Interreg Europe

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BIOWIND

FINAL REPORT

Policy recommendations for the proliferation of wind energy communities in project territories

Región de Murcia

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Executive summary

The aim of the document is to present and analyse the findings of the territorial data that were collected with a view to provide policy recommendations for the proliferation of wind energy communities (WEC) in BIOWIND regions.

To this end the document includes:

- Section 1 outlines the aim and the scope of BIOWIND Activity A1.5.
- Section 2 offers an outline of the collected data, including KPIs achieved and discrepancies.
- Section 3 presents and analyses the data collected by highlighting the territorial state of play regarding wind energy communities in BIOWIND regions, the critical factors that can influence the roll out of WECs both at territorial and project level. This section also offers an evaluation and analysis of the good practices identified per category, describing their added value and pinpointing implementation challenges and requirements.
- Section 4 discusses the main findings and recapitulates key lessons learnt conclusion from the analysis of the collected data.
- Section 5 provides policy recommendations for the refinement of territorial policies in partners' territories.

1 Introduction

Activity A1.5, namely the "Joint assessment of the potential of wind energy communities in partnership regions, as a pathway for increased social acceptance" prescribes the exchange of experience among BIOWIND partners, by identifying and collecting data to assess the current and future potential of wind energy communities and then analysing all data collected to develop a final policy recommendations report.

In this context, partners are required to:

a) share information on existing legislation and the eagerness of local communities to participate in WECs, and
b) pinpoint key factors for the establishment of wind farms, such as political will, grid access and operability, financial subsidies and support services.

The current document (D1.5.2) builds upon actions carried out by partners according to the guidelines provided by D1.5.1 and presents an analysis of the findings along with policy recommendations for project partners to support the establishment of WECs in their regions.

2 Overview of collected data

According to the survey guidelines (provided in the D1.5.1), BIOWIND partners were expected to conduct desk research in order to a) assess the potential of wind energy communities in their regions, b) pinpoint the critical enablers for the establishment and operation of the wind energy communities in their regions, and c) identify territorial good practices and assess their effectiveness, impact and transferability potential. To this end, partners were requested to identify at least two (2) practices and ideally up to four (4). However, partners from the same country or region were given the opportunity to collaborate and jointly identify up to four (4) practices.

Of the total ten (10) project partners representing regions from eight (8) countries that were expected to participate in the survey, nine (9) project partners from regions of eight (8) countries filled in the survey form. Of them, six (6) project partners representing regions from five (5) countries provided good practices, with CARM providing cases on regional level focusing on the region of Murcia and FAEN focusing on the region of Asturias. Accordingly, partners representing the region of Western Greece, namely University of Patras (UPAT) and Region of Western Greece (RWG) provided two (2) good practices, covering the expected key performance indicator. In total, twelve (12) good practices, from five (5) countries were collected. Overall, partners provided good practices implemented within their regions or countries when these practices were deemed significant. Accordingly, partners were instructed to pinpoint practices contributing to the expansion of energy communities, regardless of the fact that these practices may concern solar energy communities.

Partners unable to provide territorial cases include a) Province Vlaams-Brabant (Belgium) due to the fact that legislation enabling wind energy communities was enacted in 2023, hence identifying good practices was considered premature, b) Central Danube Development Agency Nonprofit Ltd. (Hungary) due to the lack of legislation that promotes for the establishment of wind energy communities, and c) Regional Council of South Ostrobothnia (Finland). The titles of the good practices collected were shortened to enhance clarity.

3 Data presentation and analysis

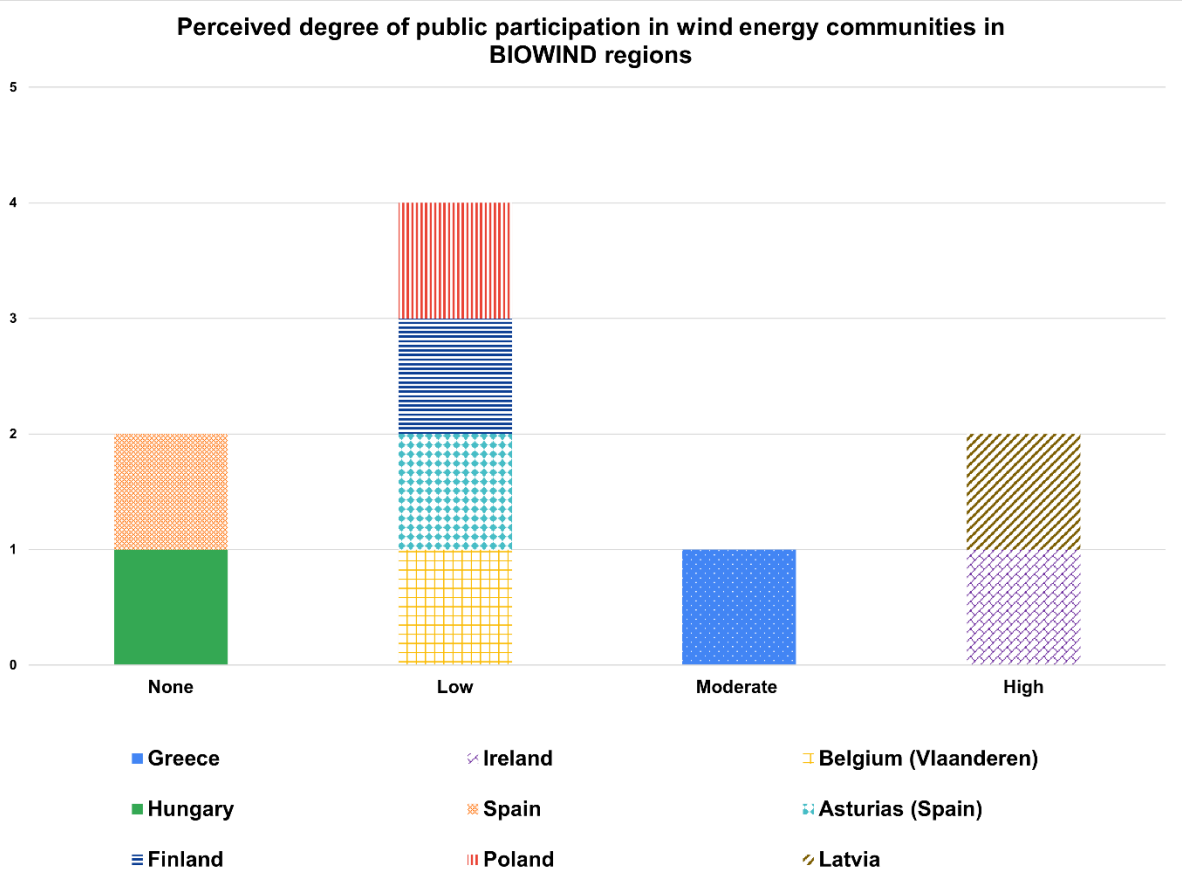
3.1 Wind energy communities: State of play in the BIOWIND regions.

BIOWIND partners were asked to evaluate the potential of wind energy communities in their regions by rating the degree of public participation and the overall success of the wind energy communities. Similarly, partners provided input on the main challenges faced by the wind energy communities in their regions. Input from partners on each question is presented in the following subsections.

3.1.1 Degree of public participation in wind energy communities in partners' regions

The degree of public participation in wind energy communities in partners' regions, was evaluated by nine (9) partners (UPAT, NWRA, PFB, CDDA, CARM, FAEN, RCSO, MOSV, ZPR) on a scale from zero (0) to three (3), where 0 represents *None*, 1 represents *Low*, 2 represents *Moderate* and 3 represents *High* degree of participation in wind energy communities. Two (2) respondents (CCDA, CARM) rated it as *None*, four (4) respondents (PFB, FAEN, MOSV, RCSO) rated it as *Low*, one (1) respondent (UPAT) rated it as *Moderate,* and two (2) respondents (NWRA, ZPR) rated it as *High*. Overall, the minority (2 out of 9 respondents) rated the degree of public participation as *High,* and the overall perception tends toward *Low* to *None*. These findings are depicted in the following graph.

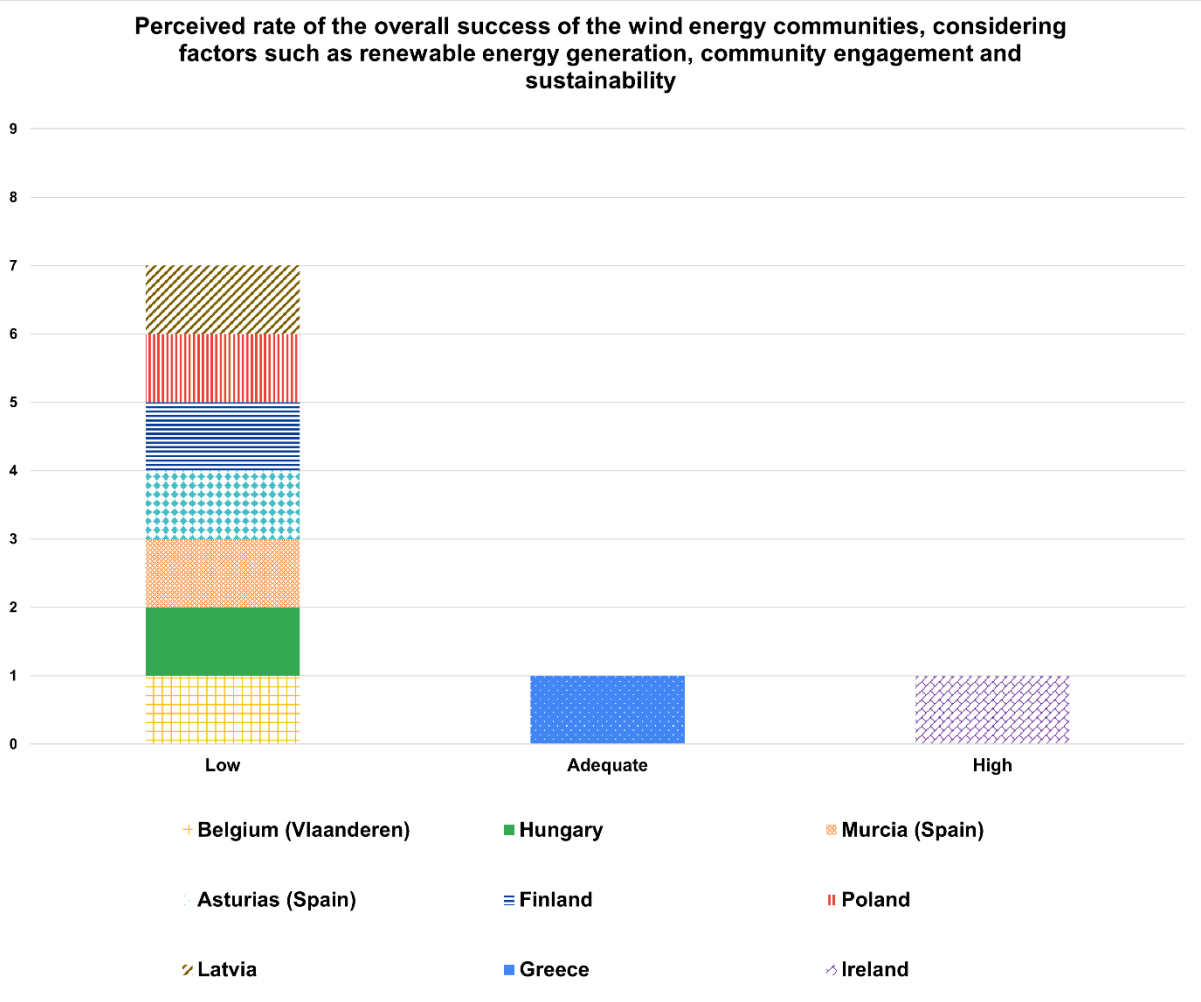
Figure 1. Perceived degree of public participation in wind energy communities in BIOWIND regions



3.1.2 Evaluating the success of wind energy communities in partners' regions

The overall success of wind energy communities in partners' regions, considering factors such as renewable energy generation, community engagement and sustainability, was evaluated by nine (9) partners (UPAT, NWRA, PFB, CDDA, CARM, FAEN, RCSO, MOSV, ZPR) using three (3) categories: *Low, Adequate,* and *High*. One (1) respondent (NWRA) rated it as *High* and another one (1) respondent (UPAT) rated it as *Adequate*, while seven (7) respondents (PFB, CCDA, CARM, FAEN, RSCO, MOSV, ZPR) rated it as *Low*. Overall, the majority of participants (7 out of 9) rated the success ow wind energy communities in their regions as *Low*, as illustrated in the following graph.

Figure 2. Perceived rate of the overall success of the wind energy communities, considering factors such as renewable energy generation, community engagement and sustainability



3.1.3 Main challenges faced by the wind energy communities in partners' regions

According to participants input the main challenges faced by the wind energy communities in their regions can be categorised in:

- **Financial challenges**

Financial challenges are related with the access to funding, especially for communities aiming at self-consumption (UPAT) and the cost of the overall endeavour which is higher compared to other renewable energy sources, such as solar panels (CARM).

- **Regulatory and policy hindrances**

Regulatory and policy hindrances may vary from the lack of supportive legislative framework (CCDA) to complex administrative procedures that fail to incorporate the specific features of wind energy model (CARM) or provoke regulatory ambivalence due to multiple contradictory provisions and classifications of energy communities and other relevant entities (PFB), and authorisation barriers (UPAT).

- **Social challenges**

Social challenges are related with the public perception of wind energy communities and are frequently demonstrated as reluctancy to participate in energy communities (RSCO), lack of awareness on opportunities, technical aspects and the process needed to be followed to participate in wind energy communities (CARM, RSCO). The skepticism towards wind energy (ZPR), the absence of a cooperative mindset among the population (FAEN), along with the public perception of a lack of transparency (NWRA, FAEN), also fall under the social challenges. Finally, the lack of paradigm and trend on national level, in specific the lack of energy communities, also affects public's willingness to participate in wind energy communities (MOSV).

In conclusion, the overall perception of public participation in wind energy communities which was rated as *Low,* as well as the overall perception of the rate of the overall

success of wind energy communities which was also rated as *Low* by the majority of respondents, can be justified by the prevailing financial, regulatory and social challenges towards the wind energy communities' proliferation in partners' regions. Moreover, the identified challenges are interrelated and compound each other, in specific the lack of public awareness on wind energy communities impede their roll out and vice versa.

3.2 Identification of the critical enablers to the establishment and operation of wind energy communities.

Partners were also asked to identify the parameters that influence the establishment and operation of the wind energy communities (WECs) in their region and assess the most significant ones for the roll out of wind energy communities. The parameters were classified under the following categories: 1) Regulatory and policy framework, 2) Financial aspects, 3) Community engagement, and 4) Technological and technical factors and are presented in the following subsections under this order.

3.2.1 Regulatory and policy framework

The regulatory and policy framework category, included the following critical factors:

- Clear and consistent regulatory framework.
- Streamlined grid access.
- Simplified permitting processes.
- Regulations that encourage the fair sharing of benefits, such as job opportunities, reduced energy expenses, and investments in infrastructure.
- Inclusive and equitable measures to incorporate and benefit marginalized populations.
- Regulations tailored to address the unique needs and characteristics of citizens, ensuring that policies are responsive and adaptable to diverse community contexts.
- Other.

