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COLLECTION OF INDICATORS FOR ASSESSING SOCIAL IMPACT AND GUIDELINES FOR THEIR MEASUREMENT



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EXECUTIVE SUMMARY

Assessing social impact poses significant challenges, particularly in defining meaningful metrics and accounting for its long-term visibility. Work Package 3 (WP3), particularly through the activities of Task 3.3 – “Definition of suitable indicators”, seeks to address these challenges by identifying the dimensions of analysis needed to develop a set of indicators to assess the social impact of energy communities. The focus is placed on tangible outcomes, such as actions over intentions, activities over perceptions, and artifacts over plans. Achieving this requires close collaboration with all partners involved in the ECOEMPOWER project. The Deliverable 3.3 – “Collecting of indicators for assessing social impact and guidelines for their measurement”, focuses on identifying and defining indicators to assess the social impacts of energy communities and provides guidelines for their effective measurement. Energy communities, as collaborative initiatives centered on renewable energy production and management, have the potential to contribute to social cohesion, local resilience, and democratic governance. However, their social impacts are less tangible and standardized compared to economic and environmental effects, posing challenges for comprehensive evaluation.

The document introduces a framework to address this gap by presenting a multidimensional approach to social impact assessment. The manuscript emphasises the integration of qualitative and quantitative methodologies to capture the complexity of energy communities as a social phenomenon. Key dimensions explored include energy democracy, energy justice, community empowerment, community well-being, and community awareness. For each dimension, specific indicators are proposed to evaluate progress, identify challenges, and support decision-making processes.

This work combines literature reviews, stakeholder consultations, and pilot site analyses conducted across five European countries: Italy, France, Germany, Czech Republic, and Greece. These pilot sites provide valuable insights into the operationalization of the proposed dimensions to identify empirically testable indicators that can be adapted to different local contexts, taking into account variations in legislation and policies in the countries involved.

The findings underscore the importance of addressing inclusivity, participatory governance, and equitable access within energy communities. While significant progress has been observed in some areas, challenges persist, particularly in achieving gender balance, engaging marginalized groups, and fostering intergenerational participation.

This document is structured to address a wide audience, including policy makers, researchers and practitioners. It provides both a theoretical basis and empirical tools to advance the understanding and implementation of social impact energy communities. The deliverable aims to construct a theoretical-analytical framework, supported by methodological tools, designed to assist energy communities in assessing the social aspects related to their operations and development.

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1 Introduction

1.1 Objectives of the Work Reported

Deliverable 3.3 – “Collecting of indicators for assessing social impact and guidelines for their measurement”, serves as a key deliverable within the ECOEMPOWER project, a European initiative to support regional authorities in their role of energy community (EC) facilitators through the creation of a One Stop Shop (OSS). The main objective of this document is to identify and propose a set of indicators that can effectively measure the social impacts of energy communities while offering guidelines for their practical application. Social impacts, unlike their economic and environmental counterparts, are inherently complex and context-dependent, making their evaluation both challenging and essential. Addressing this complexity, the document aspires to support stakeholders in evaluating the practices implemented to create and develop ECs, promoting the creation of inclusive, democratic and socially cohesive energy community models. To this purpose, five dimensions of analysis have been identified: energy democracy, energy justice, community empowerment, community wellbeing, community awareness.

1.2 How to Read This Document

This document is designed as a theoretical and methodological resource for a diverse audience that includes policy makers, researchers, energy practitioners and community leaders. While the overall narrative is structured to guide readers through the complexities of assessing social impacts, it also allows for selective reading. Those seeking an understanding of the theoretical framework can turn to Chapters 2 and 3, while readers with an interest in methodological tools can refer directly to the section on the results of the data collected in the pilot sites (Chapters 4). D3.3 emphasises the interplay between conceptual reflection and empirical insights, encouraging readers to critically reflect on how the proposed indicators can be adapted to their specific contexts.

This deliverable is structured in 5 main chapters. The chapter are organised as follows:

- Chapter 1: Introduction, where the objectives of the work are outlined, explaining why measuring social impact is complex and how the deliverable fits within the broader project.
- Chapter 2: Indicators for Assessing Social Impact, setting the theoretical groundwork for understanding why social impact is difficult to measure and how a multidimensional approach can help. This section presents the rationale behind selecting specific indicators and explains why a combination of qualitative and quantitative methods is necessary to capture the full picture of energy communities' social effects.
- Chapter 3: the heart of the document is found in Evaluating the Social Impact of Energy Communities, where five key dimensions are elaborated in the following section. Each of these sections defines the concept, discusses its relevance in the context of energy communities, and introduces measurable indicators that can be used to assess progress. For instance, energy democracy focuses on participatory governance and shared decision-making, while energy justice examines how fairly resources and benefits are distributed.

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- Chapter 4: Exploring citizens engagement, which explore how these indicators apply in real-world settings. The first Section, using pilot sites in different European countries, provides insights into how energy communities operate across diverse legal, political, and social contexts. It includes case studies from Italy, France, Germany, Czech Republic and Greece, highlighting both successes and challenges in citizen engagement, governance, and inclusivity. Following this, the Section on Survey Results presents empirical data collected from these pilot sites, detailing how communities perform in terms of participation, awareness, and empowerment.
 - Chapter 5: Conclusions and considerations on the deliverable.

2 Indicators for assessing social impact

2.1 Overview

Energy communities represent a significant step towards a more sustainable, equitable and participative energy system, in which citizens are not just passive consumers, but active players in the process of energy production and management (De Vidovich et al., 2021). Energy communities are groups of prosumers (citizens, local authorities, small and medium-sized enterprises, or other entities) that come together to produce, share and manage energy in sustainable and collective manner. As discussed in ECOEMPOWER Deliverable D4.2¹, these communities may be established in different legal forms, such as cooperatives, consortia, or associations, and operate according to principles of democratic, participation, mutuality and collective interest (Bielig et al., 2021). As outlined in D4.2, Renewable Energy Directive (RED II) created a new term: Renewable Energy Communities (RECs). Within this framework, RECs are a specific subset that emphasize the generation of energy from renewable sources, self-consumption, and local energy exchange, aiming to deliver both environmental and social benefits. In the European Union, the concept of energy communities has been formalized to encourage citizen-driven energy initiatives that contribute to the clean energy transition. These communities are recognized as legal entities that enable participants to produce, consume, store, and sell renewable energy, thereby fostering local energy solutions and enhancing energy efficiency within their communities. The establishment of RECs aligns with the EU's directives aimed at promoting the use of energy from renewable sources. These communities are designed to be inclusive, allowing various stakeholders to participate and benefit from collective energy actions, which in turn supports the overarching goals of sustainability and energy resilience. By integrating RECs into the broader framework of energy communities, there is a concerted effort to decentralize energy production and consumption. This approach not only empowers local entities but also contributes to the reduction of greenhouse gas emissions and fosters a more resilient energy system.

