SIEA
SLOVAK INNOVATION AND ENERGY AGENCY

SHREC
Interreg Europe

European Union
European Regional Development Fund

ACTION PLAN

SHifting towards Renewable Energy for Transition to Low Carbon Energy

CONTENTS

GENERAL INFORMATION

Project	SHREC (PGI06148), SHifting towards Renewable Energy for Transition to Low Carbon Energy Interreg Europe
Partner Organisation(s) concerned	Slovak Innovation and Energy Agency (SIEA) Other SHREC partner organisations: - Hanze University of Applied Sciences - Netherlands - Vilnius Gediminas Technical University - Lithuania - South Muntenia Regional Development Agency - Romania - Piemonte Region - Italy - Mondragon City Council - Spain - Auvergne Rhône-Alpes Energy Environment Agency (AURA-EE) - France - Mid Sweden University - Sweden
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CHAPTER #1

Executive summary

1. EXECUTIVE SUMMARY

Following the announcement of the European Green Deal, there has been a swirl in activity regarding climate and renewable energy policy. Green Deal aims for Europe to become the first climate-neutral continent, therefore have no net emissions of greenhouse gasses in 2050 and where economic growth is decoupled from resource waste. In May 2022, the 8th Environment Action Programme entered into force as the joint programme for implementing the European Green Deal until 2030. It enshrines the European environment and climate objectives in a legal framework, as well as a mechanism to monitor and measure progress towards the required systematic change.

Climate Target Plan stepped up the EU target of renewable energy share in the energy mix from 32% up to 40% in order to better contribute to climate and environmental objectives. The European Union presented a Clean Energy for all Europeans Package which is empowering consumers and expanding consumer rights to make self-generation easier. Two new instruments with related aims were introduced. Renewable Energy Communities and Citizens Energy Communities share a common core in regards to the open and voluntary participation of their members and their goals to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.

Furthermore, two different projects were set up in the European context to contribute to the dissemination of best practices and provide technical assistance for the development of concrete energy community initiatives. Both launched in 2022, Energy Communities Repository is about to assist local actors and citizens willing to set up CEC and REC through technical and administrative advice and encourage their development. On the other hand, the Rural Energy Community Advisory Hub can be seen as an extension of the Energy Communities Repository and will focus on assisting citizens, rural actors and local authorities in setting up a CEC or REC in rural areas.

In the national context, Low-carbon development strategy of the Slovak Republic until 2030, with a view to 2050 and the Integrated National Energy Plan of Slovakia until 2030 are two main strategic documents focused on the climate change mitigation in Slovakia. These documents represent a national response to the commitments resulting from membership in the European Union and the United Nations and the associated obligation to prepare a strategy for at least 30 years. According to the Paris Climate Agreement, all parties, including the EU, were obliged to develop and submit by 2020 at the latest their long-term low-emission development strategies to take effect by 2050. The main quantified NECP targets for the SR by 2030 are to reduce greenhouse gas emissions for sectors not involved in emissions trading (non-ETS) by 20% (the share has been increased from the originally declared 12%). The RES share in final energy consumption has been set at 19.2% for 2030, together with meeting the required target of 14% of RES in transport. The elaborated measures to achieve the national contribution of the SR in energy efficiency show slightly lower values (30.3%) than the European target of 32.5%.

Slovak Republic has still no concept of energy communities enshrined in the national legislation. However, The Ministry of Economy of the Slovak Republic has submitted a draft amendment to national law in order to transpose the package of measures under the so-called Clean Energy Package that contains, inter alia, measures in the field of the internal electricity market and security of electricity supply, as well as in the field of energy efficiency, the usage of renewable energy sources and energy governance rules.

The proposed amendment brings the following changes in particular:

- regulation of new entrants in the electricity and gas markets, accumulation legislation,
- the gradual deregulation of retail electricity and gas prices and related changes in consumer protection,

- adjustment of the existing legal conditions for the deployment of the so-called smart metering systems to specific points of consumption,
- the regulation of the procurement of ancillary services to achieve and maintain secure and reliable real-time transmission or distribution system operation and other new rights and obligations of distribution system operators and transmission system operators,
- adjustment of data flows associated with new processes.

New entrants include the active consumer, the energy community, the electricity storage facility operator, and the aggregator. In addition to the rights and obligations of these new market participants, the method of their entry into the market is also proposed, while maintaining the current concept of granting permits, or confirmation of compliance with the notification obligation.

Operational programme Quality of Environment is a programming document of the Slovak Republic for drawing aid from the EU Structural Funds and the Cohesion Fund in the programming period 2014 - 2020 in the area of sustainable and efficient resource use ensuring environmental protection, active adaptation to climate change and promotion of an energy-efficient, low-carbon economy. The Operational programme has 5 thematic objectives:

- sustainable use of natural resources through environmental infrastructure development,
- adaptation to the adverse effects of climate change with the focus on flood protection,
- promoting risk management, emergency management and resilience to emergencies affected by climate change,
- energy-efficient low-carbon economy in all sectors,
- technical assistance.

Within Operational programme Quality of Environment, Priority axis 4. Energy-efficient low carbon economy in all sectors, specific objective 4.4.1 Increasing the number of local plans and measures related to the low carbon strategy for all types of territories, announced procurement for Low Carbon strategies for villages, towns, cities, regions, districts and groups of selected municipalities.

The structure of strategies varied, however, the main topics covered were mainly the same. All strategies covered in some form objectives and/or what the strategy was based on and the analysis of current state of the territory. The measures were related to the following main themes: buildings, which usually covered housing, belonging to local authority and tertiary, public lightning, transportation, both public and private, heating, Smart City measures, climate change adoption measures, communication and work with the public.

The sole development of low-carbon strategies is just a starting point for activities to reduce CO2 emissions. According to the comprehensive analysis of available strategies, relevant opportunities for enhancement have been identified.

1. It is important to ensure that each strategy will be implemented within the stated timeline, therefore including measures such as the creation of an implementation plan.
2. The analytical part of strategies has to be based on actual data to better reflect the current state, due to changes in population, behaviour and other trends, e.g., increased number of cars owned or installations of A/Cs. It is also important to be able to correctly evaluate changes achieved through the measures of strategy.
3. Apply do no significant harm principle to ensure that no measure should lead to significant harm to environmental objectives.
4. Establishing a municipal renewable energy community has been identified as an important accelerator of the process of new renewable energy sources creation, which we can also notice in the municipal climate plans from other EU Member States.

5. Consider Power Purchase Agreements, also known as PPA contracts, that represent a highly used instrument abroad that guarantees the contracting parties the long-term production and supply of a specified amount of energy, together with the price and origin.

Current possibilities of increasing the usage of renewable energy in Slovak Republic which are performed by SIEA under the Priority axis 4 within Operational programme Quality of Environment are Live by energy and Green to the households. These national programs focus on promoting renewable energy sources, together with increasing the public awareness of the efficient use of energy sources, providing consultation services and financial support for installation of small renewable energy sources facilities, respectively.

Furthermore, the Ministry of Investment, Regional Development and Informatization of the Slovak Republic (MIRRI), as the manager of European funds, is preparing an investment plan for Slovakia for the years 2021 - 2027. These are the Partnership Agreement and the Operational Program Slovakia, that covers 5 policy objectives, which are then divided into specific objectives and measures. The second policy objective, focused on decarbonisation, circular economy, energy efficiency and environment, is further divided into eight specific objectives. Within the second specific objective, beneficiaries of two measures include renewable energy communities. Measure 2.2.1 is about to provide support for the use of renewable sources in companies based on active electricity consumers, self-consumers of energy from renewable sources and communities producing energy from renewable sources, while measure 2.3.1 is about to promote intelligent energy systems, including energy storage.

Project Shifting towards Renewable Energy for Transition to Low Carbon Energy (SHREC) is a part of the Interreg Europe – cooperation programme, co-funded by the European Union to support cooperation across borders through project funding and tackle common challenges and find shared solutions. Within the project, 18 projects were identified as good practices. According to the Interreg Europe programme manual, a good practice is defined as "an initiative (e.g. project, project, process, technique) undertaken in one of the programme's priority axes which has proved to be successful in a region and which is of potential interest to other regions. Since Interreg Europe is dedicated to regional development policy improvements, a good practice is usually related to public intervention. Out of 18 SHREC good practices, 9 are relevant to SIEA, meaning they focused on themes of energy communities, prosumerism or awareness raising activities, which are relevant for SIEA. At least 6 good practices can be classified as energy communities. While all relevant good practices, were taken into account while designing Action Plan, three projects were chosen as the main inspiration:

- **Grunneger Power**

The project is comprehensive example of energy community demonstrating that such project initiated by proactive community can be a huge success; as well as awareness raising activities conducted for local community.

- **Firewood district heating community network in Lucinges**

This project is an example of one of French projects, demonstrating importance of involvement of municipalities and that initiative can come from their side. The project was created as municipality wanted to achieve their goals, being part of agglomeration with the aim to reduce GHG emissions per inhabitant by 75% by 2050. It is also an example of involvement of entity assisting in implementation for energy community and involvement of citizens – Énergie Partagée. The project is also example was an inspiration for replication in Sassanage.

- **The nZEB RoadShow**

The project is a great example of successful awareness raising activity in relevant area, which is engaging and demonstrates feasibility and practicality of the themes raised for citizens.

Based on these three good practices, taking into account other relevant practices, the following lessons learned were formulated:

1. The establishment of energy communities was initiated wither by citizens or municipalities, and therefore these are two target groups that need to be targeted in awareness raising activities related to energy communities.
2. Local success cases of energy communities encourage replication.
3. The process of creating an energy community, or even becoming a prosumer can be daunting, therefore it is advantageous to have an entity which can consult, assist or undertake some of the activities related to energy communities that would encourage such projects or some instructional materials.
4. Municipalities which are part of the programme with clear objectives are encouraged to produce projects, which can be applied to energy communities.
5. Even not being initiators of the energy communities, stakeholders can assist in the establishment of energy communities and promote prosumerism.

In Slovakia, we are currently in the period (2014-2020) when SIEA implement the Priority Axis 4, Energy Efficient Low-Carbon Economy in all sectors and many calls are open. However, we still consider that the need for a transition to a cleaner, more sustainable and less carbon energy future, here in Slovakia, is crucial. Slovak Republic is still heavily dependent on fossil fuels and current activities leading to sustainable use of natural sources and promotion of energy efficient low-carbon economy are not sufficient. From that reason we would like to concentrate on improving regional and national policies increasing the share of energy from renewable sources in the overall energy mix and reducing energy consumption encouraging and facilitating the production and use of renewables by businesses and households aiming at less carbon intensive future.

From the knowledge acquired during the SHREC project, where SIEA had a chance to encounter many good practices from different EU Member States, the Action plan has been developed. The main purpose of the activities defined in the Action Plan is to create a comprehensive structure to support widespread public and stakeholder engagement on climate change and at the same time empower citizens to adopt more sustainable behaviours.

In adopting this approach, the Action Plan activities will have a strong focus on measures that lead to public, local and regional involvement in delivering actions which enable change of thinking. Such approach will support those people who are already active in renewable energy, empower those citizens who are not engaged to get involved in this area and at the same time support those who are likely to be most affected by climate change. In this context, three areas of support have been appropriately selected, in which great potential for developing meaningful activities has been recognised:

1. Climate literacy (communication and education);
2. Engagement and empowerment;
3. Research and evidence.

Live by energy is a project created under the aforementioned Priority axis 4 within Operational programme Quality of Environment. Action plan is therefore focused on its improvement by implementing energy communities and good practices in relevant activities. This is done by fulfilling these three areas of support. The activities described will be delivered through a systematic process that will run until the end of project implementation.

CHAPTER #2

Policy context

2. POLICY CONTEXT

2.1. POLICY INSTRUMENT

The Action Plan aims to impact:

- □ Investment for Growth and Jobs programme
- □ European Territorial Cooperation programme
- × Other regional development policy instrument

Name of the policy instrument(s) addressed: **Operational Programme Quality of Environment**, cofunded by the European Structural and Investment Funds.

Further details on the policy context and the way the action plan should contribute to improve the policy instruments are described in chapters 2.3.2. and 4.

2.2. EUROPEAN CONTEXT AND ANALYSIS OF RELEVANT LEGISLATION

The EU climate policy steers both regional and national efforts to mitigate and adapt to climate change. It is based on the UN Convention on Climate Change and the Paris Agreement. The agreement was reached on the European Climate Law when the targets to reach the 2050 carbon neutrality target and the 2030 target of 55% emission reductions became legally binding.

The Commission published a large package of proposals for climate and energy legislation with the 2030 Climate Target Plan and 8th Environment Action Programme currently in place. As part of the Green Deal, the Commission has also published a proposal for a European Climate Pact, which aims to involve all citizens and stakeholder groups in order to supplement the climate change mitigation efforts.

2.2.1. GREEN DEAL AND EUROPEAN CLIMATE LAW

Communication from the Commission sets out a European Green Deal for the European Union (EU) and its citizens while resetting the European Commission's (EC) commitment to tackling climate and environmental-related challenges that is this generation's defining task. The atmosphere is warming and the climate is changing with each passing year. One million of the eight million species on the planet are at risk of being lost. Forests and oceans are being polluted and destroyed.[1]

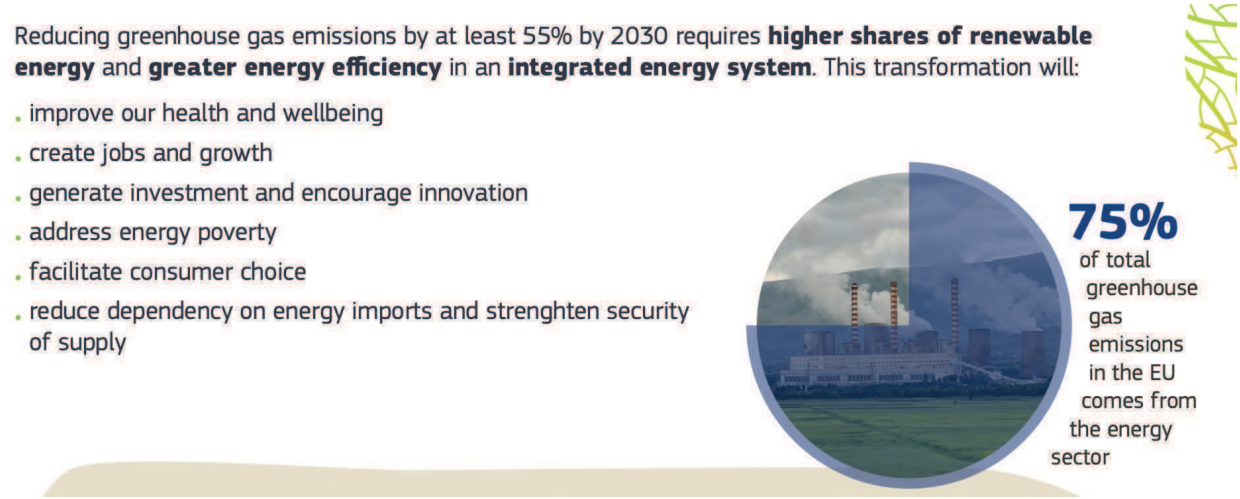
The European Green Deal is a response to these challenges. It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gasses in 2050 and where economic growth is decoupled from resource use. It also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts.

[1] The European Green Deal, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, 2019. Available via the link: https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF.

FIGURE 1. THE EUROPEAN GREEN DEAL

Source: The European Green Deal, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, 2019. Available via the link: https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF.

FIGURE 2. DECARBONISING THE ENERGY SYSTEM TO MEET THE CLIMATE GOALS



Source: Energy Factsheet, European Commission, 2021. Available via the link: https://ec.europa.eu/commission/presscorner/detail/en/fs_21_3672.

2030 CLIMATE TARGET PLAN

In the coming decade, the EU will continue building on a strong track record of climate action and parallel economic growth. In 2019, EU emissions, including removals, were down by an estimated 25% compared to 1990, while over the same period the economy has grown by 62%. This proved that we could tackle climate change and ensure sustained economic growth and job creation at the same time. The Impact Assessment accompanying the Communication from the Commission to the European Parliament demonstrates that an emissions reduction of 55% by 2030, compared to 1990 levels, is both economically feasible and beneficial for Europe, with proper policies in place.

According to the Communication published by the European Commission in September 2020, the EU's policy framework present at the time alone would not allow reaching the 2050 goals and meeting the commitments under the Paris Agreement. Projections showed that simply continuing to implement the legislation in force would see the EU achieving a 60% reduction in greenhouse gas emissions by 2050. The EU needed to raise its ambitions for this decade and avoid leaving a heavier workload for future generations. The less action the EU takes in the next ten years, the steeper and more challenging the reduction path after 2030. The Commission, therefore, proposed to change the current emissions reduction pathway to reach climate neutrality by 2050 and reflects this in the proposal for the European Climate Law.

FIGURE 3. GREENHOUSE GAS EMISSIONS (INDEX, 1990 = 100) AND RENEWABLE ENERGY SHARE OF GROSS FINAL ENERGY CONSUMPTION, 2020

Source: Statistics for the European Green Deal. Available via the link: https://ec.europa.eu/eurostat/cache/egd-statistics/

ENVIRONMENT ACTION PROGRAMME

In May 2022, the 8th Environment Action Programme (EAP) entered into force as the EU's joint programme for implementing the European Green Deal on the ground until 2030. It enshrines in a legal framework EU environment and climate objectives, as well as a mechanism to monitor and measure progress towards the required systemic change. This further strengthens our collective capacity to tackle the interlinked crises of climate change, biodiversity loss and pollution in order to create a truly sustainable future for the generations to come. The 8th EAP shall have the following six interlinked thematic priority objectives for the period up to 31 December 2030:

- swift and predictable reduction of greenhouse gas emissions and, at the same time, enhancement of removals by natural sinks in the Union to attain the 2030 greenhouse gas emission reduction target as laid down in Regulation (EU) 2021/1119, in line with the Union's climate and environment objectives, whilst ensuring a just transition that leaves no one behind;

- continuous progress in enhancing and mainstreaming adaptive capacity, including on the basis of ecosystem approaches, strengthening resilience and adaptation and reducing the vulnerability of the environment, society and all sectors of the economy to climate change, while improving prevention of, and preparedness for, weather- and climate-related disasters;
- advancing towards a well-being economy that gives back to the planet more than it takes and accelerating the transition to a non-toxic circular economy, where growth is regenerative, resources are used efficiently and sustainably, and the waste hierarchy is applied;
- pursuing zero pollution, including in relation to harmful chemicals, in order to achieve a toxic-free environment, including for air, water and soil, as well as in relation to light and noise pollution, and protecting the health and well-being of people, animals and ecosystems from environment-related risks and negative impacts;
- protecting, preserving and restoring marine and terrestrial biodiversity and the biodiversity of inland waters inside and outside protected areas by, inter alia, halting and reversing biodiversity loss and improving the state of ecosystems and their functions and the services they provide, and by improving the state of the environment, in particular air, water and soil, as well as by combating desertification and soil degradation;
- promoting environmental aspects of sustainability and significantly reducing key environmental and climate pressures related to the Union's production and consumption, in particular in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system.[2]

EUROPEAN CLIMATE PACT

The European Green Deal is a response not only to science but also to demands for stronger action coming from citizens. Public opinion surveys show that nine out of ten Europeans see climate change as a serious problem[3] and feel that protecting the environment is personally important for them.[4] The many solutions outlined in the Green Deal can only succeed if designed in a socially just and fair way and if citizens, communities, companies, and organizations play their part, alongside government policies and regulations.