The **clear and consistent regulatory framework** was deemed as a parameter that is critical to the establishment and operation of wind energy communities by the majority of the respondents: six (6) out of nine (9) respondents. The remaining three (3) respondents that stated that this parameter does not apply to their region were from Hungary (CCDA), Finland (RSCO) and Poland (MOSV). The **streamlined grid access** was identified as a parameter that applies to the establishment and operation of wind energy communities by six (6) out of eight (8) respondents and as a parameter that does not apply by (RSCO, CCDA) two (2) out of eight (8) respondents. (One

respondent didn't answer). As regards the **simplified permitting processes,** five (5) out of nine (9) partners indicated that applies to their region and the remaining four (4) (CCDA, ZPR, RCSO, MOSV) that it does not apply. Accordingly, the **regulations that encourage the fair sharing of benefits, such as job opportunities, reduced energy expenses, and investments in infrastructure** was indicated as a parameter that applies to their region by six (6) out of nine (9) respondents, and as a non-applicable parameter by three (3) respondents, namely CCDA, RCSO, and MOSV. The **inclusive and equitable measures to incorporate and benefit marginalized populations** was deemed as an applicable parameter to the proliferation of wind energy communities by four (4) out of nine (9) respondents and as a non-applicable by the majority of five (5) out of nine (9) respondents, specifically NWRA, CCDA, RCSO, MOSV, and ZPR. Moreover, as regards the **regulations tailored to address the unique needs and characteristics of citizens, ensuring that policies are responsive and adaptable to diverse community contexts,** the respondents (eight in total) were evenly split, with half (4 out of 8) indicating this parameter applies and the other half indicating that it does not apply (CCDA, CARM, RCSO, MOSV). (One respondent didn't answer).

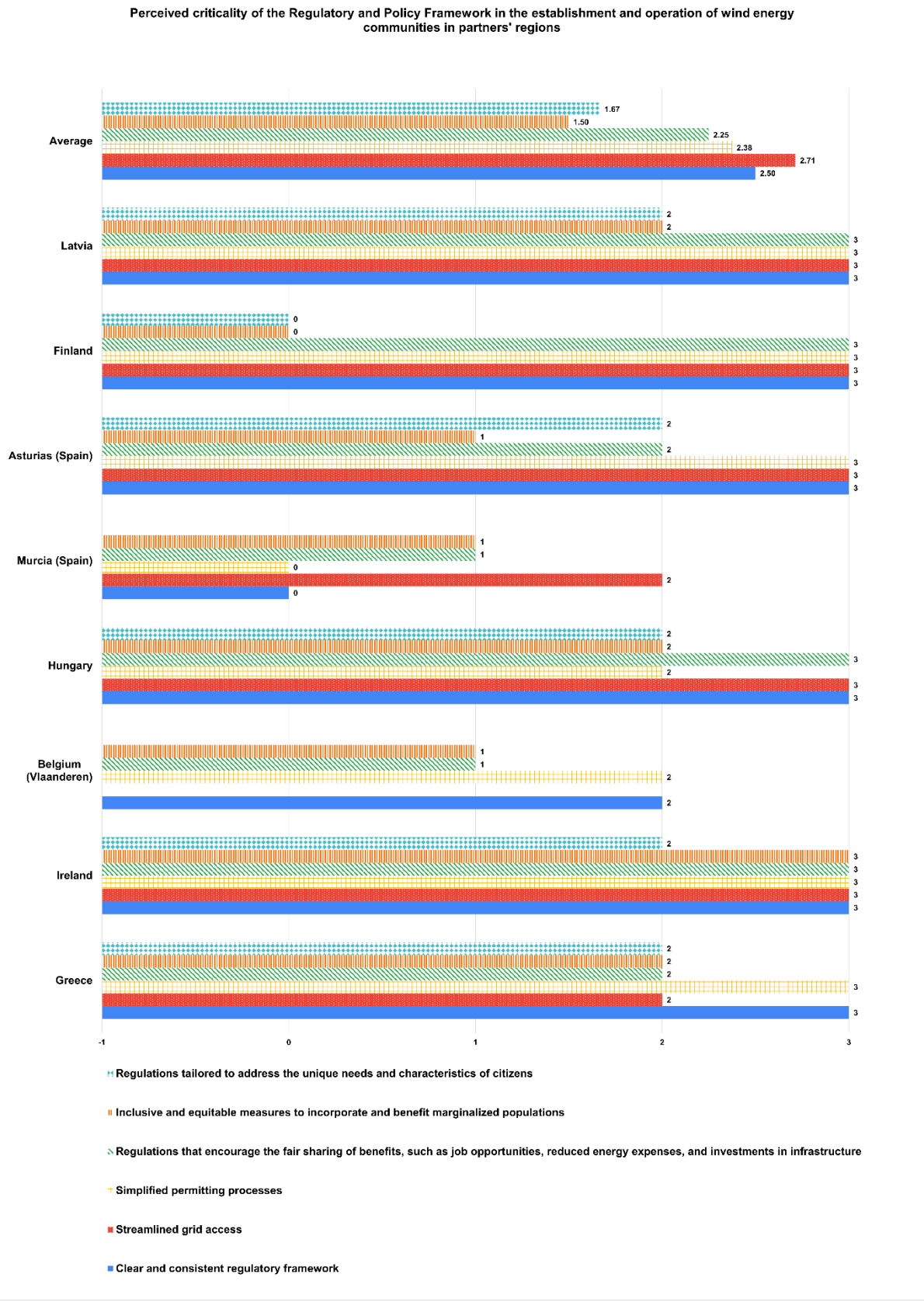
Partners were also requested to rate the criticality of each of the abovementioned parameters to the proliferation of wind energy communities in their regions on a scale from zero (0) to three (3), with zero (0) indicating *Non-relevant*, one (1) indicating *Low*, two (2) indicating *Moderate* and three (3) indicating *High*. The most critical parameters to the wind energy communities as rated by respondents are listed in descending order of their Average Scores (AS):

1. Streamlined grid access (AS: 2,7).
2. Clear and consistent regulatory framework (AS: 2,5).
3. Simplified permitting processes (AS: 2,3).
4. Regulations that encourage the fair sharing of benefits, such as job opportunities, reduced energy expenses, and investments in infrastructure (AS: 2,2).
5. Regulations tailored to address the unique needs and characteristics of citizens, ensuring that policies are responsive and adaptable to diverse community contexts (AS:1,6).

6. Inclusive and equitable measures to incorporate and benefit marginalized populations (AS: 1,5).

The following graph illustrates the perceived criticality of the parameters that fall under the Regulatory and Policy Framework category per country, along with the average scores per each parameter.

Figure 3. Perceived criticality of the Regulatory and Policy Framework in the establishment and operation of wind energy communities in BIOWIND regions



3.2.2 Financial aspects

The following factors were included under the “Financial aspects” category:

- Government incentives and subsidies (for example feed-in tariffs).
- Access to funding and financing programs.
- Utilisation of innovative financing models, including crowdfunding and cooperative funding.
- Community’s financial knowledge of how to use the funds or the support.
- Specific provisions for low-income and marginalized communities.
- Other.

The **government incentives and subsidies (for example feed-in tariffs)** factor was evenly split with half respondents (4 out of 8) indicating it as applicable and the other half indicating it as non- applicable factor to the roll out of wind energy communities in their territories (ZPR, RCSO, CCDA, PFB). (One respondent didn’t answer this question). The **access to funding and financing programs** was perceived as applicable by six (6) out of nine (9) respondents and as non-applicable factor by the remaining three (3), namely PFB, CCDA, and RSCO. Similarly, the **utilisation of innovative financing models, including crowdfunding and cooperative funding** was indicated as applicable factor by five (5) out of nine (9) respondents and as non-applicable by four (4), specifically CCDA, RCSO, MOSV and ZPR. Furthermore, the **community’s financial knowledge of how to use the funds or the support** was assessed as applicable factor by seven (7) out of nine (9) respondents, while the remaining two (2) assessed it as non-applicable (PFB, ZPR). Finally, the **specific provisions for low-income and marginalized communities** was indicated as applicable factor by five (5) out of nine (9) respondents and as non-applicable by four (4), namely NWRA, PFB, CCDA, and RCSO.

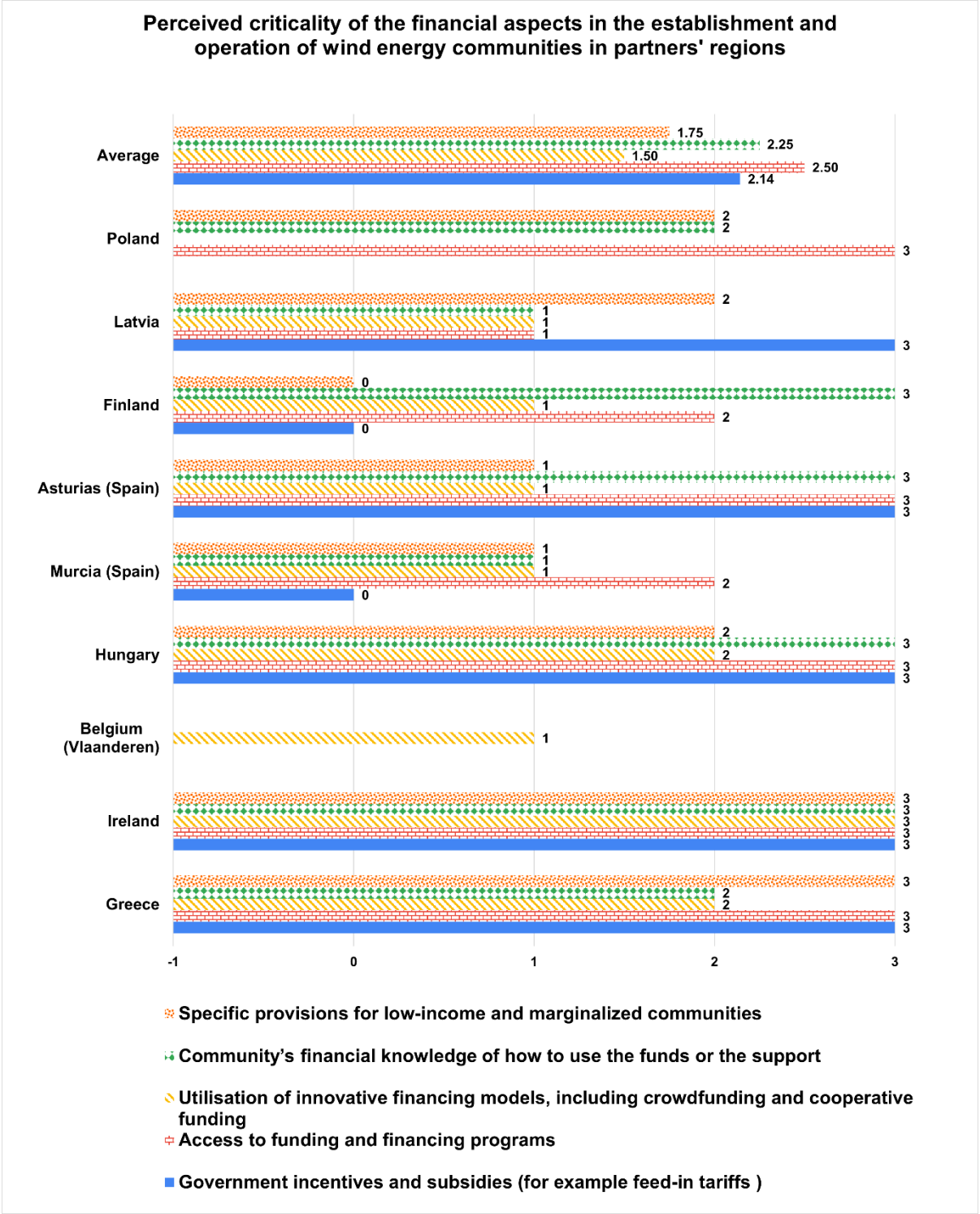
Partners were also requested to rate the criticality of each of the abovementioned parameters to the proliferation of wind energy communities in their regions on a scale from zero (0) to three (3), with zero (0) indicating *Non-relevant*, one (1) indicating *Low*, two (2) indicating *Moderate* and three (3) indicating *High*. The most critical parameters

to the wind energy communities as rated by respondents are listed in descending order of their Average Scores (AS):

1. Access to funding and financing programs (AS: 2,5).
2. Community's financial knowledge of how to use the funds or the support. Specific provisions for low-income and marginalized communities (AS: 2,2).
3. Government incentives and subsidies (for example feed-in tariffs) (AS: 2,1).
4. Specific provisions for low-income and marginalized communities (AS: 1,7).
5. Utilisation of innovative financing models, including crowdfunding and cooperative funding (AS: 1,5).

The following graph indicates the perceived criticality of the parameters that fall under the "Financial aspects" category per country, along with the average scores per each parameter.

Figure 4. Perceived criticality of the financial aspects in the establishment and operation of wind energy communities in partners' regions



3.2.3 Community engagement

The “Community engagement” category included the following parameters:

- Willingness of citizens to participate in WECs.
- Residents’ skepticism towards WECs.
- Existence of well-defined roles and responsibilities in WECs in your region.
- Awareness of the benefits of the WECs (economic, environmental, social, etc.).
- Training seminars to address knowledge gaps among citizens to support the establishment and operation of WECs.
- Platforms for knowledge-sharing and collaboration among existing and aspiring WECs.
- Other.

The willingness of citizens to participate in WECs was deemed as an applicable parameter to the proliferation of wind energy communities by seven (7) out of nine (9) respondents and as non-applicable by the remaining two (2), namely MOSV and ZPR. Similarly, the **residents’ scepticism towards WECs** was indicated as an applicable parameter to the proliferation of wind energy communities by seven (7) out of nine (9) respondents and as non-applicable by two (2), in specific PFB and MOSV. Regarding the **existence of well-defined roles and responsibilities in WECs in your region** three (3) respondents assessed it as applicable parameter to their region, and the majority of respondents, in specific six (6) out of nine (9) respondents assessed it as non-applicable: PFB, CCDA, CARM, RCSO, MOSV, and ZPR. The **awareness of the benefits of the WECs (economic, environmental, social, etc.)** was indicated applicable parameter by four (4) out of nine (9) respondents and as non-applicable by five (5) respondents, namely PFB, CCDA, RCSO, MOSV, and ZPR. **Training seminars to address knowledge gaps among citizens to support the establishment and operation of WECs** was noted applicable by three (3) out of eight (8) respondents, (one respondent didn’t answer) and as non- applicable by the majority of five (5) participants, in specific CCDA, CARM, RCSO, MOSV, and ZPR. Concerning **platforms for knowledge-sharing and collaboration among existing and aspiring WECs,** three (3) respondents evaluated it as applicable to their region

