European Commission

Empowering Municipalities to Develop and Support Rural Energy Communities

THE
RURAL ENERGY COMMUNITY
ADVISORY HUB

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Introduction

As the transition to a sustainable energy future gains momentum, municipalities in rural areas have emerged as key players in developing community-driven energy projects. They can actively contribute to the transformation of rural areas, creating flourishing rural energy communities that benefit both the environment and their residents.

This document acknowledges the unique challenges and opportunities specific to rural contexts and will delve into the following municipality involvement strategies.

Direct involvement

These strategies involve tangible, hands-on actions and collaborations. Examples include joint financial investments with rural energy communities, co-ownership of energy infrastructure, jointly operated energy utilities, and energy leasing arrangements.

Indirect involvement

These strategies focus on creating an environment where rural energy communities can grow and thrive. This encompasses the establishment of favourable legal and policy frameworks, allocating finances and resources, and enhancing community engagement through improved communication mechanisms.

Through a comprehensive approach, the Rural Energy Community Advisory Hub (RECAH) has developed this guidance document to assist municipalities in developing effective strategies to support the development of sustainable, successful, and resilient rural energy communities. This guidance targets municipal governments and officials, equipping them to effectively stimulate and support rural energy community projects. It addresses various essential aspects and is targeted towards municipal governments and officials to help them take the necessary action to help stimulate and sustain rural energy community projects. The aim is to equip municipalities with the knowledge and tools needed to navigate the complexities and seize the opportunities presented by energy community development, by providing practical recommendations and case study examples labelled '**success stories**'.

The core components of our guidance are as follows:

1. **Why should municipalities support energy communities?**
2. **How can potential rural energy communities be identified?**
3. **What direct and indirect actions can municipalities take?**
4. **What critical role can building actor networks for energy communities play?**

Why should municipalities support energy communities?

The transition to renewable energy sources is a global imperative, and energy communities play a pivotal role in achieving this goal. Municipalities, as local governing bodies, have a unique opportunity to support and enable the growth of energy communities within their jurisdictions. Through providing a favourable policy framework, identifying potential communities, offering technical and financial assistance, facilitating networking and knowledge sharing, and encouraging collaboration with businesses and institutions, municipalities can become key enablers of the renewable energy transition at the local level. Depending on national market conditions, available grid infrastructure, consumer interest, and environmental conditions, supporting energy communities can also offer municipalities a range of benefits:

ENVIRONMENTAL SUSTAINABILITY

By promoting renewables, municipalities can significantly reduce greenhouse gas emissions.

ECONOMIC GROWTH

Energy communities can foster local renewable energy production, which can lead to job creation and retention of a skilled workforce.

ENERGY INDEPENDENCE

Local generation reduces reliance on external energy sources.

COMMUNITY EMPOWERMENT

Engaging residents in energy initiatives can lead to increased social acceptance and potential political gains.

TECHNOLOGICAL INNOVATION

Support for energy communities can drive technological advancements, developing a culture of innovation.

For more information on the added value of energy communities, please refer to the RECAH Guidance Document: Creating value and engaging citizens in the energy transition.

Navigating challenges and embracing opportunities

The transition to renewable energy sources and the establishment of energy communities come with their own unique set of challenges. These challenges may include limited financial resources, lack of technical expertise, low social acceptance, regulatory barriers, and resistance from traditional energy systems and established providers. Municipalities, being at the forefront of local governance, are ideally positioned to address these challenges and act as catalysts for change by providing the necessary support and creating an enabling environment for energy communities to flourish.

For instance, In Neuenkirchen Municipality (Germany), a proposal for a community wind farm was initially met with scepticism from some residents. However, as opportunities arose for citizens to invest in the project by purchasing shares to benefit from it directly, public sentiment began to shift. The community not only stood to gain from local tax revenue and new job opportunities, but also from the creation of a civic non-profit association. This association was allocated 1% of the wind farm's yearly gross earnings, and this has been used to support initiatives like community bus services, church renovations, and social activities.[1]

Recognising the rural advantage

While energy communities can thrive in both urban and rural areas, the focus of this guidance document is on rural energy communities. Rural areas possess distinct characteristics that make them particularly suitable for renewable energy generation and energy community development. These characteristics include lower population density, specific energy consumption needs, abundant natural resources, physical space, and untapped investment opportunities. Through harnessing these advantages, rural energy communities can become catalysts for sustainable development and resilience in rural areas. The most important rural characteristics and their relevance to energy communities are as follows.

1. **Size and energy consumption needs:** Rural areas may have lower population density compared to urban areas, leading to different energy consumption profiles. Understanding these specific needs is crucial for tailoring energy solutions and providing targeted support to rural energy communities.
2. **Higher potential for rural energy generation:** Rural areas often boast abundant natural resources suitable for renewable energy generation. With vast stretches of land suitable for solar photovoltaic (PV) installations, access to wind resources for wind turbines, and opportunities for biomass-based energy systems, rural areas have the potential to become hubs of clean energy production. For more information on technological opportunities for rural areas, please refer to the RECAH Guidance Document: Navigating technology types. In collaboration with, or as part of, energy communities, municipalities can pave the way for sustainable rural and local development.
3. **Investment opportunities:** Rural areas provide attractive investment opportunities for renewable energy projects. The availability of land, relatively lower real estate costs, and the potential for local economic development make rural energy communities an appealing choice for investors. Municipalities can actively promote these opportunities, facilitate partnerships, and unlock the economic potential of energy communities in rural areas to provide local employment opportunities.

Within this evolving landscape, the term "Citizen Energy Community" (CEC) is becoming increasingly significant in the field of renewable energy. Defined succinctly, these communities represent a collaborative initiative where citizens, irrespective of their urban or rural backgrounds can collectively invest in and own renewable energy projects.

By pooling resources, these initiatives offer dual benefits:

- **Urban participants secure a cleaner energy supply, reducing their carbon footprint.**
- **Rural areas experience economic rejuvenation through job creation and local investments.**

CECs promote democratic ownership and governance of energy resources but also develop a collaborative relationship between energy producers and consumers, bridging geographical and socioeconomic divides. For further information on both Renewable Energy Communities (RECs) and CECs, please refer to the RECAH Guidance Document: Creating value and engaging citizens in the energy transition.

[1] https://www.europeanenergyinnovation.eu/Articles/Winter-2021/Local-governments-are-key-to-powering-a-community-based-energy-transition

European policies are enabling municipalities to take part

The legislative package known as the Clean Energy for All Europeans encompasses several key directives, including the **Renewable Energy Directive (Directive (EU) 2018/2001)**, the Energy Efficiency Directive (EU) 2018/2002, and **Directive (EU) 2019/944 on the Common Rules for the Internal Market for Electricity**. These directives define and establish provisions to support RECs and CECs. They also specifically recognise municipalities as one of the three eligible actors, alongside local entities and individual citizens, in participating actively within these energy communities. To facilitate this participation, Member States are obligated to provide regulatory and capacity building support, enabling public authorities to both facilitate the establishment of rural energy communities and directly engage in them. For more information on how to access these funds, please refer to the RECAH Guidance Document: Obtaining and managing finances.