The main characteristics of energy communities are:

- Local renewable energy production, through the installation of renewable energy production facilities, such as solar panels or wind turbines.
- The energy produced is consumed directly by community members or shared through local networks. In some cases, excess energy is fed into the national grid.
- Community members actively participate in the management and decision-making regarding energy production and use. Decisions are made in a democratic and transparent manner.
- They promote energy efficiency and consumption reduction practices. They may include measures to upgrade the energy efficiency of buildings and the adoption of smart grid technologies.
- Reducing greenhouse gas emissions through the use of renewable energy. They contribute to the energy transition and the fight against climate change.

¹ D4.2 - "Summary of national frameworks for the establishment of collective and cooperative energy supply systems on a local and regional level"

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- Reducing dependence on fossil fuels and centralised energy suppliers.
 - Increasing citizen awareness and participation in the management of energy resources. They strengthen the social fabric and local solidarity networks.

A better understanding of the impact of the EC phenomenon can be useful to promote policies and investments aimed at stimulating its diffusion. The literature review shows that it is easier to identify indicators to measure the economic, technical and technological impacts than the social impacts of energy communities.

While the social, environmental and economic impacts associated with the development of renewable energy communities are relevant, developing an evaluation model capable of analysing the phenomenon in its entirety is complex. This deliverable addresses this challenge by attempting to identify possible indicators capable of assessing the impact of energy communities in local territories, with the aim of helping OSSs promote the development of socio-technical configurations centred on objectives of social cohesion and democratic and inclusive local development.

Among the main reasons why it is difficult to develop a model to assess social impact we can identify:

- Energy communities can use different renewable energy sources (solar, wind, hydro, biomass) and technologies (photovoltaics, wind turbines, cogeneration plants). This makes it complicated to create a single set of indicators applicable to all types.
- Energy communities can be formed by groups of citizens, companies, public bodies, with very different organisational structures (cooperatives, associations, consortia).
- Energy communities may adopt different business models (energy sales, self-consumption, hybrid models) making it difficult to assess the economic impacts on citizens' motivation to participate.
- The presence or absence of public incentives and support can significantly influence the success of energy communities. However, it is important to note that such incentives not only impact economic sustainability but can also determine the ability of communities to address social challenges related to the energy transition, such as inclusivity and citizen participation.
- Economic conditions and access to finance can vary greatly between different communities and countries, affecting the economic sustainability and effectiveness of projects. While these factors are primarily economic, their social impact should not be overlooked, as effective economic management is crucial to ensuring equitable access and participation of all community members.
- Measuring social impact, in terms of increasing environmental awareness and changing behaviour, is complex and requires qualitative indicators that are difficult to standardise.
- Energy regulations and policies vary between countries and regions, affecting the viability and management of energy communities.

These challenges require an integrated, multidisciplinary approach that takes into account the particularities of each energy community, while ensuring that their successes and areas for improvement can be fairly and effectively compared and assessed.

2.2 An approach to assess the impact of energy communities

An energy community can be regarded as a social enterprise and as such is required to respond to a broad principle of accountability, according to which it is important to report and communicate results in relation to its mission and responsibilities to its stakeholders and community (Arvidson & Lyon, 2014).

Among the evaluation approaches in the literature, the Social Enterprise Impact Evaluation (SEIE) seems to be the most adaptable to the evaluation of energy communities as multi-level and highly differentiated social enterprises according to regulatory and geographical context. The SEIE method consists of an evaluation grid that takes into account the following dimensions of the social enterprise (Zamagni et al., 2015):

- Economic sustainability
- Promotion of entrepreneurship (risk and innovation)
- Democratic and inclusive governance
- Worker participation
- Employment resilience (ability to generate and maintain employment)
- Relations with the territory
- Public policy consequences.

These dimensions were adapted to the particularities of the energy communities seen in the previous section through the direct involvement of the partners in charge of the ECOEMPOWER Regional Ecosystems. The active involvement of these partners, together with the literature review also proposed in D3.1 – “Adaptable framework for energy communities engagement and building”, was crucial in identifying the set of indicators proposed in this document.

Dimensions for assessing social impact of energy communities can be analysed at both micro and macro levels, reflecting different dimensions of social participation and impact. At the macro level, energy justice and energy democracy emerge as fundamental pillars. Energy justice focuses on the equitable distribution of energy resources within communities, considering socioeconomic disparities and promoting universal access to energy services. Similarly, energy democracy underscores the importance of democratic citizen participation in energy decisions, enabling greater representation and inclusion in local energy governance.

At the micro level, community empowerment, community awareness, and community wellbeing are critical dimensions. Community empowerment refers to the ability of communities to take an active role in managing their energy resources, enhancing local skills and fostering participatory governance. Community awareness concerns the dissemination of information and knowledge regarding energy issues, fostering critical awareness and the adoption of sustainable behaviours. Lastly, community wellbeing refers to the positive impacts on quality of life, including social, economic, and environmental aspects, resulting from a transition to more sustainable and responsible energy models.

The evaluation of social impacts plays a key role in analysing and monitoring the effectiveness of various initiatives, projects and policies. However, it is crucial to recognise that indicators for assessing such impacts are often difficult to objectivise. In other words, the nature of social phenomena makes it complex to define precise and universal measurements.

The complexity of social contexts means that a single methodology is not sufficient to fully capture the scale and variety of social impacts. Therefore, an integrated approach combining both qualitative and quantitative methodologies is essential.

Qualitative methodologies offer a unique opportunity to explore in depth experiences, perceptions and social dynamics that may escape a strictly quantitative assessment. Through interviews, focus groups, content analysis and other qualitative techniques, it is possible to capture nuances and contexts that would otherwise be overlooked.

On the other hand, quantitative methodologies provide a broader framework and statistical basis for the evaluation of social impacts. Numerical indicators, large-scale surveys, data analysis and other quantitative tools enable the measurement of impacts on a larger scale and the identification of trends and patterns that may be difficult to detect with purely qualitative approaches.

Integrating these two methodological perspectives provides a more comprehensive and in-depth view of social impacts, allowing the complexity of social phenomena to be captured and providing more informed recommendations for the design and implementation of interventions. Moreover, such an approach can help reduce the risks of bias or limited interpretation, allowing for a more accurate and reliable assessment of social impacts.