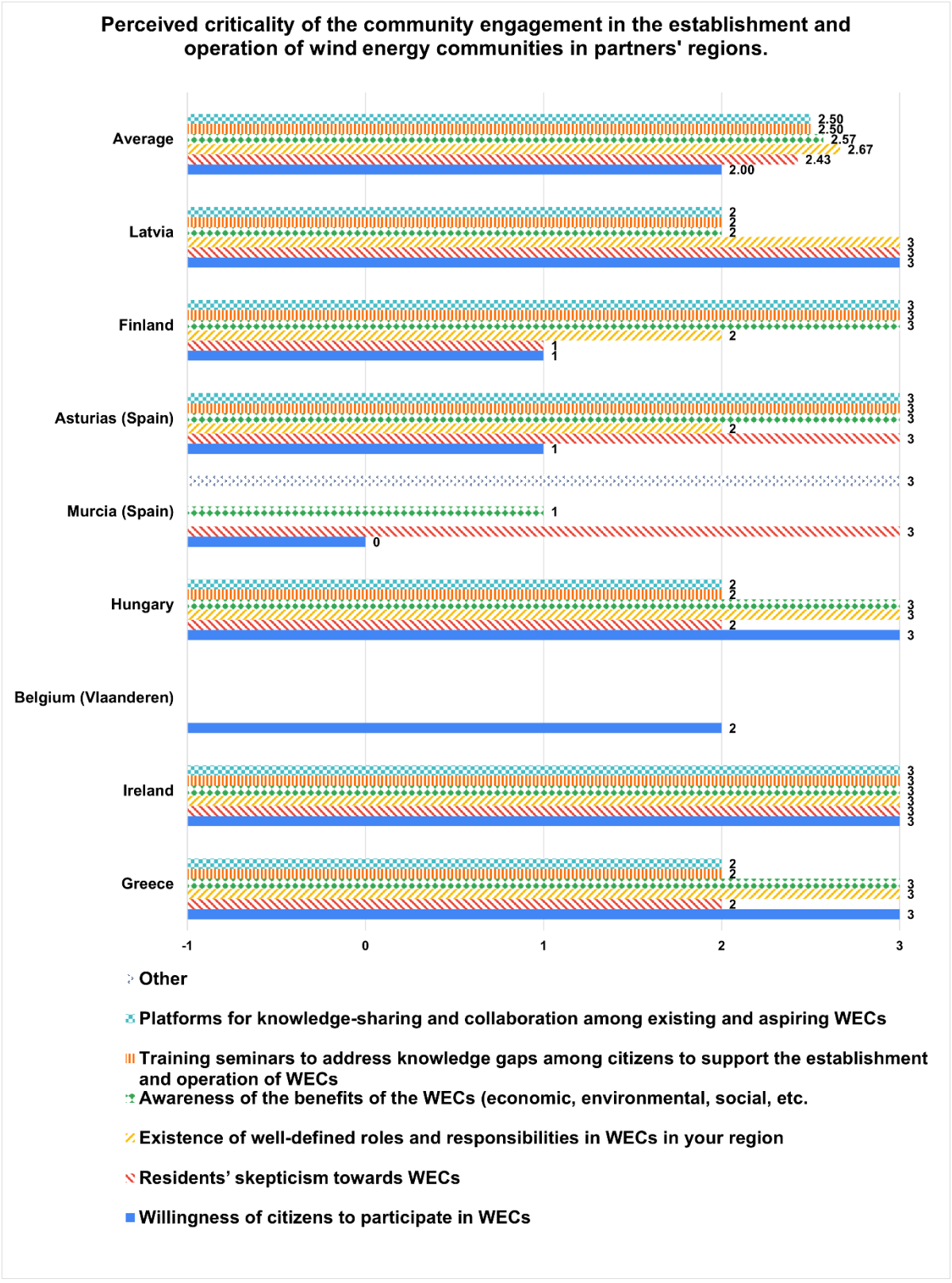
factor, while the majority of five (5) as non-applicable, namely PFB, CCDA, CARM, RCSO, MOSV, and ZPR. Finally, CARM selected **other** and defined it as **training seminars to address knowledge gaps among citizens to support the establishment and operation of solar energy communities**. Such trainings are being successfully implemented in the region of Murcia and could be easily adapted by other partners with the view to be offered to individuals or groups willing to establish a wind energy community.

Partners were also asked to rate the criticality of each of the abovementioned parameters to the proliferation of wind energy communities in their regions on a scale from zero (0) to three (3), with zero (0) indicating *Non-relevant*, one (1) indicating *Low*, two (2) indicating *Moderate* and three (3) indicating *High*. The most critical parameters to the wind energy communities as rated by respondents are listed in descending order of their Average Scores (AS):

1. Existence of well-defined roles and responsibilities in WECs in your region (AS: 2,6).
2. Awareness of the benefits of the WECs (economic, environmental, social, etc.) (AS: 2,57).
3. Training seminars to address knowledge gaps among citizens to support the establishment and operation of WECs (AS: 2,5).
4. Platforms for knowledge-sharing and collaboration among existing and aspiring WECs (AS: 2,5).
5. Residents' scepticism towards WECs (AS: 2,4).
6. Willingness of citizens to participate in WECs (AS: 2).

The perceived criticality of the parameters that fall under the "Community engagement" category per country, along with the average scores per each parameter is indicated in the following graph.

Figure 5. Perceived criticality of the Community Engagement in the establishment and operation of wind energy communities in partners' regions.



3.2.4 Technological and technical factors

The “Technological and technical factors” category included the following parameters:

- Existence of sufficient grid infrastructure to ensure the seamless connection of community wind projects to the broader energy system.
- Utilisation of smart grid technologies to monitor, control and manage energy distribution in real time.
- Utilisation of energy storage technologies, such as advanced batteries to enable WECs to store excess energy during periods of high wind energy production.
- Other.

The **existence of sufficient grid infrastructure to ensure the seamless connection of community wind projects to the broader energy system**, was highlighted as applicable parameter by the majority of respondents, in specific six (6) out of eight (8) respondents and as non-applicable by the remaining two (2) respondents, namely NWRA and CCDA. Moreover, the **utilisation of smart grid technologies to monitor, control and manage energy distribution in real time** was indicated applicable factor by six (6) out of seven (7) respondents[1] and non-applicable by one (1) respondent (NWRA). Concerning **the utilisation of energy storage technologies, such as advanced batteries to enable WECs to store excess energy during periods of high wind energy production** was identified as applicable factor by five (5) out of seven (7) respondents and as non-applicable by the remaining two (2), namely MOSV and ZPR.

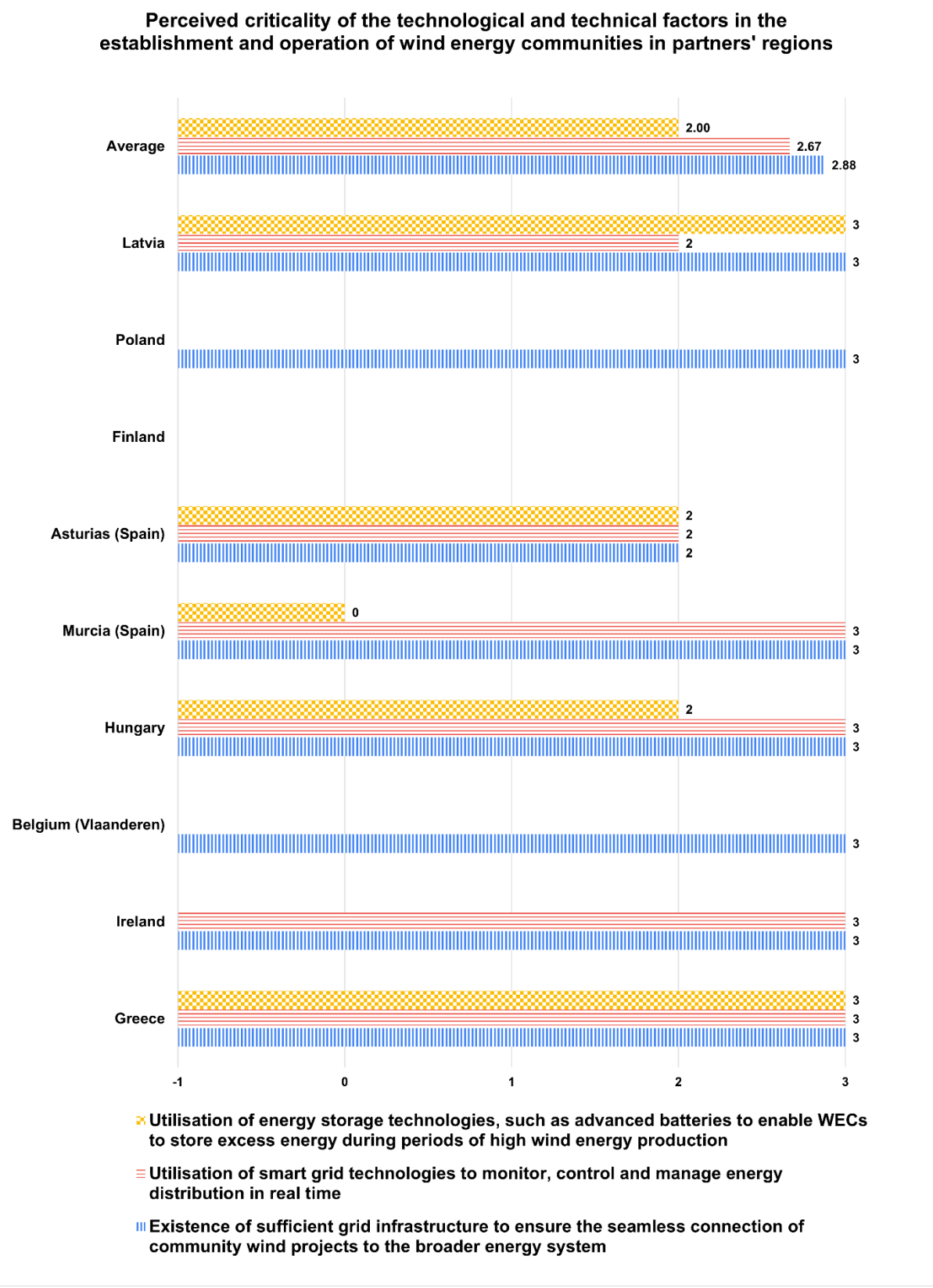
Respondents were also asked to rate the criticality of each of the abovementioned parameters to the proliferation of wind energy communities in their regions on a scale from zero (0) to three (3), with zero (0) indicating *Non-relevant*, one (1) indicating *Low*, two (2) indicating *Moderate* and three (3) indicating *High*. The most critical parameters to the wind energy communities as rated by respondents are listed in descending order of their Average Scores (AS):

[1] Two (2) respondents didn’t answer this question.

1. Existence of sufficient grid infrastructure to ensure the seamless connection of community wind projects to the broader energy system (AS: 2,8).
2. Utilisation of smart grid technologies to monitor, control and manage energy distribution in real time (AS: 2,6).
3. Utilisation of energy storage technologies, such as advanced batteries to enable WECs to store excess energy during periods of high wind energy production (AS: 2).

The perceived criticality of the parameters that fall under the “Technological and technical factors” category per country, along with the average scores per each parameter is indicated in the following graph.

Figure 6. Perceived criticality of the technological and technical factors in the establishment and operation of wind energy communities in partners' regions



3.3 Presentation and analysis of the good practices collected per country

In total six (6) partners representing five (5) countries, identified twelve (12) good practices. Verbatim responses, as collected by the survey form, are included in the annex. (5.1 Annex: Verbatim input from survey respondents on good practices). Thus, an overview of them is provided in the following subsections.

3.3.1 Good practices identified in Greece

University of Patras (UPAT) provided two (2) good practices from Greece, “Minoa energy community – Net metering system” (#1) hereafter indicated as MINOA for brevity, and “’Apollo’ Program - Installation of RES stations to reduce energy costs of vulnerable households and local governments through the establishment of energy communities” (#2), hereafter referred to as APOLLO.

1. MINOA: Minoa energy community – Net metering system

Location: Crete, Greece

Implementor: The Minoa Energy Community

Summary: The Minoa Energy Community participates in the Crete Valley project, which integrates various renewable energy sources across four locations in Crete to fulfill local energy needs. As part of the EU's "Clean Energy for the Islands" initiative, the community is involved in multiple projects that reduce energy costs, increase grid reliability, and create sustainable jobs. The community has implemented a net metering system which allows participants to offset their energy consumption with the energy they produce. Challenges that they face is to include educating citizens about renewable energy benefits and incorporating their input into technology use, which the community addresses through seminars and inclusive project designs.

Evaluation of MINOA good practice

UPAT rated the effectiveness of MINOA practice in achieving its goal and the impact of the MINOA practice as *Moderate* with a score of 2 out of 3. As regards the transferability potential of MINOA to other partners' regions, UPAT rated a) the ease of adoption (considering time and cost) in terms of required resources, as *Low* (1 out of 3), b) the ease of adoption in terms of required changes in regulations and policies as *Moderate* (2 out of 3) and c) the applicability to other territories (i.e., whether the issue it aims to tackle is widely encountered), as *High* (with 3 out of 3). To conclude, MINOA received a mean overall score of 2, indicating a moderate overall potential.

2. APOLLO: "Apollo" Program - Installation of RES stations to reduce energy costs of vulnerable households and local governments through the establishment of energy communities

Location: Greece

Implementor: Ministry of Environment and Energy

Summary: The Apollo Program is Greece's extensive energy initiative that supports vulnerable households and local governments by reducing energy costs through the installation of renewable energy stations and virtual netting. The program includes forming Energy Communities across regions, with an extensive planning and implementation phase spanning 36 months and an estimated budget of 120 million Euros. This initiative aims to unfreeze over 1 GW of renewable projects, stimulating the market and creating new employment opportunities.

Evaluation of APOLLO good practice

UPAT rated the effectiveness of APOLLO practice in achieving its goal and the impact of the APOLLO practice as *High* with a score of 3 out of 3. As regards the transferability potential of APOLLO to other partners' regions, UPAT rated a) the ease of adoption (considering time and cost) in terms of required resources, b) the ease of adoption in terms of required changes in regulations and policies and c) the applicability to other

territories (i.e., whether the issue it aims to tackle is widely encountered), as *Moderate* (with 2 out of 3). To conclude, APOLLO received a mean score of 2, indicating a moderate overall potential.

Analysis of the good practices identified in Greece

The net metering system that MINOA energy community implements is a practice that promotes the increase of public participation in renewable energy projects by providing reduced energy costs for participants, including residents and businesses. Apart from cost savings, net metering systems offer an increased return of investment and facilitate the creation of employment opportunities. Moreover, net metering systems contribute to the grid stability as they facilitate energy generation close to consumption points that minimises losses and support decentralised energy generation and thus energy communities.

APOLLO has a strongly positive impact in terms of promoting the establishment of energy communities and increasing the share of RES in the energy mix. Still, the requirements for the implementation of this practice can be high (depending on the scale of the initiative), highlighted by the cost (120 million EUR for the APOLLO project) and the increased administrational and monitoring requirements related to, for example, subcontracting services or the formal establishment of energy communities.

3.3.2 Good practices identified in Ireland

Northern and Western Regional Assembly (NWRA) shared two (2) good practices from Ireland, namely Templederry Community Windfarm-reinvestments in community (#3), hereafter referred to as TEMPLEDERRY, and COMMUNITY POWER (#4) which is a trading name of Templederry Renewable Energy Supply Ltd. – the first community - owned electricity supplier and hereafter referred to as COMMUNITY POWER for brevity.

3. TEMPLEDERRY: Templederry Community Windfarm-reinvestments in community

Location: Tipperary, Ireland

Implementor: Templederry Community Group, Templederry Energy Resources group

Summary: Templederry Windfarm, Ireland's first community-owned wind project, represents a pioneering community-driven effort in renewable energy. Supported by local training and expert agencies, the project faced challenges like planning objections and financial issues over its 13-year development. Today, it **reinvests a share of its earnings into local initiatives**, fostering further community and renewable projects under the brand Community Power, enhancing sustainable energy independence in Ireland.

Evaluation of TEMPLEDERRY good practice

NWRA rated the effectiveness of TEMPLEDERRY practice in achieving its goal and the impact of the TEMPLEDERRY practice as *High* with a score of 3 out of 3. As regards the transferability potential of TEMPLEDERRY to other partners' regions, NWRA rated a) the ease of adoption (considering time and cost) in terms of required resources, as *Low*, b) the ease of adoption in terms of required changes in regulations and policies and c) the applicability to other territories (i.e., whether the issue it aims to tackle is widely encountered), as *Moderate* (with 2 out of 3). To conclude, TEMPLEDERRY received a mean score of 2, indicating a moderate overall potential.