In addition, the recast Energy Efficiency Directive underscores the leading role municipalities play in renovating buildings and procuring socially responsible and energy efficient products. It is worth noting that the **European Union has specific legislation governing public procurement**, which aims to ensure fair treatment, effective competition, and equal opportunities for all economic actors involved in public procurement processes. Within this comprehensive legal framework, local authorities possess significant tools to promote energy communities as effective means to pursue policy objectives centred around public participation in the energy transition, social inclusion, the circular economy, local economic resilience, the alleviation of energy poverty, and other crucial social goals.

Procurement guidance for municipalities supporting energy communities

According to the European Commission, municipal purchases of goods and services account for 14% of the European Union's annual Gross Domestic Product (GDP). This substantial buying power, particularly in the energy sector, enables municipalities and other public entities to pursue specific political objectives through their procurement activities. For more information on social public procurement strategies in general, refer to the Social Economy Action Plan, the "Buying Social" guide, Making socially responsible procurement work – 71 good practice cases, and (for energy communities specifically) the COMPILE municipal guide.

Municipal support mechanisms can be categorised into two types.

1. **Direct support mechanisms encompass various ways in which local authorities can directly engage with local initiatives. They can focus on joint investments, jointly managed energy utilities, collaborative infrastructure investments, and opportunities for leasing energy from rural energy communities.**
2. **Indirect support mechanisms create equal opportunities for energy communities to participate in local economic activities. They can focus on legal and policy frameworks, the provision of finances and resources, and the promotion of community engagement through enhancing communication.**

How can potential rural energy communities be identified?

Guidelines for efficient and effective energy community identification

In order to effectively support energy communities, municipalities can start by identifying potential communities within their jurisdiction and work collaboratively with them. Through the means of identifying and engaging with existing energy initiatives and mapping current energy community projects, municipalities can assess their viability, determine areas for improvement, and identify opportunities for upscaling. If there are no energy communities in the locality, please refer to the RECAH Guidance Document: Joining or setting up a rural energy community for information on how to help citizens get started in their community energy journey.

Mapping current energy community projects

To effectively support the development and expansion of energy communities, municipalities can conduct a comprehensive mapping of current energy community projects within their jurisdiction. By conducting a thorough mapping of current energy community projects, municipalities are empowered to gather crucial data and insights to inform their strategies and decision-making. This information serves as a foundation for providing targeted support, allocating resources effectively, and promoting the growth and sustainability of energy communities within the municipality.

The mapping exercise should encompass a range of factors, including the size, scope, and characteristics of each energy community project. This involves identifying the types of renewable energy technologies being utilised, the scale of operations, and the level of community engagement. Through gathering this information, municipalities can gain insights into the diversity and potential of energy communities within their jurisdiction. The process should identify gaps and areas for expansion within the energy community landscape, while also reaching out to uncover the genuine interest and readiness of local communities to embark on energy initiatives.

For areas that showcase potential and willingness for community-based energy projects, municipalities can deploy targeted strategies for energy community development, ensuring that the benefits of renewable energy are equitably distributed. It is crucial to recognise that, while certain areas may appear underserved, the appetite for establishing an energy community might vary. Some communities may not yet have the awareness, capacity, or desire to initiate and maintain such projects. In such cases, while community empowerment remains a priority, municipalities may find that collaborating with commercial entities, universities, or associations can provide a more top-down and efficient pathway to bring renewable energy to these regions and citizens, as exemplified by several energy communities in Italy. Such projects should still be developed in ways that bring tangible benefits to citizens, whether through direct participation, job creation, local investment, or other means.

A useful tool to effectively plan energy community developments to suit your local context is the Model Assessment Tool, produced by REScoop and the ECOLOG Institute for Social-Ecological Research and Education. This tool provides a checklist with a step-by-step approach for carrying out an assessment of the existing barriers and potential for developing RECs:

Model Assessment Tool

STEP 1 | Preparation

From a municipality's standpoint, this section aids in laying the groundwork for the assessment. It assists municipal planners in designing a framework that defines their unique process and clarifies the desired goals or outcomes they aim to achieve for their communities. This step ensures that the assessment aligns with local needs and context.

STEP 2 | Barriers and drivers

Municipalities can benefit from a tool that highlights both the motivating factors and challenges in developing energy communities. By identifying these, municipalities can address potential issues head-on and leverage driving factors to rally community support and interest.

STEP 3 | Potential

For a municipality, predicting the trajectory of energy communities over time can be challenging. This section offers scenario modelling that provides a clearer understanding of how RECs might evolve in the local context, ensuring that planning is both realistic and ambitious.

STEP 4 | Costs and Benefits

Municipalities are often limited with budgetary constraints and need a clear view of the financial implications of projects. This tool aids in evaluating not just the economic, but also the environmental, energy, and social impacts of rural energy communities. It empowers municipalities to make informed decisions that balance community benefits with associated costs.

STEP 5 | Policy measures

Effective policy is key for the success of energy communities. This section assists municipalities in identifying policy measures tailored to their specific needs, ensuring that the established policies align with objectives, motivate community involvement, and lead to desired outcomes.

STEP 6 | Monitoring and reporting

For a municipality, ensuring the long-term success of energy communities is crucial. This tool emphasises the importance of both initial assessment and ongoing monitoring of enabling frameworks. It guides municipalities to track progress, evaluate the effectiveness of policies, and adapt strategies as necessary, ensuring the sustainable development of energy communities.

Engaging with existing energy initiatives

After identifying the existing initiatives, municipalities can actively engage with existing energy initiatives within their jurisdiction to leverage local knowledge, expertise, and enthusiasm. These initiatives may include community-led projects, cooperatives, or grassroots organisations that have already taken steps towards renewable energy adoption. **If no initiatives are present, the municipality is in a prime position to drive the establishment new energy communities**. These engagements can take various forms, such as establishing regular communication channels, attending community meetings, or participating in local energy events. Municipalities can thus gain insights into the challenges citizen-led organisations face and identify areas where additional support or resources are required. It is important to develop an understanding of the strengths and weaknesses of each project, so municipalities can identify areas for improvement and prioritise support where it is most needed.

Success story! "Common Light", Italy: born from the mayor's dream[2]

The mayor of the little village of Ferla, Sicily, home to roughly 2,000 citizens, has always believed that "change can start from little actions" and that citizens are central to driving this change. Through years of dedicated efforts, the municipality, backed by the commitment of the municipal councillor for energy policies, has **built a strong foundation of trust with its citizens**. This has been achieved through various sustainability initiatives like creating the first "compost village", attaining a 75% rate of separate waste collection, and installing drinking water distributors. Past investments, funded by PO FERS 2007/2013 and POI Energia 2015/16, have led to the construction of six PV plants on land and municipal structures, cumulatively producing 311 kW. This significant leap towards sustainability has generated savings of €90,000 and an additional €30,000 in the municipal budget from the GSE. These milestones have laid the foundation for the municipality's next ambitious venture.