Therefore the European Commission launched a European Climate Pact, to make sure that everyone can help build a greener Europe and support the achievement of the Sustainable Development Goals. Proposed in the Political Guidelines of the President of the EC, the Climate Pact should bring together regions, local communities, civil society, industry, and schools. Together they will design and commit to a set of pledges to bring about a change in behaviour, from the individual to the largest multinational.[5]

The European Climate Pact is a Commission initiative to engage with different stakeholders and civil society with the aim to commit them to climate action and more sustainable behaviour. It will offer ways for people and organizations to learn about climate change, to develop and implement solutions, and to connect with others to multiply the impact of those solutions. The Pact will create a lively space to share information, debate, and act on the climate crisis. It will offer support for a European climate movement to grow and consolidate.[6]

[2] Decision (EU) 2022/591 of the European Parliament and of the Council of 6 April 2022 on a General Union Environment Action Programme to 2030, Official Journal of the European Union, 2022.

[3] Citizen support for climate action, European Commission. Available via the link: https://energy.ec.europa.eu/topics/energy-strategy/clean-energy-all-europeans-package_en.

[4] Special Eurobarometer 501: Attitudes of European citizens towards the Environment, Directorate-General for Communication, 2020. Available via the link: https://data.europa.eu/data/datasets/s2257_92_4_501_eng?locale=en.

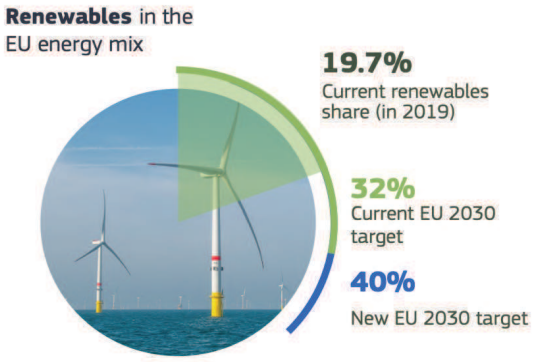
[5] Political Guidelines, Ursula von der Leyen, 2019. Available via the link: https://ec.europa.eu/info/sites/default/files/political-guidelines-next-commission_en_0.pdf.

[6] European Climate Pact, Communication from the Commission to the European Parliament, the Council, the European Committee and the Committee of the Regions, 2020. Available via the link: https://europa.eu/climate-pact/system/files/2020-12/20201209%20European%20Climate%20Pact%20Communication.pdf.

2.2.2. ENERGY COMMUNITIES IN THE EUROPEAN CONTEXT

The European Green Deal establishes the objective of becoming **climate neutral in 2050** in a manner that contributes to the European economy, growth and jobs. This objective requires a GHG emissions reduction of 55% by 2030 which requires significantly higher shares of renewable energy sources in an integrated energy system. The current EU target of renewable energy (32% by 2030), set in the Renewable Energy Directive (REDII), is not sufficient and needs to be increased to 38-40% due to the Climate Target Plan.

FIGURE 4. SHARE OF THE RENEWABLE ENERGY SOURCES IN THE EUROPEAN ENERGY MIX



Source: Energy Factsheet, European Commission, 2021. Available via the link: https://ec.europa.eu/commission/presscorner/detail/en/fs_21_3672.

The overall objectives of the revision of REDII are to achieve an increase in the use of energy from renewable sources by 2030, to foster better energy system integration and to contribute to climate and environmental objectives, thereby addressing the intergenerational concerns associated with global warming and biodiversity loss. This revision of REDII is essential to achieve the increased climate target as well as to protect our environment and health, reduce our energy dependency, and contribute to the EU's technological and industrial leadership along with the creation of jobs and economic growth.

Therefore, the EU presented the Clean Energy for all Europeans Package (hereinafter referred to as "Clean Energy Package"), a broad set of measures designed to get the EU Member States on a path to carbon neutrality and meeting the Paris Agreement. The Clean Energy Package **promotes empowering consumers and energy efficiency**, expands consumer rights to make self-generation easier, and promotes cross-border cooperation to increase the reliability of supply and the efficiency of electricity markets.

In the context of the expansion of consumer rights, the Clean Energy Package, with the recast of the REDII and the 2019 Internal Electricity Market Directive (IEMD), has introduced two new instruments with the aim of empowering citizens and achieving the following ambitions:

- Increasing citizen involvement and consumer empowerment, expanding customers rights and mobilizing private capital;
- Introduce flexibility to the grid, increase supply security;
- Increase local acceptance of renewable energy projects;
- Provide environmental, economic, and social community benefits for members of the local areas.

Renewable and Citizen Energy Communities are defined separately in Articles 2 REDII and IEMD. Although they each have a distinctive feature in terms of membership structure (different members can participate and exercise effective control for RECs and CECs), geographical limitations (proximity requirement for RECs) and governance principles (autonomy principle for RECs), they share a common core; they are legal entities based on open and voluntary participation, effectively controlled by its members, and whose primary purpose is to provide environmental, economic, or social benefits.[7]

[7] Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation, ASSET Study by Tractebel Impact, 2020. Available via the link: https://op.europa.eu/en/publication-detail/-/publication/4b7d5144-91c9-11eb-b85c-01aa75ed71a1/language-en.

DEFINITION OF RENEWABLE ENERGY COMMUNITY (REC) AND CITIZENS ENERGY COMMUNITY (CEC)

Article 2(16) REDII defines RECs as legal entities:

a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity,

b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities,

c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.[1]

Article 2(11) IEMD defines CECs as legal entities:

a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises,

b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits,

c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders.[1]

The concepts of RECs and CECs share a common core in regard to the open and voluntary participation of their members, the diversity of actors involved (households, public authorities, and enterprises) and their goals. Specifically, both Directives state that the purpose an energy community should have is "to provide environmental, economic or social community benefits for its shareholders or members or local areas where it operates, rather than financial profits."[8]

DIFFERENCES BETWEEN CEC AND REC | Although CECs and RECs are intimately related concepts, they have important differences:

- CECs can be effectively controlled by natural persons, local authorities, and small enterprises. On the other hand, RECs can be effectively controlled by natural persons, local authorities, and small and medium enterprises, provided that these members are "located in the proximity of the renewable energy projects that are owned and developed by the [REC]" (as stated in the Directive (EU) 2018/2001), while there is no such restriction for CECs.
- The set of potential activities of RECs is centred around renewable energy sources. CECs, on the other hand, are constrained to electricity but not to renewable sources only, and their set of potential activities is wider (see Table 1 for further details on the sets of potential activities of energy communities).

In certain circumstances, RECs can be considered as a subset of CECs. Unlike RECs, participation in CECs is not restricted to specific types of members, and the controlling members of CECs are not geographically bounded, unlike controlling members of RECs. Additionally, CECs are restricted to electricity but are not technology constrained, and RECs, on the other hand, can engage with other energy carriers (e.g., gas or heat) but are limited to renewable technologies. Accordingly, a REC developing renewable electricity projects only and of which no member exerting effective control would qualify as a medium enterprise would comply with the definition of CECs.

[8] Directive (EU) 2018/2001 and Directive (EU) 2019/944

TABLE 1. SETS OF POTENTIAL ACTIVITIES FOR RECS AND CECS AS PROVIDED BY THE CLEAN ENERGY PACKAGE

Name of activity	Renewable Energy Communities	Citizen Energy Communities
Generation	✓	✓
Construction	✓	✓
Energy Sharing	✓	✓
Supply	✓	✓
Energy storage	✓	✓
Aggregation	✓	✓
Own, establish, purchase, lease and manage distribution networks	✓	✓
Access all suitable markets	✓	✓
Cross-border participation		✓
Charging activities		✓
Energy efficiency services		✓
Other energy activities		✓

Source: Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation, ASSET Study by Tractebel Impact, 2020. Available online at https://op.europa.eu/en/publication-detail/-/publication/4b7d5144-91c9-11eb-b85c-01aa75ed71a1/language-en.

Two separate concepts defined in the REDII are renewable self-consumers and jointly acting renewables self-consumers. Renewables self-consumers are final customers who generate renewable electricity within their premises for their own consumption. Jointly acting renewable self-consumers are a number of self-consumers located in the same building or multi- apartment block. Active customers, defined in the IEMD, are final customers or groups of jointly acting final customers that are entitled to generate, store, self-consume electricity, and participate in flexibility or energy efficiency schemes.

EU legislation does not require either individual self-consumers or jointly active renewables self-consumers to form an energy community nor to be part of an energy community to be entitled to perform renewables self-consumption. Within the context of RECs and CECs, the ability to become a renewables self-consumer or an active customer is a right that energy community members must retain, and jointly acting self-consumption is a potential activity to be performed within the energy community.[9]

[9] Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation, ASSET Study by Tractebel Impact, 2020. Available via the link: https://op.europa.eu/en/publication-detail/-/publication/4b7d5144-91c9-11eb-b85c-01aa75ed71a1/language-en.

2.2.3. EUROPEAN ENERGY COMMUNITIES INITIATIVES

The European Parliament has provided funding for the European Commission to set up 2 different projects that should contribute to the dissemination of best practices and provide technical assistance for the development of concrete energy community initiatives across the EU. Additional subjects exist that support starting and establishing energy cooperatives and provide them with tools and contacts to help them grow and prosper and represent the voice of citizens and energy cooperatives to European policy makers, such as REScoop – the European federation of citizen energy cooperatives. They are a growing network, currently consisting of 1 900 European energy cooperatives and their 1 250 000 citizens who are active in the energy transition. Through REScoop, energy cooperatives wish to make their voices heard in the European energy debate. After all, their members are usually the ones who are willing to pay for the transition to a more sustainable energy system. REScoop empowers citizens and cooperatives and wants to achieve energy democracy.

FIGURE 5. BENEFITS OF THE ENERGY COMMUNITIES

ECONOMIC BENEFITS

- Local job growth and economic resilience
- Up to 3 times additional local economic benefits
- Low energy bills for private consumers

ENVIRONMENTAL BENEFITS

- Promotion of local renewable production
- Reduction in GHG emissions
- Lowering of private energy consumption by up to 11%

SOCIAL BENEFITS

- Active participation of citizens in the energy field
- Provision of additional services, such as energy poverty alleviation
- Increased system resilience and security of supply

Source: Energy communities: A brief explainer for managing authorities in central and eastern Europe, Bankwatch Network, 2022. Available via the link: https://bankwatch.org/wp-content/uploads/2022/05/2022_05_Energy-communities.pdf.

ENERGY COMMUNITIES REPOSITORY

Launched in April 2022, the objective of the Energy Communities Repository is to assist local actors and citizens willing to set up a Citizens Energy Community or a Renewable Energy Community in urban areas through technical and administrative advice and encourage their development. Through the collected data, the Energy Communities Repository will identify enabling and supporting frameworks for energy communities in the context of the Clean Energy Package. It will furthermore conduct an impact assessment of energy communities and disseminate best practices and know-how for local authorities, businesses, citizens and citizen organizations that wish to set up energy communities, in particular in EU countries that do not have so far a strong tradition of such initiatives.

The projects that will receive targeted technical assistance under this initiative will be primarily urban energy communities and will serve as examples of positive local actions to inspire widespread efforts for citizen-driven initiatives through the development of energy communities.

TABLE 2. MAIN BARRIERS TO THE ESTABLISHMENT OF ENERGY COMMUNITIES AND HOW TO ADDRESS THEM

BARRIERS	RECOMMENDATIONS
Disproportionate or irrelevant administrative procedures Energy communities usually offer traditional market services to finance their 'community value' activities. However, as energy communities are a relatively new concept, Member States are still experimenting with support and administrative mechanisms. Some of these mechanisms, coupled with existing market imbalances, create an inequitable situation preventing a level playing field for energy communities vis-à-vis other actors in the energy sector.	**Adapt the licensing and administrative procedure to the strength of energy communities** In essence, energy communities are small-scale local projects looking to maximize community value. Therefore, administrative procedures should be adapted to fit the size, scope, and organizational capacity of energy communities. As such, they should be rewarded for focusing on activities other than traditional financial return, for example, including social and environmental justice indicators in licensing, administrative, and procurement procedures. When making an investment decision, managing authorities should look beyond financial indicators and traditional ways of assessing investment risk and value the societal benefits resulting from the communities' projects.
Risk of corporate capture and the lack of a clear definition With the transposition of the Clean Energy Package ongoing, it has become clear that the Member States often misunderstand the concept of energy communities. Moreover, in cases where EU-level definitions are correctly transposed, commercial actors are trying to misconstrue the goal of this organisational form. This impedes the overall adoption of energy communities by European citizens and erodes trust in their functioning. Participants in such 'fake' community mechanisms without adequate safeguards for openness, transparency, the non-profit basis, and democratic governance run the risk of being disillusioned, as their expectations of being part of a 'community' are not being met.	**Create one-stop shops for energy communities** In order to simplify the administrative and validation processes of the initiative, Member States should implement one-stop shops (OSS) for energy communities at the national, regional or municipal level, based on the service type. An OSS approach would enhance the monitoring of energy community development, whilst facilitating interactions with public authorities and the implementation of specific administrative procedures.

BARRIERS	RECOMMENDATIONS
Limited access to bank financing and financing tools Energy communities often struggle to secure bank financing. This is primarily due to two reasons – firstly, a lack of knowledge and understanding from the banking institutions; secondly, the collective decision-making mechanisms lead to a longer approval process within the community and, correspondingly, a more widespread sense of responsibility.	**Create specific financing tools for energy communities** Energy communities need targeted financing tools. Several examples of successful funding schemes exist that support the development of energy communities whilst simultaneously preserving their democratic governance and ownership. The 'revolving fund' model, as is used in the Netherlands, allows for the financing to bridge the gap between the pre-feasibility phases of the project and financial close. The managing authority can then exit the project as the capital provided by citizens takes over. Another successful model is the 'loan-to-grant programme' deployed by the Scottish government. In this scheme, the managing authority gives a loan that can become a grant in case the project is not successful – within reasonable limits.
Lack of financial tools for initiating energy communities Communities have a different fundraising process from traditional initiatives. Generally, community-based initiatives raise the bulk of their financing after the financial close of their project. This is especially true for renewable energy production projects. Banking institutions mostly do not offer this type of investment for small businesses, as they are seen as 'riskier'. There is an added complexity for energy communities, as they maintain a citizen-ownership model. This reveals a need for a new type of financing scheme, one specifically dedicated to energy communities.	**Support network organization to encourage bundling and capacity building** Energy communities prefer to collaborate, rather than compete. Therefore, community organizations often work together at the regional or national level. These organizations have two crucial roles, namely, to support the aggregation of projects to mitigate risks, and to provide capacity building to starting energy communities. The first role allows managing authorities to scale community energy projects whilst incentivising the development of specific area services (i.e., renovation of energy-poor households). The second role is crucial to recognise and support the development of new initiatives.

Source: Energy communities: A brief explainer for managing authorities in central and eastern Europe, Bankwatch Network, 2022. Available via the link: https://bankwatch.org/wp-content/uploads/2022/05/2022_05_Energy-communities.pdf.

RURAL ENERGY COMMUNITY ADVISORY HUB

The Rural Energy Community Advisory Hub will be launched in June 2022. It will focus on assisting citizens, rural actors and local authorities in setting up a Citizen Energy Community or Renewable Energy Community in rural areas through technical and administrative advice and encourage their development.

Its key activities include:

- identification of best practices concerning support frameworks for rural energy community projects, with close involvement of local authorities,
- providing technical assistance to selected rural energy communities,
- providing networking opportunities to local stakeholders.

The collected data will constitute a very important source of information for the European institutions and national, regional, and local authorities and relevant stakeholders as it will contribute to the identification and dissemination of best practices and know-how for local authorities, as well as businesses, farmers and citizens that wish to set up rural energy communities.[10]

[10] Energy communities, European Commission. Available via the link: https://energy.ec.europa.eu/topics/markets-and-consumers/energy-communities_en.

2.3. NATIONAL CONTEXT IN SLOVAKIA

Low-carbon development strategy of the Slovak Republic (hereinafter referred to as "SR") until 2030, with a view to 2050 and the Integrated National Energy Plan of Slovakia until 2030 are two main strategic documents focused on the climate change mitigation in Slovakia.[11] These documents represent a national response to the commitments resulting from membership in the European Union and the United Nations and the associated obligation to prepare a strategy for at least 30 years.

LOW-CARBON DEVELOPMENT STRATEGY OF THE SLOVAK REPUBLIC UNTIL 2030

Low-carbon development strategy of the Slovak Republic until 2030, with a view to 2050, was approved by the Government of Slovakia on the 5th of March in 2020. The obligation to develop this strategy is based on international, European, and Slovak law. According to the Paris Climate Agreement, all parties, including the EU, were obliged to develop and submit by 2020 at the latest their long-term low-emission development strategies to take effect by 2050. The aim of the Low-carbon development strategy of the Slovak Republic is to outline options for a comprehensive long-term strategic roadmap for moving to a low-carbon economy, which will be completed by achieving climate neutrality by 2050.

INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN IN SLOVAKIA

The integrated national energy and climate plan (NECP) in Slovakia for the years 2021 - 2030 were prepared in accordance with Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action. The main quantified NECP targets for the SR by 2030 are to reduce greenhouse gas emissions for sectors not involved in emissions trading (non-ETS) by 20% (the share has been increased from the originally declared 12%). The RES share in final energy consumption has been set at 19.2% for 2030, together with meeting the required target of 14% of RES in transport. The elaborated measures to achieve the national contribution of the SR in energy efficiency show slightly lower values (30.3%) than the European target of 32.5%. Industry and buildings will be key to achieving the targets. The interconnectivity of the electricity grids is already above 50% and will remain so in 2030, so the target of at least 15% will be met.

TABLE 3. COMPARISON OF THE EUROPE-WIDE AND NATIONAL TARGETS ACCORDING TO THE INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN IN SLOVAKIA

EU AND SR TARGETS	EU 2030	SR 2030
Greenhouse gas emissions (compared to 1990)	-40%	There are no national targets for the individual Member States
Emissions in the ETS sector (compared to 2005)	-43%	
Non-ETS greenhouse gas emissions (compared to 2005)	-30%	-20%
Total share of renewable energy sources (RES)	32%	19.2%
Share of RES in transport	14%	14%
Energy efficiency	32.5%	30.3%
Interconnection of electricity systems	15%	52%

Source: The integrated national energy and climate plan in Slovakia for years 2021 - 2030, Ministry of Economy, 2019. Available online at https://www.mhsr.sk/uploads/files/zsrwR58V.pdf.

[11] Mitigation strategic documents of the Slovak Republic, Ministry of Environment, 2022. Available at https://www.minzp.sk/klima/nizkouhlikova-strategia/.

The NECP proposal submitted to the European Commission in December 2018 included a proposed SR contribution to the RES target of 18%. Taking into account the need to increase RES ambitions and based on the PRIMES-EUCO model scenario that shows the possibility of achieving a RES share of 19%, as well as taking into account other additional factors, the proposal for the final NECP was submitted for a public comments procedure with thorough processing for a scenario with measures for a target RES value of 19.2% in 2030. An increase in the ambition to 20% was compared to this scenario, with the additional required investment calculated at around EUR 700 million. Based on the comments from the interdepartmental consultation procedure, the target of 19.2% was chosen because 5 entities directly supported the reference target while no entity was in favour of the alternative 20% target.

Regarding the electricity generation from the RES sector, the NECP proposal from 2018 determined an indicative target of 25% for 2030, corresponding to 27.3% for the 19.2% target, which is at the limit of the technical possibilities of the Slovak electricity system. One alternative to increasing the overall share of RES in 2030 from 19.2% to 20% lies in heat generation. This would however require greater use of biomass, including the production of biogas and biomethane (mainly derived from waste from plant and animal production, from the biodegradable part of municipal waste, biodegradable kitchen and restaurant waste and waste from wastewater treatment plants), heat pumps, solar panels, and geothermal energy in DHS. The high level of national gasification, with over 90% of the population having access to natural gas, acts against the greater use of RES in the heat sector. The transition to biomass from natural gas in households is therefore problematic from the perspective of air quality, which could endanger compliance with EU legislation. One solution is to incorporate biomethane and hydrogen into the existing gas infrastructure.

The ME SR will take all possible steps to further accelerate RES development between 2021 and 2030, in particular in heat generation, to ensure that the SR will be able to approach the higher RES share in 2030.[12]

2.3.1. NATIONAL LEGISLATION FOR ENERGY COMMUNITIES

In Slovakia, we are still waiting for the concept of energy communities to be enshrined and defined in legislation. The Ministry of Economy of the Slovak Republic (ME SR) submitted a draft amendment to national law in order to transpose the package of measures under the so-called Clean Energy Package analysed in the previous section. The Clean Energy Package contains, inter alia, measures in the field of the internal electricity market and security of electricity supply, as well as in the field of energy efficiency, the usage of renewable energy sources and energy governance rules. The three of the main objectives of the Clean Energy Package are:

- to give priority to energy efficiency,
- to achieve global leadership in renewable energy, and
- to ensure fair conditions for consumers.

The basic principles on which the current legislation is based remain valid within the EU, but some of them are being expanded or new principles are being introduced, as well as new electricity market participants, in order to promote the common market in electricity, stability and security of the electricity market and ensuring the protection of individual entities, end consumers in particular.

The proposed amendment brings the following changes in particular:

- regulation of new entrants in the electricity and gas markets, accumulation legislation,
- the gradual deregulation of retail electricity and gas prices and related changes in consumer protection,
- adjustment of the existing legal conditions for the deployment of the so-called smart metering systems to specific points of consumption,

[12] The integrated national energy and climate plan in Slovakia for years 2021 - 2030, Ministry of Economy, 2019. Available online at https://www.mhsr.sk/uploads/files/zsrwR58V.pdf.

- the regulation of the procurement of ancillary services to achieve and maintain secure and reliable real-time transmission or distribution system operation and other new rights and obligations of distribution system operators and transmission system operators,
- adjustment of data flows associated with new processes.

New entrants include the active consumer, the energy community, the electricity storage facility operator, and the aggregator. In addition to the rights and obligations of these new market participants, the method of their entry into the market is also proposed, while maintaining the current concept of granting permits, or confirmation of compliance with the notification obligation.

An overview of the proposed regulation of new entrants is given below.

TABLE 4. OVERVIEW OF THE PROPOSED REGULATION OF NEW ENTRANTS

DESCRIPTION OF NEW ENTRANT	BUSINESS LICENSE REQUIRED	SIMPLE NOTIFICATION REQUIRED
Active consumer, operator of an electricity storage facility or energy community with energy facilities up to 10.8 kW	no	no
A consumer who does not fall into the category of an active customer or the energy community operating activities not only for its members with energy facilities above 10.8 kW	yes, a license to generate electricity or a license to store electricity (or both types of the license)	no
Active consumer or energy community generating or storing electricity for its members with energy facilities of 10.8 kW - 1 MW	no	yes
Active consumer or energy community with energy facilities over 1 MW	yes, a license to generate electricity or a license to store electricity (or both types of the license)	no
Active consumer supplying electricity	no	yes
Energy community supplying electricity (self-produced or purchased on the market) only to its members or performing an aggregation activity only for its members	no	yes
Energy community supplying electricity (self-produced or purchased on the market) not only to its members or performing an aggregation activity not only for its members	yes, license to supply electricity	no
Aggregator (except energy communities - see above)	yes, license to supply electricity	no
Energy community operating the distribution network	yes, license to distribute electricity	no
Energy storage facility operator (not consumer)	yes, a license to generate electricity or a license to store electricity (or both types of the license)	no

Source: LP/2021/574 Zákon, ktorým sa mení a dopĺňa zákon č. 251/2012 Z. z. o energetike a o zmene a doplnení niektorých zákonov v znení neskorších predpisov a ktorým sa menia a dopĺňajú niektoré zákony, Slov-Lex, 2022. Available via the link: https://www.slov-lex.sk/legislativne-procesy/-/SK/LP/2021/574.

ACTIVE CONSUMERS | Active consumers are generally considered to be end customers of electricity who, in addition to the consumption of electricity from the system to a certain extent, also produce and possibly supply electricity to the market, and who can also adjust their consumer behaviour so that they can be a source of additional flexibility for the market.

ENERGY COMMUNITY | Energy community means a citizens energy community under Directive (EU) 2019/944 and a renewable energy community under Directive (EU) 2018/2001, which aim to organize Community energy activities through a legal entity established by specific persons, with democratic governance principles, for non-commercial purposes and on a non-discriminatory basis vis-à-vis other market participants, whereas a community producing energy from renewable sources can operate not only on the electricity market but also on other energy markets, provided that the condition that it is energy from RES is met. The draft, therefore, regulates the entry of energy communities into the market regarding the performance of their various roles, the certification procedure of energy communities and their rights and obligations in the electricity market.

The impact of the proposed measures on the business environment as a whole is expected, especially with regard to the entry of new players into the electricity market. The new legislation will introduce and define new activities and entities operating in the field of electricity, which can perform these activities, thus opening up opportunities for new business activities in the electricity market. The proposed concept of deregulation of electricity and gas prices will increase competition in the market. A possible initial negative impact on small businesses is expected in the short term by increasing the final prices of electricity and gas, but this should be offset by a potential reduction in final prices resulting from increased competition and service offerings by suppliers.

The positive impact of the new legislation in terms of social impacts is expected, as the proposed legislative proposal will strengthen the opportunities for all customers to actively participate in the energy market, manage their own consumption or reduce energy costs by providing flexibility or installing renewable energy equipment. Strengthening the powers of the Regulatory Office for Network Industries (ÚRSO) in the field of consumer protection will ensure an increase in the protection of the rights of electricity and gas consumers. The concept of price deregulation will open the door for competitors to enter the market and thus contribute to the development of competition, which should ultimately benefit the end customer, especially in the long term by reducing final energy prices and improving the services offered. At the same time, the proposal envisages leaving a temporary possibility for consumers in the household category to conclude a contract at a price regulated by ÚRSO and with business conditions approved by ÚRSO. The draft also defines energy communities as new market players, which are another option for consumers, as they can directly participate in the production or sharing of electricity/gas, or generally in the electricity market or the gas market. The main difference from traditional societies is that the primary goal of community energy initiatives is not to make a profit but to provide economic, environmental, and social benefits to their members.

The additional positive impact of the draft is expected, especially on air quality, as the emphasis is placed on the further development of electricity production from RES.[13]

[13] LP/2021/574 Zákon, ktorým sa mení a dopĺňa zákon č. 251/2012 Z. z. o energetike a o zmene a doplnení niektorých zákonov v znení neskorších predpisov a ktorým sa menia a dopĺňajú niektoré zákony, Slov-Lex, 2022. Available online at https://www.slov-lex.sk/legislativne-procesy/-/SK/LP/2021/574.

2.3.2. ANALYSIS OF THE PRIORITY AXIS 4 IN OPERATIONAL PROGRAMME QUALITY OF ENVIRONMENT

Operational programme Quality of Environment (hereinafter referred to as "OP QE") is a programming document of the Slovak Republic for drawing aid from the EU Structural Funds and the Cohesion Fund in the programming period 2014 - 2020 in the area of sustainable and efficient resource use ensuring environmental protection, active adaptation to climate change and promotion of an energy-efficient, low-carbon economy.

The OP QE Strategy, i.e., the selection of thematic objectives and respective investment priorities, as well as the definition of specific objectives, results and activity/intervention types, was set up to:

- Support fulfilment of the priorities defined in the document Europe 2020 - A strategy for smart, sustainable, and inclusive growth and to contribute towards the achievement of the National Reform Programme of the Slovak Republic's goals, as well as the requirements resulting from the EU legislation in the area of the energy sector and environment;
- Respect the needs and challenges at the national and regional levels, which must be responded to, and focus on addressing them with the aim of ensuring sustainable and efficient use of resources, including energy resources.

Thematic objectives in the OP QE are:

1. Sustainable use of natural resources through environmental infrastructure development;
2. Adaptation to the adverse effects of climate change with the focus on flood protection;
3. Promoting risk management, emergency management and resilience to emergencies affected by climate change;
4. Energy-efficient low-carbon economy in all sectors;
5. Technical assistance.

From these objectives, Slovak Innovation and Energy Agency (SIEA) is implementing the priority axis number 4 by fulfillment of the following:

- Promoting the production and distribution of energy derived from renewable sources (investment priority 4.1);
- Promoting energy efficiency and renewable energy use in enterprises (investment priority 4.2);
- Supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector (investment priority 4.3);
- Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation – relevant adaptation measures. (investment priority 4.4);
- Promoting the use of high-efficiency co-generation of heat and power based on useful heat demand (investment priority 4.5).

The primary focus of the action plan is to support a wider use of renewable energies in Slovakia. In the OP QE, the fourth investment priority is promoting low-carbon strategies for all types of territories, in particular urban areas, including the promotion of sustainable multimodal urban mobility and mitigation - relevant adaptation measures.

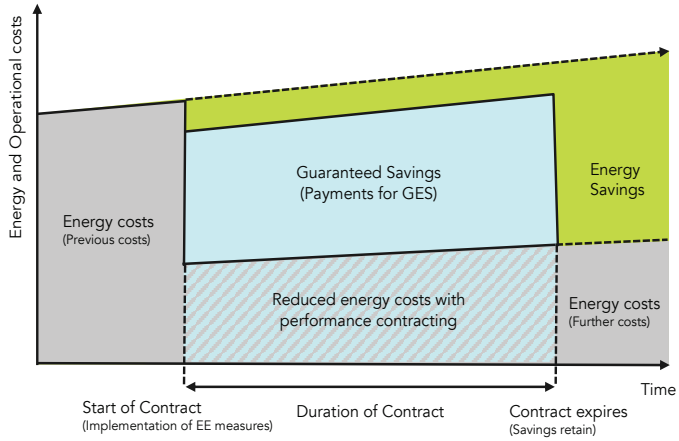
There were 3 separate calls published under the fourth investment priority:

FIRST CALL | The first one emphasized the support for the implementation of energy and environmental management systems, including energy audits and the EU Environmental Management and Audit Scheme (EMAS). Within the aforementioned main type of activity, the support is focused on following the agreed low-carbon strategies or their parts in order to improve and ensure the long-term quality of the energy management, including the energy audits. Only one project was approved under the call, namely the energy management of the city of Prešov – first stage.

SECOND CALL | Activities within the second call include the development of a low-carbon strategy, which includes an assessment of the state of supply of all available forms of energy, possible measures with an emphasis on energy efficiency, the use of RES with regard to environmental protection, especially in connection with greenhouse gas emissions and air pollutant emissions. A regional or local low-carbon strategy should be developed using the methodology of the Covenant of Mayors to the Sustainable Energy Development Action Plan for a period of at least 5 years. If there is a centralized heat supply system in the locality in question, an update of the municipal development concept in the field of thermal energy must be an integral part of the low-carbon strategy, considering the declining demand for usable heat and determining the procedure for subsequent optimal distribution and heat production.

THIRD CAL | The third call is developing energy services at the regional and local level. Activities emphasized in the third call are divided into two groups. The first one is developing special-purpose energy audits, prepared by a professionally qualified person for the purpose of identifying and proposing energy efficiency measures that can be implemented in the form of a guaranteed energy service (GES).

FIGURE 6. ENERGY PERFORMANCE CONTRACTING



Source: What is Energy Performance Contracting, Ministry of Finance of the Slovak Republic, available online at https://www.mfsr.sk/en/finance/public-private-partnership-ppp/energy-performance-contracts/.

Energy performance contracting (EPC) is a type of contract between an Energy Service Company (ESCO) and the recipient of this service, which may also be a public authority. ESCO are specialized companies, that are paid from achieved savings. The essence of the EPC is the provisioning of service in the form of guaranteed energy savings with respect to the current energy balance of property owned by the recipient, for which the ESCO is entitled to agreed compensation. The ESCO undertakes to take measures on the building (i.e., replacement of the boiler, windows, insulation) that will lead to a reduction in energy usage. The ESCO guarantees the amount of such savings. Instead of paying for energy, the recipient pays for guaranteed savings. The benefit for the recipient is lower spending on consumed energy.[14]

The second group of activities include the preparation of the GES project. The preparation of documents to utilize the GES is ensured by a professional independent consultant in cooperation with the GES beneficiary and other relevant entities, based on the results of the first group of activities and a written report from the energy audit. The goal of the second group of activities is to conclude an Energy Efficiency Contract for the public sector and its official publication for the duration of the project or a notice of the result of the public procurement.

[14] What is Energy Performance Contracting, Ministry of Finance of the Slovak Republic, available online at https://www.mfsr.sk/en/finance/public-private-partnership-ppp/energy-performance-contracts/.

TABLE 5. CALLS PUBLISHED WITHIN THE INVESTMENT PRIORITY 4.4.1

Specific call name	Declaration date	Call code	Number of projects
35th call to support the implementation of energy and environment management systems	27th of December 2017	OPKZP-PO4-SC441-2017-35	1
39th call to support low-carbon strategies for all types of territories	6th of April 2018	OPKZP-PO4-SC441-2018-39	74
53rd call for development of energy services at a regional and local level	2nd of August 2019	OPKZP-PO4-SC441-2019-53	125

Source: Archive of Calls within the OP QE, available online at https://www.op-kzp.sk/vyzvy/archiv-vyziev/.

74 municipal and regional low-carbon strategy projects were approved in the 39th call, related to the operational programme Quality of Environment. It is further analysed to point out the importance of how municipalities and regions are going to tackle climate change. SIEA announced the procurement of low-carbon strategies for villages, towns, cities, self-governing regions, districts and groups of selected municipalities of Slovakia on the 6th of April 2018.

A detailed analysis of completed strategies is presented in Annex 1.

OPPORTUNITIES FOR ENHANCEMENT

The sole development of low-carbon strategies is just a starting point for activities to reduce CO2 emissions. According to the comprehensive analysis of available strategies, relevant opportunities for enhancement have been identified:

IMPLEMENTATION PLAN | It is important to ensure that each strategy will be implemented within the stated timeline, therefore including measures such as the creation of an implementation plan, as well as setting up responsible executive subjects and/or working groups, as these were mentioned just in the few of the strategies.

UPDATE ANALYSIS OF CURRENT STATE ON THE UP-TO-DATE DATA | Many strategies included an analysis based on the data more than a ten years old or using an average for a period of a few years, while even data few years old not necessarily will reflect the current state, due to changes in population, behaviour and other trends (e.g., increased number of cars owned or installations of A/Cs). Therefore it is essential at the beginning of the period of strategy to assess the real state and adjust priorities and measures if needed. It is also important to be able to correctly evaluate changes achieved through measures of strategy.

DO NO SIGNIFICANT HARM | While the low-carbon strategies are for sure directed for the betterment of the life of the community, it is important to remember the principle of no-harm and ensure it.

Such measures can include ensuring that any changes in the energy system will not negatively affect certain categories of people; for example, a notion to make territory friendly for local pollinators can cause harm if it is misinterpreted as benefits just for honey bees and not native pollinators; adding urban greenery, with incorrectly chosen plants can lead to increase in resources needed to maintain them or damage to the local ecosystem; while some projects of buildings with a lot of greenery actually require a huge amount of water resources to maintain. To prevent that, policies and measures must be put in place to ensure that in the development of each project "no-harm principle" will be adhered to.