4. COMMUNITY POWER: trading name of Templederry Renewable Energy Supply Ltd.- the first community-owned electricity supplier

Location: Ireland

Implementor: Templederry Community Group

Summary:

COMMUNITY POWER, emerging from Templederry Windfarm, is Ireland's first community-owned electricity supplier. This initiative leverages local renewable sources to provide energy to Irish households and businesses, emphasising community ownership and participation. Despite challenges faced in securing support from national agencies, COMMUNITY POWER is making significant strides in transforming Ireland's energy landscape towards sustainability.

Evaluation of COMMUNITY POWER good practice

NWRA rated the effectiveness of COMMUNITY POWER practice in achieving its goal and the impact of the COMMUNITY POWER practice as *High* with a score of 3 out of 3. As regards the transferability potential of COMMUNITY POWER to other partners' regions, NWRA rated a) the ease of adoption (considering time and cost) in terms of required resources, as *Low*, b) the ease of adoption in terms of required changes in regulations and policies as *Moderate*, and c) the applicability to other territories (i.e., whether the issue it aims to tackle is widely encountered), as *High.* To conclude, COMMUNITY POWER received a mean score of 2, indicating a moderate overall potential.

Analysis of the good practices identified in Ireland

Reinvestments in community by the energy community include the provision of funds to support various local initiatives and enhance economic development and sustainability. These actions have further increased the social acceptance of the project, which can be of great importance for future initiatives since residents, through their involvement in the public consultation, can influence decision making and the approval of future renewable energy projects. It is worth noting that the members of the Templederry windfarm faced significant challenges to obtain the necessary funds for the establishment and operation of the windfarm, having to mobilise both private and public funds.

COMMUNITY POWER was established through a partnership of local community energy groups with the aim of producing and selling energy produced from RES.

COMMUNITY POWER highlights the potential of energy communities to expand their activities and evolve into medium or large scale energy suppliers, something that should be directly supported by policy initiatives. In addition, COMMUNITY POWER buys electricity from local renewable energy producers, which directly supports local communities and contributes to the national climate change goals.

3.3.3 Good practices identified in Spain

Autonomous Community of the Region of Murcia - General Directorate of the Natural Environment (CARM) identified four (4) good practices, namely Municipal participatory budgeting process - Energy Voucher (#5), hereafter referred to as BULLAS, Community transformation offices (#6), hereafter indicated as OTCs, Self-consumption tool (#7), hereafter referred to as MURCIA, and SOLAR MAP (#8)-information tool Likewise, the same country partner, Asturias Energy Foundation (FAEN) identified one (1) good practice, namely Rural CEL BIMENES (#9), hereafter referred to as CEL BIMENES.

5. BULLAS: Municipal participatory budgeting process - Energy Voucher

Location: Bullas, Region of Murcia, Spain

Implementor: Bullas Town Council

Summary

In Bullas, participatory budgeting led to a project where municipal savings from solar installations fund energy vouchers for residents in energy poverty. This initiative not only provides direct financial relief but also fosters community involvement and trust, paving the way for further cooperative energy ventures in the municipality.

Evaluation of BULLAS good practice

CARM rated the effectiveness of BULLAS practice in achieving its goal and the impact of the BULLAS practice and the transferability potential of BULLAS to other partners' regions as *High* with a score of 3 out of 3. To conclude, BULLAS received a mean score of 3, indicating a high overall potential.

6. OTCs-Community transformation offices

Location: Region of Murcia, Spain

Implementor: Various local and regional bodies, namely OTC COITIRM, ALEM (City Hall of Murcia) and Fundación Desarrollo Sostenible

Summary

Murcia's Community Transformation Offices facilitate the establishment of energy communities by offering technical, legal, and financial guidance. Funded by European sources, these offices aim to demystify renewable energy use and promote local participation through workshops and consultations, offering information on the coordination challenges posed by differing legislative frameworks..

Evaluation of OTCs good practice

CARM rated the effectiveness of OTCs practice in achieving its goal and the impact of the OTCs practice and the transferability potential of OTCs to other partners' regions as *High* with a score of 3 out of 3. Yet, CARM rated the ease of adoption (considering time and cost) in terms of required resources (sub-criterion of the transferability potential) with a score of 2 out of 3, indicating that it might be challenging - in terms of the required resources - for other regions to adopt this good practice. To conclude, OTCs received a mean score of 3, indicating a high overall potential.

7. MURCIA: Self-consumption information tool

Location: Murcia municipality, Region of Murcia, Spain

Implementor: OTC ALEM - Local Energy Agency of Murcia

Summary

The self-consumption information tool from Murcia's Local Energy Agency aids citizens in understanding and setting up personal and collective solar energy installations. This initiative provides preliminary assessments and supports community aggregation models, making sustainable energy accessible and fostering the establishment of energy communities.

Evaluation of MURCIA good practice

CARM rated the effectiveness of MURCIA practice in achieving its goal as *High* with a score of 3 out of 3 and its impact as *Moderate*. Moreover, CARM rated the overall transferability potential of MURCIA to other partners' regions as *Moderate* by rating a) the ease of adoption (considering time and cost) in terms of required resources (sub-criterion of the transferability potential) as *Low* with a score of 1 out of 3, b) the ease of adoption in terms of required changes in regulations and policies, and c) the applicability to other territories (i.e., whether the issue it aims to tackle is widely encountered), as *High.* In conclusion, MURCIA received a mean score of 2, indicating a moderate potential.

8. SOLAR MAP-Information tool

Location: Murcia municipality, Region of Murcia, Spain

Implementor: OTC ALEM - Local Energy Agency of Murcia

Summary

Murcia's Solar Map is an information tool that provides detailed photovoltaic potential assessments for city rooftops, encouraging residents to participate in solar energy generation. This online tool, built on comprehensive geographic and climatic data, enhances public engagement and facilitates solar installations across the community.

Evaluation of SOLAR MAP good practice

CARM rated the effectiveness of SOLAR MAP practice in achieving its goal and its impact as *High* with a score of 3 out of 3. Similarly, CARM rated the overall transferability potential of SOLAR MAP to other partners' regions as *Moderate* by rating a) the ease of adoption (considering time and cost) in terms of required resources (sub-criterion of the transferability potential), as *Moderate* (with a score of 2 out of 3), b) the ease of adoption in terms of required changes in regulations and policies, and c) the applicability to other territories (i.e., whether the issue it aims to

tackle is widely encountered), as *High.* Overall, SOLAR MAP received a mean score of 2, indicating a moderate potential.

9. CEL BIMENES: Rural CEL BIMENES

Location: Bimenes, Asturias, Spain

Implementor: Citizens of Bimenes

Summary

In Bimenes, a rural community in Asturias, local citizens have collaborated to build a community-based photovoltaic plant for self-consumption. Towards the establishment and operation of the plant, residents faced various challenges due to delays in the administrative process. However, they managed to overcome them due to the leadership skills demonstrated by members who led the initiative. This project serves as a model case for rural energy community formulation, potentially setting the groundwork for upcoming renewable initiatives in Asturias and beyond.

Evaluation of CEL BIMENES good practice

FAEN rated the effectiveness of CEL BIMENES practice in achieving its goal and its impact as *Moderate* with a score of 2 out of 3. Yet, FAEN rated the overall transferability potential -along with the respective sub criteria of CEL BIMENES to other partners' regions, as *High.* In general, CEL BIMENES received a mean score of 2, indicating a moderate overall potential.

Analysis of the good practices identified in Spain

The municipal participatory budgeting process in BULLAS allowed citizens to propose and vote on policies reflecting their needs. Participatory budgeting consists of a public consultation policy that can increase the interest and willingness of citizens to participate in initiatives emerging from participatory process. Moreover, the success of BULLAS is that the raised awareness and interest of the citizens on renewables led to the formulation of a local energy community. During its implementation, the involved actors faced technical difficulties and received the voluntary work of a consulting company to overcome them, highlighting the importance of providing technical, in addition to financial, support to citizens' initiatives.

The EU funded OTCs serve as hubs promoting the roll out of energy communities and environmental sustainability in general. On their premises, various workshops and training sessions are being delivered, aiming to support interested individuals and groups gain knowledge and receive assistance on technical, financial and legal aspects of establishing an energy community. Moreover, useful tools to assess energy consumption and define the technical specifications of the installation equipment, as well as tools to estimate the territorial solar energy potential are accessible to citizens at the OTCs. Furthermore, OTCs are involved in other local and regional initiatives within the same scope such as BULLAS, MURCIA, and SOLAR MAP. Overall, OTCs plays a key role on the roll out of energy communities since they offer consultancy on regulatory, financial, technical aspects while facilitating community engagement, partnerships and collaboration. At the same time, the establishment and operation of OTCs requires a financial contribution on behalf of the implementing organization as well as staff members with relevant technical expertise.

MURCIA self-consumption information tool facilitates the establishment of energy communities, since it holds data of the citizens residing in a nearby area and are interested in being involved in renewable energy initiatives. Users of the tool are able to identify and get in contact with all neighbors sharing common goals to coordinate the establishment of community-owned energy production projects. Consequently, the

tool can be employed as a quasi-matchmaking platform, bringing together citizens from the local community and accelerating the establishment of energy communities.

The SOLAR MAP tool informs citizens on the solar energy potential of areas of their interest, thus providing information that is essential for energy production products. Obviously, the tool is not directly applicable in the case of wind energy communities, however, similar tools sharing information on the local wind energy potential could reduce the financial and time commitment required to establish a wind energy community, thus addressing two key barriers that inhibit the proliferation of these initiatives in project territories.

CEL BIMENES highlights the critical importance of having energy community members with relevant thematic expertise and knowledge of key issues related to financing, designing and operating an energy community. The lack of such individuals has been repeatedly reported as a major pain point of energy communities, either limiting their longevity or preventing their establishment. The experience that members of CEL BIMENES gained within a solar energy community is transferable and applicable to wind energy communities. As a result, public authorities are advised to implement measures to build up the capacities of energy community members and/or provide consulting services (e.g., on funding mechanisms) which will directly address the capacity gaps of energy community members.

3.3.4 Good practices identified in Latvia

Zemgale Planning Region (ZPR) identified two (2) good practices in Latvia, namely 10) Project “RES FORWARD”, hereafter referred to as RES FORWARD and 11) Project “CO2MMUNITY”, hereafter indicates as CO2MMUNITY.

10. RES FORWARD: Project “RES FORWARD

Location: Latvia, Lithuania, Estonia

Implementor: "Green Liberty" in Latvia, "Circular Economy" in Lithuania and “Estonian Nature Fund” in Estonia.

Summary

RES FORWARD, funded by the European Climate Foundation, was a collaborative effort involving partners across the Baltic states aimed at enhancing national renewable electricity goals and facilitating community involvement in renewable projects. Among others, the project focused on advancing Latvia's National Energy and Climate Plan, promoting wind energy through improved spatial planning, and fostering a citizen-driven approach to energy system transformation. The initiative also emphasised networking and capacity-building across the Baltic region and engaged in extensive public communication to raise awareness about renewable energy. With an overall budget of 65,960 EUR, the impact of the project was significant in harmonising policies and fostering community-driven wind energy planning.

Evaluation of RES FORWARD good practice

ZPR rated the effectiveness of RES FORWARD practice in achieving its goal, its impact and the transferability potential (including all sub criteria), as *High* with an average score of 3 out of 3, indicating a high overall effectiveness.

11. CO2MMUNITY: Project "CO2MMUNITY"

Location: Mārupe Municipality, Latvia and various other locations across Europe

Implementor: Mārupe Municipality Government in collaboration with Rīga Planning Region in Latvia.

Summary

The CO2MMUNITY project, part of the INTERREG VB Baltic Sea Region Programme, was a transnational initiative aimed at fostering community-led renewable energy projects through co-creation and co-financing by local populations. Running from 2017 to 2020, the project engaged various European partners and emphasised the development of community energy projects, leading to the installation of solar panels in Mārupe. The project's activities included extensive surveys to gauge community interest, discussions on energy efficiency, and the establishment of Renewable Energy Co-operative Partnerships (RENCOPs) across several countries. To this end, partners initiated the formulation of local networks called Renewable Energy Cooperative Partnerships (RENCOPs) in the countries participated in the project. RENCOPs established in Estonia, Denmark, Finland, Germany, Latvia, Lithuania, Poland, and Sweden gathered parties representing residents, NGOs, academia, businesses and policymakers which collectively brought their expertise to address challenges pertaining to renewable energy projects. The total budget was 3.15 million EUR, with significant ERDF financing, contributing to a sustainable and participatory approach to renewable energy development in Europe.

Evaluation of CO2MMUNITY good practice

ZPR rated the effectiveness of CO2MMUNITY practice in achieving its goal, its impact and the transferability potential (including all sub criteria), as *High* with an average score of 3 out of 3, indicating a high overall effectiveness.

Analysis of the good practices identified in Latvia

The approach followed in both projects (RES FORWARD, CO2MUNITY), i.e., transnational policy exchange is considered critical for the roll out of energy communities. Participation in such projects, can allow participating entities to build capacities and improve their policies on energy planning through the exchange of experience, solutions and practices with other organisations, which can help address policy gaps. Similarly, RENCOPs developed under CO2MUNITY project, is a practice that can allow the proliferation of wind energy communities. In conclusion, seeking opportunities for participation in such projects can benefit partners to increase their institutional capacity, and uncover policy solutions to promote wind energy communities.

3.3.5 Good practices identified in Poland

Marshal Office of Świętokrzyskie Voivodeship (MOSV) provided one (1) good practice by Poland, namely the 12) construction of the 10 MW wind farm in the Pawłów Commune enacting compensation schemes, hereafter referred to as PAWLOW. Since various fields in the questionnaire were left incomplete, the following presentation of the practice is based on desk research conducted by CARM.

12. PAWLOW: construction of the 10 MW wind farm in the Pawłów Commune- compensation schemes

Location: Pawłów Commune, Świętokrzyskie Voivodeship, Poland

Implementor: Farma Wiatrowa Szerzawy sp. z o.o.

Summary

The construction of the 10 MW wind farm in the Pawłów Commune, located in the Świętokrzyskie Voivodeship, was carried out by Farma Wiatrowa Szerzawy sp. z o.o. This project involved several key components and stages and led to the generation of a significant amount of renewable energy, contributing to the region's energy needs and sustainability goals. The location was chosen for its favourable wind conditions and the feasibility of integrating the wind farm into the local grid. The development of the project included the installation of wind turbines, construction of access roads, and the establishment of necessary electrical infrastructure to connect the generated power to the national grid. Each turbine was strategically placed to maximise energy capture while minimising environmental impact. To this end, comprehensive environmental assessments were conducted to ensure minimal impact on local wildlife and habitats. Accordingly, measures were implemented to mitigate any potential negative effects, adhering to both national and EU environmental regulations. The project is expected to provide economic benefits to the local community through job creation during both the construction and operational phases. Additionally, it supports the broader goal of increasing renewable energy production in Poland, contributing to energy security and the reduction of carbon emissions. Finally, the implementer

supports local community by enacting compensation schemes such as employment opportunities, lease agreements with landowners, community funds supporting schools and social events while at the same time its implementer followed an approach which respects biodiversity concerns by implementing environmental impact assessment and biodiversity offset measures.

Evaluation and analysis of PAWLOW good practice

MOSV rated the effectiveness of PAWLOW practice in achieving its goal, and its impact as *Moderate* with a score of 2 out of 3. As regards the transferability potential was also rated as *Moderate* with a score of 3 out of 3 regarding a) the ease of adoption (considering time and cost) in terms of required resources, and b) the applicability to other territories (i.e., whether the issue it aims to tackle is widely encountered), and a score of 1 out of 3 regarding the ease of adoption in terms of required changes in regulations and policies.