Given the inherent challenge in objectifying social impact indicators, the adoption of an integrated methodological approach combining qualitative and quantitative methodologies is essential for a complete and accurate assessment. Only through such an approach can we hope to fully understand the social implications of various initiatives and to inform decisions and policies in an effective and responsible manner.

To facilitate the collection of information and fill in the indicator templates, specific data collection tools were developed. These tools include a template and a questionnaire distributed online². The survey was implemented to collect data directly from stakeholders involved in the implementation of the energy community in the various territories. Unfortunately, it did not achieve the expected success, as the responses received were too few. As a result, we decided to officially consider it a failure and implemented data collection templates that was already in use. To facilitate comprehensive data collection, the strategy involved implementing a data template compiled directly by representatives of regional ecosystems. This template is designed for use by regional ecosystems to gather qualitative and quantitative data from prosumers and stakeholders involved in the project. Additionally, data was also collected in pilot sites where no energy community exists yet. Therefore, the collection of indicators is useful to have a baseline of monitoring data before and after the EC development. The reference timeframe for the first data acquisition is from July 2024 to December 2024, after which data will be collected every six months.

² The questionnaire is available to this link: <https://unitn-survey.limesurvey.net/386519?lang=en>

3 Evaluating the social impact of energy communities: dimensions and indicators

In the literature, the assumption that ECs have a positive social impact is increasingly criticised as a ‘romantic narrative’ (Hanke et al., 2021). Some scholars agree in pointing out an ongoing trend in both academia and politics towards an uncritical assumption of the concept of ECs, as if they inevitably lead to positive outcomes for the community in which they are found, due to the positivity with which the term “community” has been received in recent years.

To evaluate the influence of energy communities it is necessary to identify the possible dimensions of social impact to include in the evaluation, breaking them down into indicators and variables that provide the most reliable representation possible.

Indicators are pieces of data that, when aggregated, offer an overview of the phenomenon within a local area. They offer insights into whether a community is progressing, regressing, or maintaining its status quo, or experiencing a combination of these trends. Social indicators must describe diversity and inclusion, social cohesion and energy literacy, but also energy democracy and energy justice. By combining various indicators, they establish a system for gauging past patterns, present circumstances, and future trajectories to assist in decision-making (Philips, 2003).

Each dimension has indicators and variables to be collected at each Pilot Site. The dimensions identified are as follows and will be discussed in more detail in the next section: energy justice; energy democracy; community awareness; community empowerment; community well-being.

3.1 Energy democracy

The literature sees in the concept of “energy democracy” a response to the limits of “public ownership” (van Veelen & van der Horst, 2018). Energy democracy represents a project to aspire towards in order to achieve energy systems that are more decentralised and socially controlled (Pearl-Martinez & Stephens, 2016), with fair accessibility (Farrell, 2014) whose consumption does not harm or people nor the environment (Weinrub & Giancattarino, 2015). Some conceive of it as a means of putting power in the hands of ordinary citizens in order to break down inequalities in energy access and consumption. Seen in these terms, energy democracy has more to do with the procedures and mechanisms associated with decision-making (Goodin et al., 2014). For some scholars, this means that people have the decisional right to contest and decide on innovations and energy consumption that affect them.

Indeed, a key point of the literature on energy democracy is the participatory dimension of democratic governance. In this case, the need to reform the way energy decisions are made is argued. In the literature there is a strong focus on direct participation highlighting the ways in which citizens can participate. As Vansintjan (2015) states, energy democracy presupposes that the shareholder of the EC is also the user of the service in which it invests and suggests a vision in which people through their vote are active and involved both as financiers and as producers, owners of energy (Pearl-Martinez & Stephens, 2016; Vansintjan, 2015). The concept presupposes a citizenship that must act through active participation rather than a citizenship conferred by a series of obligations and rights that come from above.

Cooperatives represent organizational entities useful for implementing an energy and economic democracy, as they are useful for creating greater involvement among citizens in the creation of a more sustainable future (Bielig et al., 2021). In this sense, cooperatives could support actions towards the creation of shared and more distributed ownership, moving from the idea of ownership of property to that of collective and community ownership. This aspect is very relevant because the literature discusses how participation in "desirable" energy activities is influenced by social and economic factors, including gender (Fraune, 2015), economic status (Walker, 2008) and property ownership (Rogers et al., 2008). Therefore, the promotion of individualised ownership can cause the process according to which those with a high socio-economic status invest in the EC, thus compromising the principle of accessibility for all segments of the population.

Table 3.1 – Input request for evaluation Energy democracy

Dimension: Energy democracy Energy democracy represents a project to aspire to in order to achieve energy systems that are more decentralised and socially controlled, with fair accessibility, whose consumption does not harm or people nor the environment.	Value	Unit of measure
<i>Indicator: Shared ownership of energy</i>		
Number of collective projects carried out through EC incentives		[#]
Economic benefits redistributed among members of the energy community		[€]
Renewable energy infrastructure owned by municipalities.		%
Renewable energy infrastructure owned by citizens.		%
Renewable energy infrastructure owned by private companies.		%
<i>Indicator: Governance model of the energy community</i>		
Number of people participating in decision-making through direct voting system		[#]
Representative board election system		Description of voting system used
Organisational form of EC		Associative Cooperative Other (Specify ___)

3.2 Energy justice

The definition of energy justice is based on the concept of social justice in the context of the global energy system and assumes that the positive or negative effects of the energy system should be distributed equally throughout society. When conceptualizing energy justice in the literature, a distinction is made between distributive, procedural and recognitional energy justice (Jenkins et al., 2016; Sovacool et al., 2017). Jeking et al. (2016)

provide an overview of these three conceptualizations. Distributive justice refers to the distribution of the benefits and burdens of energy systems across all members of society, such as the spatial location of energy infrastructure (Bielig et al., 2022). This also includes the development of skills among citizens engaging in EC activities, or among municipal offices, as well as job creation. Procedural justice refers to the equality and representativeness of decision-making processes, allowing access to be as inclusive and participatory as possible. Recognition justice continues on the path of inclusiveness and focuses on the equity of recognition of those sections of the population usually marginalized by the most economically vulnerable such as young people, with attention to the gender variable.

Energy communities are a powerful tool to promote energy justice in all its dimensions. By facilitating a fair distribution of benefits, ensuring inclusive decision-making processes and recognising the needs of marginalised populations, energy communities can help create a more just and sustainable energy system. These principles not only improve energy access and equity, but also strengthen resilience and social cohesion within communities.