In 2021, the municipality, in collaboration with the University of Catania, technical experts, and a lawyer, pioneered a community energy project with the installation of a 20 kW PV system on the town hall rooftop. **This partnership with the university represented a synergy of mutual interest**. The municipality of Ferla benefited from constant and effective advice from the university, establishing their initiative as a "best practice". In return, researchers from the University of Catania translated their high academic goals into tangible actions in the field, exemplifying the "third mission" of the institution: transferring research results to benefit the local territory.

Importantly, while the municipality maintained predominant authority over the initiative, it was unwavering in its commitment to local community involvement by opening a call for citizens and small and medium-sized enterprises (SMEs) to join "Common Light". Due to some technical rules imposed by the law, the REC, beyond the municipality, is composed of two other households and two commercial activities, and they had to pay only €20 for creating the CEC in its legal form. This makes Ferla's approach a compelling example of a CEC. In this model, the municipality retains principal control, yet actively facilitates avenues for local citizens and SMEs to partake, demonstrating a balanced and inclusive energy transition strategy. Several mayors of neighbouring municipalities have shown interest in Ferla's initiative, seeking guidance and expressing their admiration. Building on its success, Ferla's municipality is poised to implement more renewable energy technologies, including increasing production power with an additional plant and exploring advanced storage systems.

[2] https://www.archiviobollettino.unict.it/articoli/ferla-energia-green-e-%e2%80%98terza-missione%e2%80%99

What direct actions can municipalities take?

Municipalities have a pivotal role to play in driving the sustainable energy transition by actively participating in rural energy communities. Through joint investments, they can pool resources to maximise impact. Furthermore, by co-managing and co-owning energy utilities and infrastructure, municipalities can ensure that both urban and rural needs are met in a manner that's both efficient and collaborative. Beyond ownership and investment, the innovative concept of leasing energy from these rural communities also offers a flexible approach to meeting both rural and urban energy demands. Below you will find descriptions and guidance for implementing direct strategies, but note that not all municipalities have the same capacity or expertise to fully manage or oversee such large-scale initiatives and you should assess what is the most appropriate form of support for your municipality to provide.

Joint investment

Municipalities, when stepping up as co-investors in sustainable energy projects, make a bold statement of commitment, moving beyond passive support to proactive engagement. Through reallocating public funds to shared ventures, they highlight the project's significance and ensure its financial stability. Moreover, co-ownership offers municipalities a pivotal role in decision-making, harmonising broader city objectives with grassroots innovations, while ensuring regulatory alignment. This shared model inherently balances risks and rewards and enhances resilience as both local governments and energy communities jointly navigate the investment landscape. The involvement of municipalities also serves as a robust endorsement, developing community trust and encouraging broader citizen engagement as investors, consumers, or champions of the initiative. Beyond technical achievements, such collaborative ventures are deeply embedded into the community's socioeconomic framework. They are positioned to stimulate local job markets, invigorate economies, and further catalyse educational efforts in sustainable energy, ensuring a comprehensive impact on the community's present and future.

Success story! Coopem, Belgium: A city going solar[3]

In the evolving landscape of renewable energy, the city of Mouscron, Belgium, stands out as a success story. In 2017, the local government of Mouscron ventured into a partnership with its citizens and two other partners to birth "Coopem" – the Cooperative Energy of Mouscron. The unique ownership model of this cooperative is worth noting: **the city authority has a 15% stake, while an impressive majority of 55% is held by the citizens**. The remainder is split between a green investment cooperative and another company. Beyond just ownership, early members of Coopem benefited from tax rebates on their investments and from the cooperative's ability to tap into the Belgian government's Qualiwatt subsidy (a previous incentive programme for PV systems up to 10 kW).

[3] https://energy-cities.eu/wp-content/uploads/2019/06/EnergyCities_RNP_Guidebook_Web.pdf
Photo: Jean-Pol GRANDMONT

This, combined with the municipality's ability to bulk-purchase renewable energy technology at a lower price, significantly reduced the installation costs for citizens in the region and opened up opportunities for residential self-consumption and collective self-consumption of renewable energy. With these incentives in place, Coopem promised to provide an annual return to members of up to 6%. True to its word, by the cooperative's third year, dividends of up to 6% were distributed to the members.

Coopem's mission is clear and commendable. It seeks to ease the path for households to have solar PV installations on their rooftops. Recognising the barrier of initial costs, Coopem innovatively pre-finances 45% of a project, advancing regional solar subsidies that are typically spread across five years. Coopem also offers a complete package from handling administrative procedures to collectively purchasing equipment from local suppliers, and meticulously supervising the installation phase. A testament to their robust approach, in 2018, just a year into their operations, Coopem successfully outfitted approximately 90 PV units, simultaneously amplifying public consciousness on the clean energy transition. The municipality of Mouscron also raises awareness and helps its citizens do the same, which has increased legitimacy and promoted the creation of Coopem.

Local businesses have not been left out of this green revolution. Coopem extends a leasing plan for solar PV installations, generously financing 90% of the initial costs. This loan is then recouped over a 10-year span through the sale of green certificates. The impacts of Coopem's initiatives ripple throughout Mouscron. Households and businesses have found it much simpler, both financially and technically, to invest in solar energy. The cooperative's democratic "one member, one vote" principle ensures that every member has a say in its decision-making. Beyond the obvious environmental advantage of slashing CO2 emissions, this initiative aligns with Mouscron's broader environmental goals. Furthermore, it is a boom for the local economy, creating jobs and invigorating economic activities. The model of Coopem aligns with recent European legislation on CECs, which endorses principles like co-ownership and the localised generation and consumption of energy.[4]

Coopem is also part of the ColéCo project, launched with the intention of creating a surge in collective self-consumption across Walloon Picardy. The project set an ambitious target: to establish seven mini-grids in business parks and to birth around 100 local energy communities in Walloon Picardy by 2025. This region, comprising 23 municipalities including Mouscron, is anticipated to witness the emergence of several of these energy communities in each participating locality. Central to this project is the installation of solar PV on school buildings. This innovative approach envisions schools harnessing solar energy during daylight hours and increasing awareness/education of renewable energy to younger generations. The Saint-Exupéry school in Mouscron, with its expansive roofing, has been earmarked as the pilot site, capable of hosting 100 kWp of PV panels funded by the cooperative. While the school stands to benefit as the primary energy producer within this energy community, its energy consumption is on the lower side. During off-school periods, the excess energy generated will be sold and supplied into the national grid, albeit at a modest price.[5]

Stimulating growth: Mouscron's story underscores the potential of municipalities actively participating in, and even co-owning, their energy transition, directly weaving new energy communities into the fabric of sustainability plans. Matters like utilising the public electricity grid and facilitating the installation of panels on educational infrastructures necessitate strong collaboration with a municipality. Various other municipalities across Belgium are already exploring ways to replicate and integrate Mouscron's pioneering model into their unique circumstances.