The strategies enacted within the framework of PAWLOW mitigate social opposition to renewable energy projects through the provision of financial and social incentives to local communities. Thus, combining such strategies with public consultation mechanisms can increase public acceptance and interest in wind energy projects especially in areas where the hesitancy or opposition towards wind energy projects prevails.

3.4 Evaluation of the effectiveness, the impact and the transferability potential of the good practices collected per category

This section provides an evaluation of the good practices collected in terms of their effectiveness, impact and transferability potential. To facilitate the analysis of the identified good practices, these are grouped into the following categories:

1. Practices contributing to the establishment and operation of wind energy communities (WECs).

This category includes MURCIA, RES FORWARD, CO2MUNITY, CEL BIMENES, SOLAR MAP, OTCs, APOLLO, and MINOA.

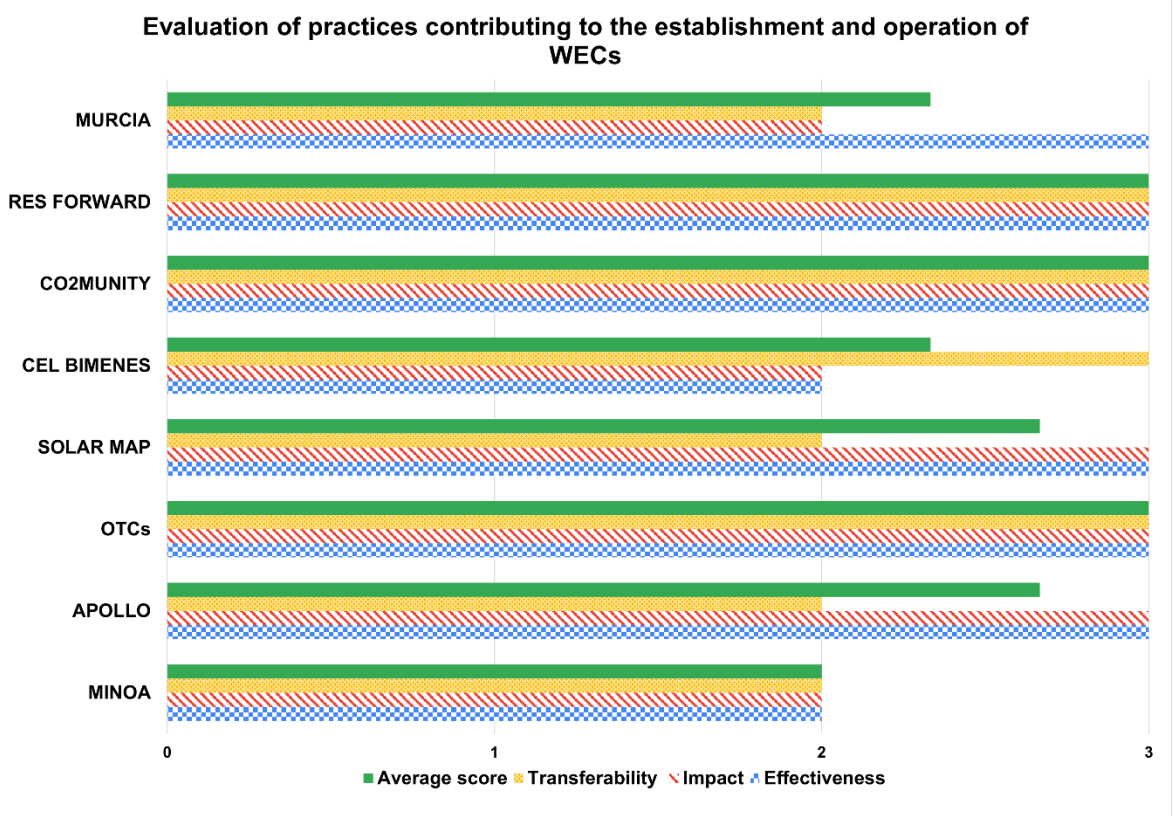
2. Practices increasing the social acceptance of renewable energy projects.

This category contains PAWLOW, BULLAS, COMMUNITY POWER, and TEMPLEDERRY.

3.4.1 Evaluation of the identified good practices contributing to the establishment and operation of wind energy communities.

RES FORWARD, CO2MUNITY, and OTCs, received the highest average score in terms of effectiveness in accomplishing their objectives, impact and transferability potential as indicated in the following graph. This implies the importance of transnational cooperation to improve policy gaps, as well as the importance of establishing entities, such as RENCOPs and OTCs that can raise awareness, provide information and assist citizens in either establishing or participating in energy communities.

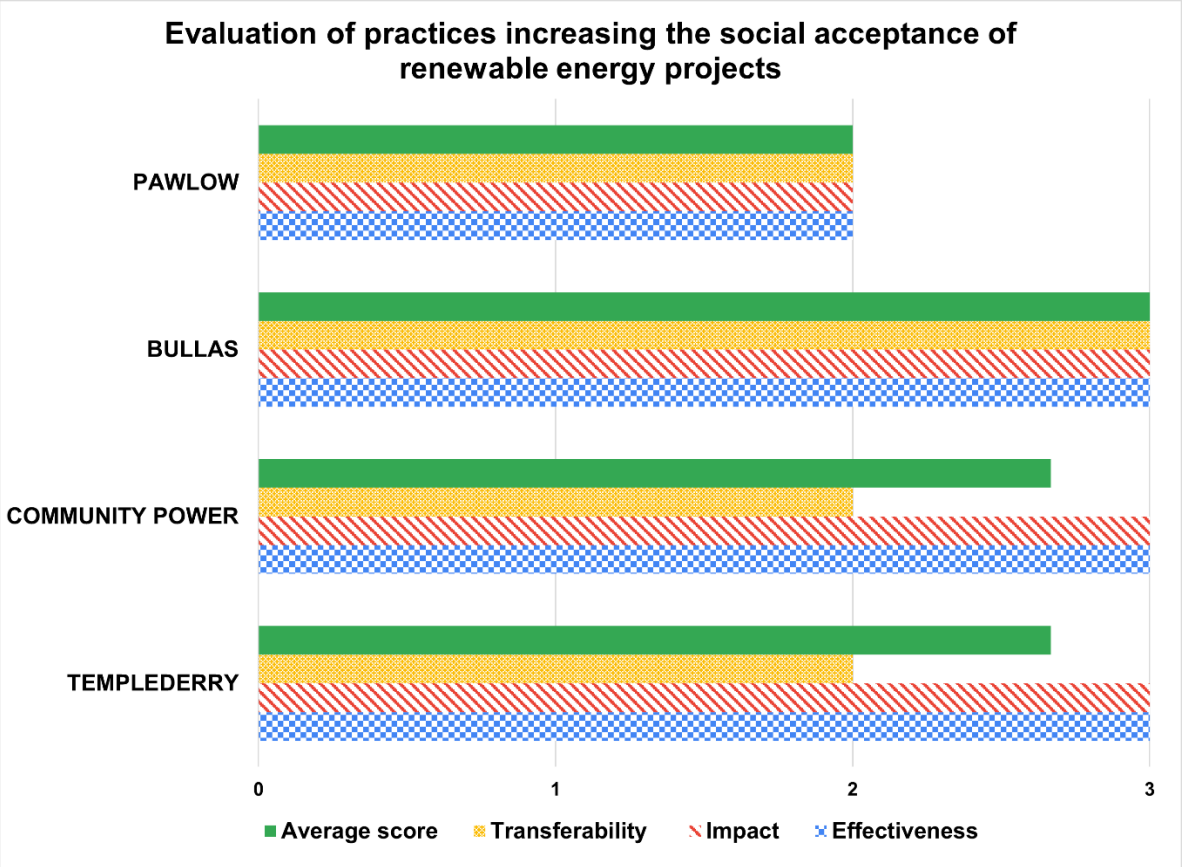
Figure 7. Evaluation of good practices contributing to the establishment and operation of WECs.



3.4.2 Evaluation of the identified good practices increasing the social acceptance of renewable energy projects.

Regarding practices that increase the social acceptance of renewable energy projects the most effective according to respondents include BULLAS, TEMPLEDERRY, and COMMUNITY POWER. The common denominator of all these practices is that they contribute to the wellbeing of the communities. The respective findings are indicated in the following graph.

Figure 8. Evaluation of practices increasing the social acceptance of renewable energy projects



4 Discussion

This section discusses the key findings from the survey conducted by BIOWIND partners. It highlights a) the territorial state of play for wind energy communities (WECs) including the willingness of public to participate in WECs and the main challenges inhibiting the roll out of WECs b) critical factors to facilitate the expansion of WECs and c) the lessons learnt from the review and analysis of the provided good practices.

Public involvement

According to the data provided by the partners, public participation in wind energy communities, is overall low in participating countries, a result that conforms to the findings of previous studies. As a case in point, it has been reported that Poland, Greece, Spain, Finland, and Belgium have considerably fewer wind energy communities (also in relation to their population) compared to the Netherlands and Denmark[2]. The low degree of public participation can be attributed, based on the data shared by partners, on a number of factors, including the inadequacy of the policy framework, and the lack of awareness and / or interest in wind energy initiatives among the general public in the majority of participating regions. Nevertheless, the situation is currently changing due to the gradual refinement of EU and national policies (such as the Renewable Energy Directive II) resulting in a steadily increasing number of citizen's initiatives in the energy production.

Wind energy community effectiveness

Accordingly, the success of wind energy communities, assessed in terms of renewable energy generation, community engagement and sustainability, is reported as Low, a fact that is partly related to the relatively low popularity of wind energy communities and reflects both structural weaknesses of wind energy communities (such as thematic expertise, organisational capacity, members' commitment) and persisting policy gaps

[2] Koltunov, et al. Mapping of Energy Communities in Europe: Status Quo and Review of Existing Classifications. Sustainability 2023, 15, 8201.

(such as preferential treatment in terms of financial support for large scale initiatives vis-à-vis energy communities) . It is noteworthy that in Latvia, the degree of public participation in WECs is reported as high despite the fact that WECs' overall success is reported as low.

Factors impacting the establishment of wind energy communities

The above results can be explained by the challenges frequently reported by citizens aiming to establish, or simply participate in, a wind energy community. These include a) financial challenges, such as access to funding programs and potentially higher infrastructure costs compared to other renewable energy sources, such as solar panels, b) regulatory and policy gaps, including the lack of supportive legislative framework, convoluted and often contradictory administrative processes, and grid access policies, and c) social challenges, including public perception and awareness. Furthermore, it is worth noting that several of these issues are potentially interrelated, creating a negative feedback loop. Thus, lack of public awareness limits citizens' participation, which in turn limits the visibility as well as the overall success of the wind energy communities. Similarly, regulatory gaps compound financial challenges and discourage local communities to further get involved in wind energy initiatives.

Overall, these insights are in agreement with past findings[3], pinpointing a) the fragmented policy and regulatory landscape, b) the large upfront financial cost, c) expertise and skill gaps, especially for community- led, bottom-up efforts, and d) public ignorance or scepticism towards renewable energy projects as key factors inhibiting the establishment and operation of energy communities. Furthermore, they highlight the need for targeted policy improvements in order to achieve the EU goals for energy communities.

In particular the most highly rated factors (i.e. with the most potential impact), under the 'Regulatory and policy framework' category include a) streamlined grid access, b)

[3] Bernd Bonfert,'We like sharing energy but currently there's no advantage': Transformative opportunities and challenges of local energy communities in Europe, Energy Research & Social Science, Volume 107,2024, 103351.
Sabine Löbbe, Fereidoon Sioshansi, David Robinson, 'Energy Communities', Academic Press,2022.

clear and consistent regulatory framework, and c) simplified permitting processes. All factors have been reported in previous studies and are key focal areas of several policy initiatives. For example, the revised EU Renewable Energy Directive[4] specifically calls for specific duration of permit-granting procedures for the installation of renewable energy systems' equipment that must not exceed one month. To this end, the Directive also urges Member States to uptake measures that result in simplified registration process and reduced fees for energy communities and in facilitating system integration of renewable electricity.

The financial parameters that are deemed most important are the a) access to funding and financing programs, b) community's financial knowledge of how to use the funds or the support, and c) specific provisions for low-income and marginalized communities. These results emphasise the importance that funding mechanisms still have in mitigating investment risks and facilitating the establishment of wind energy communities. Consequently, efforts should be made to address any discrimination towards small scale initiatives (such as the typical wind energy community) in terms of funding opportunities.

As regards the community engagement, factors that were reported to have significant impact include a) the existence of well-defined roles and responsibilities in WECs in the region, b) awareness of the benefits of the WECs (economic, environmental, social, etc.), and c) training seminars to address knowledge gaps among citizens to support the establishment and operation of WECs. These represent areas that are blind spots for most current policies, which typically focus on streamlining administrational processes and providing more effective financial support, not acknowledging the importance that knowledgeable individuals and well-define organisational structures play for the longevity of energy communities.

Finally, the most critical technological and technical factors for the establishment and operation of wind energy communities largely concern the expansion of current

[4] Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council

networks in order to ensure the seamless connection of energy communities to the electricity grid and the broader energy system, and the adoption of smart grid technologies to monitor, control and manage energy distribution in real time, both of which highlight the detrimental impact that complex and long-lasting grid connection processes have on the longevity of the wind energy communities.

Good practices identified

Looking into the identified good practices per category - especially these which achieved the highest average scores in terms of effectiveness, impact, and transferability potential, key observations emerge. The category of 'Practices contributing to the establishment and operation of energy communities' (MINOA, APOLLO, OTCs, SOLAR MAP, CEL BIMENES, MURCIA, RES FORWARD, CO2MUNIY) included policy initiatives aiming at reducing energy costs for vulnerable households, technological innovative practices (net metering system), information tools and consulting services, as well as transnational cooperation projects targeting policy improvement in energy planning. As regards information tools, it is worth noting that although tools are important as a mean that can raise awareness and increase public interest on renewable energy projects. Tools alone are naturally insufficient to support citizens in establishing energy communities; thus, active support from public authorities is required. On the other hand, information centres that are established for this purpose, such as OTCs, have proved to be more impactful, since they can provide customised services assisting citizens in all stages required to develop or participate in an energy community. Nevertheless, the staff of OTCs can employ the above-mentioned tools to support interested individuals and groups on legal, technical, and financial aspects, highlighting the importance of an integrated approach.

The practices in the category 'Practices increasing the social acceptance of renewable energy projects', included TEMPLEDERRY, COMMUNITY POWER, BULLAS, and PAWLOW. A key conclusion from the analysis of these practices is that the establishment of giving back mechanisms can improve social acceptance to wind energy projects but also directly increase public engagement in wind energy communities. This has been also observed in cases where citizens can directly benefit

from renewable energy projects, e.g., through reduced electricity costs. Both of these findings are reported in the relevant literature, however in several countries such measures are optional, and often not implemented, indicating that a stricter regulation in this specific aspect could help increase social acceptance and improve public engagement in wind energy communities. Finally, providing support for the growth of energy communities, such as in the good practice concerning the COMMUNITY POWER, not only directly benefits community-based energy production but provides a model to be replicated by other energy communities. As a result, measures to accelerate the connection of the energy communities to the grid, facilitate their involvement in the energy market, and support the expansion of their activities represent a major parameter that can increase the longevity of the established energy communities.