Table 3.2 – Input requested for evaluation Energy justice

Dimension: Energy justice <i>Energy justice assumes that the positive or negative effects of the energy system should be distributed equally throughout society. This also includes the development of skills among citizens engaging in EC activities, or among municipal offices, as well as job creation.</i>	Value	Unit of measure
<i>Indicator:</i> Inclusiveness and accessibility of information		
Percentage of household income spent on energy		[%]
Number of citizens taking part in energy communities		[#]
Number of dissemination events (leaflet, poster distribution, video discussion, stands, information days, communication campaigns etc.)		[#]
Number of workshops (collective working group on energy communities)		[#]
Number of people participating workshops		
Number of promotional activities (leaflet distribution, etc.)		[#]
Number of demonstrations, strikes, with focus on environmental and climate crisis		[#]
Number of stakeholders reached through events and media		[#]
Number of citizen-led initiatives supported and/or created		[#]
Availability and accessibility of information on energy projects		On a scale from 1 (a little) to 5 (a lot)
Percentage of vulnerable population benefiting from subsidised energy tariffs		%
Number of collective projects carried out through EC incentives		[#]
Economic benefits redistributed among members of the energy community		[€]
Men involved in the EC		%

Women involved in the EC		%
Intergenerational diversity in the EC:		%
Between 18 and 24 years old		
Between 25 and 29 years old		
Between 30 and 34 years old		
Between 35 and 39 years old		
Between 40 and 49 years old		
Between 50 and 59 years old		
Over 60 years old		

3.3 Community empowerment

There is a growing trend to create communities that go beyond mere participation in decision-making, also integrating how they interact with energy technologies in their home life (Berka et al., 2020; Vansintjan, 2015). In these energy communities, consumers become active prosumers, i.e. producers and consumers of energy (Van Der Schoor & Scholtens, 2015).

These communities are characterised by a collective and inclusive approach to energy management, promoting cooperation among members to optimise the use of renewable energy resources. The aim is not only to reduce dependence on centralised and unsustainable energy sources, but also to create a sense of belonging and shared responsibility towards the environment and sustainability.

However, this path must face several challenges including the presence of centralized energy players already present, business models and regulatory frameworks that are often unclear for citizens. This suggests the need to study how communities can actively engage to become actors themselves in the socio-material network in which political and economic power act and enable energy transformation.

In this context, the concept of empowerment assumes a central role. Empowerment is a multidisciplinary concept and means giving people the power and skills they need to make informed decisions and act independently. In the context of energy transformation, often the concept of empowerment is a buzzword that is little problematised and has an undefined meaning (Dowd et al., 2012). One of the pitfalls is that this term often translates to top-down interventions, in which communities are invited, rather than to take part in the decision-making process or implementation of the project, but to consult on an issue (PIAC, 2018; Schwarz, 2020). For energy communities, this implies providing community members not only with the technical and financial resources, but also with the knowledge and skills to manage their own energy projects independently. Empowerment leads to greater local control over energy resources and encourages more active and conscious participation of citizens in the energy transition process.

In the social sciences, although there is no consistent definition, the concept of empowerment is based on several levels. Furthermore, it can be a process, as it is fluid and modifiable over time, and/or a result, as it is tangible and measurable (Coy et al., 2021). In this regard, Coy et al. (2021, p.6) define empowerment as “the process of an individual, group or community increasing their capacity and contextual power to meet their own goals, leading to their transformative action”.

Community empowerment is a process through which individuals and communities acquire the awareness, skills, resources and control necessary to face challenges and improve their living conditions. This concept is based on the idea that local communities have the potential to identify and solve their own problems, rather than depending solely on external resources or central authorities. Community empowerment focuses on promoting active participation, autonomous decision-making and empowerment of communities in shaping their own destiny.

Empowerment of energy communities not only strengthens local resilience, but also promotes innovation and long-term sustainability. When people are truly involved and feel they have a real impact on the energy decisions that affect their lives, a virtuous circle of engagement and continuous improvement is created. In this way, energy communities not only contribute to reducing carbon emissions, but also become an example of participatory democracy and sustainable resource management.

Table 3.3 – Input requested for evaluation Community empowerment

Dimension: Community empowerment Community empowerment is a process through which individuals and communities acquire the awareness, skills, resources and control necessary to face challenges and improve their living conditions.	Value	Unit of measure
<i>Indicator: Participation</i>		
Number of events organised to network between participants (aperitif, coffee-cart moments, excursions, neighbourhood working groups, walk-in sessions, etc.)		[#]
Number of people participating meetings, assemblies and decision-making processes (if the energy community is established)		[#]
Number of energy projects and local initiatives (except EC)		[#]
<i>Indicator: Newly added roles</i>		
Number of volunteers who manage different tasks (such as administration, data protection and acquisition, communication of data to the relevant institutional bodies, communication)		[#]
Number of jobs created		[#]
<i>Indicator: Energy literacy (knowledge and understanding that a person has about energy, its use, its sources, and the associated environmental, economic and social impacts)</i>		
Number of community members involved in energy literacy and skills development programmes		[#]
Availability of and access to financial, technical and information resources necessary for the implementation of energy projects.		On a scale from 1 (a little) to 5 (a lot)
1. Methods by which marginalised population groups (low-income citizens and young people) are contacted and involved (CHECK THE TABLE BELOW)		Qualitative (likert scale)
2. Tasks required by volunteers (CHECK THE TABLE BELOW)		Qualitative (likert scale)

3. Skills required by volunteers (CHECK THE TABLE BELOW)		Qualitative (likert scale)
4. Knowledge built up by members (CHECK THE TABLE BELOW)		Qualitative (likert scale)

1. Methods by which marginalised population groups (low-income citizens and young people) are contacted and involved	Likert scale
Methods are ineffective, hardly reach the target, low participation	1 - Very Poor
Methods are partially effective, reach the target in a limited way, moderate participation	2 - Poor
Methods are quite effective, reach a significant part of the target audience, good participation	3 - Appropriate
Methods are effective, reach most of the target audience, high participation	4 - Good
The methods are highly effective, reaching almost the entire target audience, maximum participation.	5 - Excellent
Do not know	

2. Tasks required by volunteers	Likert scale
Tasks are poorly defined, overly demanding, or unsuitable for volunteers' skills	1 - Very Poor
Tasks are partially defined, sometimes too challenging or not fully adapted to volunteers' skills	2 - Poor
The tasks are fairly well defined, generally appropriate to the volunteers' skills, but could be improved	3 - Appropriate
The tasks are well-defined, appropriate and challenging, well aligned with the skills of the volunteers	4 - Good
Tasks are clearly defined, highly appropriate, challenging and enhancing, and perfectly aligned with volunteers' skills and interests	5 - Excellent
Do not know	