[4] https://www.citiesoftomorrow.eu/sites/default/files/documents/Mouscron%20-%20BE.pdf
[5] https://energy-cities.eu/combining-collective-self-consumption-and-energy-based-tourism/

Joint energy utilities

In certain European Union Member States, the collaboration between local authorities and citizens gives rise to jointly managed energy utilities, often rooted in a longstanding tradition of cooperative ownership. For instance, in Denmark, where district heating is a predominant heat supply model, non-profit entities that are jointly owned by cooperatives and municipalities typically oversee these networks. On another front, and driven by sociopolitical motivations, there's a push in some regions to revert privatised energy networks to local governance. Germany exemplifies this trend, with the re-municipalisation movement leading to the formation of comprehensive energy companies. These entities span the entire spectrum, from production to supply, and citizen cooperatives often include not just stakeholders but also influential decision-makers.

Success story! The municipality taking the lead in Wolfhagen, Germany[6]

In the town of Wolfhagen, located in Northern Hesse, Germany, the city council supported the formation of a citizen cooperative that now possesses a 39.69% stake in the municipal energy company "Stadtwerke" and plays a significant role in shaping the utilities strategic directions. The municipality took the initiative in establishing this new energy community, further highlighting the crucial role that can be taken by a municipality to stimulate the emergence of rural energy communities. This partnership led to the financing of a 12 MW wind farm and a 5 MW ground-mounted solar park, and the establishment of an energy-saving foundation.

The municipality of Wolfhagen began actively involving itself in local energy affairs during the period of energy market liberalisation in the 1990s. Instead of selling the municipal energy company and privatising the local network, the municipality decided to retain the ownership of the network and also to reintegrate the networks of the districts back into ownership (2006). To ensure community influence, two members from the cooperative are part of the Stadtwerke's nine-member supervisory board.

[6] https://municipalpower.org/best-practice-guides/guide2/

By the early 2000s, the city's focus had shifted towards increasing the supply of renewable energy as a means of enhancing energy provision and addressing climate change. Local renewable energy generation presented an opportunity for the city to take climate action while also developing local economic prospects and citizen participation. The idea of establishing an energy community was proposed by the Stadtwerke's director at the time, who persuaded local politicians to capitalise on the impending expiration of E.ON's 20-year concession contract, aiming to regain control of the distribution network. The attractiveness of the director's proposal arose from the potential to promote citizen involvement and raise much-needed capital for investment in new wind and solar projects. The director presented the idea to the city council, which endorsed the plan. After three years of intense discussions, lengthened by E.ON's reluctance and an intricate maze of technical, commercial, and legal considerations, an agreement was signed in 2006. As a result, the cooperative, known as BEG Wolfhagen, was formed, comprising 264 Wolfhagen residents as its initial members.

Once established, BEG Wolfhagen was offered the opportunity to acquire a 25% stake in the Stadtwerke, granting local citizens direct ownership. Through their first community share offer, with shares valued at €500 each and a maximum of five shares per member, the cooperative raised €1.47 million. While this amount fell short of the funds required to purchase the 25% stake, the city council provided a loan to cover the remaining financing, which was repaid within 12 months. Regular communication was maintained between the two organisations through supervisory board meetings, and cooperative members were given voting rights on all matters pertaining to electricity production and supply in the region.

The collaborative efforts of the cooperative and Stadtwerke have yielded impressive outcomes. Their 12 MW wind farm and solar plants exceed 100% of the energy consumed in Wolfhagen by the 13,500 inhabitants, enabling excess energy to be sold to the national grid. As a result, the municipal-owned company generates annual profits and cooperative shareholders receive a yearly dividend (approximately 4% in 2016), while the remaining funds are channelled into the cooperative's energy-saving foundation. By the end of 2016, BEG Wolfhagen had amassed 814 members with a cooperative wealth exceeding €3.9 million. As an established entity, the cooperative allows new members a two-year period to pay for their initial shares in €20 instalments, ensuring greater accessibility for low-income households.

Beyond the financial incentives, this collaboration facilitates the exchange of expertise and information regarding new energy incentives from local and national governments with cooperative members. As 7% of Wolfhagen's population are cooperative members, this provides an effective means of engaging with a substantial number of local citizens. It has also doubled the number of staff employed in the local energy industry, securing jobs and retaining a highly skilled workforce in the locality to provide further potential for economic development.

Taking inspiration: Emboldened by Wolfhagen's success, approximately 284 municipalities – including Hamburg, Germany's second-largest city – have taken similar strides to reclaim authority over their energy sectors since 2005.

Jointly owned energy infrastructure

Another form of direct participation is through jointly owned energy infrastructure. Municipalities are increasingly taking the lead in this respect, recognising the transformative potential of joint ownership models. Through collaboration with rural energy communities, municipalities are pioneering a model where shared ownership meets public interest. This approach not only amplifies the efficiency and resilience of energy projects, but also anchors them firmly in the needs and aspirations of the local community. When municipalities invest directly in these ventures, they develop stronger community ties, stimulate local economies, and create more transparent, accountable, and participatory energy governance.

Success story! Middelgrunden wind farm, Denmark

The Middelgrunden wind farm in Denmark is as a success story of a jointly municipality and community-owned large-scale energy initiative, and ranks among the world's most expansive offshore wind farms. Its origins trace back to the late 1990s, when an emerging energy cooperative began partnering with Copenhagen's municipal energy utility. Their collaboration centred on building 20 wind turbines (2 MW each) just outside the city's harbour. The yearly power output of the farm is equivalent to the consumption of 30,000 local households. It highlights the potential for municipalities and citizens to obtain joint ownership of high-profile renewable energy installations.

Throughout the wind farm's developmental stages, both the utility and the cooperative equally shared the costs and revenue from the operational turbines. By 2000, once the project had been fully realised, they began operating as distinct units: the cooperative's 8,500 members assumed ownership and management of the southern 10 turbines, while the local utility oversaw the northern set of 10. The cooperative prided itself on a democratic governance system where each member, regardless of their share count, was granted an equal vote. An educational facet was also incorporated, and one turbine was designated the "children's wind turbine". This allowed youth to participate in voting, enhancing their understanding of, and commitment to, energy issues.

This partnership emerged as a best practice example of Denmark's emphasis on community energy. The municipal utility brought to the table financial backing, as well as technical and legal support, while the cooperative played a pivotal role in engaging the local community. In 2003, the municipal utility offloaded its 50% stake to a private Danish energy firm, only to repurchase it in November 2018. This move aimed to rejuvenate the park and prolong the wind farm's operational lifespan post-2025 by an extra 25 years.

Looking ahead: According to the Copenhagen Climate Strategy, energy communities will have the opportunity to invest in the 100 new wind turbines the city's utility aims to establish by 2025.[7]

[7] https://energy-cities.eu/wp-content/uploads/2019/06/EnergyCities_RNP_Guidebook_Web.pdf

Energy leasing

The collaboration between municipalities and rural energy communities in energy leasing has multifaceted dimensions. To understand and optimise this partnership, it is crucial to delineate the different scopes. This section offers clarity by providing descriptions of each strategy and the potential benefits.

