatedly mentioned the importance of a lead person to manage the running of the initiative and move the project forward. None of the interviewees commented on the feasibility study in the open-ended question. This may be because the LAGs interviewed were mostly not yet at the implementation stage.

Some respondents reported that there is enough information to carry out an energy community, but it is difficult to evaluate and use it. Respondents highlighted the importance of expertise, which is often lacking in the team. Some interviewees consider training themselves, their team members and partners as an important first step for project implementation.

Setting realistic short-term and long-term goals is key to successful project implementation. Equally, it is often necessary to decide on the appropriate energy source given the specific needs of the energy community and the territory. Some respondents mentioned that they did not know who they could turn to in the region to help them navigate the issues. There was also a concern that LAG members would be able to adequately and informatively evaluate the decisions and plans of the external experts brought in, and that there would be no potential misuse of the project for someone else's benefit.

The workshop took place within the framework of the conference "Energy Communities - transfer of know-how to the Czech Republic" organised by the LAG Czech Republic on 15 November 2021 in Prague. The workshop was attended by approximately 40 representatives of LAGs from the Czech Republic who were interested in or already had experience with community energy projects.

The main content of the workshop was the presentation of three sets of questions according to the phases of a community energy project.

1) Initial interest in the topic of community energy and its transfer to the LAG.
2) The transition from an expression of interest to a concrete project plan.
3) From the project plan to a successfully implemented project.

Summary of the workshop results:

1) Participants expressed the reasons that led them to get interested in the topic of energy community. These reasons given can be subdivided into three levels: personal, social and environmental. Within the personal level, the possibility of financial savings dominates as the main motivator. On the social level, energy community is profiled as an emerging trend whose localisation and independence from large suppliers is arousing interest among individuals and institutions. At the environmental level, energy community is a way to personally contribute to solving the environmental crisis. Conversely, reasons that discourage from getting involved or developing an energy community include the high complexity of the topic, the established habits and reluctance of social actors to change them (e.g. some mayors, potential investors), and the perceived lack of individuals and communities driving the topic of energy community forward in the country.
2) According to workshop participants, uncertainty and frustration prevail in emerging energy communities, interspersed with moments of hope. Sources of uncertainty and frustration include poorly supportive legislation that makes the creation of energy communities difficult, lack of in-house expertise within the community, and a perceived vacuum between emerging energy communities in the Czech Republic and "exemplary" communities abroad that are usually much further along in implementation and do not face the specific barriers of the Czech environment. Rising energy prices currently provide a good argument for the establishment of energy communities and at the same time strengthen public interest.
3) With one exception (LAG Opavsko), none of the workshop participants was in the implementation phase of an energy community. This may have influenced the description of the experience. The recommended strategy for the energy community was to "start the project earlier and with less ambition than to try for a big project and have everything perfect from the beginning." The energy community can then expand its project and improve its existing components progressively. The synthesis of the results of the questionnaire survey and the workshop points to the existence of several avenues through which the development of energy communities can be supported. These are: the creation of a supportive legislative and information infrastructure, the building of energy

community as a socially desirable concept, the capacity-building of skills and capabilities relevant to the establishment and energy community, and the development and maintenance of motivation by the members of the energy community.

The latest update from the meeting on 11.9.2022 shows that already 80 LAGs have started to address the topic of energy community and 8 ENERGEKOM advice centres have been built under the auspices of LAGs in the country.

4.2. Existing interventions and actions

Community energy pilot project in Mikolajice

In cooperation with the University Centre for Energy Efficient Buildings at the Czech Technical University in Prague, the municipality of Mikolajice built a heating system with a Wave pellet-fired cogeneration boiler that provides heat and electricity for the municipal office, food store and fire station. In addition, there are solar cells on the rooftop of the shop and batteries in the building. This system is unique in the Czech Republic. "The main advantage is that the whole system can be completely autonomous." says Martin Krupa, mayor of Mikolajice, and he continues "Moreover, all the energy is consumed immediately or stored in the battery for later use. Solar cells work on the same principle. This means that, for example, in the event of a power failure, which supplies, among other things, the freezers and fridges in the shop, the food cannot be spoiled. Our fire brigade's emergency unit also has electricity and heat available at all times and can carry out its tasks even in the event of a grid failure.".

https://www.komunalniekologie.cz/info/komunitni-energetika-energeticka-sobestacnost-a-uspory-v-malych-mestech-a-obcich