5 Policy recommendations

This section provides horizontal policy recommendations, as well as policy recommendations tailored to address challenges faced by BIOWIND partners in their regions. These policy recommendations aim at boosting the expansion of wind energy communities (WECs) in the BIOWIND regions, derived from the analysis of all key aspects examined through the survey including, the territorial state of play, the most highly rated critical factors and good practices towards this end. Hence, BIOWIND partners are encouraged to consider their own local context and accordingly adapt the following recommendations to this or select those that they deem as more appropriate to address regional policy gaps.

Horizontal policy recommendations promoting the establishment and operation of WECs in BIOWIND territories, organised by key policy objectives are listed below:

1. **Implement consistent regulatory frameworks for the establishment and operation of WECs and conduct public consultation to evaluate the effectiveness of the proposed measures.**

Clear definitions and permitting processes for WECs and decreasing the required time for administrative procedures can play a key role in increasing general public's interest in community-owned energy production.

Likewise, supportive legislative frameworks may contribute to the alleviation of bureaucratic and convoluted procedures and increase transparency and accountability which have proved to be important requirements for both individuals and communities willing to get further involved in renewable energy projects.

Regardless of the specific policy measures partners may willing to enact, it is essential to involve citizens and representatives of the local communities in the decision-making process by conducting consultation meetings for citizens with a view to evaluate the effectiveness of the proposed measures and suggest the ones that they consider as more impactful.

2. **Enhance financial support and promoting financial incentives and subsidies for WECs**.

Acknowledging that restricted access to funding combined with the high upfront installation costs demotivate citizens, BIOWIND partners can promote more accessible funding mechanisms and financial incentives to reduce the cost burden on communities. These may include:

a) Alternative financing models such as crowdfunding, as well as interest-free or low-interest loans from regional and community funds to cover the installation costs.
b) Revising the eligibility criteria on pertinent calls to achieve a gradual increase in WECs.
c) Innovative public-private partnerships such as the provision of public land donations or tax reliefs to constructive companies can incentivise the companies providing their installation services to local energy communities at lower cost. Another option that could be considered is the prepayment of installation costs by regional and provincial funds. This cost could be offset against municipal taxes paid by citizens on monthly or annual basis.

Furthermore, public authorities could provide targeted information regarding EU funded programmes that could financially contribute to community-driven renewable energy projects. Considering respondents views of critical factors, it is important for financial provisions to incorporate measures for low-income and marginalized groups. Apart from providing financial motives to WECs, partners should ensure that these measures are well communicated to the interest groups to accomplish an effective outreach.

3. **Establish regional wind energy centres to improve public awareness, support the establishment and operation of WECs and build the capacities of relevant target groups.**

The establishment of wind energy centres in BIOWIND regions can facilitate the promotion of wind energy by increasing public awareness on the benefits of RES, and in particular wind energy. This will help curtail public opposition that is aggravated by the lack of scientific information and inform citizens about opportunities in wind energy production. In addition, wind energy centres can provide operational, technical and financial guidance on interest groups, effectively tackling one significant barrier to the expansion of wind energy communities. In particular, wind energy centres can host capacity building seminars for members of wind energy communities or individuals seeking to establish a wind energy community in order to provide them a clear understanding of the operational requirements, technical aspects and financial knowledge essential for the establishment of wind energy communities.

Policy recommendations tailored to address challenges faced by BIOWIND partners in their regions are listed below per region.

Western Greece

The expansion of wind energy communities, particularly those focused on self-consumption, faces significant challenges due to limited access to funding. Despite the willingness of the public to formulate energy communities, financial barriers remain a critical obstacle for small-scale projects. Securing investment for community-based wind initiatives is often difficult, as traditional investors, such as banks may view these projects as high-risk due to their small scale, longer payback periods, and the complex regulatory environment they operate within. While there are various EU grants, cooperative models, and specialised institutions such as the European Investment Bank available, these resources can be difficult to navigate for smaller community-driven projects or even remain unknown to the public. Policies to facilitate wind energy communities aiming at self-consumption to gain access to funding are listed below:

1. **Establish a dedicated renewable energy fund.**

Regional authorities can create dedicated renewable energy funds that specifically target community-driven projects. These funds could provide grants and low-interest loans tailored to the unique needs of wind energy communities, thus lower the financial barriers for small scale projects focusing on self-consumption.

2. **Revise the eligibility criteria for calls under existing financial instruments.**

Accordingly, regional authorities can revise the eligibility criteria for calls under existing financial instruments by prioritising the wind energy communities' participation in the pertinent calls. To achieve this, regional authorities may consider involving interested groups in the process and organise consultation meetings with them in order to effectively integrate criteria tailored to their needs.

3. **Revise the eligibility criteria on pertinent calls to promote the formation of wind energy communities with the participation of local tourism and blue economy stakeholders.**

Promoting co-investments that attract private capital to community wind energy projects, especially those that are small scale and might be overlooked by traditional investors, can help energy communities overcome financial barriers. This can be achieved by involving local economic stakeholders, such as hotel owners in Western Greece, where offshore wind farm investments are anticipated. Revising eligibility criteria in relevant calls under the regional operational program to encourage the formation of wind energy communities with the participation of tourism and blue economy stakeholders can provide dual benefits, supporting both the roll out of wind energy communities and the local economy.

Northern and Western Ireland

The proliferation of wind energy communities faces a significant challenge due to the public's perception that the planning process for wind energy projects is neither fair nor transparent. As reported by NWRA, many communities feel excluded from decision-making, stating that their concerns are not adequately addressed. This perception of inequity can increase social opposition towards wind energy projects

and impedes on both renewable energy expansion and the roll out of wind energy communities. Partners may promote the implementation of the policies that are listed below to improve public's perception of planning procedures:

1. **Establish local information offices and helpdesks to mitigate misinformation and increase public participation in the consultation procedures for wind energy projects.**

Establishing local information offices and helpdesks can play a pivotal role on the roll out of wind energy communities. By providing support to community the local information offices and helpdesks can mitigate misinformation about wind energy and improve public participation and trust in pertinent local projects. Local information officers act as points of contact, answering questions, addressing concerns, and gathering feedback from residents in real time and can bring together individuals willing to establish a WEC. Helpdesks, either physical or virtual, offer a space for community members to seek clarification on the project, submit feedback, or learn more about wind energy initiatives.

2. **Increase transparency in the decision-making process.**

Implementing policies that require full transparency in the decision-making process for wind energy projects can effectively increase the social acceptance of such projects. This could include the publication of detailed wind project proposals, environmental impact assessment, biodiversity offset action plans, as well as the rationale behind approval or rejection decision.

3. **Provide clear communication and information on all aspects related to wind energy communities.**

Raising local community's awareness on issues related to community-driven wind energy projects covering all stages from installation and operation to decommissioning while clarifying the ways of public participation to such projects can allow local communities acquire a better understanding, change their stances, thus effectively get

involved. Partners can design communication campaigns deploying digital tools, such as online platforms and informative audiovisual material to increase the outreach of the upcoming local wind energy projects.

Flanders, Belgium

Regulatory ambivalence and unclear conceptual definitions over energy communities remain barriers for their further expansion. Current regulations often provide broad and unclear definitions of energy communities, with overlapping terms like renewable energy communities and citizen energy communities, making it difficult for projects to comply with or benefit from relevant policies. This ambiguity complicates the formation and operation of wind energy communities, as different interpretations of these definitions exist across regions and institutions. Additionally, there is a lack of streamlined communication between various agencies and institutions regarding how energy communities differ from, and relate to, concepts like energy sharing and peer-to-peer (P2P) energy trading. This fragmented regulatory landscape creates confusion and delays, making it harder for wind energy communities to navigate the legal frameworks and fully participate in the territorial energy transition. Policy measures to address regulatory ambiguity, streamline communication among institutions, and provide clearer, more effective support for wind energy communities are listed below:

1. **Develop clear and commonly accepted definitions of (wind) energy communities.**

Partners can work with national governments, legislative bodies and wind energy stakeholders to develop consistent definitions of energy communities and revise the existing legal and regulatory framework by excluding overlapping terms. This would include specifying the differences between (wind) energy communities, energy sharing, and peer-to-peer (P2P) energy trading and the definition of wind energy community in line with the EU framework. By standardising terminology, partners can reduce confusion and misconception and ensure that all stakeholders operate under the same understanding.

2. **Provide explanatory guidelines and toolkits clarifying the operational framework of wind energy community to citizens.**

Partners can develop and distribute region-specific guidelines or toolkits that outline the roles, responsibilities, and processes for establishing and managing energy communities. These resources may clarify the relationship between energy communities, energy sharing, and P2P trading, helping local communities understand the opportunities and the process need to be followed.

Central Danube region, Hungary

In Hungary, the roll out of wind energy communities has been hampered until recently by an unsupportive legislative environment. In specific, in 2016, Hungary implemented stringent regulations that banned the construction of new wind farms. This law prohibited wind turbines from being located within a 12-kilometer radius of populated areas, which limited potential sites for wind energy development due to Hungary's dense population. However, under European Union pressure, the government agreed to amend these regulations in 2023 by setting the exclusion zone from 12 km to 700 m. Still current laws tend to favor large-scale energy producers, making it challenging for small, community-driven wind projects to be realised. Complex permitting processes, zoning restrictions, and the absence of clear legal frameworks for community ownership create significant obstacles. In conclusion, the lack of legislation promoting decentralized renewable energy initiatives leaves wind energy communities unable to fully participate in the wind energy market.

Policies targeting to overcome this challenge include:

1. **Revise the eligibility criteria of existing calls to support small scale wind energy producers.**

As stipulated by the Renewable Energy Directive (RED II), it is essential for small-scale energy producers, particularly wind energy communities, to receive support that facilitates their integration into the energy market. Apart from revising the eligibility criteria for pertinent calls under the Regional Operational Programme, the support may

include simplifying administrative procedures, providing guidance on obtaining Guarantees of Origin for the renewable energy produced, and offering advice on power purchase agreements to ensure that any excess energy can be sold.

2. **Incorporate wind energy communities into regional energy, operational, and climate action plans to better direct financial instruments toward this goal.**

Ensure that all relevant policy plans explicitly incorporate the role of wind energy communities in meeting renewable energy targets and prioritise their participation in wind energy production. This could involve setting specific goals for the number of community projects to be developed within a certain timeframe or mandating the inclusion of community energy in broader energy transition strategies while directing financial instruments to effectively support the development of wind energy communities.

3. **Increase policy support for energy communities and engage them in the policy-making process.**

Establishing clear, tailored regulatory frameworks that specifically support wind energy communities is necessary to lay the groundwork for their proliferation. These frameworks should simplify permitting processes, set clear guidelines for community ownership models, as well as create legal frameworks for the operation of wind energy communities. A crucial step towards this direction is involving all interested parties and local stakeholders in consultation meetings in order to map their unique needs and concerns.

Murcia, Spain

The roll out of wind energy communities faces several distinct challenges when compared to other models like solar energy. One obstacle is the high upfront cost, which makes wind energy projects more capital demanding. Additionally, wind energy systems are technically more complex. Hence, there is limited public understanding of their operational requirements. Moreover, these specific challenges are compounded by broader issues affecting all energy communities, such as complex administrative

procedures, difficulty in securing financing, and a lack of regulatory frameworks that address the unique operational needs of wind energy projects.

To address the aforementioned challenges partners can implement the following actions:

1. **Offer training seminars to address knowledge gaps**

It is recommended to launch regional training seminars that offer technical expertise and support for wind energy communities. During these seminars, trainers could present tools and software used for wind speed and direction forecasting. They can also explain how factors like topography, weather patterns, and human interference can impact wind energy generation. Seminars could also delve into energy storage technologies. To this end, trainers can present innovative solutions, such as battery storage systems, which allow excess wind energy to be stored for later use and elaborate on the integration of storage with local grids, and how it helps balance supply and demand, ensuring energy availability even during periods of low wind.

2. **Ensure targeted financial support for the installation costs of wind energy communities.**

Providing specific grants, subsidies, or low-interest loans can effectively reduce the high upfront costs of wind energy installation costs. Recommended policy measures in this direction require developing financial packages tailored to wind energy projects, offering investment security to community initiatives, and offsetting capital expenditures with municipal taxes.

3. **Simplify administrative procedures for community-driven wind energy projects through institutional collaboration and public participation.**

A dedicated task force can streamline the permitting and approval processes for community-driven wind energy projects by creating fast-track approval systems, standardising paperwork, and providing clear, tailored guidelines specific to wind energy communities. The task force can identify weaknesses in administrative

procedures, such as lengthy permitting processes, zoning issues, and overlapping regulations and offer tsolutions through appropriate regulations. This approach reduces bureaucratic hurdles and fosters institutional collaboration between regional and national authorities, while also encouraging public participation in decision-making through consultation schemes.

Asturias, Spain

The formation of wind energy communities is hindered by a general lack of cooperation mentality among citizens, as well as trust issues over such projects. wind energy communities require a strong sense of collective ownership and participation, where the benefits and responsibilities are shared equally among members. However, in many cases, a lack of understanding and experience with cooperative models challenges public support for community-based wind energy projects. Additionally, trust issues arise due to concerns over the transparency, management, and long-term sustainability of these projects. Citizens often fear that the complexities involved in wind energy production, such as maintenance and could lead to financial losses or technical failures.

Policies targeting to overcome this challenge include:

1. **Developing a regulatory framework for wind energy community projects with specific standards to support wind energy communities designate defined roles and responsibilities.**

Establishing a regulatory framework that provides specific standards for the roles and responsibilities of the members involved in community wind energy projects can help them outline more defined roles that reflect their own needs and context. This framework may include standards to support WEC members outline their rights and responsibilities, include provisions for entry and exit procedures, such as when a member leaves, sells their stake, or fails to comply with the project's rules. The regulation may also include mechanisms for conflict resolution, financial reporting, and penalties for non-compliance, to ensure the transparency of community wind energy initiatives.

2. **Launch public awareness and education campaign on the management and long-term sustainability of wind energy community projects.**

It is important to consider launching a comprehensive public awareness and education campaign to address citizens' concerns regarding the management, maintenance, and long-term sustainability of wind energy community projects. The campaign may provide information on the technical and financial aspects of wind energy production, including risk management strategies, maintenance plans, and performance efficiency metrics. To achieve this, it is recommended to use a mix of media channels, public workshops, and informational materials to ensure increased outreach.

South Ostrobothnia, Finland

One of the major challenges in advancing wind energy communities (WECs) and other renewable community energy projects is the difficulty in motivating and organising communities to invest their time, effort, and financial resources. Many citizens are unfamiliar with how to start or participate in such projects due to a lack of knowledge about the benefits, technical requirements, and financial structures involved. The process of establishing a wind energy cooperative might be seen as daunting, since potential participants may not understand how to navigate legal, administrative, or technical aspects of the project development. This uncertainty, combined with a perceived risk of financial loss or project failure, discourages community engagement and limits the growth of WECs.

Policy practices to overcome such challenges include:

1. **Develop partnerships with local universities, NGOs and financial institutions to provide specialised training and financial planning resources for citizens interested in WEC projects.**

Partners may seek to establish strategic partnerships with local universities, non-governmental organizations (NGOs), and financial institutions to offer specialised training and financial planning resources to citizens interested in developing wind energy communities or other renewable energy projects. These partnerships will focus

on providing practical skills, technical knowledge, and financial tools necessary for starting, managing, and supporting community-driven energy projects. The financing of this policy action could be through grants and subsidies to ensure accessible education for all citizens.

2. **Secure grants for renewable energy communities at their early stages.**

Securing grants for WECs at their early stages can be accomplished by either revising the eligibility criteria of pertinent calls under their regional operational programme or funding new projects that provide financial incentives, grants, or low-interest loans specifically designed for wind energy communities at their early-stage. These funds could cover feasibility studies, initial technical assessments, and the establishment of governance structures and operating models for community wind energy projects. This measure lowers the economic barriers to entry for communities and reduces the perceived risk while also encourages initial exploration of renewable energy opportunities without requiring communities to commit large amounts of their capital.