1. **Municipal energy procurement via power purchase agreements (PPA)**

Under this arrangement, rural energy communities establish renewable energy systems on public buildings owned by municipalities. The municipalities then commit to procuring the generated energy through a PPA at a predetermined rate.

Benefits

- **Allows municipalities to harness renewable energy without incurring initial infrastructure expenses**
- **Offers energy communities feasible venues, like public buildings, to install their renewable assets**

2. **Asset leasing from municipalities to rural energy communities**

Municipalities can lease or rent out, or even offer at no charge, assets such as unused land or building rooftops to rural energy communities. The communities can then use these assets to set up renewable energy installations. The energy produced can either cater to the municipality's needs or be fed into the national grid.

Benefits

- **Enables municipalities to derive non-monetary value from their underutilised properties, such as meeting sustainability goals, developing community development, and preventing energy poverty**
- **Grants rural energy communities the opportunity to produce energy without the financial burden of land or property acquisition**

Success story! BioZon, Netherlands: A testament to municipal PPA and asset leasing

Between 1960 and 1990, a 24-ha contentious municipal waste landfill was a potential environmental issue. Post-closure, the site was sealed with a two-metre-deep layer of soil and equipped with a gas extraction system, which was initially utilised by a commercial entity for electricity. However, as gas volumes dwindled, the business model became unviable.

Backed by the support of eight municipalities launched with a capital of €900,000, Agem Gemeentelijke Energie B.V. (AGEM) embarked on an ambitious mission to achieve energy neutrality by 2030. Their visionary approach led to the emergence of 17 local energy communities, exemplifying the potential of municipalities and their networks to pioneer rural energy initiatives. Recognising the potential of the landfill, BioZon, founded in 2019 as one of AGEM's flagship energy communities, seized the opportunity to take on the challenge of replacing the old engine to match the current gas output, ensuring continued energy extraction.

Photo: https://biozon.nu

Today, BioZon oversees an 80 kW gas installation, with its members benefiting from a national renewable energy tax regulation proportionate to their participation certificates. Moreover, the social benefits come from the once waste-filled site being transformed into an attractive green hill, which appeals to nature enthusiasts, hikers, and even tourists, who can enjoy unique experiences such as trekking with donkeys and bring income to the local economy.[8] In the foreseeable future, BioZon plans to invest in a PV system to keep the developing their renewable energy portfolio and has backing from the municipality to implement this project.

A defining aspect of BioZon's operations is the **commitment from municipalities to purchase energy from BioZon at a fixed €55/MWh rate, illustrating a structured PPA**. This agreement ensures stability and financial viability for both parties. Further exemplifying the symbiosis between municipalities and rural energy communities, **the former landfill site (municipal asset) is leased to BioZon free of charge or rent**. The municipality provided further help to the project by allocating staff hours and supplying other vital resources, ensuring BioZon's operations were well-grounded. Through this collaboration, the energy harnessed not only serves the municipality's needs but also offers distinct advantages to BioZon's members. Impressively, half of the generated energy finds its way back to BioZon's members through their energy supplier, empowering them to access their self-produced energy at home at a rate they've set themselves.

For such a rural energy community project to truly resonate and flourish, local community backing is essential. The municipality, recognising this importance, took charge of community outreach. Through dedicated awareness campaigns, they ensured the local residents were informed and supportive of BioZon's mission. This initiative not only promoted BioZon, but also laid the foundation for broader community acceptance. The collaboration between BioZon and the municipality was about sharing a vision, and the municipality is now using BioZon's energy to meet municipal requirements and for direct energy distribution. The efficacy of this model has sparked interest within the municipality, leading to discussions about replicating this sustainable approach at other suitable locations. True to the spirit of shared growth, BioZon is in dialogue with other energy communities in the Netherlands that are keen on exchanging insights and furthering collective knowledge.

Pioneering partnerships: BioZon's evolution showcases how municipalities can exhibit remarkable ability to join forces and pioneer the development of new rural energy communities united around a shared ambition. AGEM has demonstrated the power of collaboration. Its synergy not only propels sustainable energy solutions, but also solidifies the belief that collaborative endeavours are pivotal in shaping a greener, more inclusive future.

[8] https://www.interregeurope.eu/good-practices/biozon-cooperative-energy-production-from-landfill-gas-extraction

3. Asset leasing from rural energy communities to municipalities

Rural energy communities offer their renewable energy infrastructure for lease or rent to municipalities. The municipalities can then operate these assets and benefit from the generated energy or other related advantages.

Benefits

- **Provides municipalities with a direct method to expand their renewable energy resources, without the complexities of initial setup**
- **Ensures a consistent revenue stream for energy communities from their assets**

Success story! Vienna, Austria's community solar energy model

In 2012, Vienna's municipal utility (WienEnergie) conceptualised an innovative solution: it built solar power plants and sold the solar modules to the citizens. These modules were then leased back to the utility, ensuring a return on the investment for the citizens, which came in various forms, from direct bank transfers to utility vouchers. After an approximately 25-year lifecycle, the panels would be bought back by WienEnergie, assuring citizens a return on their initial investment. This novel initiative was a beacon of community ownership, as over 10,000 citizens had jointly invested €35 million in solar energy by 2017. Solar panels were strategically installed in diverse urban locations like train stations, shopping centres, and schools. This maximised energy production and turned underutilised city assets into sustainability landmarks.[9]

What indirect actions can municipalities take?

While this document emphasises the pivotal role that municipalities can play in spearheading and supporting community projects, it's crucial to recognise that municipalities often operate within constraints, both in terms of resources and capacity. Not all municipalities have the same capacity or expertise. To fully manage or oversee such large-scale initiatives can be challenging for some. Therefore, these listed strategies are an indicative list that should be explored in greater detail depending on the country, its socioeconomic conditions, and its policy commitments. As a result of implementing supportive indirect strategies, the direct strategies can be streamlined and made more efficient for partnership development.

Creating a favourable policy framework

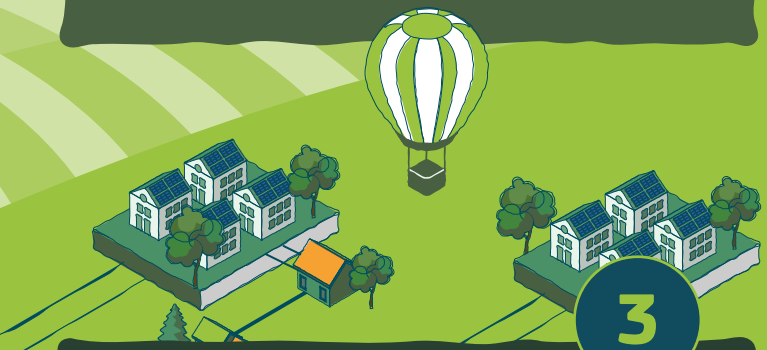
Ensuring the proper legal and regulatory framework is in place is crucial for establishing and operating energy communities. Municipalities have a pivotal role in providing the necessary legal and regulatory support to energy communities, helping them navigate complex legal requirements and maximise their potential for success. This can be achieved through the development of local energy plans or strategies that set goals for renewable energy generation, energy efficiency, and emissions reduction. They should take into account the unique characteristics of the municipality, including its rural nature and available resources. However, these plans must align with national energy objectives, which can be general or specific to energy communities. Aligning their policies with regional and national energy targets sets the stage for the implementation of concrete, actionable measures. Ensuring this alignment allows municipalities to tap into a wider range of policy tools, including public procurement, concessions, and innovative financing mechanisms, enhancing the impact of their local initiatives. For instance, a well-constructed local transition plan may take into account the following factors.