Community energy pilot project in Budišov nad Budišovkou

Creation of a small local distribution network for heat and electricity distribution with smart grid elements - intelligent control system and consumption management for three buildings owned by the City of Budišov nad Budišovkou. The project included the reconstruction and balancing of the connection of the 150 kWt biomass boiler room in the House of Culture with the gas boiler room in the Primary School. A TOTEM condensing CHP unit with an output of 20 kWt and 48 kWt was installed in the boiler room of the Primary School with the simultaneous installation of new gas condensing boilers with an output of up to 2 x 85 kWt. The whole system was supplemented with heat storage for efficient heat supply to the whole building of the primary school (old school, new school - annex, kitchen). At the same time, the boiler room at the Municipal Office was reconstructed and two new condensing boilers added, with an output of 2 x 49 kWt. According to the analysis prepared by the Czech Technical University in Prague, University Centre for Energy Efficient Buildings, the cumulative savings in operating costs for heat and electricity are expected to exceed CZK 200,000 per year (in 2019 prices), as well as a total reduction of CO2 emissions of almost 180 t per year.

https://www.budisov.eu/mesto/projekty/zrealizovane-projekty/vytvoreni-male-lokalni-distribucni-site-pro-distribuci-tepla-a-elektriny-s-prvky-smart-grid-inteligentnim-ridicim-systemem-a-rizenim-spotreby-pro-tri-objekty-v-majetku-mesta-budisov-nad-budisovkou/

Community energy pilot project in Litultovice,

The electricity generated by the photovoltaic plant on the roof of the kindergarten in Litultovice is now available to other members of the community in Litultovice; members without their own source of renewable electricity draw it in preference to electricity from the grid. The installed secondary meters then clearly quantify who produced how much energy, who consumed how much (and from where), how much unused energy eventually went to the grid, all of which is reflected in the subsequent billing. Actual consumption can be monitored in real time via a mobile app. In the future, the primary school, fire station

or post office as well as other family houses should also join the community. Key to the development of such communities will be the passage of a law that would encourage community energy or allow for discounted sales of electricity generated in this way. So far, there is talk that the law could be drafted by the Ministry of Industry and Trade in 2023.

https://obec2030.cz/novinky/videoblog-litultovice/

Study Impact assessment of the construction of the Šluknov agro-photovoltaic power plant

The study was prepared within the SMART CITY - SMART REGION - SMART COMMUNITY project. The intention of the agro-photovoltaic power plant in the Šluknov region is a new concept of linking PV energy production with the preservation of agricultural activities. This concept has found its application in Austria, Italy and France, for example, however it would be the first time that a similar power plan might be implemented in the Czech Republic. Hence, interest is expected from the professional public and the media in both the power plant and the site. The study was interesting for us in that it dealt with the evaluation of a PV project. The evaluation used the Methodology for Determining the Impact of Renewable Energy Sources on the Economy and Environment of a Micro-Region / LAG[3].

A certified methodology has been used to help local governments and other users get a basic idea of what a specific renewable energy project will bring to the region, based on a simple process. A comparison of the impacts of a conventional PV plant and an agro photovoltaic plant shows a higher impact for agro photovoltaic with a higher use of the land concerned, but a lower output per area. According to the documentation provided so far, the proposed agri-photovoltaic power plant project has no other negative impacts on the appearance of the landscape except for aesthetic impacts. In relation to the environment, it has a neutral impact, whereas in relation to the economic, social and innovation pillars it represents a significant potential for the development of the micro-region. The municipality in the Šluknov region can acquire a partner in the power plant, which can generate new revenue for the municipal budget if the company is registered on site. The municipality can raise additional funds by leasing land and negotiating more favourable energy prices for public and private customers. At the same time, new jobs are expected to be created in connection with the operation of the power plant.

SMART CITY – SMART REGION – SMART COMMUNITY (CZ.02.1.01/0.0/0.0/17_048/0007435) v období březen až červen 2021. Macháč, J., and all.

The project of LAG Opavsko will map the positive impacts resulted from energy savings and clean energy sources on the health of people and their environment. This proect was implemented with the support and in close cooperation with ČEZ a.s., specifically with its ČEZ Innovation Department. Using smart meters from the Ostrava-based company Perfect Air, dust and other variables were measured in 17 municipalities in the Opava region. The project started in a record time of 7 months from the first idea to the start of measurement. The Opava region is thus becoming a test region for smart solutions not only in the energy sector.

[3] The methodology was compiled by the FSE UJEP team and certified by the Ministry of Agriculture of the Czech Republic in 2018 (Macháč et al., 2018). The assessment procedure was subsequently applied to 21 renewable energy sources in the Czech Republic between 2018 and 2020 (Macháč and Zaňková, 2020). These were mainly conventional photovoltaic and wind power plants, but also small hydropower plants and biogas plants were represented.