3. Skills required by volunteers	Likert scale
Required skills are ill-defined, irrelevant or overly specific, making it difficult to recruit volunteers	1 - Very Poor
The required skills are partially defined, some are irrelevant or too specific, limiting the pool of suitable volunteers	2 - Poor
The required skills are fairly well defined, generally relevant and appropriate, but could be clarified further	3 - Appropriate
The required skills are well defined, relevant and appropriate for the assigned tasks, facilitating the recruitment of suitable volunteers	4 - Good
The required skills are clearly defined, highly relevant, appropriate and enhancing, making volunteer recruitment highly effective	5 - Excellent
Do not know	

4. Knowledge built up by members	Likert scale
Members gain very little knowledge, with little understanding of the topics covered	1 - Very Poor
Members gain limited knowledge, with partial understanding of the topics covered	2 - Poor
Members gain a good amount of knowledge, with a general understanding of the topics covered	3 - Appropriate
Members gain in-depth knowledge, with a solid understanding of the topics covered.	4 - Good
Members gain a very thorough and detailed knowledge, with an excellent understanding of the topics covered	5 - Excellent
Do not know	

3.4 Community wellbeing

Climate change has a significant impact on the wellbeing of communities. Extreme weather events, such as heat waves, violent storms and floods, have become more frequent and intense, causing direct damage to people's physical and mental health (Tong & Ebi, 2019; Who, 2008). The relationship between climate change and health manifests in a wide range of physical effects, such as heat exhaustion, injuries from severe storms, or respiratory illnesses, and long-term effects on mental health. Climate change can trigger acute or chronic mental health effects in the medium and long term, exacerbating anxieties stemming from witnessing the destruction of homes, businesses, or entire agricultural sectors, with obvious economic effects.

Moreover, climate change undermines health infrastructure and essential services, further worsening living conditions. The relationship between climate and community wellbeing highlights the need for adaptation and mitigation measures, such as the development of sustainable energy communities. These communities, through the production and sharing of renewable energy, can reduce greenhouse gas emissions, improve local resilience and promote a healthier and more cohesive environment, thus contributing to lasting collective wellbeing.

Energy communities are a proactive response to climate change by promoting renewable and sustainable energy production. This approach not only contributes to reducing greenhouse gas emissions but also offers numerous benefits to community well-being.

The concept of community wellbeing, when applied to energy community development, encompasses a holistic view that integrates multiple dimensions of collective wellbeing:

- Social wellbeing: the creation of energy communities promotes active participation and collaboration among community members. This can strengthen the social fabric, increasing the sense of belonging and solidarity.
- Environmental wellbeing: energy production from renewable sources contributes to reducing greenhouse gas emissions, mitigating the impact of climate change and contributing to a healthier environment. An important consideration is the aesthetic impact of energy infrastructures. The construction of large photovoltaic plants or wind turbines may raise concerns among citizens about the modification of the local landscape. It is argued that such concerns are primarily driven by the potential disruption of the natural environment, particularly in terms of limiting agricultural land, generating micro-climates that may affect local flora and fauna, and disturbing sensitive or protected ecosystems. In light of these issues, it is crucial to involve citizens in planning and design decisions to ensure that aesthetic concerns are addressed and to integrate design solutions that harmonise with the natural and urban environment and reduce negative visual impacts. Transparency and participation can mitigate resistance and increase acceptance of new infrastructure.
- Psychological and mental wellbeing: participating in the activities of an energy community can help improve the environment and the community and reduce stress related to climate change. In particular, the young generation's concern about the future of the planet plays a key role in building social movements of climate change (Soler-i-Martí et al., 2024).
- Energy communities offer a holistic response to climate change, promoting a sustainable development model that can improve collective and individual well-being. By integrating active participation, education, economic sustainability and environmental protection, energy communities can help build less uncertain future visions also for younger generations.

Table 3.4 – Input request for evaluation of Community wellbeing

Dimension: Community wellbeing Community well-being is affected by climate change and extreme weather events, which have visible effects on the well-being of individuals and catastrophic impacts on local economies and health systems.	Value	Unit of measure
<i>Indicator: Impact on quality of life</i>		
Practices implemented to reduce energy consumption daily consumption.		<input type="checkbox"/> use of bicycles and electric cars. <input type="checkbox"/> use of household appliances (washing machine, dishwasher, etc.) when energy production is at its highest. <input type="checkbox"/> Other (Specify ___)
Initiatives promoted or supported by the community to encourage energy efficiency, renewable energy or other sustainable practices over time.		<input type="checkbox"/> Installation of solar panels or other renewable sources. <input type="checkbox"/> Creation of local energy cooperatives. <input type="checkbox"/> Educational campaigns on energy saving. <input type="checkbox"/> Promotion of energy consumption practices. <input type="checkbox"/> Other
Presence of social movements on climate change in the local community		<input type="checkbox"/> Yes. If yes, describe the vision and goals <input type="checkbox"/> No.

3.5 Community awareness

Community awareness is a key support to promote participation and collective action towards sustainability, particularly in the context of energy communities. This concept refers to the ability of individuals within a community to understand and respond to the environmental and energy issues that surround them (Caratù et al., 2023; Coy et al., 2021; Piselli et al., 2022). Through community awareness, people develop an understanding

of the links between their daily actions and the impacts on the environment and energy resources. This awareness can be promoted through educational processes, social engagement and information dissemination.

Environmental education, for example, plays a crucial role in shaping informed and responsible individuals capable of making informed decisions that take sustainability into account. This type of education can be implemented through school programmes, community seminars and sustainability workshops, where participants learn not only the theoretical concepts but also the practical applications of sustainable practices. In addition, social engagement initiatives, such as volunteer groups and awareness-raising campaigns, help mobilise communities, creating a sense of shared ownership and responsibility.

The dissemination of information through various channels, such as social media, community newsletters and public meetings, allows for reaching a wider audience, facilitating the circulation of knowledge and resources. Community awareness not only informs, but also inspires collective action, encouraging the building of social networks and the sharing of sustainable practices. These social networks become platforms through which people can exchange ideas, experiences and innovative solutions, thus strengthening the social fabric of the community. In addition, community awareness is crucial in fostering social networking and the sharing of knowledge, resources and sustainable practices, thus promoting greater community adaptability in the face of environmental and energy challenges. Aware communities are better prepared to plan and implement solutions that mitigate negative impacts and utilise opportunities to improve the quality of life for all members.