[9] https://energy-cities.eu/wp-content/uploads/2019/06/EnergyCities_RNP_Guidebook_Web.pdf

1

ASSESSMENT PHASE

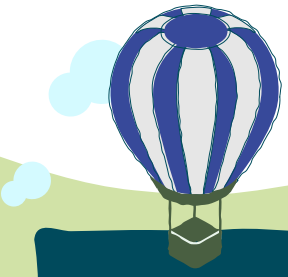
- Assess the interest of the local community to take ownership of renewable energy installations
- Understand the current energy consumption, production, and types of infrastructure through energy audits; identify areas with the most potential for energy community projects (refer to the Guidance Document: Navigating technology types for rural energy communities for more information)
- Identify key players in the community through stakeholder mapping, including potential energy producers, consumers, and intermediaries



3

ENGAGEMENT, IMPLEMENTATION, AND POLICY DIRECTION

- Engage with local residents, businesses, and energy producers; encourage grassroots initiatives and entrepreneurial ventures in the energy sector, and incorporate these views into decision-making
- Offer training and resources to local residents, enabling them to actively participate in, and benefit from, energy community projects
- Invest in technology and infrastructure that supports decentralised energy production and distribution
- Provide local tax breaks or subsidies for households and businesses that produce renewable energy or participate in community energy initiatives
- Encourage the creation of local energy marketplaces where consumers can directly purchase energy from community producers (for instance, the ENTRNCE matcher in the Netherlands has revolutionised the decentralised energy market by allowing consumers to directly purchase electricity from community-based producers in real time: this innovative approach ensures transparency, enabling users to choose and support local renewable energy sources over conventional grid supplies)



2

PLANNING AND STRATEGY DEVELOPMENT FRAMEWORKS FOR PROVIDING MUNICIPAL DIRECT SUPPORT

While the following points outline direct strategies as previously discussed in Section 4, complementing them with the following indirect approaches can enhance their effectiveness and viability:

- **Joint investment:** Detail mechanisms that can establish the resources and national policies available to jointly invest in sustainable energy projects with rural energy communities
- **Joint energy utility:** Establish a comprehensive plan for creating and operating joint energy utilities, detailing stakeholder roles, operational guidelines, funding sources, revenue distribution mechanisms, and emphasising meeting both urban and rural energy needs efficiently and collaboratively
- **Shared infrastructure:** Develop policies to co-manage and co-own energy infrastructure, ensuring equitable access and benefits for all community members
- **Energy leasing mechanisms:** Set guidelines for leasing energy from rural energy communities, including aspects like pricing structures, duration, and quality checks

Success story! Valencia, Spain's community-centric approach to environmental planning[10]

With the goal of becoming climate neutral by 2030, Valencia has developed ambitious targets, while also ensuring that its citizens are at the heart of its energy transition. In 2021, Valencia introduced its "Valencia 2030 Climate Mission", aiming to slash greenhouse gas emissions by 40% and boost energy efficiency and renewable energy use by 27% by 2030. However, the city recognised that community participation was pivotal to achieve these goals. Understanding the need for comprehensive stakeholder participation, Valencia set up the "Energy Transition Roundtable" comprising of decision-makers from local/regional government, media, civil society, and academia. This coalition was crucial in crafting six demonstration projects for the 2030 Mission, and this consensus-based approach ensured the community's diverse voices were considered and integrated.

One of the key parts of the initiative involves developing and encouraging the growth of RECs. The 2030 mission has also established the city's first energy office under the Valencia Climate and Energy Foundation. The office serves a dual purpose. It acts as an educational hub, providing information on energy to citizens and offering workshops and training sessions on a range of topics. Additionally, it generates financial benefits for citizens. Through the knowledge disseminated, citizens have managed to save an impressive average of €226 annually. Recognising the office's impact and the growing demand, the city announced plans to inaugurate two additional offices.

Further examples can show how such strategies can manifest on a larger scale. Several countries have already set impressive benchmarks, translating local energy community ideals into national policy.

Denmark: Since 2009, the Renewable Energy Act has mandated that all wind energy developers provide a 20% ownership stake to locals residing near new wind installations. This community-focused strategy for renewable energy has spearheaded a significant wind energy transformation in the country. To illustrate its impact, the wind energy sector now employs around 85,000 individuals and contributes nearly 3% of Denmark's GDP, as stated by the Danish Wind Industry Association.[11]

Belgium: Energy-related competencies are largely decentralised at the regional level, with the exception of major infrastructures such as nuclear energy, offshore wind, and high-voltage lines. Within the Walloon region, local governance and cooperatives have successfully advocated for a regional recommendation specific to wind projects. This stipulates that developers must offer 50% community participation: 25% to the local residents and 25% to the municipal authority. In Flanders, energy cooperatives are urging the Flemish Parliament to enact a law where permits granted to renewable energy developers are contingent upon them offering at least a 50% ownership stake to the local community. While they lack the authority to issue such permits directly, two provinces and over 20 municipalities in Flanders have already set a precedent, offering political backing for such renewable energy goals within their jurisdictions.[11]

[10] https://eu-mayors.ec.europa.eu/sites/default/files/2022-10/2022_CoMo_CaseStudy_Valencia_EN-8.pdf
[11] https://energy-cities.eu/wp-content/uploads/2019/06/EnergyCities_RNP_Guidebook_Web.pdf

Providing legal and regulatory support

One significant area where municipalities can assist is in advising energy communities on legal and regulatory support, such as the establishment and governance of their projects. Municipalities have the ability to assess the national and local legal and regulatory frameworks, identifying the opportunities and challenges that energy communities may encounter. They can also advocate for policy changes at a national level. This includes offering support when energy initiatives submit legal processes to become either a CEC or REC, advising on the organisational structures they might adopt (such as cooperatives, partnerships, or non-profit organisations).

For instance, municipalities can establish one-stop shops that facilitate collective local action and enable the development of energy communities, which can significantly enhance citizen involvement in the energy transition. Such initiatives are a potent tool in assisting communities to grasp and adhere to new European Union legislation. For comprehensive examples and additional guidance, please refer to the Horizon 2020 project "Upstairs". Developing one-stop shops could help rural energy communities in the following ways.