4.3. Recommendations from the MAP

Three main recommendations are outlined from the MAP:

- Follow developments around renewable energy alternatives, focusing on resource savings, including energy.
- Monitor in more depth the impacts of RES and community energy projects. Start projects after good preliminary assessment and preferably in smaller steps and investments.

4.3.1. Recommendations for future rural policies

Which policy interventions (i.e. instruments, measures) are recommended by MAP members to be implemented at the local, regional, and/or national level? How can the EU support these interventions?

Engage in dialogue with government officials to regulate the legal conditions for the establishment and operation of energy communities. Currently, for example, the legislation does not allow the distribution of electricity generated by the energy community without paying fees to the owners of the distribution networks. These costs reduce the financial attractiveness of community energy projects and the motivation of communities to undertake such projects.

Improve the availability of experts to whom energy communities can turn. For example, create a database of suitable experts. This is a way to reduce the uncertainty associated with finding experts "on your own".

Improve the availability of quality information and examples in community energy. For example, to quantify the financial returns of community projects, where to find potential collaborators, promoters and investors, how to communicate and present projects to key stakeholders, and where to find inspiring Czech examples of good practice.

Improve the availability of financial support. Funding is needed to purchase infrastructure and to cover expert consultation and invested time of core members and community facilitators. Promoting information exchange can make it easier to raise the necessary funds during project preparation and implementation.

Connect energy communities to each other to facilitate information exchange and mutual support. Knowing that similar people are also interested in the topic reinforces the communities' belief that the creation of community energy projects is socially desirable. It is advisable to disseminate examples of good practices to the general public as well.

Develop the knowledge and skills of the members of the energy communities themselves. For the successful implementation of an energy project, the core members and facilitators of the community need to be able to provide, among other things, the team, experts and finance needed to implement the project. It is equally important that at least some of the team members are familiar with the technical issues of energy community. Current energy communities rated all of these activities as difficult in the questionnaire. Support in capacity development of energy community members is another keyway to accelerate the emergence of energy communities.

Motivation galvanises energy communities into action, increases their ability to overcome obstacles and encourages them to develop further. Motivation development support programmes should aim not only to build initial enthusiasm for the topic, but also to help energy communities sustain it throughout their activities. Use communication skills, such as proper presentation of community energy, to be able to evoke immediate positive emotions in people. It is possible to build on the fact that energy community offers a number of benefits that are attractive to people: the possibility of saving money, gaining independence from big energy companies, contributing to solving the climate crisis or joining circles that create a social trend. It is also

important to find out which benefits resonate most with your target audience and focus on communicating them to generate interest and evoke positive emotions.

Prevent the spread of misinformation that can discourage energy communities from implementing their projects. An example of misinformation is that Czech legislation does not currently allow for the establishment of communities to generate and distribute electricity. The fact is that Czech can do so, it just has to pay fees to the owners of the distribution networks, for example. A similar type of misinformation is community energy has no potential to bring economic benefits. The most effective way to prevent misinformation is by communicating the facts before the false information can spread.

Realistically and thoroughly plan community energy projects with realistic goals and timelines. Assistance from experienced community energy leaders is important.

4.3.2. Recommendations for future research agendas

What are the knowledge gaps and what research projects are needed?

Evaluation is an essential prerequisite for the design of effective support programmes. Effective programmes are those interventions that provide the best possible support to energy communities in the Czech Republic for the resources available. Evaluation is the best tool for systematically identifying and designing programmes that actually work. Well-conducted evaluation allows programs to build on elements that have been proven to work and reduce spending on program components that are not achieving the desired effect. Examples of economic analyses in terms of societal benefits include Cost-Benefit Analysis, Social Return On Investment and others. The principles of good evaluation and the conduct of randomised trials are unfortunately beyond the scope of this report. For those interested in a more in-depth introduction to measurement and evaluation in English, we refer, for example, to the presentation by Shackman (2018). "A specific introduction to randomised experiments in English is provided by the Innovation Growth Lab under NESTA (2016)."

Conclusions

In the 21st century, it is crucial to promote the production and consumption of energy localised in the region, abandoning the established pattern of exclusive central patterns of energy production and trading/distribution. The development of energy communities is a model example of how to harness the potential of a region, of a space - landscape, social capital, rural areas.

A high degree of integration and cooperation is needed, networking for energy sharing in energy communities. The diversity of sources (biogas plants, wind and hydro power plants, PV plants, CHP units) gives a greater possibility to match production and consumption and thus ensure a win-win principle without increasing the load on the distribution system due to the unfavourable characteristics (instability) of RES.