Table 3.5 – Input request for evaluation of Community awareness

Dimension: Community awareness	Value	Unit of measure
<i>Through community awareness, people develop an understanding of the links between their daily actions and the impacts on the environment and energy resources.</i>		
<i>Indicator: Levels of knowledge</i>		
Percentage of people who use smart meters to monitor energy consumption in real time and identify behaviour and anomalies.		%
Percentage of people who consider energy sustainability a priority for the community		%
Percentage of households adopting energy-saving practices		%
Level of people's satisfaction with the community's efforts towards energy sustainability		On a scale from 1 (a little) to 5 (a lot)
Number of users reached by the regional ecosystem newsletter promoting ECOEMPOWER activities		[#]
Number of collaborations between community groups, local businesses and institutions to promote sustainability.		[#]

Number of schools involved in energy awareness initiatives.		[#]
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4 Results: Exploring citizens' engagement

4.1 Regional Ecosystems

This section examines the dynamics of citizen engagement in energy communities across Europe, using pilot sites as case studies. By analysing the dimensions of energy democracy, energy justice, empowerment, and awareness, the study aims to identify best practices and areas for improvement in fostering active citizen engagement in the energy transition. The pilot sites were selected to represent diverse regional contexts and state of development, including France, Germany, Italy, and Greece, with additional data planned for the Czech Republic in future iterations. Each pilot site offers unique insights into how energy communities operate, engage citizens, and address challenges such as democracy, justice and empowerment. The discussion in this Chapter is based on data collected by the Regional Ecosystems Partners. Tables with all the data are available in Deliverable D3.4.

4.1.1 Regional Ecosystem #1 (RE1) – Italy

Valle dei Laghi

In Valle dei Laghi, one citizen-led initiative has been supported or created, with 40 citizens actively participating in energy communities. Outreach efforts are notable, with 11 dissemination events conducted, including leaflet and poster distribution, video discussions, stands, and information days, showing again through these indicators a strong dimension of democracy and awareness.

On the dimension of energy justice, the indicators show that the energy community demonstrates a gender imbalance, with 70% male and 30% female participants, and 68% of members aged over 40, highlighting the need for broader inclusivity. Despite this, members report gaining a good amount of knowledge and achieving a general understanding of energy-related topics, showcasing the initiative's impact in raising awareness and fostering engagement.

Levico Terme

Currently under construction, the initiative in Levico Terme has already engaged 40 participants in workshops and events. Outreach efforts include one dissemination event, featuring activities such as leaflet and poster distribution, video discussions, and stands. Additionally, two events focused on environmental issues have been organized, reflecting the project's commitment to raising awareness and fostering community involvement.

Val di Fassa Energy

In Val di Fassa, efforts to foster energy communities and promote sustainability have shown promising engagement, primarily driven by schools, with one citizen-led initiative originating directly from the school. The energy community operates under an associative model (pending formal establishment), supported by 10 volunteers managing various tasks to ensure smooth operations. The energy infrastructure includes one renewable energy installation owned by private companies, while collaboration between community groups has led to one formal partnership to promote sustainability and a strong commitment to energy democracy, fosters a sense of agency among community members, ensuring that sustainability efforts are rooted in democratic

principles and collective action. This is especially reinforcing as shown by our indicator that 10 citizens participate actively in the energy community and decision-making processes through a direct voting system, ensuring democratic governance.

This approach has resulted in an increasing energy justice dimension with balanced gender representation, with 50 men and 50 women actively involved, and impressive intergenerational diversity, with 40% of participants under the age of 40. Climate change awareness is a significant priority, with three schools engaged in energy-related educational initiatives. Outreach efforts have reached 10 users through the regional ecosystem newsletter, promoting ECOEMPOWER activities. The energy community has organized two dissemination events, including leaflet distributions, poster campaigns, and public discussions, alongside one event focused on environmental issues. Furthermore, there is also a strong dimension of empowerment with 20 individuals participated in workshops aimed at increasing knowledge of renewable energy and sustainability, leading to a noticeable improvement in members' understanding of energy-related topics (rated 3 out of 5 on the Likert scale).

Val di Fassa's strong focus on education, gender balance, youth involvement, and community engagement positions it as a valuable example of a localized approach to fostering sustainability and climate awareness.

4.1.2 Regional Ecosystem #1 (RE2) – France

Eau et Solaire du Lac

Eau et Solaire du Lac was established in 2022 and has successfully launched two renewable energy projects: a photovoltaic project and a micro-hydroelectric project. The initiative strongly emphasizes democratic dimension, operating as shown by our indicator as a simplified joint-stock company where 43 active citizens participate in decision-making through a one person = one vote system.

The organization ensures high accessibility to information via its website and actively fosters citizen engagement through procedural democracy. To empower citizens with the tools necessary for participation, it has organized four workshops, reaching a total of 60 stakeholders via events and media, demonstrating its commitment to inclusive and transparent decision-making processes.

Despite these achievements, challenges persist as shown by the indicators of inclusivity relative to the dimension of energy justice. Indeed, the community performs poorly in gender equity and age diversity, with 70% male participation, 30% female, and only 17% under the age of 40. Efforts to engage marginalized populations, such as low-income citizens and young people, are rated 2/5, indicating that methods are only partially effective, with limited participation. The number of volunteers is unknown, but their tasks are generally appropriate to their skills, though improvements could be made. The required skills for volunteering are partially defined, with some being overly specific, potentially limiting the pool of suitable candidates.

The project offers significant potential for dimension empowerment, with our indicator saying that members gain thorough and detailed knowledge, rated 5/5 on a Likert scale. Approximately 75% of participating households have adopted energy-saving practices, although there is no clear causal link between energy community participation and empowerment, as members often already demonstrated high awareness, particularly those with PV panels.

While no direct jobs have been created, the initiative has generated 1.1 indirect jobs contributing to the wellbeing of the territories. Finally, the initiative has achieved high satisfaction ratings (5/5) for its sustainability efforts and has involved one school in energy awareness programs, underscoring its potential for long-term community impact despite areas requiring improvement in inclusivity and engagement.

Vezouze en Piémont

Vezouze en Piémont, established in 2019 manages 10 infrastructures and includes 83 members. Again a strong democratic dimension is identified by operating as an energy community with a collaborative governance model based on the principle of one person = one vote, within a simplified joint-stock company structure and a strong attention on procedural justice with has organized one dissemination event and one workshop, engaging two participants, and reached 15 stakeholders through events and media. Additionally, it supported the development of one new project and implemented a collective self-consumption initiative through EC incentives, ensuring high availability and accessibility of information on energy projects.