To ensure this, the Regulation 2020/852 (Taxonomy Regulation) has been approved, establishing a classification system (or taxonomy) which provides a common language to identify whether or not a given economic activity should be considered "environmentally sustainable".

In this context it is crucial that the municipalities creating or implementing their low-carbon strategies provide that no measure included in these strategies should lead to significant harm to environmental objectives within the meaning of Article 17 of the Taxonomy Regulation. Thus, it is necessary that an assessment of the low-carbon strategies is carried out, ensuring that each investment within the strategies complies with the 'do no significant harm' principle (DNSH).

DNSH ASSESSMENT IN EU FUNDING POLICY

Such an assessment is already in place in relation to the reforms and investments adopted within the Recovery and Resilience Facility (RRF); the Regulation establishing the Recovery and Resilience Facility (RRF) requires explixitly that each and every measure (i.e. each reform and each investment) within the plan complies as assessed against the 'do no significant harm' principle (DNSH). The RRF Regulation also states that the Commission should provide technical guidance on how DNSH should apply in the context of the RRF. This guidance aims to clarify the meaning of DNSH and how it should be applied in the context of the RRF, and how the EU Member States can demonstrate that their proposed measures in the RRP comply with DNSH.[1]

It is expected that such an assessment will be extended also to other funding policies and measures, including those that can be used to implement the local Low carbon strategies in Slovakia (e.g., European Structural and Investment Funds).

MUNICIPAL RENEWABLE ENERGY COMMUNITY | Another opportunity is to include municipal energy communities directly in the strategies. Establishing a municipal renewable energy community has been identified as an important accelerator of the process of new renewable energy sources creation. Legal bases for energy communities are already defined in European legislation and they will be gradually implemented in the legislation of other European countries.

The main focus of municipal energy communities is to **accelerate and facilitate the installation process of clean energy sources photovoltaics and smart volume measurements in the municipality (see the example of Prague in the text box)**.

ENERGY COMMUNITIES IN LOW-CARBON STRATEGIES

As part of the Climate Plan of Prague for 2030, Prage suggests the creation of a new entity, in the form of the Prague Renewable Energy Community (PREC).[1]

The existence and operation of the PREC should be based on the relevant provisions of European regulations (EU Directive No. 2018/2001). The founder should be the capital city in order to accelerate the installation of photovoltaics (PV) or other emission-free electricity sources, first on the property of the capital city of Prague and then on the real estate of other owners.

Main services provided by PREC:

- operation and production of green electricity on buildings and real estate of the city, or other persons;
- supply of green electricity to customers - members of the community;
- purchase of surplus green energy from consumption points of the city and other persons.

The city has to overcome economic and technical barriers that today prevent the emergence of green energy production and part of the activity will offer membership to potential members - citizens and organizations that have permanent residence in the city. The condition will be to supply or consume this green energy. To increase interest, the community can also offer a financial product in the form of special securities - green bonds tied to specific planned installations.

POWER PURCHASE AGREEMENTS | Power Purchase Agreements, also known as PPA contracts, represent a highly used instrument abroad that guarantees the contracting parties the long-term production and supply of a specified amount of energy, together with the price and origin. Through it, it is possible to fix the source of electricity and its price for several years.

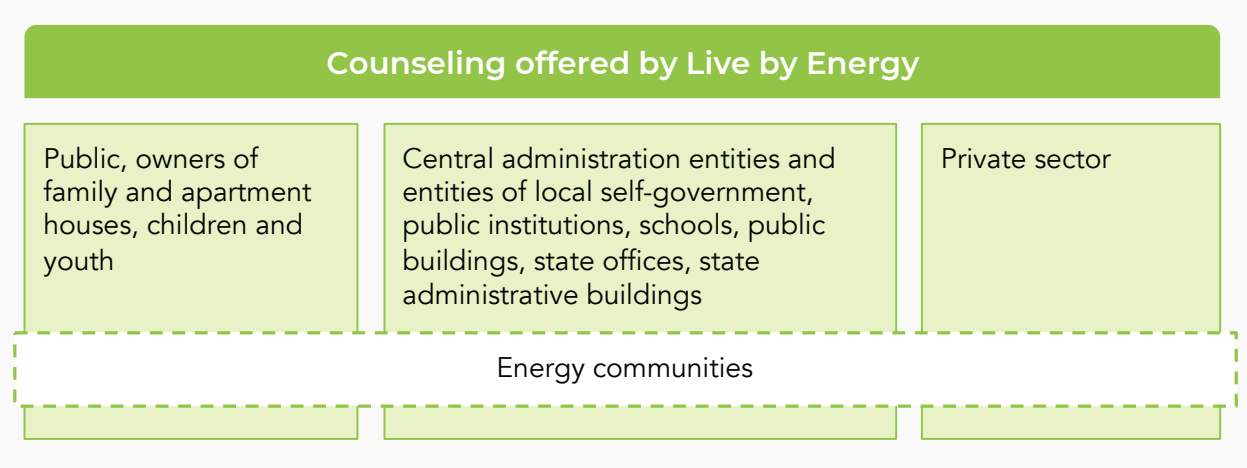
2.3.3. CURRENT POSSIBILITIES OF INCREASING THE USAGE OF RENEWABLE ENERGY

Two of the main projects performed by SIEA focused on the usage of renewable energy are Live by energy and Green to the households. These national programs focus on promoting renewable energy sources, together with increasing the public awareness of the efficient use of energy sources, providing consultation services and financial support for installation of small RES facilities, respectively.

LIVE BY ENERGY | The aim of the national project Live by energy (translation of Žiť energiou) is to increase public awareness of the efficient use of energy sources and promote renewable resources with a focus on the development of a low-carbon economy.

There are currently five counseling centers established in Bratislava, Trenčín, Banská Bystrica, Žilina and Košice. The main purpose of these centers is to provide free professional energy advisory services contributing to CO2 emissions reduction. Eventually, additional counseling centers should be opened in other regions of Slovakia as well.

FIGURE 7. VISUALIZATION OF THE FUTURE



Source: Bezplatné poradenstvo Žiť energiou, SIEA, 2022. Available via the link: https://www.siea.sk/bezplatne-poradenstvo/.

Scope of these counseling centers include:

- providing information for all of the stakeholders,
- create publications, information brochures, aids, information videos and thematic shows,
- providing individual counseling,
- organize seminars, conferences and excursions,
- prepare activities for children and schools,
- create analyses, surveys and strategies,
- prepare publicly available studies and analyses related to energy efficiency and renewable sources.

Live by energy also provided information regarding the possibilities to finance the installation of RES facilities. There are several forms available, from guaranteed energy services and energy performance contracting described within the OP QE analysis above, crowdfunding, EU and SK grants, EU and SK financial instruments and private investments. One of the current possibilities is presented by a national project Green to the households (translation of Zelená domácnostiam), which is providing support in the form of a voucher for installation of small RES facilities.

GREEN TO THE HOUSEHOLDS | National projects are funded by the aforementioned OP QE, which is managed by the Slovak Ministry of the Environment. The financial contribution for the installation of equipment for the use of RES in households is provided from the funds of the European Regional Development Fund (ERDF) and the state budget of Slovakia. In the first phase, a budget of 45 million EUR was available in the pilot project by the end of 2018 with additional 48 million EUR available in the second phase, during a period from 2019 to 2023.

The household chooses a suitable device from the list of available devices that have met the technical conditions and a contractor who ensures, together with the delivery of the device, its installation.

The list of supported devices:

- small electricity generation plants up to 10 kW:
- photovoltaic panels,
- wind turbines (it is not yet possible to obtain support for these devices),
- heat production installations that cover the energy needs of a family or apartment building:
- solar collectors,
- biomass boilers,
- heat pumps.

2.3.4. FUTURE POSSIBILITIES FOR INCREASING THE USAGE OF RENEWABLE ENERGY BY ENERGY COMMUNITIES

Slovak Recovery and Resilience plan includes several measures to support the uptake of RES within the Component 1. It includes investments in supporting the construction of new RES capacities and the modernisation of existing RES electricity installations totalling 220MW of installed capacity, which should contribute to reducing the carbon intensity and support the EU's target of a 32% share of RES in final energy consumption by 2030. New jobs should be created by integrating RES in the production sector at local level (e.g. RES energy communities). Investments will be directed towards storage and hydrogen in order to increase the flexibility of the grid. The investments will be underpinned by reforms facilitating access to the grid for new entrants and clean energy sources, putting in place a long-term auctioning scheme, and integrating the 'energy efficiency first' principle into the planning of investment.[15]

The Ministry of Investment, Regional Development and Informatization of the Slovak Republic (MIRRI), as the manager of European funds, is preparing an investment plan for Slovakia for the years 2021 - 2027. These are the Partnership Agreement and the Operational Program Slovakia. These strategic documents will determine how Slovakia will invest EUR 12.6 billion from European resources over the next decade and the related EUR 3.5 billion in mandatory national co-financing (a total of EUR 16.3 billion). Program Slovakia covers 5 policy objectives, which are then divided into specific objectives and measures. The second policy objective, focused on decarbonisation, circular economy, energy efficiency and environment, is further divided into eight specific objectives. Within the second specific objective, beneficiaries of two measures include renewable energy communities.

Under specific objective 2.2. Promotion of energy from renewable sources in accordance with Directive (EU) 2018/2001, including the sustainability criteria set out therein, measure 2.2.1. is "Support for the use of RES in companies based on active electricity consumers, self-consumers of energy from RES and communities producing energy from RES". For this measure, related action types:

- installation of equipment using RES, especially for own use (local, decentralized sources), including facilities for electricity storage; in the case of support for biomass energy production, compliance with sustainability criteria and environmentally responsible approaches will be ensured;

[15] Analysis of the recovery and resilience plan of Slovakia, European Commission, 2021. Available via the linkt https://ec.europa.eu/info/system/files/com-2021-339_swd_en_0.pdf.

- pilot project "Green Enterprise" for the provision of vouchers for the installation of small facilities for the use of RES in SMEs - support for decentralized production of energy from RES in combination with the design of energy efficiency measures through energy audits for SMEs, including the provision of energy audits for SMEs.

Under the specific objective 2.3., measure 2.3.1, which is "Promoting intelligent energy systems, including energy storage", has the following related action types stated:

- promoting intelligent energy systems and energy storage for the efficient use of grid-connected resources and storage facilities, creating opportunities for the active involvement of end-users in the process of optimizing and reducing their energy requirements and costs, as well as improving energy efficiency and energy losses;
- the support will also include measures for system optimization, implementation of measurement systems and cyber security, etc.

Program Slovakia uses the definition of "community which produces energy from renewable sources" within the meaning of the aforementioned REDII.

CHAPTER #3

Good practices

3. GOOD PRACTICES

WHAT IS SHREC

Project Shifting towards Renewable Energy for Transition to Low Carbon Energy (SHREC) is a part of Interreg Europe – cooperation programme, co-funded by the European Union to support cooperation across borders through project funding and tackle common challenges and find shared solutions. SHREC was created to address the evident urgent need for transition to sustainable, clean energy and reduction of CO2 footprint. Its aim was to support the transition to a low-carbon economy with a focus on renewable sources of energy and facilitate investment in low-carbon measures to reduce CO2 activities by businesses and households. Partners worked on encouraging technical development in the sector of renewable energy production, and the involvement of energy customers – from businesses and government authorities and households and communities – in energy production. Awareness raising among households, businesses and public actors on the necessity and opportunities of renewable, low carbon energy was another major goal. The project was conducted by 8 partners from different EU Member States: Netherlands, Lithuania, Spain, France, Romania, Italy, Sweden, and Slovakia. The project took place from August 2021 and will end on the 31st of July 2023.

Within the project, several learning events were conducted, and over a hundred people increased their professional capabilities. Another major output is 18 projects identified as good practices.

OUTLINE OF SHREC GOOD PRACTICES

According to the Interreg Europe programme manual, a good practice is defined as "an initiative (e.g. project, project, process, technique) undertaken in one of the programme's priority axes which has proved to be successful in a region and which is of potential interest to other regions. Proved successful means that the good practice has already provided tangible and measurable results in achieving a specific objective." Since Interreg Europe is dedicated to regional development policy improvements, a good practice is usually related to public intervention. A private initiative may be considered a good practice only if there is evidence that this initiative has inspired public policies.

In the Figure 8 that follows, we state all SHREC Good Practices and their relevance for the Action plan, which are those that include topics and activities identified as relevant to SIEA and the Action plan itself, such as energy communities, prosumerism and awareness raising.

FIGURE 8. SHREC GOOD PRACTICES

State support for the solar power plant in the solar park in 2022

Budget: EUR 1,650,000 (planned to allocate)

Lithuania

RES: solar
Project type: Funding of Installation of renewable energy sources

Initiator: The Ministry of The Economy and Innovation
Stakeholders: Ministry of Finance (coordinator); Industrial enterprises, especially SME (receivers of funding)
Funding: EU Investment Action Programme

Relevance: Purely funding projects are of no interest to SIEA

Integrated District Heating System in Torino

Budget: EUR 500-800 per meter of heating pipe-line

Italy

RES: solar, wind
Project type: District heating, with central generation points

Stakeholders: Citizens; Municipalities; Local authorities; Energy network solution suppliers; Renovation solution suppliers; FSU (Finanziaria Sviluppo Utilities) – controlled by municipalites
Funding: FSU

Relevance: Construction project is out of the scope of SIEA activities

Groningen Seaports

Netherlands

RES: solar, wind, hydrogen
Project type: Renewable energy production for consumption by the industry in the ports

Stakeholders: Industries (fuel intensive); Local authorities; Municipalities
Funding: Groningen Seaports

Relevance: Power plant for industries are not relevant for SIEA

KTP – Knowledge Transfer Partnership, energy pilot in Jämtland county

Turnover: 30 MSEK (~ about EUR 28,5 millions)

Sweden

Project type: Energy efficiency projects in SME in collaboration with newly graduates (national project)

Stakeholders: SMEs; Graduates; Universities; academic coaches; business coaches
Funding: ERDF, companies-participants, region of Jämtland

Relevance: Is not relevant for SIEA as it does not cover themes of household, communities or renewable energy production

"DRIVE " - by Dr Nicklas Blomqvist

Budget: 30.2 MSEK (~ about EUR 28,7 millions)

Sweden

Project type: R&D collaboration between university

Stakeholders: Companies; University; Researchers, scientists; Municipalities; Local authorities
Funding: ERUF, University (MIUN), Companies, Region Västernorrland, Municipalities

Relevance: R&D activities are not relevant for SIEA

Financing schemes (ERDF) in Piemonte region for the transition to a low-carbon economy in all sectors

Budget: EUR 173,000,000

Italy

Project type: Reduce energy consumption in public buildings through funding interventions

Initiator: Piedmont region
Stakeholders: Enterprises; Local authorities; Municipalities
Funding : ERDF funds (non-refundable funds (20%) and partly as subsidized credit (80%))

Relevance: Purely funding projects on energy efficiency not covering private households are not relevant for SIEA

Energy Performance Contracts in Piemonte (EPC)

Budget: EUR 10,000,000

Italy

Project type: Mobilizing private investments in the energy efficiency of buildings

Initiator: Piedmont region
Stakeholders: Citizens; Municipalities; Local authorities
Funding: EPC, grants

Relevance: Purely funding projects on energy efficiency not covering private households are not relevant for SIEA

Biomethane from municipal organic waste

Budget: EUR 2,000,000

Italy

RES: biofuel
Project type: Production of biofuel from waste management plant

Stakeholders: ACEA - public multi-utility company; HYSYTECH and Acea Pinerolese Industriale
Funding: ACEA - public multi-utility company

Relevance: not relevant to SIEA activities

Energie VanOns

Budget: EUR 400,000 (starting capital)

Netherlands

Project type: Licensed energy supply company that buys and sells the locally produced energy cooperatives

Stakeholders: Energy communities, Citizens

Relevance: not relevant to SIEA activities

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/

3.1. RECURRING THEMES

SHREC Good practices were analyzed with focus on topics identified as relevant by SIEA. Among all good practices we identified some major repeating themes. The themes are mentioned in the order of number of how frequently they are mentioned.

ENERGY PRODUCTION AND DISTRIBUTION | Out of all good practices, 10 projects are directly related to energy and heat production or distribution – these can be found in Figure 8, marked with the appropriate icon. *Energie VanOns* is the only project focused on green energy distribution and is associated with another project – Grunneger Power. In *Financing schemes (ERDF) in Piemonte Region for the transition to a low-carbon economy in all sectors* project, energy production is not the focus, but RES plants were one of the measures funded. *Biomethane from municipal organic waste* is project for production of biomethane on waste management plant.

ENERGY COMMUNITIES AND MUNICIPALITY INVOLVEMENT | As expected energy communities were very much present in identified good practices. At least 6 projects can be classified as energy communities – these can be found in Figure 8, marked with the appropriate icon.

The involvement of municipalities in energy community projects is one of the trends noticed. In *Photovoltaic and thermal power plant of the Préau des Colibris in Voiron* the company Buxia Energies which was created by citizens from the idea of producing renewable electricity locally which was born within the Agenda 21 committee of the municipality of La Buisse. The municipality of La Buisse also supported Buxia Energies by the provision of roofs to equip for the initial projects.

For the *Firewood district heating community network in Lucinges* project, the municipality of Lucinges, which is part of the agglomeration with the aim to reduce GHG emissions by 75% per inhabitant by 2050, decided to replace old boilers with a firewood heating network to supply local community. The municipality delegated the production, distribution, and sale, but set an objective, that at least 40% of the project would be funded by local funds. Besides being shareholders, citizens were also involved in governance.

The model used in Lucinges was adapted by Sassenage municipality to their need to establish two wood-heating networks to supply communal buildings with renewable heat. The municipality of Sassenega decided to involve the local community in the financing and governance of the project.

The Commune of Mazet-Saint-Voy, which has a public service delegation contract with ERE43, was interested in supplying renewable heat and involvement of the local community. Five boiler rooms were installed, the fourth being partially financed by funds of citizens. Énergie Partagée was involved to raise funds from citizens.

ÉNERGIE PARTAGÉE

Énergie Partagée was involved in fundraising from citizens and governance in Lucinges, Sassenage and Mazet-Saint-Voy projects. Énergie Partagée is a French movement to promote, support and finances renewable energy production projects whose financing and governance are controlled by local authorities and citizen collectives.