In order to ensure that the principles of community energy are operational, it is necessary **to reduce administrative burdens and create a new legislative environment**. Complex or restrictive settings may make it difficult or impossible for energy communities to function.

In terms of technology recommendations, it is advisable to attempt to accommodate the use of regional energy resources rather than putting barriers to its use. The technologies are there, the limitations are more in our heads. Example - functional implementation in Austria (removal of distribution charges within the NN).

To develop the regional energy (production and consumption) sector, MAP VENUS sees the establishment of a LEADER-based association as a systemic solution. Good functioning requires equal involvement of members (suppliers, consumers, community) partnership, cooperation, integration, innovation, advice and mutual assistance.

To summarise, MAP VENUS advocates for the following steps in order to facilitate the implementation of energy community:

- Establishment of a LEADER-based association - equal participation of members (suppliers, consumers, municipality).
- Fulfilling the principles of partnership, cooperation - joint action and participation in the preparation of the Energy Act (UKEN).
- Mutual assistance and advice, exchange of information between members.
- Information and incentive support for regional energy (RES production).
- Motivation for savings (consumption).
- Preparation of a project for the implementation of energy management.
- Launching the production and consumption pass porting of members.
- Sharing human resources (especially project and implementation capacity).

Acknowledgements

Thanks for this contribution to rural development and the topic of climate change go to two groups of people. Thanks go to the guidance and support of colleagues in the SHERPA project who prepared the methodology and review of relevant data.

A big thank you goes to the LAG Opavsko, who fully embraced the topic of community energy. During the duration of the SHERPA project, they have implemented 3 pilot projects, invented and established the ENERKOM advisory centre, and generally have been working on the topic of energy saving and RES use for a long time.

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Annex 1 Methodology used by the MAP

Responsibility: Facilitator and Monitor

Which kind of stakeholders/how many participants/groups/facilitators?

For the questionnaire method (Green Dock), 70 respondents participated and 40 respondents worked on workshops.

ENERKOM Opavsko provides consultancy services to its current 30 members. The interest in the energy community is great, the membership base is growing every week, from the originally rural area the idea of cooperation is moving to cities, cities like Opava (60 thousand inhabitants) and Bruntál are joining or considering joining. ENERKOM's target is to cover the territory of municipalities with up to 200,000 inhabitants.

Another wave of interest is being directed to Opava from other areas of the Czech Republic, Poland and Slovakia. Excursions arrive in Opava region to present the activities of ENERKOM Opava region, practical solutions of ENERKOM members, discuss the background, solutions and goals of energy communities (community energy). Experiences are exchanged. Approximately 40 ENERKOMs are now being established throughout the Czech Republic (9/2022) with advisory support from LAG Opavsko, NN LAGs ČR or UKEN.

Was there any anticipation in preparation for the MAP meetings (e.g. questionnaires, documents shared)?

Yes, members and collaborators have high expectations.

The strategic roll-out of ENERKOM Opavsko is implemented using the VENUS (Vision of an Energy Efficient Region) methodology developed by MAS Opavsko in 2019 - 2021. The VENUS included questionnaire surveys. Currently, a comprehensive production and consumption passport is being prepared in preparation for the introduction of energy management on the buildings of the members.

However, in the current crisis (collapse of the free gas and electricity market), the members' expectations are all the way down to the building of resources (especially PV plants). Unfortunately, there is a lack of capacity, especially not enough professional human resources - designers, coordinators, energy consultants, implementation companies, availability of materials and technologies is also problematic) .... ENERKOM is not able to meet the needs of members and partners without long-term professionalization and funding to build human resources. For the time being, ENERKOM distributes requests to cooperating entities (e.g. VŠB) and tries to link demand with supply as far as possible.

The interest in building resources and implementing energy saving measures is enormous among municipalities, citizens and companies

Which changes did you implement to the process?

Obviously, PR is thriving and there is a lot of interest in the topic from all types of media. Videos, TV programmes, interviews for printed media (newspapers, magazines), excursions to Opava region are coming in record sequence. However, there is a need to find funds for operation, start-up, people, currently ENERKO is run by volunteers, a few enthusiasts.

The upcoming projects on the introduction of energy management (Modernisation Fund), a project exploring the social aspects of the energy crisis, a project to train the staff of the advisory network (ENKOMAS), and a MAS project on community activation (OPZ+) could help to professionalise it.

What was difficult for facilitators/criticised by members?

It is difficult to meet the expectations of the members who are facing immediate, urgent problems - high energy prices, lack of human resources for the preparation of energy saving projects, while the community can only offer information support, advice, exchange of experience at the current stage, and even then only to a limited extent due to the low level of professionalisation. ENERKOM offers an idea and direction, members demand immediate solutions, building resources and reducing energy costs.