Regarding the dimension of empowerment, while the indicators show that required skills and tasks for volunteers are generally well-defined and appropriate, there is potential to better align these tasks with volunteer capabilities. Despite this, the initiative has significantly enhanced members' knowledge, rated for this indicator 5/5. Approximately 75% of households in the community have adopted energy-saving practices, although many members again already demonstrated high awareness of energy efficiency, particularly those with PV panels, prior to joining the community.

The community has achieved a maximum satisfaction level (5/5 out of the Likert scale for the indicator) for its sustainability efforts, underscoring its effectiveness in promoting sustainable practices and maintaining strong engagement among participants.

VercorSoleil

Established in 2015, VercorSoleil is an energy community that owns 29 renewable energy infrastructures, managed through a collaborative governance model based on the principle of one person = one vote within a simplified joint-stock company structure, underlying again the importance given to the energy democracy dimension. The community comprises 149 active members involved in decision-making and ensures a high level of accessibility and availability of information on energy initiatives, rated 5/5 on the Likert scale. The community has reached 100 stakeholders through events and media showing its commitment to the dimension of awareness on this issue. It has supported or initiated four citizen-led projects.

Despite these achievements, the dimension of justice especially through equity remains a challenge, with 78% male participation and no representation of individuals under 40. Participation in meetings, assemblies, and decision-making processes is moderate, with 46 participants, but the community has not organized informal networking events, such as neighborhood gatherings or group activities, to foster collaboration among members.

Regarding empowerment, six volunteers handle tasks such as administration, data protection, and communication. These tasks are well-defined, appropriate, and challenging, aligning effectively with the volunteers' skills. Knowledge-building among members is significant, as shown by our indicator, rated 5/5 on a Likert scale, with 100% of participants prioritizing energy sustainability. Furthermore, 85% of households have

adopted energy-saving practices. Similarly, the indicator shows that the required skills for volunteering are relevant and well-defined, facilitating the recruitment of suitable candidates.

Members report high satisfaction with the community's sustainability efforts, also rated 5/5. Collaboration is a strong point, with 14 partnerships established between community groups, local businesses, and institutions to promote sustainability, alongside one school involved in energy awareness programs. However, only 0.4 direct jobs have been created through the initiative.

4.1.3 Regional Ecosystem #1 (RE3) – Germany

Elektrizitätswerke Hindelang eG

Founded in 1923, Elektrizitätswerke Hindelang eG is a cooperative energy community operating under the principle of one person = one vote, irrespective of members' shares with a strong commitment to democracy. The community's governance structure includes renewable energy infrastructures, with 15% owned by municipalities and 85% owned by citizens, reflecting a strong emphasis on local ownership and participation. Additionally, the community has redistributed €8,750 in economic benefits to its members, highlighting its commitment to delivering tangible financial advantages to the local population. The indicators show that around 350 people actively participate in decision-making, with 80 regularly attending meetings and assemblies. The cooperative has organized 10 dissemination events, reaching approximately 3,500 stakeholders, and held four networking events to enhance collaboration among participants.

The initiative provides free, neutral on-site energy consultations for homeowners and supports citizen-led projects such as Sonnenwende Hindelang e.V. It has created 16 jobs and relies on three volunteers for tasks that are generally well-aligned with their skills (rated 4/5 for clarity and appropriateness). Regarding the dimension of empowerment, accessibility to information on energy projects is high (rated 4/5 on our indicator), and members gain a fair level of knowledge, though further improvement is needed (rated 3/5 on our indicator). Moreover, very interesting regarding the dimension of empowerment, 5% of members have already engaged with smart meters to monitor energy consumption in real time and identify behaviour and anomalies.

However, on the dimension of energy justice, the community faces challenges in inclusivity, with 70% male participation and limited engagement of marginalized groups, including low-income citizens and young people (rated 1/5 for outreach effectiveness). Additionally, while household energy expenditure is relatively low (6.2% of income), it highlights potential disparities in energy justice due to the community's generally high-income demographic.

Dorfenergie eG Eppishausen

Founded in 2010, Dorfenergie eG Eppishausen is a citizen-driven energy cooperative with 99% ownership by citizens. The community has carried out six collective projects through energy community (EC) incentives and redistributed €21,375 in economic benefits among its members. The indicators show that governance is participatory, with five board members elected for three-year terms by members through a show of hands or written vote, adhering to a one person = one vote principle. The cooperative includes 140 active members, showing a strong commitment to the dimension of energy democracy.

A strong effort has been made on the dimension of awareness. Efforts to engage stakeholders include invitations to an information evening in May, disseminated via email, the cooperative's website, the municipal gazette, and regional newspapers, reaching according to the indicators, 42 stakeholders directly and an estimated 1,000 readers through a major district newspaper. One citizen-led initiative has been supported or created. Networking among participants is facilitated by five events (e.g., aperitifs, excursions, and neighborhood working groups), with 1 to 30 participants attending meetings and decision-making processes. Two local energy projects, including a local heating network (14 MWp open space PV by a solar company), were promoted independently of the energy community, with potential financial participation from the cooperative.

Regarding the dimension of empowerment, the cooperative relies on 13 volunteers for well-defined and appropriate tasks that align effectively with their skills, though no jobs have been created. The indicators highlight those thirteen community members who participated in energy literacy and skills development programs, gaining a moderate understanding of energy topics (rated 3/5 on the Likert scale). Access to information on energy projects is also rated 3/5, indicating some room for improvement.

Efforts to promote sustainable practices include ongoing initiatives to encourage energy efficiency and renewable energy adoption, such as photovoltaic systems and balcony PV panels, with increased interest expected following the May information evening. Challenges remain on the dimension of energy justice, especially seen through the indicator of inclusivity, in achieving gender balance (69% male participation) and age diversity (over 70% of participants are above 40).

Elektrizitätswerke Reutte

The third pilot project, initiated by the Arbeitskreis Energie & Umwelt (local Energy & Environment Working Group) in the municipality of Seeg, is still in the development phase and has not been formally established. Currently, one dedicated volunteer is leading the initiative.

The project benefits from relatively strong access to financial, technical, and informational resources required for the implementation of energy initiatives, rated 4/5 on a Likert scale. This foundation highlights the project's commitment to energy democracy and its potential for successful execution once formally founded and further developed.