Grunneger Power is another example of an energy community, however, this one was initiated by a few proactive citizens. They work in collaboration with the municipality, which provided a loan and land for rent. Additionally, the project was financed through crowdfunding and a loan from a bank. Grunneger Power develops various energy and sustainability-related projects with the main focus on solar energy and heat production with the involvement of the local community.

BioVill project was conducted within Horizon 2020 programme. It aimed to develop the bioenergy sector by, essentially building capacity for possible stakeholders within villages. The project developed 5 bio villages for the investment stage. These villages were selected based on the availability of biofuel resources, infrastructure, but also motivation of municipalities and local authorities. These bio villages should essentially become energy communities with bioenergy district heating systems, created by a collaboration

of the municipality, citizens, and other stakeholders. This project also involved the knowledge transfer stage, which included a compilation of case studies and training of stakeholders. Municipalities were involved in knowledge sharing, in establishing permanent dialogue between local, regional, and national authorities; the project was presented and communicated during municipality meetings and other official events. Mayors, and other officials and decision makers demonstrated interest, support, and involvement in the project.

ENERGY EFFICIENCY | Out of four projects related to energy efficiency two were related only to energy efficiency in buildings, one covered both building and processes of enterprises and one was related to energy efficiency projects for SMEs in areas of products or services, new customers or markets, and processes or personnel. Energy Efficiency projects include:

- *The nZEB RoadShow* aim was to share knowledge on energy efficiency and energy production for building with the construction sector's target audience;
- *Grunneger Power* provides education services for more energy-efficient usage, better insulation and rent out thermal imagers to identify heat leakage in homes;
- The *Financing schemes (ERDF) in Piemonte Region* project provided funding to public entities and companies in defined sectors for the implementation of measures for increasing the energy efficiency of the building which included: high-efficiency cogeneration plants, measures to increase the energy efficiency of production processes and buildings, the replacement of low-efficiency systems and components with more efficient ones, installation of new high-efficiency production lines; installation of plants for the renewable energy production;
- *KTP – Knowledge Transfer Partnership, energy pilot in Jämtland county* project focused on improving the energy efficiency of Small and Medium Enterprises (SME) by engaging newly graduates in developing measures for them.

AWARENESS RAISING AND KNOWLEDGE SHARING | Within good practices, two projects were focused on awareness and knowledge sharing, *The nZEB RoadShow* and *Fotovoltaikoak Etxean: FV Etxean*, within which a checklist for producing energy for households was prepared and sent to every mail address within the region.

Additionally, *Bioenergy Villages (BioVill)* project included actions towards raising public acceptance and awareness of sustainable bioenergy production and its commercial opportunities. And another project with awareness raising activities is *Grunneger Power*, which conducts educational events and consultations related to energy production, energy efficiency and other topics related to sustainability. They provide service of free consultations from district energy coach and have walk-in consultation days, presentation of subsidy possibilities, host events from "sustainable house day" to "sustainable cooking", prepared Roadmap of Neighbourhood Heat and the underlying Advisory Report and have a lot of useful information on how to start with making home energy efficient and produce RES. Grunneger Power collaborated with Hanze University of Applied Sciences, the University of Groningen and TNO for creation of some of these tools.

R&D | Research and Development activities are not very present in the good practices with only one directly related. *DRIVE* - by Dr Nicklas Blomqvist - is the project in which researchers and universities collaborate with companies in developing new technologies related to renewable energy production, energy efficiency, etc.

3.2. INSPIRATION FOR ACTION PLAN

While all relevant good practices, were taken into account while designing Action Plan, three projects were chosen as the main inspiration:

- **GRUNNEGER POWER |** The project is comprehensive example of energy community demonstrating that such project initiated by proactive community can be a huge success; as well as awareness raising activities conducted for local community.
- **FIREWOOD DISTRICT HEATING COMMUNITY NETWORK IN LUCINGES |** This project is an example of one of French projects, demonstrating importance of involvement of municipalities and that initiative can come from their side. The project was created as municipality wanted to achieve their goals, being part of agglomeration with the aim to reduce GHG emissions per inhabitant by 75% by 2050. It is also an example of involvement of entity assisting in implementation for energy community and involvement of citizens – Énergie Partagée. The project is also example was an inspiration for replication in Sassanage.
- **NZEB ROADSHOW |** The project is a great example of successful awareness raising activity in relevant area, which is engaging and demonstrates feasibility and practicality of the themes raised for citizens.

Description of these projects can be found in boxes below. All relevant to SIEA good practices, including three above mentioned and other good practices, which are identified as relevant, but not directly inspired the Action plan are described in the Annex 2. Based on the analysis of three SHREC Good Practices that inspired the Action Plan (confirmed by analysis of all other projects), we identified the following lessons learned that are reflected in the Action Plan.

1. **Establishment of energy communities was initiated either by citizens or municipalities**, and therefore these are two target groups that need to be targeted in awareness raising activities related to energy communities.

Among identified good practices, the establishment of an energy community was initiated either by citizens as in "Grunneger Power" (as well as "Photovoltaic and thermal power plant of the Préau des Colibris in Voiron" project) or by the municipality as in "Firewood district heating community network in Lucinges". However, it can be assumed that the process can also be initiated by a company which will act as a stakeholder and main point of governance, similar to how it was done in Lucinges. If the municipality is the initiator, their involvement can be of different levels, from contracting the whole project to initiating an idea in a strategic session and finding an interested group of citizens who are interested in undertaking the project. The involvement of the local community in renewable energy projects is not necessarily done by municipalities themselves but can be outsourced to a contractor, as was done in the *Firewood district heating community network in Lucinges*. Additionally, the municipality can support the implementation of an energy community, by providing funding, land for rent or place for installation, as with Grunneger Power. Both citizens and municipalities should be considered target groups in awareness raising activities and should be educated on opportunities and possible ways of involvement.

2. **Local success cases of energy communities encourage replication**.

French projects are a great example of replication. From the Lucinges project, which was replicated in Sassanage, it can be assumed that successfully implemented local projects, which exist within one country and share enough similarities to be relevant, can promote other communities and municipalities to repeat the success. A similar situation can be seen with the project in Voiron, as Buxia Energies states on their website several similar projects in neighboring territories. The importance of the local success is demonstrated also by the *Grunneger Power* project, which promoted prosumerism and energy

communities not just by educational events but also by example, demonstrating success of such endower and increasing willingness to invest, as well as social acceptance of the changes.

3. The process of creating energy community, or even becoming prosumer can be daunting, therefore it is advantageous to have **an entity which can consult, assist or undertake some of the activities related to energy communities would encourage such projects,** as well as some instructional materials.

It cannot be denied that success of *Firewood district heating community network in Lucinges* (as well as other French projects) is at least partially due to the existence of Énergie Partagée – an entity that is knowledgeable and assists and supports such projects and can provide services such as engagement of local communities, their education or even funding instruments.

Success of *Grunneger Power* expansion is at least partially due to the consultations they provide. The popularity of *nZEB Roadshow* demonstrates that people are engaged with the topics of saving/producing energy in households and interested in information on practical environmental solutions. The practical demonstration is an engaging way to learn about this topic, which in a way, also acts as a promotional activity raising awareness on the topic and existing solutions.

Additionally, the benefits of assistance, including in the form of instructional materials are confirmed through other good practices: the instructional videos developed as part of BioVill on how to start bio-villages, manual developed as part of *FV Etxean* on installation of solar panels for households, which was later replicated.

4. **Municipalities which are part of the programme with clear objectives are encouraged to produce projects**, which can be applied to energy communities.

Being part of some programme or initiative with clear goals and objectives, municipalities seem to be more inclined to produce projects, which can be assumed from project in Lucinges being part of Annemasse-les-Voirons agglomeration whose aim is to reduce GHG emissions by 75% per inhabitant by 2050. The conclusion is only further validated by the project in city of La Buisse, which was part of Agenda 21.

5. Even not being initiators of the energy communities, **stakeholders can assist in the establishment of energy communities and promoting prosumerism**.

Even not being initiators or entities establishing projects, municipalities, and companies, as well as other enterprises, such as governmental organizations and NGOs, can provide support to the establishment of energy communities and energy prosumerism:

- Provide funding and grants (e.g. Grunneger Power);
- Provide land for rent (e.g. Grunneger Power) or other incentives;
- Assist with permits or simplifying regulations;
- Conduct consultations, and education activities (e.g. SIEA, The nZEB RoadShow, Grunneger Power);
- Provide services to citizens' engagement and collections of citizens funds for projects (e.g. project in Lucinges);
- Provide tools and toolboxes, as well as other services, for the installation of the energy production systems (e.g. Grunneger Power);
- Provide services of buying/selling/distribution of energy services;
- Provide a platform to invest, and participate in existing projects of renewable energy production (e.g. Grunneger Power).

Grunneger Power

Location: Netherlands

RES: solar

SCAN OR CLICK TO SEE MORE

Grunneger Power is a cooperative established by few proactive citizens, which, by making use of crowdfunding, financial loans of the bank and strategic marketing techniques, establishes various energy and sustainability-related projects with the main focus on solar energy and heat production with the involvement of the local community. Some of the established programmes:

- Members can install solar panels on their roof and join energy distribution through VanOns (a company established for distribution, buying and selling green energy produced by communities – another good practice identified). However, even if a person does not have a roof to produce energy, Grunneger Power has programmes of the shared roof and solar power plant which is managed by the community and people can invest in.
- Grunneger Power also provides an option to switch to a heat network, as it is more sustainable than gas, and also educates on insolation in the home, even providing a heat scanner to detect heat leakages in the house.
- They also inform (non) members actively on isolation, renewable energy production and energy efficiency.

The involvement of citizens (members and non-members) lead to a high rate of social acceptance of the renewable energy projects they are developing.

Firewood district heating community network in Lucinges

Location: France

RES: firewood

SCAN OR CLICK TO SEE MORE

The municipality of Lucinges, decided to install a **firewood district heating network** allowing to supply a number of housing buildings and 2 businesses with **renewable heat and to replace the aging oil-fired boilers**. They delegated the production, distribution and sale of heating for 20 years; and requested the project to be financed with at least 40% of local funds but is also shareholder of ForestEner at 4% of the capital.

ForestEner was selected for the design, implementation, financing and operation of the project.

Citizen funds were raised by Énergie Partagée (founding member and shareholder of ForestEner).

Besides being shareholders, citizens can get involved in the governance of the project via Énergie Partagée and can send a representative to the general assemblies of ForestEner. The inhabitants are also involved in the operation of the boilers, managing the ashes (which are even used to make artisanal soap), and thus allowing to decrease the operating cost of the wood boilers on the long run.

Wood used to run the boiler room comes from a short circuit (less than 30 km).

The nZEB RoadShow

Location: Romania Croatia, Greece, Italy, Bulgaria

RES: other

nZEB Roadshow
Bulgaria | Croatia | Romania | Greece | Italy

SCAN OR CLICK TO SEE MORE

The nZEB (nearly-zero-energy buildings) weeks consist of a multitude of events:

- construction products and real estate fairs
- practical demonstrations and real-time nZEB construction
- training courses for designers and construction workers
- and others

The BKHs (Building Knowledge HUBs) – in form of prefabricated modular mobile buildings, will serve as information and demonstration centres for raising awareness of the benefits and specificities of nZEB.

With attention to exterior and interior design, the centres will offer real-life experience of quality nZEB and will be equipped with all necessary technologies to provide full information of the processes with relevance to the building's performance in terms of comfort, internal air quality parameters, and energy consumption.

Professional marketing and sales services and strong media partnerships will be added by the roadshow to nZEB promotion efforts.

CHAPTER #4

Details of the Actions envisaged

4. DETAILS OF THE ACTIONS ENVISAGED

4.1. ACTIONS RELATED TO POLICY INSTRUMENT ADDRESSED

Based on the opportunities for enhancement identified in the **ANALYSIS OF THE PRIORITY AXIS 4 IN OPERATIONAL PROGRAMME QUALITY OF ENVIRONMENT** (Chapter 2.3.2.), following Action is recommended for implementation.

ACTION 1: RECOMMENDATIONS FOR THE OP QUALITY OF ENVIRONMENT 2014-2020
Relevance to the project
The global objective of the OP Quality of Environment as main policy instrument in Slovakia is to support sustainable and efficient resource use ensuring environmental protection, active adaptation to climate change and promotion of an energy efficient, low-carbon economy. Furthermore, national or regional OPs oriented on low carbon economy measures are subjects of investigation by all involved project partners. In this context synergies can be found as the overall objective of the project is to improve regional and national policies increasing the share of energy from renewable sources in the overall energy mix and encouraging and facilitating the production and use of renewables by businesses, communities and households aiming at less carbon intensive energy future. This purpose can be achieved in accordance with the objectives of the OP Quality of Environment.
Nature of the action
The emphasis on the proper application of information and communication measures is based on the principle that citizens have a right to know how EU funds are invested and how investing these funds helps to meet the EU's strategic objectives. Slovakia as EU member state Slovakia has committed to adopting these rules. Lessons learnt from the implementation of the three calls for proposals published within the investment priority 4.4 shows us that there was quite a significant interest of beneficiaries to implement low carbon strategies in particular oriented on planned reduction of energy consumption and energy use from renewable energy sources. However, we see that there is still room for improvement. A positive change may occur if, according to the recommendations of the Action Plan mentioned below, the MA/IB for the OP will reflect and try to apply them till the end of the implementation of the programming period 2014-2020. In this context the Action plan proposes following recommendations for the OP Quality of Environment:I • **Put more emphasis on rising awareness of energy communities** – establishing a municipal renewable energy community has been identified as an important accelerator of the process of new renewable energy sources creation and therefore we strongly recommend to add the activities concerning establishment of energy communities (municipal energy communities) directly in the low carbon strategies in to eligible activities as it is currently missing in the OP. • **Do quality check of the existing low carbon strategies within the projects** - MA/IB should strongly check if the strategies are in line with existing low carbon regulation and directive at the national and the EU level. If they do not comply, the project beneficiary should be invited to revise the strategy. • **Update low carbon strategies with actual data** – many strategies approved within investment priority 4.4 included an analysis based on the old data. As nowadays

	technologies are advancing at a rapid pace, which means that data are also changing faster than in the past, it is necessary to focus on providing up-to-date data. The MA/IB should communicate this fact to the beneficiary at the beginning of the project implementation or for the projects that are already in progress, this additional condition can be given to beneficiaries by the MA/IB in the ERDF contract. • **Strongly respect the "do not no significant harm policy" in the implementing projects** – following this principle should secure that any changes in energy system will not negatively affect certain category of people or decrease their benefits. In this context it is crucial that the municipalities creating or implementing their low-carbon strategies provide that no measure included in these strategies should lead to significant harm to environmental objectives within the meaning of Article 17 of the Taxonomy Regulation. This measure should be implemented while performing quality control of the monitoring reports submitted by beneficiaries. In this context the questionnaire on compliance with the above mentioned principle (see Annex 4) can be used by the project partner. • **Introduction of an implementation/action plan into low carbon strategies** - as it is important to ensure that each strategy will be implemented within the proposed timeline, measures such as the introduction of an implementation/action plan, as well as setting up responsible executive subjects and/or working groups would be recommended.
	Stakeholders involved
	N/A
	Timeframe
	Until the end of OP implementation – end of programming period 2014-2020.
	Costs
	No additional costs needed.
	Funding sources
	No funding source needed.
	Outputs included in the Annexes to be used within the implementation of the Action
	• ANNEX 4: EXAMPLE OF QUESTIONNAIRE ON COMPLIANCE WITH THE PRINCIPLE OF DO NO SIGNIFICANT HARM TO THE ENVIRONMENT

4.2. ACTIONS RELATED TO IDENTIFIED GOOD PRACTICES

METHODOLOGY

The main purpose of the activities defined in the Action Plan is to create a comprehensive structure to support widespread public and stakeholder engagement on climate change and at the same time empower citizens to adopt more sustainable behaviours.

In adopting this approach, the Action Plan activities will have a strong focus on measures that lead to public, local and regional involvement in delivering actions which enable change of thinking. Such approach will support those people who are already active in renewable energy, empower those citizens who are not engaged to get involved in this area and at the same time support those who are likely to be most affected by climate change. In this context, three areas of support have been appropriately selected, in which great potential for developing meaningful activities has been recognised. The actions/activities described below will be delivered through a systematic process that will run until the end of project implementation (July 2023).

This approach will provide following benefits:

- **ensuring that activities are linked, and the impacts of these activities are easily measured as outcomes.**
- **enabling that the experience gained from the evaluation of actions carried out based on this Action Plan will provide positive impact for SIEA activities/projects co-funded by other EU financial instruments, e.g. Recovery and Resilience Plan and the Program Slovakia (programming period 2021-2027).**

AREAS OF ACTIONS | As described above and in order to achieve the objectives of the Action Plan three different areas of actions/activities have been chosen.