On the other hand, the preparation of legislative changes, also the announcement of subsidy support for the start-up of energy communities, is dragging on. But community energy ideas are slowly taking root in policy agendas and statements even without subsidy support.

And of course, certain groups representing specific business interests are not in favour of the idea of community energy and are confusing or blocking the negotiations (especially on energy communities and RES).

What was particularly useful/appreciated?

Intensive transfer of experience from Austria and Bavaria, visited by members of LAG Opavsko and ENERKOM.

What kind of reflections were facilitated (or not) by the methods used? Did the MAP address any controversial issues in the exercise?

The controversial issues today are all about the energy crisis. From a selection:

- What is and will be the public support for building RES?
- Is it necessary to sacrifice agricultural land for the installation of PV or technical energy crops?
- What will be the cooperation between large and smaller investors?
- How will the energy law turn out, will it support or bury energy communities?
- Can we do without Russian natural gas? How?
- Is there a vision for the application and mainstream use of hydrogen technology?
- Will there be mandatory capping of electricity and gas prices? How will the (EU scope, individual states) rate method be addressed?
- How will bureaucratic obstacles to RES construction and subsidy support be addressed?

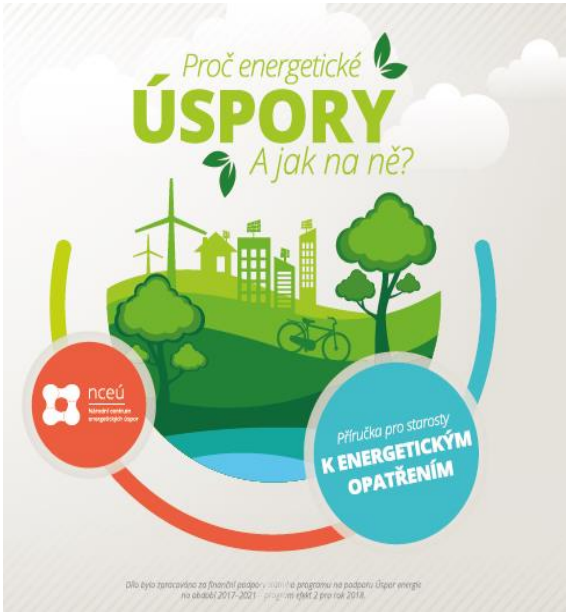
Ownership of results: is there any take-up of results by MAP members? Were there any follow-ups to the meetings? If yes, by what members (policy, research, CS) and what kind of follow up (media, publications, debate started at the gov level/fed into an existing debate, etc)

The results and experiences from ENERKOM meetings are fed into the Union for Community Energy (UKEN) and into political or professional meetings at commission, government, ministerial, committee level, up to the wider public etc....

Key learning re. the methodology, if any?

- VENUS methodologies
- UKEN and partners' methodological materials
- Studies, information and advice provided

Results are captured in articles and media releases.



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Zpracováno k 15. 9. 2014

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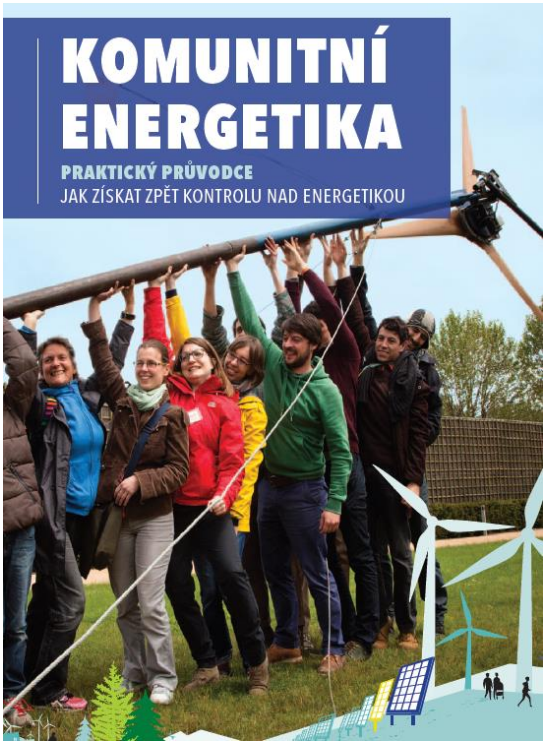
IČO 653 414 90
č. ú. 2600050537/2010



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SHERPA has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 862448. The content of the document does not reflect the official opinion of the European Union. Responsibility for the information and views expressed therein lies entirely with the author(s).