3. **Create a platform for sharing success stories and implementation challenges of WECs.**

It is recommended to develop an online platform and organise regular forums for sharing success stories, best practices, and lessons learnt from existing WECs and other renewable energy projects to serve as a digital community of practice. This platform may feature case studies, interviews, and detailed reports on implemented energy community projects, offering practical insights and guidance for communities interested in starting their own renewable energy initiatives. Additionally, the platform may host a searchable database of projects across the EU, highlighting key factors such as funding sources, technical difficulties, and community engagement strategies.

Świętokrzyskie Voivodeship, Poland

With limited wind farm installations, communities often lack local examples or visible proof of the economic and environmental benefits of wind energy as well as successful models to follow. This may lead to reduced public interest and confidence in WEC

projects, as citizens may feel uncertain about the feasibility and reliability of such initiatives. Additionally, the few existing wind farms may already be operated by large wind energy producers, potentially increasing citizens' reluctance to be involved in energy production.

The subsequent policy practices can be implemented to counteract the above-mentioned challenges:

1. **Develop a regional wind energy network.**

It is advisable to create a regional wind energy network that connects local authorities, community organisations, and industry experts. This network aiming at facilitating knowledge sharing will provide technical assistance and promote best practices among communities interested in developing wind energy projects. In addition, the network could coordinate joint initiatives, such as collective purchasing and shared maintenance services, to reduce costs.

2. **Implement information campaigns to promote public participation in wind energy planning and consultation.**

Targeted information campaigns designed to encourage and facilitate citizen participation in the planning and consultation processes of wind energy projects can be promoted by partners. These campaigns will use a variety of media channels, including social media, local newspapers, radio, and community events, to disseminate clear information about the benefits, opportunities, and processes involved in wind energy projects. The campaigns will also provide guidance on how citizens can get involved in consultations, participate in decision-making, and express their opinions effectively.

Zemgale Region, Latvia

The negative attitude towards wind energy turbines is a common barrier to the development of WECs. Many citizens express concerns about the visual impact, noise, and potential environmental effects of wind turbines, leading to resistance

against wind energy projects. This skepticism may derive from a lack of understanding of the benefits, perceived disruption to local landscapes and biodiversity, or misinformation about turbine technology. As a result, public opposition can halt the development of wind energy projects, undermining efforts to establish WECs. This reluctance not only impedes renewable energy expansion but also limits the potential for communities to benefit from the economic and environmental advantages of wind energy.

The following policies can help mitigating such challenges:

1. **Establish wind energy communities and involve local citizens in them.**

Public authorities may establish WECs and share benefits with the community through the provision of energy vouchers to vulnerable citizens or by supporting community projects. This measure ensures that local communities receive direct financial or social benefits from wind energy projects and gradually convinces local citizens to get involved. These projects may additionally include revenue sharing, funding for local initiatives or infrastructure, and job creation. By providing tangible benefits, this policy aims to enhance local support for wind turbines and demonstrate the positive impacts of wind energy on the community.

2. **Mandate biodiversity sensitivity assessment for wind farms' site selection.**

It is recommended to implement mandatory biodiversity sensitivity assessments as part of the site selection process for wind farms. This measure requires developers to conduct comprehensive evaluations of potential sites to identify and assess the impacts on local wildlife, habitats, and ecosystems before project approval. The assessment may include field surveys, ecological impact studies, and consultations with environmental experts and local biodiversity conservation groups. By effectively addressing public concerns on local biodiversity disruption, partners will achieve to minimise social opposition towards wind energy farms.

3. **Require landscape impact assessments and mitigation plan for the approval of wind farm projects.**

It is advisable to require all wind farm projects undergo landscape impact assessments as a prerequisite for approval. To this end, developers will submit detailed assessments that evaluate the potential effects of wind turbines on local landscapes, including visual, aesthetic, and cultural impacts. These assessments may include visual simulations, site-specific analysis, and consideration of community viewpoints. In addition, based on the findings, developers will create and implement a mitigation plan to address and minimise any adverse landscape impacts, outlining specific measures to enhance landscape integration, and address any concerns raised by the local community.

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Annex

5.1 Annex: Verbatim input from survey respondents on good practices

UPAT-Greece

1. **Minoa energy community - Participation in Crete Valley project**

Area of implementation: Crete, Greece

Implementor: The Minoa Energy Community

Short description: The Minoa Energy Community continually increases its collaborations with different stakeholders from the local government, academic institutions and private companies. Throughout its existence, it has also participated in various seminars and events regarding the green energy and energy communities' establishment. The Minoan Energy Community has also joined the island network of the European Commission for the "Clean Energy for the Islands of the European Union" initiative and has close cooperation with agencies for submitting proposals to community programs. One of the projects that Minoa Energy Community is participating is the Crete Valley projects.

Impact of the good practice in the establishment and operation of wind energy communities

Minoa Energy as the main beneficiary of the project Crete Valley, participates in the implementation of four case studies, located in the same number of locations in Crete: Arvi, Lasithi Plateau, Arkalochori and Atherinolakkos. In each region, a different mix of renewable energy sources (solar, wind, geothermal, biomass, biogas/biomethane and hydrogen) is used, depending on the specific geographical and climatic conditions of each one, to cover the annual energy needs.

Implementation challenges and counter strategies

Challenge 1: Inadequate information of citizens about the benefits of RES: The Minoa Energy Community organizes seminars/infodays and gives the opportunity to local civil societies to learn about the benefits arising in local communities by RES projects and express their interest for participating in them.

Challenge 2: Inclusion of citizens in the technologies to be used. The energy infrastructures that are planned, employ state-of-the-art technologies, utilize the energy sources and respond to the climatic conditions of each aera. Another innovation of the Minoa Energy Community is the social inclusion methodologies it uses, so that the end-users of the energy infrastructures are simultaneously co-shapers of the final solution.

Main prerequisites for the design and the implementation of the practice

For the implementation of the good practice, personnel with a wide range of scientific knowledge is required, including their attendance in infodays, field visits and proposals for the proper location of the equipment locations.

Description of the impact of the good practice

CRETE VALLEY benefits participating communities by reducing energy costs and enhancing grid reliability and security. These local communities include approximately 150 commercial and industrial infrastructure and 175 households. In addition, the project creates sustainable jobs, accelerates the green transition and demonstrates the replicability of renewable energy systems in other regions. Moreover, 22,840 MWh of energy will be covered by renewable sources on an annual basis while, by the end of the project, there will be a 10-15% reduction in their energy bills.

2. **"Apollo" Program - Installation of RES stations to reduce energy costs of vulnerable households and local governments**

Area of implementation: Greece

Implementor: Ministry of Environment and Energy

Short description

“Apollo" is the largest energy offset program in Greece - combining energy with social policy - and contributes to Renewable Energy Sources having an even stronger, positive, social footprint. Through the installation of new RES stations and the implementation of virtual netting with synchronization, "Apollo" contributes to:

- support energy-vulnerable households and specifically to the beneficiaries of Social Tariff A, i.e. households with an annual income of less than 5,400 euros, covering 90% of their energy consumption.

- the reduction of energy costs for local governments of the first and second grade, Municipal Water Supply and Sewerage Companies and Vascular Improvement Organizations (GOEB/TOEB), covering 50% of their consumption.

For the purposes of the program, the Energy Communities model will be utilized, and a Citizens' Energy Community will be established in each Region.

Impact of the good practice in the establishment and operation of wind energy communities

The Program is designed in three implementation phases:

- The 1st phase, where the necessary legal entities per region should be established, the energy needs of the beneficiaries and the specific consumption profiles should be studied and the required RES projects and the energy for netting and virtual synchronization, which will be requested, should be dimensioned. This specific process will be assigned to external consultants, who will support the local

governments and deliver for the 13 Regions - 13 Citizens' Energy Communities and 13 studies with specific needs for green energy.

- The 2nd phase, where based on the studies that will be delivered per Energy Community, the relevant tenders will be announced for the selection of contractors - that is, the RES projects, which will cover with their energy the energy needs of the Energy Communities.

- And the 3rd phase, where is the construction and electrification of the projects. Here, the contractors - apart from the construction of the RES projects - are required to be responsible for the management of the energy produced and the energy offsetting of the beneficiaries' consumption.

Implementation challenges and counter strategies

The main challenge has to do with the 1st implementation phase, and the fact that it is quite time-consuming to gather all the members and all the benefits, and then to study them, to bring a tangible result. To overcome this challenge this specific process will be assigned to external consultants, who will support the local governments.

Main prerequisites for the design and the implementation of the practice

Costs: APOLLO program budget will be around 120 million Euros.

Personnel: Assignment of time-consuming processes to external consultants.

Timeplan: The implementation of all three phases (including the operation of all projects to cover all regions) is estimated to 36 months.

Description of the impact of the good practice

The development of RES stations is to be carried out through competitive tenders throughout the territory, which will be addressed to RES projects that have secured

connection conditions to the System and their generated energy will be offset by virtual simultaneous offset with the required consumption of the beneficiaries.

In absolute numbers, this means that more than 1 GW of RES projects are "unfrozen", and a new market outlet is given to producers, which will lead to further market stimulation and new jobs, which underlines the development orientation of program.

The RES stations that will be selected will be compensated for the energy they produce and offset against the consumption of the beneficiaries for a period of 20 years.

NWRA-Ireland

3. TEMPLEDERRY: Templederry Community Windfarm

Area of implementation: Tipperary, Ireland

Implementor: Templederry Community Group, Templederry Energy Resources group

Short description

Templederry Community Group in Co. Tipperary, Ireland was seeking to develop wind energy as part of the 'Environmental Protection' goal within their Community Development Plan. A feasibility study was completed on wind energy, the community group then purchased an anemometer and erected this on a site, selected in conjunction with the Tipperary Energy Agency (TEA).

The Group finalised a grid connection agreement in Dec 2007 from the National Grid Operator, having received planning permission for the erection of 3 x 1.3 MW wind turbines in June 2003 and again in 2010 for 2×2.3 MW. The group started producing Green Electricity and selling it to the grid in November 2012. The project is 100% owned by the local community with dividends from the project being re-invested to support other community activities.

Impact of the good practice in the establishment and operation of wind energy communities

" Templederry Community Wind Farm is a 100% community-developed and owned wind farm, the first of its kind in Ireland, using a mix of public and private finance. Templederry community is located on the northern edge of the Slieve Felim mountains. It is located between the main urban centers of Nenagh (north) and Thurles (south) in Co. Tipperary.

The project was instigated based on the communities' interest in environmentally friendly clean energy sources, cheaper more economical renewable energy sources.

This is an area suffering from population decline and there are limited local employment opportunities. Four individuals from the community completed a Certificate in Renewable Energy at the Tipperary Institute (www.tippinst.ie) and, following from this, sought to develop a wind energy project in the region."

Implementation challenges and counter strategies

"Templederry is typical of many small Irish settlements, suffering from population decline with limited local employment opportunities. The concept of wind energy was first discussed by residents when formulating their Community Development Plan and considering the "environmental protection" pillar.

The achievement of the wind farm in Templederry took 13 years to bring to fruition and placed substantial demands on those involved. Some of the adverse challenges encountered included planning permission objections, financial issues and an evolving national landscape in relation to wind energy. Maintaining enthusiasm and commitment to the project were key and required a diversity of attributes and skills; patience, trust, honesty, determination, communication by all members involved. Research conducted into the motivation of the members involved in the project reveals that of, 'not wanting the system to beat the project, (...)' as there were a lot of technical issues and planning issues that were a 'challenge to overcome', but (...) the collective

drive of the group of people at the core of the project was motivating in itself, (...)'. see reference here: https://www.researchgate.net/publication/282863044_Enhancing_community_investment_in_sustainable_energy_in_Ireland_learnings_from_the_community_wind_farm_in_Templederry_Co_Tipperary "

Main prerequisites for the design and the implementation of the practice

"Training in Renewable Energy technologies was conducted to support the development.The support of experts via external agencies was also key, in particular the North Tipperary LEADER Partnership (NTLP) and the Tipperary Energy Agency (TEA). NTLP is not-for-profit private limited company with responsibility to support the sustainable development of the North Tipperary region, promoting and supporting social inclusion, rural enterprise and voluntary initiatives. NTLP provided funding for the initial feasibility study and provided the financial backing to kickstart the project. The TEA is also a not-for-profit private limited company with a remit to provide a range of professional and technical services to enable organisations and communities to implement viable sustainable energy projects. The TEA provided technical advice to the community group at every stage of the process and played an important role in problem-solving and overcoming challenges. The TEA holds one share in the project "

Description of the impact of the good practice

The Wind Farm was Ireland's first community owned wind farm, and it is now working with Irish communities to develop more renewable energy projects owned by people, it has launched a company called Community Power. Community Power is Ireland's first community owned electricity supplier which is a partnership of community energy groups working for a sustainable energy future for Ireland.

4. **Community Power. Community Power is a trading name of Templederry Renewable Energy Supply Ltd.**

Area of implementation There is only one WEC in Ireland, the one previously mentioned: Templederry Wind Farm

Implementor The Templederry wind energy Community

Short description

"Community Power is Ireland's first community owned electricity supplier. It is a partnership of community energy groups working for a sustainable energy future for Ireland. Community Power grew out of Ireland's first community owned wind farm, Templederry Wind Farm in Co Tipperary, and are working with Irish communities to develop more renewable energy projects owned by people.

It took almost 12 years to build the Irelands first, and only wind farm, and it has been operating from the foothills of Slieve Feilim since November 2012. The two turbines generate about 15 GWh of electricity every year, which roughly, the amount of electricity used by the town of Nenagh. Now, Community Power are buying renewably generated electricity from a handful of small and micro hydro and wind generators across Ireland and selling it to our customers to use in their homes, businesses, farms and community buildings.

Their mission is to support Ireland to run on clean, renewable power, based also on the belief that people should also have a real stake in it, and own it for themselves. Community Power recognise that Ireland's energy system is in crisis, with over 90% reliance on climate polluting fossil fuels and many people struggling to pay high energy bills in cold homes. That's why Community Power are working to make sure the many benefits of generating renewable power is shared by the people and communities of Ireland. "

Impact of the good practice in the establishment and operation of wind energy communities

Community Power is Ireland's first Community Owned licensed electricity supplier. They buy locally and renewably sourced electricity and sell electricity to the community.

Implementation challenges and counter strategies

Supports from SEAI are not forthcoming

Main prerequisites for the design and the implementation of the practice

"Support was provided by many technical experts and environmental NGOs: Tipperary Energy Agency, Friends of the Earth and Smart M Power.

Their work is also supported by other community energy organisations: Energy Community Tipperary Co-operative, Aran Islands Energy Co-operative, Tait House Community Enterprise, Claremorris and Western District Energy Co-operative, etc.

This project is also supported by the European Regional Development Fund through Interreg North-West Europe."

Description of the impact of the good practice

a positive and transformative role on teh Irish Renewables Sector

CARM-Spain

5. **Participatory budgeting - energy voucher**

Area of implementation Municipality of Bullas. The objective is to benefit individuals affected by energy poverty.

Implementor

The entity that has implemented the best practice is the Bullas Town Council. However, the initiative has also involved local residents, OTC COITIRM, La Solar Energía, and Efficiency Services Consulting.