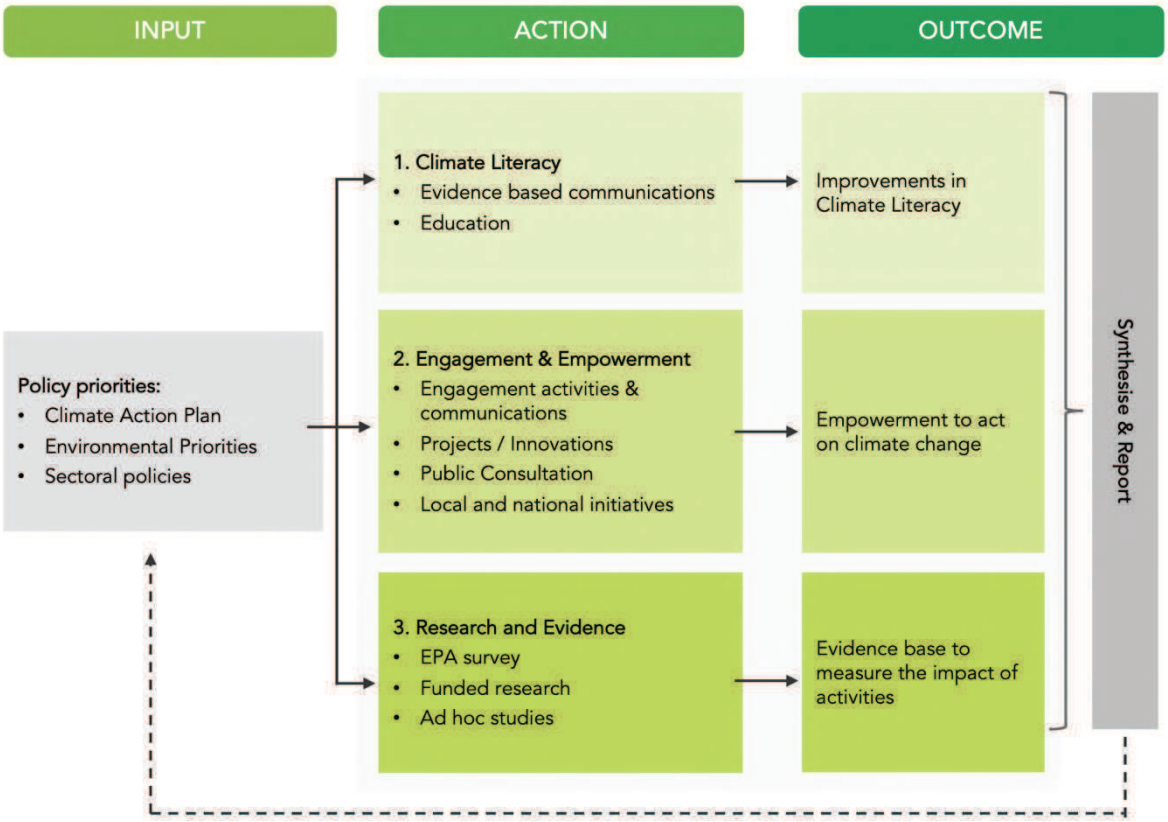
a) Climate literacy (communication and education);
b) Engagement and empowerment;
c) Research and evidence.

TARGET GROUPS | The target groups have been defined as follows:

- Public sector;
- Regional and local level – Association of cities and municipalities of Slovakia, self-governing regions, cities, municipalities;
- Households and citizens;
- Private sector – companies and non - governmental organizations (NGOs, e.g. Friends of Earth - CEPA).

MAIN AIM | The main aim of the actions described below is to encourage and support the establishment of local energy communities. According to the EC definition "Energy communities organize collective and citizen-driven energy actions that help pave the way for a clean energy transition, while moving citizens to the fore. They contribute to increasing public acceptance of renewable energy projects and make it easier to attract private investments in the clean energy transition". This means in other words that they have the potential to provide direct benefits to citizens by increasing energy efficiency, lowering their electricity bills and creating local job opportunities.

FIGURE 9. STRUCTURE OF ACTIONS



KEY POINTS | The Action Plan strongly recalls that actions/activities mentioned below are conceived in close cooperation with the outcomes of the "Live by energy" project, which is also implemented SIEA. In this context great potential for implementing the activities of the Action Plan in close cooperation with 5 consultation centres across Slovakia has been recognized e.g. while performing social media work, organizing events/workshops or roadshow. Specifically, while implementing the communication activities following key points should be considered which form also the structure of the different actions:

- Drawing inspiration from the good practices analysed;
- Setting relevance to the SHREC project – specifically described in each action including definition of the target groups;
- Nature of the action - describing the promotion and dissemination of the action including stakeholders involved – collaboration with potential stakeholders;
- Time frame of the activity – regular, one – off activity, etc.;
- Cost – estimation of costs related to implementation of the action;
- Funding source – how the action will be financed/out of which policy instrument;
- Measuring the impact and effectiveness of communication activities - defining effective KPIs (key performance indicators) is hugely important element of every communication strategy and should be a process to enable improvements or adjustments to be made during all stages of a communications campaign. Measuring the impact of communications activities is essential to maximize the campaign's effectiveness. Results of the KPIs can generate lessons learnt for future campaigns. Specific KPIs are described and targeted in Chapter 5 of the Action Plan.

A) CLIMATE LITERACY

COMMUNICATION | One of the most important activities in communication the climate and energy outcomes is the climate and environmental literacy. Moreover, as climate science progresses and as efforts to educate the people about climate's influence on them and their influence on the climate system mature, public understanding of the issue will definitely continue to grow. A lack of accurate information of citizens in renewables may increase public resistance and thus constitute a barrier to efficient, effective and rapid renewable energy deployment. In relation to above mentioned the SHREC project partners work together aiming at encouraging citizens and households in playing active role as energy consumers. At the same time the partners seek to increase the awareness among households, business and public actors of the their need and opportunities to use renewable energy as the low-carbon alternative energy. To achieve this goal he project partners seek the possibilities to communicate all accessible, fact-based literacy and media work that are needed in order to increase support for policy environment.

EDUCATION | In order to provide awareness and knowledge related to renewable energy, the role of education institutions is considered crucial even though it faces challenges. Specifically, the objectives of renewable energy from the educational perspective are to:

- create awareness among the households, citizens, cities and municipalities,
- identify renewable and non-renewable sources of energy,
- enhance motivation for people to use the renewable energy sources,
- create sustainable values.

As from the perspective of public it is utmost important to have a deeper global awareness of renewable energy, the educators are expected to have prior knowledge of new information and methods. Therefore, their knowledge, awareness and understanding of government policies which support and implement renewable energy are considered essential in determining public understanding of renewable energy. In creating public perceptions, awareness and knowledge of the concept of renewable energy, the role of teachers (experts) is considered to be an effective and pertinent catalyst. The experts on renewable energy are seen as essential for disseminating knowledge and teaching citizens about the concept, values and benefits of renewable energy for society and the environment. The SHREC projects partners seek to educate the defined target groups so that they positively transform their behavior concerning energy efficiency. Especially at the time of the long lasting war in Ukraine it makes us confident to understand the importance of education which includes how alternative energy sources can be used in response to dramatically rising prices at the energy market.

As the areas described above have been linked very closely and synergies can be found in both areas the Action plan foresees following action to combine the dissemination of communication and educational activities:

ACTION 2: PUBLIC RELATIONS AND EDUCATIONAL WORK WITH LOCAL COMMUNITIES

Relevance to the project - Link to the SHREC good practices

Each project partner has created accounts on social networks, which forms the main platform for communication with the public about the activities and the project results. At the same time education is one of the most important instruments for ensuring publicity and awareness about renewable energy sources. This activity is almost relevant as the SHREC project will tackle issues how to influence the renewable energy production and increase the awareness among households, public and local actors.

Energy communities were broadly identified as good practice within different SHREC project partners. One of the best practices is the GRUNNEGER POWER project which demonstrates that projects initiated by proactive community can be a huge success as well as optimal tool for raising awareness within a local communities in different countries. Secondly, a French project Firewood district heating community network in Lucinges builds an example of success while demonstrating importance of involvement of municipalities. It is also an example of involvement of entity assisting in implementation for energy community and involvement of citizens - Énergie Partagée.

Nature of the action

Although renewable energy is popular, most people aren't energy experts. These supporters may not be sure which energy options are best for them, which makes energy-related decisions complicated and overwhelming. Due to this fact the social media and other PR materials are an excellent place for people to learn about renewable energy. Especially through the social media the project partner can share news, articles, post educational resources, provide tips, and answer questions. Through this source of information the users will be educated about their energy choices and potentially give them the information they need to become customers. The PR materials will be distributed during conferences, round tables and other events. Another goal of this action is to provide education on renewable energy sources and potential establishment of energy communities, especially for households, citizens, companies and NGOs. Education will be provided in form of conferences oriented mainly on target group described above.

Based on the above mentioned following activities will be implemented:

- **moderated podcasts** - podcasts will be accessible via Youtube and we will be promoted on social networks especially on Facebook of the SHREC project. One podcast will be dedicated to energy communities - in this context an expert from SIEA will be able to talk about energy communities in an engaging and comprehensible way, bring examples of good practice from abroad and describe opportunities for establishment of energy communities in Slovakia.
- **use of social media - Facebook and Twitter -** regular publication of social media contributions regarding the activities within the SHREC project, recommendations and hints for target groups in the field of use of renewable energy sources, sharing of best practices, publication of available information materials and publisihing results of the conferences mentioned below and in Roadshow mentioned in chapter Engagement and empowerment.
- **brochures, flyers and information materials** - publishing PR materials for energy communities including best practices (see templates in Annex 2 and 3 of the Action Plan), which would be further distributed at individual conferences mentioned below, during Roadshow specifically described in chapter Engagement and empowerment as well as in 5 regional consultation centers of the "Live by energy" project. The PR materials will also be available in electronic form on Facebook of the project.

- **Conferences** - energy communities can involve a large number of local actors (households, companies) in the challenge of decarbonization. The proximity of the plants to consumers will result, in many cases, in installations of photovoltaic panels on roofs or in the vicinity of buildings, shifting attention to the issue of active citizens' engagement. The involvement of individual users and the economic benefits of these systems will lead the Communities members to more efficient energy behaviors and, more generally, to a greater awareness of renewable energy sources. A model that in fact encourages energy production and its instant absorption by local users can act as a driving force for storage, behavior and technological solutions. By granting the end customers more responsibility, they will feel compelled to align their load and production profiles and carry out a first balancing of their own small system. **In the above mentioned context the SIEA will use several conferences organized by the "Live by energy"** project for cities, municipalities, households and citizens which primary aim will be to encourage the local communities to move forward in terms of use of renewable energy and in potential establishment of energy communities. At some of these conferences examples of good practice regarding the establishment and effective functioning of energy communities from the SHREC project will be presented. At the same time, round tables will be organized with representatives of cities and municipalities in which SIEA experts will present opportunities for the establishment of energy communities in the Slovak Republic. **The attention of the SHREC project wil be paid mainly to the conferences on renewable energy sources and on hydrogen and on municipal energy**. The concrete dates and topics of the conferences are mentioned below. At the conferences specific information materials will be distributed which are more precisely described in the time frame section.
- **Providing support within consultation centres** – the households, citizens and companies can take advantage of professional advice of consultants within SIEA consulting centers in Bratislava, Trenčín, Banská Bystrica, Žilina and Košice. Within the given activity, the consultants will provide advice in the field of energy communities and at the same time promote the establishment of the energy communities through flyers and brochures.

Stakeholders involved

- Association of cities and municipalities of Slovakia
- Municipalities
- Cities
- Self-governing regions
- Citizens
- Households
- NGOs (Friends of Earth – CEPA)

	TIMEFRAME
	Podcasting - start: August/September 2022 – end July 2023 **Use of social media** - Facebook and Twitter – until the end of July 2023 **Distribution of PR materials** (see templates in Annex 2 and 3 of the Action Plan) – the PR materials about good practices of energy communities will be distributed at the conferences described below: 20.9.2022 - 21.9.2022 - **Conference on renewable energy sources and on hydrogen** - at this conference round tables presenting and discussing examples of good practice of the SHREC project as well as the possibilities of establishing energy communities in the Slovak Republic will be organized. Besides information materials about energy communities and best practices related to energy communities within the SHREC project will be distributed (see Annex 2 and 3 of the Action Plan). At the same time, a draft presentation for the given conference (attached in Annex 5) can be used by the SHREC project partners if needed. 14.3.2023 - 15.3.2023 - **Conference on municipal energy** (Target group - Association of cities and municipalities of Slovakia and Friends of Earth - CEPA) – at this conference round tables presenting and discussing examples of good practice of the SHREC project as well as the possibilities of establishing energy communities in the Slovak Republic will be organized. Besides information materials about energy communities and best practices related to energy communities within the SHREC project will be distributed (see Annex 2 and 3 of the Action Plan). 23.5.2023 - 24.5.2023 – **Conference on Heating** (Target group - Slovak Association of Heat Producers) - in case of interest, presentation of the SHREC project results at this conference can be made by SIEA.
	Costs
	No additional costs needed.
	Funding sources
	No funding source needed.
	Outputs included in the Annexes to be used within the implementation of the Action
	• ANNEX 2: DESCRIPTION OF RELEVANT GOOD PRACTICE • ANNEX 3: DRAFT INFORMATION MATERIAL (FLYER) ABOUT ENERGY COMMUNITIES • ANNEX 4: EXAMPLE OF QUESTIONNAIRE ON COMPLIANCE WITH THE PRINCIPLE OF DO NO SIGNIFICANT HARM TO THE ENVIRONMENT • ANNEX 5: PRESENTATION ON ENERGY COMMUNITIES

B) ENGAGEMENT AND EMPOWERMENT

In the last years we are facing the growing importance of empowering communities within the energy transformation. Facilitating communities to engage in energy transformations is crucial in order to achieve more sustainable outcomes. Engagement and empowerment broadly refers to an individual or group's power, right or authority to act. In this context we see this as process of an individual, group or community increasing their capacity and power to meet their own goals, leading to their transformative action in renewable energy use. Therefore it is utmost important that citizens and other relevant stakeholders described above should take an active role in delivering activities on climate action.

We propose to implement the following action:

ACTION 3: CAPACITY BUILDING FOR LOCAL COMMUNITIES

Relevance to the project - Link to the SHREC good practices

This activity is relevant and often used by other project partners, and at the same time is one of the tools to gain the awareness of public in favor of the use of renewable energy sources. One concrete example can be mentioned the "nZEB Roadshow" project in Romania which demonstrates that people are engaged with the topics of saving/producing energy in homes and interested in information on practical environmental solutions. The practic demonstration is an engaging way to learn about this topic, which in a way, also acts as a promotional activity raising awareness on the topic and existing solutions. Additionally, the benefits of assistance, including in the form of instructional materials are confirmed through other good practices: the instructional videos or manual developed as part of the installation of solar panels for households, which was later replicated. At the same time the Solar Parks Platform for remote generating prosumers in Lietuva, Lithuania can be mentioned as best practise for the activities related to establishment of prosumer platform within SHREC project. The launched solar parks platform gives every resident of the country, even those living in an apartment, the opportunity to purchase or rent part of the solar power plant from solar parks and at the same time become a remote generating consumer.

Nature of the action

The main aim of this action is to visit rural and urban locations across Slovakia to highlight the importance of hosting renewable energy infrastructure and the critical role played by these key locations in the fight to reduce our carbon emissions. Through engaging the public and local stakeholders in conversations about climate change, the Roadshow should spotlight the impact of renewable energy in these areas and discuss how the climate emergency will shape our homes, energy and transport sector. At the same time the SIEA will focus on stakeholders' dialogue to identify possible areas of joint actions aimed at implementing effective measures that would lead to improvement of their competitiveness and exploiting emerging opportunities by Slovak regions and Slovak businesses In the field of smart energy services. The action will be implemented through following activities:

- **Roadshow -** the Roadshow will be organized by the "Live by energy" project in close cooperation with the SHREC project. There will be in total 13 events in individual

regions of Slovakia with comprehensive program. In each of the event also face to face sessions and advise by energy consultants will be provided. The contribution of SHREC project will be mainly related to support and presentation of examples of good practices of existing energy communities. At these events information materials about energy communities and best practices related to energy communities within the SHREC project will be distributed (see Annex 2 and 3 of the Action Plan).

- **Establishment of renewable energy prosumer platform -** the main aim will be to establish a prosumer platform that is focused on renewable energy sources and smart energy services. The activity will be implemented mainly by the project GreenDeal4Buildings in which SIEA acts as partner in close cooperation with the SHREC project. The SIEA will organize various round tables and expert group meetings in order to establish the platform. Energy efficiency roundtables will be permanent multilateral discussion forums involving relevant stakeholders such as governmental, regional and local authorities, the financial sector, households, energy efficiency operators and the construction sector. The work of the round tables in Slovakia is part of the initiative of the European Commission, which launched the Forum for Sustainable Investments and round tables within all EU member states. Therefore, the round tables in Slovakia can benefit from experience in other EU member states and the transfer of know-how of many projects and successful initiatives implemented throughout Europe. **The contribution of the SHREC project during the round tables will be in form of presentations of good practice examples as well as of the possibilities/conditions of establishing energy communities in the Slovak Republic**.

Stakeholders involved

- Association of cities and municipalities of Slovakia
- Municipalities
- Citizens
- Households
- NGOs (Friends of Earth – CEPA)
- Slovak Association of Heat Producers
- Association of Construction Entrepreneurs of Slovakia

Timeframe

Roadshow - concrete time schedule will be specified after the realization of public procurement by SIEA

Prosumer platform – concrete dates of round tables and expert group meetings will be specified in close cooperation with the project GreenDeal4Buildings implemented by SIEA with other Slovak and international partners. The project has been financed out of Horizon 2020 programme. At these roundtables draft questionnaire for "Do not significant harm policy" will be distributed among the stakeholders – see the template for questionnaire in Annex 4 of the Action Plan. Besides information material (flyer) about energy communities (Annex 3) together with presentation on energy communities (Annex 5) can be used by project partner if needed.

	COSTS
	No additional costs needed.
	Funding sources
	No funding source needed.
	Outputs included in the Annexes to be used within the implementation of the Action
	• ANNEX 2: DESCRIPTION OF RELEVANT GOOD PRACTICE • ANNEX 3: DRAFT INFORMATION MATERIAL (FLYER) ABOUT ENERGY COMMUNITIES • ANNEX 4: EXAMPLE OF QUESTIONNAIRE ON COMPLIANCE WITH THE PRINCIPLE OF DO NO SIGNIFICANT HARM TO THE ENVIRONMENT • ANNEX 5: PRESENTATION ON ENERGY COMMUNITIES

C) RESEARCH AND EVIDENCE

The importance of energy research for sustainable development is derived from the fact that an increase in knowledge enhances awareness on the use of green energy. The long lasting effects of research, especially in relation to the effects of the use of renewable energy sources have been growing steadily in recent years. At the same time, results and outcomes of the research are important not only for finding out how citizens approach the possibilities that are offered to them in the field of renewable energy sources, but also makes evidence with regard to the public's interest in using these sources in an increasing number. In this context following action has been proposed:

ACTION 4: IMPACT SURVEY/QUESTIONNAIRE	
	Relevance to the project - Link to the SHREC good practices
	The importance of this activity within the project is multiplied by the fact that based on it the project partner can receive feedback on the implemented activities of the Action Plan, as well as to find out the real interest of stakeholders concerning the use of renewable energy sources in the Slovak Republic.
	Nature of the action
	The main goal of the action is to measure the impact of realization of activities in Action plan. The survey aims to identify what the stakeholders feel about renewable energy and what are the factors that influence them to use it. The second factor will be finding out whether the activities within the Action plan have been implemented successfully and to monitor their impact on the project. The questionnaire will be distributed before the end of the project implementation (in April 2023). Methods of statistical analysis will be used while defining representative samples of target groups (public, central government entities, local government entities and private sector entities).