- **Simplifying and streamlining regulations: This may involve developing standardised procedures for obtaining permits and licences, creating clear guidelines, and providing resources to assist community members in navigating the regulatory landscape for community-led energy projects. As a result of reducing administrative burdens and eliminating unnecessary barriers, municipalities can ensure that energy communities can operate both efficiently and effectively.**
- **Assisting energy communities in addressing regulatory challenges specific to their local circumstances: This may involve navigating land management regulations, local planning laws, and environmental permitting requirements. Through the use of legal advice and facilitating interactions with relevant authorities, municipalities help energy communities overcome potential obstacles and ensure compliance with regulatory frameworks.**
- **Helping energy communities understand and comply with energy market regulations: This includes providing guidance on grid connection processes, feed-in tariffs, net metering, and other market mechanisms. With the help of clarifying the legal requirements and procedures associated with energy market participation, municipalities enable rural energy communities to effectively integrate their renewable energy generation and participate in energy markets if they choose to do so.**
- **Identifying available public and private funding opportunities: Municipalities are able to provide energy communities with information about relevant European Union funding programmes, national or regional support schemes, and private co-funding options, and can even facilitate connections with potential private investors. For more information, please refer to the RECAH Guidance Document: Obtaining and managing finances.**

Providing financial assistance

To encourage participation in rural energy communities, municipalities can provide incentives that make renewable energy investments more attractive to community members. These incentives may include financial incentives, such as grants, low-interest loans, or tax credits, which can help offset the costs of renewable energy installations. By partnering with local financial institutions and regional development agencies, municipalities can amplify their efforts and leverage additional funding sources for energy community projects. In addition, municipalities have the option to establish revolving funds or crowdfunding platforms specifically tailored for energy community projects. These mechanisms empower community members and local stakeholders to contribute financially to energy community initiatives. For more information, please refer to the RECAH Guidance Document: Obtaining and managing finances. The following list provides a brief overview of how municipalities can offer support to energy communities.

List of financial support schemes

Grants 	Municipalities are able to establish grant programmes specifically designed to support renewable energy projects and community-driven initiatives. These grants can provide direct funding to energy communities to cover a portion of the capital costs associated with the installation and operation of renewable energy systems, energy efficiency upgrades, community engagement activities, or capacity building efforts. Through offering grants, municipalities incentivise the adoption of renewable energy technologies, promote community-led projects, and support the development of sustainable energy solutions within their jurisdiction.
Low-interest loans 	Municipalities have the capacity to collaborate with financial institutions to create low-interest loan programmes tailored to the needs of energy communities to enable them to move forward with their initiatives. These loan programmes provide access to capital at favourable interest rates, easing the financial burden on energy communities and facilitating the implementation of renewable energy projects. Municipalities can work closely with lending institutions to establish flexible repayment terms, grace periods, and loan conditions that align with the unique circumstances of rural energy community projects.
Tax incentives 	Municipalities may also consider implementing tax incentives as a means of supporting energy communities and promoting the transition to renewable energy sources. These incentives can include property tax exemptions or reductions for energy community projects, such as solar installations, wind turbines, or community-based energy infrastructure. Through implementing tax incentives, municipalities reduce the financial burden on energy communities and create favourable conditions for the development of sustainable energy projects.
Funding for feasibility studies and business planning 	Municipalities have the capacity to allocate funds to support energy communities in conducting feasibility studies and developing robust business plans. Feasibility studies assess the technical, economic, and social viability of renewable energy projects, providing crucial information for decision-making and attracting investors. They also allow municipalities to assist energy communities in evaluating the potential of their projects, ensuring they are on a solid foundation before proceeding. In addition, municipalities possess the capacity to provide financial support for the development of comprehensive business plans that outline the financial, operational, and marketing strategies for energy community initiatives. These plans are essential in securing financing from investors, financial institutions, and grant programmes.

Success story! Driving the way forward: Emilia Romagna, Italy

The Emilia Romagna Region aims to promote the formation of RECs in accordance with Regional Law 5/2022, as outlined in Regional Council resolution no. 2151 dated 5 December 2022. To facilitate this, the region plans to provide financial support in the form of economic contributions to cover the expenses associated with conducting feasibility studies and establishing these communities. The programme received a total funding of €2 million, with a maximum contribution of €50,000 allocated to each energy community. The application period has now ended, and beneficiaries have been chosen according to guidelines associated with European Union Directives.

Municipalities can also develop programmes that prioritise energy generated within the community, promoting local consumption and self-sufficiency. Through the development of smart grids or district energy systems, and by diversifying technology types,[12] rural energy communities can have greater control over their energy sources. Revenues can be further optimised by interacting with implicit and explicit incentives to provide flexibility across energy markets (ranging from local congestion management to balancing services), contributing to cost-effective deployment of renewable energy technologies and operation of the grid.

Providing municipal resources

Municipalities have the potential to provide building space and resources (even waste) that can help rural energy communities develop their renewable energy generation capacity. For more information, please refer to the RECAH Guidance Document: Navigating technology types for rural energy communities. Examples are given below.

1. **Solar PV installations (identification of suitable spaces for solar PV installations within their jurisdiction): This includes assessing public buildings, vacant lands, rooftops, and other underutilised areas that are conducive to solar PV projects. In addition, municipalities have the option to offer these spaces on long-term lease agreements at affordable rates or free of charge. An important point to consider here is public procurement and concession procedure. In certain jurisdictions, such as Spain, exemptions are made available when projects serve the common good, with citizen participation often seen as serving this purpose. Municipalities must ensure they are aligned with national regulations if they are to make public spaces readily available without extensive bureaucratic procedures.**
2. **Municipal waste for biogas: Municipalities can actively collaborate with energy communities to explore the utilisation of municipal waste for biogas production. Through anaerobic digestion, organic waste can be converted into biogas, a renewable fuel source. Through establishing waste-to-energy projects in partnership with energy communities, municipalities can contribute to effective waste management, reduce emissions, and create a local, sustainable energy source.**

Expert voice: Speaking at an event in Portugal, Rui Pimenta from the Porto Energy Agency believed municipalities hold significant potential for establishing RECs due to the vast number of buildings they possess, many of which are not energy efficient. He advocated starting with social housing as a strategic approach to address energy poverty and drew attention to a pioneering energy community in Porto: "Renewable Energy Community – Agra do Amial". Initially supported by EEA grants, the community is serving both the Agra do Amial housing district and the EB1/JI of Agra school, focusing on social housing to combat energy poverty while also exploring the practicality of innovative practices and technologies. These include renewable energy self-consumption, integrated storage solutions, energy efficiency upgrades, and electric vehicle charging. Comprising of 181 homes, a school, and a kindergarten, the energy community stands as a beacon, testing cutting-edge practices and technological advancements in the energy sector. The project has attracted attention from Portugal's energy regulatory authority, ERSE, which recognised it as a pioneering pilot project to replicate elsewhere.[13]

[12] RECAH Guidance Document: Navigating technology types
[13] https://municipalpower.org/articles/portugal-regional-event/

What critical role can building actor networks for energy communities play?