Short description

It was proposed as an idea in the participatory budgeting process and was the initiative most voted for by residents. The initiative involved installing solar panels on the roof of a public building. The municipal energy savings are calculated, and that amount of money is invested in energy vouchers for individuals experiencing energy poverty or at risk of social exclusion. Citizens can apply to receive the vouchers based on criteria published on the town council's website. The initiative has been so successful that in subsequent years, the municipal photovoltaic installation has been expanded, and a neighborhood cooperative has been created to install its own solar panels.

Impact of the good practice in the establishment and operation of wind energy communities

It has had a positive impact not specifically on WECs but on energy communities in general. The success of this initiative has increased trust and reduced skepticism among residents, ultimately leading to the creation of an energy community called "AS. Bullas en Transición Energética, CER."

Implementation challenges and counter strategies

The technical difficulties in installation and energy savings calculation exceeded the knowledge of municipal technicians, which were resolved through the voluntary work of the consulting firm.

Main prerequisites for the design and the implementation of the practice

To have the technical and financial capacity and to have a mechanism for public consultation.

Description of the impact of the good practice

Residents facing energy poverty are benefiting from energy vouchers. Awareness among residents regarding the benefits of renewable energy has increased, and skepticism about the initial investment has decreased. Consequently, a new neighborhood energy community has been established.

6. Establishment of 3 Community Transformation Offices in Murcia

Area of implementation

The scope of the Community Transformation Offices (OTCs) is local and regional. Their objective is to promote the creation of energy communities through training workshops and support throughout the process. The scope of the Community Transformation Offices (OTCs) is local and regional. Their objective is to promote the creation of energy communities through training workshops and support throughout the process.

Implementor

OTC COITIRM, ALEM (City Hall of Murcia) and Fundación Desarrollo Sostenible

Short description

The OTCs are funded by European funds and their role is to stimulate the creation of energy communities. They provide guidance on technical, legal, and financial aspects, supporting promoters throughout the establishment of these communities. Additionally, they offer free consultation tools, disseminate energy knowledge, and conduct training workshops.

Impact of the good practice in the establishment and operation of wind energy communities

They assist with administrative and technical procedures, which promotes the proliferation of successful energy communities. By increasing collective knowledge, skepticism towards the use of renewable energy and energy communities decreases.

Implementation challenges and counter strategies

The lack of coordination among different legislations, both local-regional and public-private, has been addressed through collaboration agreements.

Main prerequisites for the design and the implementation of the practice

Primarily, financial capacity is crucial, although their establishment is subsidized by Europe, a significant initial investment is still required. Additionally, having the knowledge and technical capacity to effectively conduct training and support work is essential.

Description of the impact of the good practice

There has been a proliferation of initiatives aimed at creating new energy communities, and there has been increasing interest among the general public in receiving training on this topic.

7. Self-consumption tool-MURCIA

Area of implementation City of Murcia

Implementor OTC ALEM - Local Energy Agency of Murcia

Short description

From the Office of Community Transformation at the City of Murcia, they promote the use of solar energy and offer a free preliminary report to help citizens understand how to size a photovoltaic installation based on their energy needs.

The preliminary report is a first step. Upon receiving the report, citizens can contact the OTC to further study each specific case in detail and customize the report. They can also facilitate the grouping of neighbors who have requested the service to advise on the creation of energy communities or participation in existing ones.

The personalized preliminary report for self-consumption sizing includes:

Installed power and energy generated based on electrical consumption (including necessary technical configurations: modules, inverters, etc.)

Cost estimate (average market rate) and payback period. Taking advantage of the 50% discount on the Construction, Facilities, and Works Tax (ICIO) offered by the City of Murcia.

The OTC Murcia, using individual consumer data, offers an aggregation service for different users who can share the energy they generate to participate in collective self-consumption. They conduct a study on the sizing and economic feasibility of the collective installation.

Impact of the good practice in the establishment and operation of wind energy communities

Contributes to the creation of energy communities by serving as the common contact point for all individuals interested in participating in this energy model within a nearby geographic area. Being a free tool, it is accessible to the entire population. Moreover, it provides an advance economic study, identifies the necessary investment, and guides you through the process of obtaining subsidies.

Implementation challenges and counter strategies

Contributes to the creation of energy communities by serving as the common contact point for all individuals interested in participating in this energy model within a nearby geographic area. Being a free tool, it is accessible to the entire population. Moreover,

it provides an advance economic study, identifies the necessary investment, and guides you through the process of obtaining subsidies.

Main prerequisites for the design and the implementation of the practice

"Having the technical and staffing capacity to process applications, as well as obtaining authorizations for handling personal data."

Description of the impact of the good practice

There has been considerable interest in the tool. Since it is recent, the medium to long-term results are not yet known.

8. SOLAR MAP

Area of implementation Murcia city

Implementor OTC ALEM- Local Energy Agency of Murcia

Short description

"It is an analysis of the potential to produce photovoltaic solar energy based on the solar radiation received on buildings in the city of Murcia and its surrounding districts. For each rooftop, information is provided on the type of roof, area, predominant slope, predominant orientation, usable area for photovoltaic installation, number of panels, photovoltaic installation power, and annual potential for electricity generation."

Impact of the good practice in the establishment and operation of wind energy communities

It provides information on the potential for harnessing solar energy, facilitating access to knowledge and promoting citizen interest.

Implementation challenges and counter strategies

Unknown to me.

Main prerequisites for the design and the implementation of the practice

To conduct the "Study of the Photovoltaic Potential of all Rooftops in the City of Murcia and Surrounding Areas," two main types of data were required: geographic data and climatic data. The geographic information sources used for this study were two: Municipal cartography at a scale of 1:1000 and LIDAR data. In order to obtain historical climate data and build a solar radiation database for the Murcia region, data was obtained from the PVGIS tool. This tool provides historical data series for solar radiation anywhere in the world.

Description of the impact of the good practice

The resulting map is published on the web for public access, serving as a user-friendly tool that provides detailed information for each rooftop. It includes details such as roof type, area, predominant slope, predominant orientation, usable area for photovoltaic installation, number of panels, photovoltaic installation power, and annual potential for electricity generation.

FAEN-SPAIN (Asturias)

9. **Rural CEL BIMENES**

Area of implementation This is a Local Energy Community allocated in a rural area which members are citizens joined to built a PV installation for energy generation.

Implementor Citizens of Bimenes.

Short description

Regarding the aim of UE addressed to the creation and participation of citizens by LEC, 7 owners from the rural area of Bimenes (Asturias) have joined to built a PV plant (no storage) for self-consumption.

Impact of the good practice in the establishment and operation of wind energy communities

The organization, the rural area and the good results obtained by this community is a good example for the rest of the similar rural areas of Asturias to promote the implementation of new local communities and a base for, maybe in the future the first WEC in Asturias.

Implementation challenges and counter strategies

Along this process there were many challenges and problems to overcome. Delays, administration requirements, unknowledge about a new situation, were some of them. The mean point to overcome these situations were that this group of people had a leader which accepted the responsibility and pushed to reach the goal and the benefits for the community.

Main prerequisites for the design and the implementation of the practice

There is a need of technical expertise which could be provided by the administration and also a social expertise in order to guarantee the protection of those suffering from energy poverty. Most important of prerequisites is the willingness to work together taking into account the social and environmental benefits of Energy Communities in general. If there is not awareness of these problems and the determination to solve them, the entire EC is not a Good Practice.

Description of the impact of the good practice

This good practice is an example with high possibility to replicate in other rural areas in energy poverty.

Office of the Marshal of the Świętokrzyskie Voivodeship MOSR-Poland

10. Construction of the 10 MW wind farm in the Pawłów commune with accompanying infrastructure

Area of implementation Pawłów Commune, Świętokrzyskie Voivodeship

Implementor Pawłów Commune, Świętokrzyskie Voivodeship

Short description

-

Impact of the good practice in the establishment and operation of wind energy communities

-

Implementation challenges and counter strategies

-

Main prerequisites for the design and the implementation of the practice

-

Description of the impact of the good practice

compensation schemes

ZPR-Latvia

11. Project "RES FORWARD"

Area of implementation Sustainable wind energy planning and wind energy communities in future electric energy market.

Implementor NGO "Green Liberty"

Short description

The project was implemented from 02.2023-01.2024 by 3 partners "Green Liberty" in Latvia, "Circular Economy" in Lithuania and Estonial Nature Fund. It was financed by European Climate Foundation. The aim of the project was to support the raising of national goals in the field of renewable electricity, monitor spatial planning processes and public participation in renewable energy projects, as well as promote the first initiatives of energy communities in Latvia.

Impact of the good practice in the establishment and operation of wind energy communities

This Good practice contributed to the development and operation of WECs by following project activities:

(1) More ambitious RES targets in Latvia's National Energy and Climate Plan (NECP):

Participation in NECP working groups;

Assessment of NECP scenarios and their alternatives;

Development of recommendations for improving the NECP;

Formulating positions in collaboration with the Environmental Advisory Council.

(2) Promoting spatial planning for wind energy:

Establishing a multi-level planning framework to identify the most suitable areas for wind farms;

Assessment of accelerated procedure legislation;

Stakeholder dialogues involving institutions and experts;

Enhancing the availability of information for wind park project development.

(3) Transitioning towards a citizen-driven energy system transformation:

Regulatory improvement – recommendations for decision-makers;

Recommendations for municipalities in developing socially inclusive projects;

Technical solutions for the development of energy community infrastructure;

Transfer of best practices;

Involvement of local groups in idea development.

(4) Networking and capacity building:

Collaboration with other organizations - joint position development, participation in events, studies;

Meetings with Baltic state partners;

Participation in working groups, forums.

(5) Communication:

Participation in public discussions and events representing renewable energy topics;

Collaboration with the media;

Preparation and distribution of visual and textual materials;

Collaboration with students and young activists.

Implementation challenges and counter strategies

N/A

Main prerequisites for the design and the implementation of the practice

From Latvian side in the project was involved NGO "Green Liberty" with staff having the knowledge in climate issues and national governance. Project budget: 65 960 EUR.

Description of the impact of the good practice

This project has helped to gather the partners to work together on the level of Baltic states in the field of wind energy development, harmonize the policies by attending the national working groups to influence the legislative process. The project has made also the contribution in the community driven WEC planning.

12. Project "CO2MMUNITY"

Area of implementation Project on co-creation and co-financing of renewable energy projects of local population groups (communities).

Implementor Mārupe Municipality Government.

Short description

Mārupe Municipality Government as an associated partner in collaboration with Rīga Planning Region was involved in the “Co2mmunity” project under the INTERREG VB Baltic Sea Region Programme for 2014-2020 alongside with 8 other European countries. The project focused on the co-creation and co-financing of renewable energy projects by local resident groups (communities). The project implementation period was from 10.2017.-09.2020.

Community energy projects are initiatives that are created, implemented, and co-financed by the residents themselves in collaboration with the municipality, business sector, and others. They are fundamentally important and contribute significantly to achieving a higher proportion of renewable energy in energy production in Europe.

As part of the project, Mārupe Municipality Government established a local residents' group (community) for the co-creation of renewable energy projects and implemented a community energy pilot project.

Impact of the good practice in the establishment and operation of wind energy communities

The aim of the project was to increase public knowledge about community energy project development, enhance the capacity of policymakers and energy planning specialists to support the use of renewable energy resources in community energy projects, and promote the broader and more efficient use of renewable energy resources.

The Good practice has contributed to the development RES communities by following activities:

• In September 2018, a survey was conducted on the development of community energy projects. Its goal was to determine the interest of the residents in implementing

energy-efficient solutions, as well as their habits in energy resource conservation and optimization. A total of 42 residents participated in the survey. The results showed that 76% of respondents wanted to better understand the basic principles of energy efficiency and learn how to be energy-efficient in everyday life, while the rest were already well informed. Slightly more than 70% of the surveyed expressed future interest in using innovative solutions to reduce energy consumption in their homes. These results indicate that a portion of the residents has a significant interest in energy efficiency solutions.

• On October 25, 2018, a discussion was organized with residents about energy efficiency solutions in the municipality. The event was attended by approximately 20 participants who were introduced to the residents' survey conducted in the municipality in September of that year.

• On November 26, 2019, a Co2mmunity expert meeting took place, during which decisions were made regarding the format and location of the pilot project. Residents had the opportunity to review informational materials presented during the discussion.

In 2020, during the course of the project, two sites were selected: a multi-apartment residential building at Mazcenu Alley 15, where solar collectors and panels were installed on the roof, and a row house at Lielā Street 160, which also had solar panels installed on its roof. As the row house residents can return any excess electricity generated to the main electrical grid, this arrangement allows for reduced electricity bills. During and after the project, these installations will remain the property of the municipality.

September was declared GREEN ENERGY MONTH, and along with the municipality's informational publication delivered to their mailboxes, residents also received a brochure encouraging them to consider using alternative energy sources for household needs and to share their experiences with others by sending stories to the email dzivozali@marupe.lv.

On September 18, 2020, the Co2mmunity closing seminar for the residents of the municipality took place, focusing on the topic of "GREEN ENERGY". During the seminar, project expert Raivis Šķērstens informed the attendees about the results of the "Co2mmunity" project. Additionally, Aigars Kalniņš, a representative of the Solar Energy Association, gave a presentation. Representatives from AS Sadales tīkls, Lauris Andžāns and Aivars Slišāns, also spoke at the event. Furthermore, Jānis Bethers, a resident of the multi-apartment building at Lielā Street 160 and one of the pilot sites, shared his experience participating in the Co2mmunity project.

On September 18, 2021, in collaboration with the Riga Planning Region and within the framework of the EU Interreg Baltic Sea Region Transnational Cooperation Programme 2014-2020 project "Energize Co2mmunity," the festival "Green, Independent & Powerful" was held. Attendees had the opportunity to hear from Aigars Kalniņš, a representative of the Solar Energy Association, who spoke about the potential uses of solar energy. Toms Nāburgs, representing the Wind Energy Association, discussed the possibilities for wind park development. Āris Ādlers, a professional in community and place development, encouraged participants to join communities.

Regarding the installation of solar panels or collectors, neighbors often serve as a major source of inspiration, which is why a special segment at the event was dedicated to the stories of local residents.

Among the participants and visitors, Uģis Joksts and Eva Johansone, young residents of the municipality, shared their vision of a green lifestyle. Additionally, a guest from Germany, Christian Andresen, passionately introduced green energy solutions within the framework of local communities.

https://interreg-baltic.eu/project/co2mmunity/

https://www.marupe.lv/lv/viedie-risinajumi/projekts-co2mmunity

Implementation challenges and counter strategies

Involvement of the society at the beginning was challenging but within different project activities people got more used to the energy community issues.

Main prerequisites for the design and the implementation of the practice

Project total budget was 3.15 million EUR of them 2.45 million EUR ERDF financing.

Description of the impact of the good practice

Transnational exchange to foster community energy:

The Co2mmunity partners organised Renewable Energy Co-operative Partnerships (RENCOPs) in their respective home countries. These local networks are comprised of communities, coordinators, and experts, which include citizens, authorities, businesses, and academia. Every RENCOP is different, but they all worked to implement renewable energy projects which would be unmanageable by one person or group alone. They could learn about the opportunities and pitfalls of cooperative renewable energy project development. The project partners have initiated and managed nine RENCOPs in total in Estonia, Denmark, Finland (two), Germany, Latvia, Lithuania, Poland, and Sweden. Depending on conditions in the specific region, the RENCOPs have used different strategies and focus areas. Examples of this are solar panels for housing cooperatives developed in Sweden and Estonia as well as the jointly purchased heat pumps in Denmark. The pilot projects are instructive examples for the participatory mobilisation process according to RENCOP and for profitable renewable energy on a community level. Thanks to RENCOPs, citizens can ultimately have access to knowledge that allows them to take the energy transition into their own hands.