	The questionnaire should have following structure: - Part related to importance of the renewable energy use - Part related to practical use of renewable energy - Part related to the future of renewable energy - Part related to the implementation of activities of Action Plan There should be a maximum of 20 questions within the questionnaire. Each answer to the question should be ranked on a scale from 1 to 5 whereas 5 points is the highest score. We recommend distributing the questionnaire via e-mail form to at least 200 participants.
	Stakeholders involved
	• households • citizens, • Association of cities and municipalities of Slovakia • cities • municipalities • self - governing regions
	Timeframe
	April 2023
	Costs
	No additional costs are needed if the questionnaire will be elaborated and distributed by internal staff of the project partner.
	Funding sources
	No funding source needed.

CHAPTER #5

Monitoring the implementation of the Action Plan

5. MONITORING THE IMPLEMENTATION OF THE ACTION PLAN

Monitoring is a one of the key parts of the implementation of Action plan. Once the activities of the Action Plan have been defined, it is almost of high importance to define indicators for tracking progress towards implementing those activities. Regular monitoring of indicators followed by adequate adaptations of the Action plan (in case of non-fulfilment of targets) allows initiating a continuous improvement of the Action Plan Indicators should be a mix of those that measure process, or what is being done in the Action Plan, and those that measure outcomes.

In this context concrete indicators (Key performance indicators – KPIs) have been defined to assess the progress and performance of the Action plan. The data should be gathered by the project partner at the end of project implementation.

TABLE: MONITORING PLAN

Indicator	Connected with Action	Target	Monitoring period	Source of verification
Number of recommendations for MA/IB of OP Quality of Environment	Recommendations for the OP Quality of Environment 2014-2020	5	End of July 2023	SIEA statistics
Number of views on social media networks	Public relations and educational work with local communities	500	End of July 2023	Social media
Number of moderated podcasts	Public relations and educational work with local communities	2	End of July 2023	SIEA statistics
Number of brochures and flyers distributed	Public relations and educational work with local communities	200	End of July 2023	SIEA statistics
Number of conferences attended	Public relations and educational work with local communities	2	End of July 2023	SIEA statistics

Number of round tables on energy communities	Public relations and educational work with local communities	1	End of July 2023	SIEA statistics
Roadshow on promotion of renewable energy sources	Capacity building for local communities	1	End of July 2023	SIEA statistics
Number of round tables contributing to establishment of renewable energy prosumer platform	Capacity building for local communities	1	End of July 2023	SIEA statistics
Number of stakeholders contacted	Impact survey/ questionnaire	200	End of July 2023	SIEA statistics

Date: 24.06.2022

Signature:

Artur Bobovnický, PhD.
Director

Division of Innovation

Stamp of the organization:

SIEA
SLOVAK INNOVATION
AND ENERGY AGENCY

SHREC
Interreg Europe

European Union
European Regional
Development Fund

ANNEX #1

Analysis of local strategies

ANNEX 1: ANALYSIS OF LOCAL STRATEGIES

Prices of completed projects varied from EUR 8,859.60 for Bojnice city, to EUR 137,275.40 for the district of Rimavská Sobota. Projects with a higher valuation were also approved but are still being developed when writing this action plan. On average, one strategy cost was EUR 22,880.19.

17 of the completed strategies had the municipality as one of the multiple contractors and only one of them was a sole municipality.

Out of the 47 completed strategies, 34 strategies were completed by five contractors. As a result, different strategies were prepared using the same template and approach and have a lot of repeating actions and formulations. While all of them are relevant for low-carbon plans, a more tailored approach might have been more effective, and it remains to be seen how prepared actions will be implemented.

These strategies are generally being prepared for the period up till 2030. However, specific years may vary for each strategy. Most of them are prepared for 10 years and depending on the year of a compilation of the strategy, the end year might be 2030 or 2031. There are also strategies, such as Liptovský Mikuláš, for which a period of 15 years was chosen with the end year of 2036.

Strategies usually start with sections covering objectives and aims, approval method, responsible parties, and existing regulations, both on the level of EU and local, which were considered in development. Strategies focus on emissions produced by end-users and, in general, do not cover industries and power plants.

It is often mentioned that the low-carbon strategy must be implemented on two levels:

- As a tool for a city (or other territories) to work with to achieve environmental objectives;
- As a communication tool for the municipality/city with stakeholders.

Most measures mentioned in the strategies are of a medium-term nature and cannot be implemented in a short period of time.

All the strategies cover to some extent the description of the area as well as a current state, which includes socio-demographic state, existing infrastructure, state of the territory environment wise and CO2 emissions, and how emissions will be calculated on the territory and by sector. Many strategies also include a SWOT analysis (some of the weaknesses include low awareness, lack of interest in the measures and threats - the low impact of public administration on owners of buildings and heating sources). While such analyses are mostly comprehensive and cover the current state from different sides, the data used is often outdated, being created more than a decade ago. Even data for the 2018 year might not be representative enough of the current situation, which undermines some of the estimation done within this analysis and further for the effect of proposed measures.

The expected impact is calculated in different forms even within one strategy and inter alia include:

- Reduction in greenhouse gas emissions, expressed as percentage or amount, until the end of the period of the strategy or annual (for the territory as well as the sector);
- Planned reduction of energy consumption;
- Demand and energy use from renewable energy sources;
- Impact on the quality of the environment, for example in terms of reduction of air pollutants.

While the structure of strategies varied, the main areas of interventions covered were more or less the same and mostly included:

- Buildings usually divided on:

- Local governmental buildings;
- Housing, family building;
- Tertiary buildings;
- Public lightning;
- Transportation, both public and private;
- Central heating/Thermal energy;
- Smart City;
- Climate change adaptation measures;
- Communication/work with the public.

Renewable energy sources were also often mentioned, but mostly as part of other sections and rarely as separate sections.

Most measures, even if not marked as such in the strategy, can be categorized as follows:

- Investment;
- Regulatory;
- Educational;
- Organizational.

For most measures information is stated on the responsible subject, budget, sources of funding, expected impact and timeline.

BUILDINGS | While not universal, many strategies have some sort of analysis of each type of building existing on the territory. Analysis can include energy consumption and sources, types of buildings and regulations applicable, information on renovations, year of building, CO2 produced by types of buildings, etc. For governmental and tertiary building list can even mention specific buildings, not just statistics.

For buildings belonging to local government, measures are some combination of:

- Investment in the renovation of buildings for increasing energy efficiency;
- Introduction of energy management;
- Awareness raising for employees.

For tertiary buildings measures usually include either investment in renovation with a focus on energy efficiency, or it is stated that the municipality has little impact on their energy consumption and can only lead by example and by raising awareness on the necessity of reducing energy consumption and greenhouse gasses, while usually accompanied with a list of measures that sector of tertiary buildings can implement, which include some renovation measures, the introduction of the energy management system and use of renewables.

For households, measures identified almost universally include:

- Investment in renovation for heat efficiency;
- Increase of share of RES in household buildings through investments;
- Tax bonus for the efficient renovation of buildings.

The measure "Increase of share of RES in household buildings" is accompanied by a mention of the Green for Households project. Quite a substantial number of strategies provide an assumption that 10% of energy consumption in residential buildings and individual housing construction will be provided by renewable energy sources by 2030. Also, most of the strategies share the statement that municipalities cannot influence the energy transition of household buildings (and often tertiary) and can only raise awareness.

PUBLIC LIGHTNING | Measures proposed for public lightning corresponds with two ways how municipalities can lower related emissions:

- indirectly: reducing energy consumption by implementing a SMART solution - an intelligent light intensity management system,

- directly: use advanced technologies with lower environmental impact - replacing old lightning with LED alternatives.

TRANSPORTATION | Most common measures introduced for transportation both public and private included:

- Promotion of non-motorized transport, and public transport; car-sharing and its support by city employees;
- Replacement of existing fleet with a more environmentally friendly option, when the fleet will need replacing and supporting quality public transport;
- Investment in bike paths, promotion of a bike-sharing system, investment in a bike-sharing system
- Promotion of electromobility and support of emission-free individual road transport by financing private sources or investment and simplification of administrative sources for the construction of the charging infrastructure;
- Implementation of low-emission zones with emission-based restrictions for vehicles.

HEATING | When mentioning heating, the current system was usually outdated and inefficient, e.g., consisted of too many individual old boilers. The measures for heating were specific to the current state of the heating system but can be covered as:

- Energy audit of heat distribution;
- Modernisation of heat distribution, including the introduction of a management system;
- Modernisation of heat production.

SMART CITY | Majority of strategies had Smart City presented as a separate section, while also mentioned in other sections, such as public lightning. Smart City is mostly described as a quite wide concept which includes Smart Energy, Smart Buildings, and Smart Transport. Measures related to Smart City mostly consist of investment measures but are wary: of SMART technologies in waste management, traffic monitoring systems, internet distribution, energy management systems, smart parking, etc.

CLIMATE CHANGE | Most strategies also include at least some measures related to adapting to climate change, its mitigation, or just a positive impact on environment-related issues, besides measures related to energy usage and efficiency. Some of the climate changes mentioned include the temperature increase on hot days, tropical nights, heat waves, flood risk, insufficient infiltration of rainwater, extreme weather fluctuations, droughts etc.

Measures for adaptation included implementing/supporting:

- urban greenery,
- water areas,
- early warning system for floods and drought,
- general agriculture and horticulture,
- shading of public spaces,
- vegetation management,
- construction of areas with a permeable surface,
- increased water infiltration,
- sustainable drainage systems,
- additional measures for rainwater management, wastewater reuse, construction of irrigation and fountains,
- community gardens,
- measures to protect pollinators,
- a comprehensive approach to the prevention, reuse, and waste recovery,
- investments in improving air quality,
- the transition to a circular economy and efficient use of resources,
- improving biodiversity and landscape protection.

Some of the measures mentioned here could have been allocated to other sections or had separate sections in some of the strategies.

COMMUNICATION STRATEGY | Awareness raising was mentioned in all strategies, while the complexity varied. Most communication strategies mentioned some combination of:

- Communication - increase the interest of the public in energy efficiency, informing the public on implemented activities, preparing promotional activities about energy-efficient solutions for households, organizing meetings, and informing on possibilities that exist.
- Consulting - provide qualified advice in the area of energy efficiency and use of RES, for example, SIEA consultations through the Live by energy project, round tables to exchange useful information, and support associations that would be relevant in discussion with municipalities.
- Education - educational campaigns for students and homeowners on energy literacy and energy efficiency and usage of RES and training provided for operators of public buildings.

Some strategies mentioned the involvement of citizens and local communities in the discussion and implementation of the strategy as one of the stakeholders. For example, Rimavská Sobota explicitly mentioned the involvement of the local community in the preparation of projects, while the city of Nováky plans to support the creation of associations and communities that are going to become relevant partners in the discussions. Other cities, including Veľký Meder, plan a community education centre for climate and biodiversity.

Communication channels also varied. Most often, the official board and website were mentioned, as well as meetings with residents. Other popular channels are social media and the press.

PLANNING AND REGULATIONS | In some strategies planning and regulations presented a separate section that included measures related to spatial planning, water retention, energy management, waste management, and possible benefits for the inhabitants of the city, such as tax bonuses, public transportation tickets or reimbursement of energy certificates.

Some strategies also mentioned the creation of the new position of the person who will be responsible for the management and implementation of some of these measures and the creation of the working group involving all stakeholders, including citizens. As structure varies from strategy to strategy, some of the measures could have been mentioned in another section.

ANNEX #2

Description of all relevant SHREC good practices

Grunneger Power

Location: Netherlands

RES: solar

SCAN OR CLICK TO SEE MORE

Grunneger Power is a cooperative established by few proactive citizens, which, by making use of crowdfunding, financial loans of the bank and strategic marketing techniques, establishes various energy and sustainability-related projects with the main focus on solar energy and heat production with the involvement of the local community. Some of the established programmes:

- Members can install solar panels on their roof and join energy distribution through VanOns (a company established for distribution, buying and selling green energy produced by communities – another good practice identified). However, even if a person does not have a roof to produce energy, Grunneger Power has programmes of the shared roof and solar power plant which is managed by the community and people can invest in.
- Grunneger Power also provides an option to switch to a heat network, as it is more sustainable than gas, and also educates on insolation in the home, even providing a heat scanner to detect heat leakages in the house.
- They also inform (non) members actively on isolation, renewable energy production and energy efficiency.

The involvement of citizens (members and non-members) lead to a high rate of social acceptance of the renewable energy projects they are developing.

Firewood district heating community network in Lucinges

Location: France

RES: firewood

SCAN OR CLICK TO SEE MORE

The municipality of Lucinges, decided to install a **firewood district heating network** allowing to supply a number of housing buildings and 2 businesses with **renewable heat and to replace the aging oil-fired boilers**. They delegated the production, distribution and sale of heating for 20 years; and requested the project to be financed with at least 40% of local funds but is also shareholder of ForestEner at 4% of the capital.

ForestEner was selected for the design, implementation, financing and operation of the project.

Citizen funds were raised by Énergie Partagée (founding member and shareholder of ForestEner).

Besides being shareholders, citizens can get involved in the governance of the project via Énergie Partagée and can send a representative to the general assemblies of ForestEner. The inhabitants are also involved in the operation of the boilers, managing the ashes (which are even used to make artisanal soap), and thus allowing to decrease the operating cost of the wood boilers on the long run.

Wood used to run the boiler room comes from a short circuit (less than 30 km).

The nZEB RoadShow

Location: Romania Croatia, Greece, Italy, Bulgaria

RES: other

nZEB Roadshow
Bulgaria | Croatia | Romania | Greece | Italy

SCAN OR CLICK TO SEE MORE

The nZEB (nearly-zero-energy buildings) weeks consist of a multitude of events:

- construction products and real estate fairs
- practical demonstrations and real-time nZEB construction
- training courses for designers and construction workers
- and others

The BKHs (Building Knowledge HUBs) – in form of prefabricated modular mobile buildings, will serve as information and demonstration centres for raising awareness of the benefits and specificities of nZEB.

With attention to exterior and interior design, the centres will offer real-life experience of quality nZEB and will be equipped with all necessary technologies to provide full information of the processes with relevance to the building's performance in terms of comfort, internal air quality parameters, and energy consumption.

Professional marketing and sales services and strong media partnerships will be added by the roadshow to nZEB promotion efforts.

Bioenergy Villages (BioVill) – Increasing the Market Uptake of Sustainable Bioenergy

Location: Slovenia, Serbia, Croatia, Macedonia, Romania

RES: biofuel

SCAN OR CLICK TO SEE MORE

The project fosters the development of the bioenergy sector by strengthening the role of locally produced biomass as the main contributor to energy supply on a local level.

Core activities of BioVill included:

- the technological and economic assessment of the target villages;
- the involvement and active participation of stakeholders and citizens;
- increasing public acceptance of sustainable bioenergy;
- the development of local bioenergy value chains and technologies;
- capacity building about financing schemes and business models.

A community mobile wood boiler in Mazet-Saint-Voy

Location: France

RES: firewood

SCAN OR CLICK TO SEE MORE

The Commune of Mazet-Saint-Voy has a public service delegation contract with ERE43 to supply multiple public and private buildings with renewable heat. ERE43, is a consulting firm with a cooperative community-oriented enterprise status (SCIC).

The project results:

- **5 micro-heating plants were installed** by ERE43 in the municipality;
- **3rd boiler and following were of a newer model developed** by ERE43 (Modul'R): can be disassembled, based on a short circuit heating; supplied with local resources (chipped wood or thinning wood);
- **4th boiler room was partially funded** by citizens funds (with the involment of Énergie Partagée).

Firewood district heating project in Sassenage

Location: France

RES: firewood

SCAN OR CLICK TO SEE MORE

The city of Sassenage, undertook the construction of two firewood heating networks to supply six communal buildings with renewable heat and wanted to involve the citizens in the governance and financing of the project.

ForestEner was selected for the design, implementation and operation of the district heating network as well as the financing of the project.

The municipality provided the facilities for the plant for 20 years.

Énergie Partagée and Énerg'Y Citoyennes - two structures specializing in citizen financing – were involved to raise by municipality:

- Énerg'Y Citoyennes helped raise funds from local residents;
- Énergie Partagée participated in the financing of the project and advanced funds while waiting for the subsidy.

The governance of the project is shared between the municipality of Sassanges and their citizens through Énerg'Y Citoyennes and Énergie Partagée.

Solar Parks Platform for remote generating prosumers (virtual prosumers)

Location: Lithuania

RES: solar

The solar parks platform, created by UAB "Ignitis" – one of the state-owned companies, gives every resident of the country, even those living in an apartment, the opportunity to purchase or rent part of the solar power plant from solar parks and at the same time become a remote generating consumer.

~20% of total prosumers went to the market using Solar Parks platform

> 27 projects were published and successfully sold or rent to the end-users (positive impact on RES development)

ignitis group

Fotovoltaikoak Etxean: FV Etxean

Location: Spain

RES: solar

During "FV_Etxean" a document was developed on steps that households would need to follow if they wanted to be self-consumers, which included: information on different FV installation typologies, current laws, funding opportunities, etc. Attached to the main document a briefing of the main document (Flyer) was mailed to every single mailbox in the city.

The methodology for document development can be replicated and consists of the following steps:

1. Conduct interviews with local authorities, local enterprise, and other interest groups to understand what the framework is;
2. Analyse the legal and technical issues;
3. Include real examples to give some data on investment and costs;
4. Communicate the results to the citizens.

Photovoltaic and thermal power plant of the Préau des Colibris in Voiron

Location: France

RES: solar

The company Buxia Energies which was founded by citizens was created from the idea of producing renewable electricity locally which was born within the Agenda 21 committee of the municipality of La Buisse. The town hall of La Buisse also supported Buxia Energies by the provision of roofs to equip for their 1st projects.

When co-owners of eco-friendly housing projects initiated by the local community decided to supply part of the energy consumption with solar (PV and thermal) panels but couldn't afford it, Buxia Energies intervened as third-party investor.

The PV panels are operated by Buxia Energies. Buxia Energies took a lease on the rooftop, installed the panels and sell the electricity produced at a fixed rate over 20 years.