As we conclude this guidance document, we look into the ways in which the implementation of projects can be made more sustainable and inclusive by building strong networks and collaborations. It is vital to consider the importance of a collaborative approach, where communities and other stakeholders actively participate, ensuring that the municipalities form partnerships with third-party actors to allow for more distributed control, expertise, and decision-making. Municipalities frequently serve as enablers, helping develop connections between actors and technologies. Economically and administratively, they support this role by financing installations, overseeing platforms and devices, and navigating the necessary bureaucratic processes.[14]

Enhancing communication and public awareness

Effective communication plays a vital role in promoting the activities and achievements of rural energy communities, increasing citizen engagement, and building support from stakeholders. Municipalities have the capabilities to provide communication support to rural energy communities, helping amplify their voice and raise awareness about their initiatives at the local, regional, and national levels. One essential aspect of communication support is assisting rural energy communities **in developing a comprehensive communication strategy to increase participation and build partnerships**. For more information on best practices for communication, please refer to the Energy Cities: Community energy communication guide.

Networking and knowledge sharing

The power of partnerships: Rural energy community partnerships often pivot around the role of local authorities. Different geographical and context conditions lead to distinct network formations, each addressing specific local needs. The available resources at the local level, whether these consist of funds, knowledge, infrastructure, or collaborative culture, play a significant role.

Trust and communication as the backbone: A defining aspect of these networks is the profound trust and open communication between residents and local authorities, especially mayors. Trust and communication play a pivotal role in increasing citizen participation in rural energy communities, ensuring both community cohesion and adherence to with legal mandates.

Encouraging collaboration with businesses and institutions

Collaboration between rural energy communities, businesses, and research and public institutions is a powerful driver for the development and sustainability of energy community initiatives. For instance, municipalities often have networks of contacts to effectively engage with utility companies, research institutions, non-profit organisations, neighbouring municipalities, and other relevant stakeholders. Through collaborative partnerships, shared goals are pursued, innovative solutions are developed, and efficiency is enhanced. For instance, BioZon (one of the success stories) was initiated as part of a collective effort from eight municipalities in the region to initiate dozens of new energy communities. These partnerships can involve exploring joint funding opportunities, co-developing projects, and leveraging each other's resources and networks.

To help rural energy communities increase their viability and achieve success, municipalities can also help them develop their own stakeholder networks through the following methods.

[14] https://www.sciencedirect.com/science/article/pii/S0960148123005451

Establishing platforms for collaboration

Municipalities act as catalysts in facilitating collaborations by establishing platforms or forums where rural energy communities and potential partners can connect. These platforms can take the form of matchmaking events, business networking sessions, or dedicated working groups focused on energy community collaborations. Through the collaboration of bringing together diverse stakeholders, municipalities create opportunities for knowledge exchange, idea generation, and joint problem-solving. They can also provide a space for businesses and institutions to showcase their expertise, products, and services that can support the development and operation of rural energy communities.

Engaging innovative businesses and institutions

Municipalities have the opportunity to proactively seek out innovative businesses and institutions that can contribute to the growth and sustainability of rural energy communities. They engage in proactive outreach, inviting companies and organisations with expertise in renewable energy technologies, energy management systems, energy storage, smart grid solutions, and other relevant areas to collaborate with rural energy communities. As a result, municipalities are able to create an ecosystem of technical and social innovation by connecting rural energy communities with technology providers, research institutions, and entrepreneurs.

Success story! Energy City Hall in Magliano Alpi, Italy

In the town of Magliano Alpi in Northern Italy, a rural community with 2,166 residents, a transformative initiative was born on 12 March 2021: the Energy City Hall. A compelling story of **strong collaboration and visionary leadership**, it was initiated by the local municipality and mainly driven by local SMEs to form a 20 kW PV system. The overarching goal was to revitalise the community, making public buildings energy efficient and implementing renewable energy sources. With the intention of developing trust and participation among its citizens, Magliano Alpi aimed to position them at the forefront of the energy transition. The energy produced powered the town hall and energy overflow was shared with community hubs like the library, the gym, schools, and pioneering residents. In addition, the residents benefited from the installation of two electric vehicle charging stations, which were connected to this energy grid without any charge. To ensure transparency and active participation, the municipality integrated smart meters, connecting every participant of the rural energy community. Energy4Com, an innovative startup driven by a social mission, partnered with the municipality, which played a facilitating role, to analyse energy patterns and oversee services.

Energy City Hall is a CEC operating as a public–private partnership and consisting of members from the municipality, local businesses, and citizens. The board committee is comprised of seven specialists from the industry, academia, and public administration sectors, and is headed by a professor from the Politecnico University of Torino's Energy Centre. A scientific–technical committee provides technical and organisational support.

Digitally, the CEC's operations are streamlined through an Internet of Things-based energy system management platform. This platform prioritises energy self-consumption, manages bidirectional energy flows, networks, and services, and correlates consumption patterns with energy use. Additionally, it allocates economic benefits among CEC partners based on internally established guidelines. The platform also offers real-time monitoring and remote control of generation units, enhancing flexibility and demand-response services. Furthermore, CEC members have access to a mobile app designed to finalise smart contracts and facilitate payments using blockchain technology. It is worth noting that peer-to-peer trading is currently under experimentation.[15]

The initiative ought to become a connection for "local short supply chains", integrating the energy needs of private citizens, professionals, businesses, and the public authority under one umbrella. The community would not just include consumers: they would also be stakeholders, actively shaping the energy narrative. The municipality also developed a Community Operating Group (GOC), a consortium of local talent, aiming to nurture a collaborative ecosystem of technicians, designers, and service providers. This initiative, grounded in local economic upliftment, created co-benefits by increasing job creation and skill enhancement.

Three distinctive features encapsulate the Energy City Hall's story:

1. **A unique combination of public and private entities, collaborating to facilitate local development and catering to broader community needs**
2. **The facilitation of connections by the municipality, while playing a pivotal role in educating the local residents about sustainable energy consumption**
3. **The crucial involvement of local businesses in the rural energy community, as highlighted by a notable statement from a Professor and Engineer at the Polytechnic of Turin: *"What is perhaps becoming the most important lever, not so much citizens but rather local businesses. That is, the REC creates a lot of work on the territory. There is the digital dimension for the management of the REC, therefore the local ecosystem in which there are installers, SMEs, artisans, through what we have called the Community Operating Group (GOC), but this means that it multiplies local job opportunities"***[16]

The Energy City Hall of Magliano Alpi stands as a testament to what visionary leadership from the municipality, collaborative spirit, and community participation can achieve.

Concluding considerations

While this guidance document has explored a range of strategies through which a municipality can develop and support rural energy communities, it is imperative to recognise that each context presents its unique set of challenges and opportunities. The drive for impactful results and a keen understanding of the local landscape are crucial determinants in translating these insights into actionable initiatives. Ultimately, a municipality's commitment to both direct and indirect support can catalyse the flourishing of rural energy communities, but **the journey to success must always be tailored to the specific needs and dynamics of each region**.

[15] https://come-res.eu/fileadmin/user_upload/Resources/Deliverables/COME_RES_Deliverable_WP4.1_Organisational_and_Legal_Forms_and_Business_Models.pdf
[16] https://www.sciencedirect.com/science/article/pii/S0960148123005451

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