The revenue from the sale of energy is used to cover the costs, pay the shareholders and to develop new installations. The non-trading estate company pays Buxia Energies a rent for 10 years based on the expected gas savings.

Buxia énergies
L'énergie citoyenne

ANNEX #3

Draft information material (flier) about energy communities

ANNEX 3: DRAFT INFORMATION MATERIAL (FLIER) ABOUT ENERGY COMMUNITIES

DEFINITION OF RENEWABLE ENERGY COMMUNITY (REC) AND CITIZENS ENERGY COMMUNITY (CEC)

RENEWABLE ENERGY COMMUNITY (REC) are legal entities:

d) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity,

e) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities,

f) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.[1]

CITIZENS ENERGY COMMUNITY (CEC) are legal entities:

d) based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises,

e) that have for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits,

f) that may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders.[1]

The purpose an energy community should have is "to provide environmental, economic or social community benefits for its shareholders or members or local areas where it operates, rather than financial profits."

SETS OF POTENTIAL ACTIVITIES FOR RECS AND CECS AS PROVIDED BY THE CLEAN ENERGY PACKAGE

Name of activity	Renewable Energy Communities	Citizen Energy Communities
Generation	✓	✓
Construction	✓	✓
Energy Sharing	✓	✓
Supply	✓	✓
Energy storage	✓	✓
Aggregation	✓	✓
Own, establish, purchase, lease and manage distribution networks	✓	✓
Access all suitable markets	✓	✓
Cross-border participation		✓
Charging activities		✓
Energy efficiency services		✓
Other energy activities		✓

Source: Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation, ASSET Study by Tractebel Impact, 2020. Available online at https://op.europa.eu/en/publication-detail/-/publication/4b7d5144-91c9-11eb-b85c-01aa75ed71a1/language-en.

BENEFITS OF THE ENERGY COMMUNITIES

ECONOMIC BENEFITS

- Local job growth and economic resilience
- Up to 3 times additional local economic benefits
- Low energy bills for private consumers

ENVIRONMENTAL BENEFITS

- Promotion of local renewable production
- Reduction in GHG emissions
- Lowering of private energy consumption by up to 11%

SOCIAL BENEFITS

- Active participation of citizens in the energy field
- Provision of additional services, such as energy poverty alleviation
- Increased system resilience and security of supply

Source: Energy communities: A brief explainer for managing authorities in central and eastern Europe, Bankwatch Network, 2022. Available via the link: https://bankwatch.org/wp-content/uploads/2022/05/2022_05_Energy-communities.pdf.

ANNEX #4

Questionnaire on compliance with no significant harm

ANNEX 4: EXAMPLE OF QUESTIONNAIRE ON COMPLIANCE WITH THE PRINCIPLE OF DO NO SIGNIFICANT HARM TO THE ENVIRONMENT

For all question, select only one of the proposed options

Climate change mitigation

- The project activities have no or an insignificant foreseeable impact on climate change mitigation. *Provide justification:*
- The project activities are tracked as contributing 100 % to the climate change mitigation objective in accordance with Annex VI of Regulation (EU) 2021/241. *Provide justification:*
- The project activities "contribute substantially" to achieve the environmental objective of climate change mitigation according to the Taxonomy Regulation. *Provide justification:*
- None of the above.

Is the action expected to lead to significant greenhouse gas emissions?

- Yes: *The action should be critically revised.*
- No: *Provide substantive justification as to why the action meets the DNSH principle for the climate change mitigation objective.*

Are there technically and/or economically feasible alternative with low environmental impact?

- Yes: *The action should be reconsidered or redesigned, choosing a low environmental impact activity that is technicallyand economically feasible.*
- No: *Provide justification:*

Climate change adaptation

- The project activities have no or an insignificant foreseeable impact on climate change adaptation. *Provide justification:*
- The project activities are tracked as contributing 100 % to the climate change adaptation objective in accordance with Annex VI of Regulation (EU) 2021/241. *Provide justification:*
- The project activities "contribute substantially" to achieve the environmental objective of climate change adaptation according to the Taxonomy Regulation. *Provide justification:*
- None of the above.

Is the action expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets?

- Yes: *The action should be critically revised.*
- No: *Provide substantive justification as to why the action meets the DNSH principle for the climate change adaptation objective:*

Are there technically and/or economically feasible alternative with low environmental impact?

- Yes: *The action should be reconsidered or redesigned, choosing a low environmental impact activity that is technically and economically feasible.*
- No: *Provide justification:*

Sustainable use and protection of water and marine resources

- The project activities have no or an insignificant foreseeable impact on sustainable use and protection of water and marine resources. *Provide justification:*
- The project activities are tracked as contributing 100 % to the sustainable use and protection of water and marine resources objective in accordance with Annex VI of Regulation (EU) 2021/241. *Provide justification:*
- The project activities "contribute substantially" to achieve the environmental objective of sustainable use and protection of water and marine resources according to the Taxonomy Regulation. *Provide justification:*
- None of the above.

Is the action expected to be detrimental (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters?

- Yes: *The action should be critically revised.*
- No: *Provide substantive justification as to why the action meets the DNSH principle for the objective of sustainable use and protection of water and marine resources:*

Are there technically and/or economically feasible alternative with low environmental impact?

- Yes: *The action should be reconsidered or redesigned, choosing a low environmental impact activity that is technically and economically feasible.*
- No: *Provide justification:*

Circular economy and waste management

- The project activities have no or an insignificant foreseeable impact on circular economy and waste management. *Provide justification:*
- The project activities are tracked as contributing 100 % to circular economy and waste management objective in accordance with Annex VI of Regulation (EU) 2021/241. *Provide justification:*
- The project activities "contribute substantially" to achieve the environmental objective of circular economy and waste management according to the Taxonomy Regulation. *Provide justification:*
- None of the above.

Is the action expected to (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of natural resources[16] at any stage of its life cycle,

[16] Natural resources include energy, materials, metals, water, biomass, air and land

which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy[17]?

- Yes: *The action should be critically revised.*
- No: *Provide substantive justification as to why the action meets the DNSH principle for the circular economy and waste management objective:*

Are there technically and/or economically feasible alternative with low environmental impact?

- Yes: *The action should be reconsidered or redesigned, choosing a low environmental impact activity that is technically and economically feasible.*
- No: *Provide justification:*

Pollution prevention and control to air, water or land

- The project activities have no or an insignificant foreseeable impact on pollution prevention and control on air, water or land. *Provide justification:*
- The project activities are tracked as contributing 100 % to the on pollution prevention and control on air, water or land objective in accordance with Annex VI of Regulation (EU) 2021/241. *Provide justification:*
- The project activities "contribute substantially" to achieve the environmental objective of on pollution prevention and control on air, water or land according to the Taxonomy Regulation. *Provide justification:*
- None of the above.

Is the action expected to lead to a significant increase in emissions of pollutants[18] to air, water or land?

- Yes: *The action should be critically revised.*
- No: *Provide a substantive justification as to why the action meets the DNSH principle for the objective of prevention and pollution control of air, water or land:*

Are there technically and/or economically feasible alternative with low environmental impact?

- Yes: *The action should be reconsidered or redesigned, choosing a low environmental impact activity that is technically and economically feasible.*
- No: *Provide justification:*

Protection and restoration of biodiversity and ecosystems

- The project activities have no or an insignificant foreseeable impact on protection and restoration of biodiversity and ecosystems. *Provide justification:*
- The project activities are tracked as contributing 100 % to the protection and restoration of biodiversity and ecosystems objective in accordance with Annex VI of Regulation (EU) 2021/241. *Provide justification:*

[17] For information on the objectives of circular economy, please refer to recital 27 of the Taxonomy Regulation.

[18] "Pollutant" means a substance, vibration, heat, noise, light or other contaminants present in the atmosphere, water or soil, which may cause pollution of the air, water or soil and may have harmful effects on human health or the environment.

- The project activities "contribute substantially" to achieve the environmental objective of protection and restoration of biodiversity and ecosystems mitigation according to the Taxonomy Regulation. *Provide justification:*
  - None of the above.

Items identified with □ (empty circle), are ones not complaining with principle of "do no significant harm"

- This questionnaire is an example which covers "do no significant harm" principle for **environment**, it can be adapted depending on the type of the project and extended to include questions covering "do no harm" principle in other areas.

ANNEX #5

Presentation for stakeholders on energy communities

ANNEX 5: PRESENTATION FOR STAKEHOLDERS ON ENERGY COMMUNITIES


SIEA
SLOVAK INNOVATION
AND ENERGY AGENCY
SHREC
Interreg Europe
European Union
European Regional
Development Fund
ENERGY COMMUNITIES

DEFINITION OF ENERGY COMMUNITY

Purpose of an energy community: to provide environmental, economic or social community benefits for its shareholders or members or local areas where it operates, rather than financial profits.

Renewable energy communities (REC) are legal entities:

a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;

b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities;

c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.

Citizens energy communities (CES) are legal entities:

a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises;

b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits;

c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders.

Source: Directive (EU) 2018/2001 and Directive (EU) 2019/944

POTENTIAL ACTIVITIES FOR ENERGY COMMUNITIES

ACTIVITY	RES	CES
Generation	✓	✓
Construction	✓	✓
Energy Sharing	✓	✓
Supply	✓	✓
Energy storage	✓	✓
Aggregation	✓	✓
Own, establish, purchase, lease and manage distribution networks	✓	✓
Access all suitable markets	✓	✓
Cross-border participation		✓
Charging activities		✓
Energy efficiency services		✓
Other energy activities		✓

Source: Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation, ASSET Study by Tractebel Impact, 2020

BENEFITS OF THE ENERGY COMMUNITIES

ECONOMIC BENEFITS

- Local job growth and economic resilience
- Up to 3 times additional local economic benefits
- Low energy bills for private consumers

ENVIRONMENTAL BENEFITS

- Promotion of local renewable production
- Reduction in GHG emissions
- Lowering of private energy consumption by up to 11%

SOCIAL BENEFITS

- Active participation of citizens in the energy field
- Provision of additional services, such as energy poverty alleviation
- Increased system resilience and security of supply

Source: Energy communities: A brief explainer for managing authorities in central and eastern Europe, Bankwatch Network, 2022

MAIN BARRIERS TO THE ESTABLISHMENT OF ENERGY COMMUNITIES AND HOW TO ADDRESS THEM (1/2)

BARRIERS	RECCOMENDATIONS
Disproportionate or irrelevant administrative procedures as energy communities are a relatively new concept, Member States are still experimenting with support and administrative mechanisms, which coupled with existing market imbalances, can prevent a level playing field for energy communities vis-a-vis other actors in the energy sector.	**Adapt the licensing and administrative procedure to strength energy communities** Administrative procedures should be adapted to fit the size, scope, and organizational capacity of energy communities. They should be rewarded for focusing on activities other than traditional financial return, for example, including social and environmental justice indicators in licensing, administrative, and procurement procedures. When making an investment decision, managing authorities should look beyond financial indicators and traditional ways of assessing investment risk and value the societal benefits resulting from the communities' projects.
Risk of corporate capture and the lack of a clear definition Member States often misunderstand the concept of energy communities or in cases where EU-level definitions are correctly transposed, commercial actors are trying to misconstrue the goal of this organisational form.	**Create one-stop shops for energy communities** Member States should implement one-stop shops (OSS) for energy communities at the national, regional or municipal level, based on the service type. An OSS approach would enhance the monitoring of energy community development, whilst facilitating interactions with public authorities and the implementation of specific administrative procedures.

Source: Energy communities: A brief explainer for managing authorities in central and eastern Europe, Bankwatch Network, 2022

MAIN BARRIERS TO THE ESTABLISHMENT OF ENERGY COMMUNITIES AND HOW TO ADDRESS THEM (2/2)

BARRIERS	RECCOMENDATIONS
Limited access to bank financing and financing tools Energy communities often struggle to secure bank financing, primarily due to: • a lack of knowledge and understanding from the banking institutions; • the collective decision-making mechanisms lead to a longer approval process within the community and, a more widespread sense of responsibility.	**Create specific financing tools for energy communities** Energy communities need targeted financing tools. Several examples of successful funding schemes exist that support the development of energy communities whilst simultaneously preserving their democratic governance and ownership. • The 'revolving fund' model, allows for the financing to bridge the gap between the pre-feasibility phases of the project and financial close. The managing authority can then exit the project as the capital provided by citizens takes over. • 'Loan-to-grant programme'. In this scheme, the managing authority gives a loan that can become a grant in case the project is not successful – within reasonable limits.
Lack of financial tools for initiating energy communities Communities have a different fundraising process from traditional initiatives, having citizen-ownership model and generally raising the bulk of their financing after the financial close of their project. Banking institutions mostly do not offer this type of investment for small businesses.	**Support network organization to encourage bundling and capacity building** Energy communities prefer to collaborate, rather than compete. Therefore, community organizations often work together at the regional or national level. These organizations have two crucial roles, namely, to support the aggregation of projects to mitigate risks, and to provide capacity building to starting energy communities.

Source: Energy communities: A brief explainer for managing authorities in central and eastern Europe, Bankwatch Network, 2022

GOOD PRACTICES: GRUNNEGER POWER

Location: Netherlands

RES: solar

Initiator: citizens

Grunneger Power is a cooperative established by few proactive citizens, which, by making use of crowdfunding, financial loans of the bank and strategic marketing techniques, establishes various energy and sustainability-related projects with the main focus on solar energy and heat production with the involvement of the local community. Some of the established programmes:

- Members can install solar panels on their roof and join energy distribution through VanOns (a company established for distribution, buying and selling green energy produced by communities – another good practice identified). However, even if a person does not have a roof to produce energy, Grunneger Power has programmes of the shared roof and solar power plant which is managed by the community and people can invest in.
- Grunneger Power also provides an option to switch to a heat network, as it is more sustainable than gas, and also educates on insolation in the home, even providing a heat scanner to detect heat leakages in the house.
- They also inform (non) members actively on isolation, renewable energy production and energy efficiency.

The involvement of citizens (members and non-members) lead to a high rate of social acceptance of the renewable energy projects they are developing.

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/

GOOD PRACTICES: FIREWOOD DISTRICT HEATING COMMUNITY NETWORK IN LUCINGES

Location: France

RES: firewood

Initiator: Municipality

The municipality of Lucinges, decided to install a **firewood district heating network** allowing to supply a number of housing buildings and 2 businesses with **renewable heat and to replace the aging oil-fired boilers**. They delegated the production, distribution and sale of heating for 20 years; and requested the project to be financed with at least 40% of local funds but is also shareholder of ForestEner at 4% of the capital.

ForestEner was selected for the design, implementation, financing and operation of the project.

Citizen funds were raised by Énergie Partagée (founding member and shareholder of ForestEner).

Besides being shareholders, citizens can get involved in the governance of the project via Énergie Partagée and can send a representative to the general assemblies of ForestEner. The inhabitants are also involved in the operation of the boilers, managing the ashes (which are even used to make artisanal soap), and thus allowing to decrease the operating cost of the wood boilers on the long run.

Wood used to run the boiler room comes from a short circuit (less than 30 km).

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/

GOOD PRACTICES: THE nZEB ROADSHOW

Location: Romania Croatia, Greece, Italy, Bulgaria

RES: other

Initiator: EU programme

The nZEB (nearly-zero-energy buildings) weeks consist of a multitude of events:

- construction products and real estate fairs
- practical demonstrations and real-time nZEB construction
- training courses for designers and construction workers
- and others

The BKHs (Building Knowledge HUBs) – in form of prefabricated modular mobile buildings, will serve as information and demonstration centres for raising awareness of the benefits and specificities of nZEB.

With attention to exterior and interior design, the centres will offer real-life experience of quality nZEB and will be equipped with all necessary technologies to provide full information of the processes with relevance to the building's performance in terms of comfort, internal air quality parameters, and energy consumption.

Professional marketing and sales services and strong media partnerships will be added by the roadshow to nZEB promotion efforts.

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/

GOOD PRACTICES: PHOTOVOLTAIC AND THERMAL POWER PLANT OF THE PRÉAU DES COLIBRIS IN VOIRON

Location: France

RES: solar

Initiator: municipality (Buxia Energies), citizens (energy production for housing project)

The company Buxia Energies which was founded by citizens was created from the idea of producing renewable electricity locally which was born within the Agenda 21 committee of the municipality of La Buisse. The town hall of La Buisse also supported Buxia Energies by the provision of roofs to equip for their 1st projects.

When co-owners of eco-friendly housing projects initiated by the local community decided to supply part of the energy consumption with solar (PV and thermal) panels but couldn't afford it, Buxia Energies intervened as third-party investor.

The PV panels are operated by Buxia Energies. Buxia Energies took a lease on the rooftop, installed the panels and sell the electricity produced at a fixed rate over 20 years.

The revenue from the sale of energy is used to cover the costs, pay the shareholders and to develop new installations. The non-trading estate company pays Buxia Energies a rent for 10 years based on the expected gas savings.

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/

GOOD PRACTICES: COMMUNITY MOBILE WOOD BOILER IN MAZET-SAINT-VOY

Location: France

RES: firewood

Initiator: municipality

The Commune of Mazet-Saint-Voy has a public service delegation contract with ERE43 to supply multiple public and private buildings with renewable heat. ERE43, is a consulting firm with a cooperative community-oriented enterprise status (SCIC).

The project results:

- 5 micro-heating plants were installed by ERE43 in the municipality;
- 3rd boiler and following were of a newer model developed by ERE43 (Modul'R): can be disassembled, based on a short circuit heating; supplied with local resources (chipped wood or thinning wood);
- 4th boiler room was partially funded by citizens funds (with the involvement of Énergie Partagée).

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/

GOOD PRACTICES: BIOENERGY VILLAGES (BIOVILL) – INCREASING THE MARKET UPTAKE OF SUSTAINABLE BIOENERGY

Location: Slovenia, Serbia, Croatia, Macedonia, Romania

RES: biofuel

Initiator: Horizon 2020 programme

The project fosters the development of the bioenergy sector by strengthening the role of locally produced biomass as the main contributor to energy supply on a local level.

Core activities of BioVill included:

- the technological and economic assessment of the target villages;
- the involvement and active participation of stakeholders and citizens;
- increasing public acceptance of sustainable bioenergy;
- the development of local bioenergy value chains and technologies;
- capacity building about financing schemes and business models.

Source: https://projects2014-2020.interregeurope.eu/shrec/good-practices/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