4.1.4 Regional Ecosystem #1 (RE5) – Greece

Domokos

The ECOEMPOWER initiative has supported or created three citizen-led initiatives, with a governance owned to 50% to public authorities, 10% citizens and 10% private companies with 23 people participating to the assemble. The regional ecosystem newsletter promoting ECOEMPOWER activities and 6 events organised to network between participants and 5 communicational activities and 1 workshop with around 50 people participating in workshops and events. Additionally, one demonstration focused on environmental issues was conducted, showing as shown by these indicators a commitment to raise awareness on energy issues.

Regarding the dimension of energy justice, the methods used to contact and involve marginalized population groups, such as low-income citizens and young people, have been assessed as highly ineffective. These efforts have struggled to reach their target audience, resulting in very low levels of participation. On a more positive note, the project indicators show a relatively diverse composition in terms of gender, with 64% of members being men and 36% women. Regarding age diversity, 5% of members are aged 18–24, 10% are 25–29, 27% are 30–34, and 32% are 35–39. Adding these percentages shows that 74% of members are below the age of 40, indicating strong engagement among younger and mid-career age groups.

Finally, regarding empowerment, the indicators reveal that volunteer tasks are not well-defined, with required skills only partially specified. In some cases, tasks are either irrelevant or overly specific, which limits the pool of suitable volunteers. On a more positive note, members have gained in-depth knowledge and developed a comprehensive understanding of the topics covered, highlighting the project's potential to enhance participant expertise despite the challenges in task design.

Kamena Vourla

The energy community has supported or created four citizen-led initiatives, demonstrating a strong commitment to local engagement, sustainability, and raising awareness about energy issues. The governance structure reflects a division of ownership, with 45% owned by public authorities, 5% by citizens, and 50% by private companies, while 10 individuals actively participate in the assembly. The availability and accessibility of information on energy projects is rated highly, scoring 4 out of 5 according to the indicators, further emphasizing the community's dedication to transparency and stakeholder involvement. Outreach activities have included three dissemination events, which featured leaflets, poster distribution, video discussions, and information stands, as well as one demonstration event focused on environmental issues. Additionally, a workshop was organized, with the participation of 10 individuals, further contributing to raising awareness and engaging stakeholders.

Regarding the dimension of energy justice, the indicators reveal that the methods used to engage marginalized groups are ineffective, with limited success in reaching the target audience and resulting in low participation. However, the community maintains a balanced gender distribution, with 55% men and 45% women actively involved, and demonstrates impressive intergenerational diversity, with 75% of participants under the age of 40. This youthful representation highlights the community's ability to engage younger generations effectively. The indicator shows that engagement methods have proven highly effective, reaching most of the target audience and ensuring robust participation.

Regarding the dimension of empowerment, the indicators show that members report gaining in-depth knowledge and a solid understanding of key energy-related topics, showcasing the educational impact of the initiatives. Volunteer roles are generally well-defined and appropriate to individual skills, although there is room for improvement in task alignment. The required skills for participation are relevant and clearly outlined, facilitating the recruitment of suitable volunteers and strengthening the community's operational capacity.

Amfilia

The energy community has successfully supported or created two citizen-led initiatives, highlighting its strong commitment to local engagement and sustainability. The governance structure is divided among stakeholders, with 40% owned by public authorities, 5% by citizens, and 55% by private companies. The indicator regarding

the availability and accessibility of information on energy projects is rated 3 out of 5, indicating room for improvement.

Outreach efforts have included one dissemination event featuring activities such as leaflet distribution, poster campaigns, video discussions, and stands, as well as four promotional activities. Additionally, the community organized one event specifically addressing environmental issues, reinforcing its dedication to raising awareness, along with two workshops attended by 11 participants, further engaging the local population.

Regarding the dimension of energy justice, the indicators show a slightly better performance compared to the two other projects, with methods being partially effective, reaching the target audience in a limited way, and resulting in moderate participation. However, the community demonstrates notable diversity in its participant base. The gender distribution includes 58% men and 42% women, while the intergenerational representation is particularly strong, with 75% of participants under the age of 40. This high level of youth involvement highlights the community's ability to effectively engage younger generations.

Finally, regarding the dimension of empowerment, members report gaining a solid understanding of key topics, reflecting successful knowledge dissemination. Volunteer roles are well-defined, challenging, and appropriately aligned with individual skills, which facilitates recruitment and enhances the overall impact of the community's efforts. This comprehensive approach highlights the community's commitment to inclusivity, education, and active participation.

4.2 Survey results

This survey was conducted from July 2024 to December 2024, during which we collected 55 responses from our partners: France, Germany, Italy and Greece. The exception was the Czech Republic: after the withdrawal of the Czech partner a new one joined the project in October 2024, making the timeframe too short for data collection. The data collection process was conducted in collaboration with regional partners who were responsible for gathering insights through a survey distributed to local energy community representatives. Despite repeated attempts, the data collection process was not successful: we collected only about 50-60 answers in total for the 15 pilot sites. The difficulties are first of all in reaching the possible respondents (citizens, EC members, other stakeholders, ...). In some cases, the survey tool reports respondents leaving the survey before completing all the questions, possibly because the overall length or due to demands that were not always well-adapted to the context. In addition, there was a huge delay in receiving responses, making the data collected less meaningful (more than six months for the 50ish answers). For that reason, it was decided to avoid repeating this form of data collection within the project.

4.2.1 France

In France, the study was distributed around to 70 projects affiliated with the Centrales Villageoises network, yielding a response rate of 40% with 28 responses and 23 totally exploitable. Among these respondents, 21 have already established energy communities, with 20 identifying as founders or executive board members, and 1 as a volunteer. The remaining 7 respondents are in the planning stages of their projects.

In France's traditionally centralized energy system, which heavily relies on nuclear power and top-down production methods, there is a growing emphasis on the development of a bottom-up logic with engagement of

local actors and especially an active citizen involvement in energy communities. The French vision of energy communities places strong emphasis on active citizen involvement at the core of the process and throughout the development of the project. This community-driven approach aligns with various organizational models often shared among public institutions, citizens, and small and medium-sized private companies, facilitating the pooling of expertise and knowledge. While collaborative governance remains a cornerstone, with a strong emphasis on citizen participation, project management is not always implemented under cooperative structures. In France, many projects adopt the form of *société anonyme* (anonymous society) due to its simplicity in terms of establishment and management, while still upholding the democratic principle of "one person, one vote".

Notably, public administration plays a crucial role in fostering the development of such projects, as evidenced by the fact that executives largely agree or strongly agree with the statement: "Public administration stimulated the development of their energy community". The role of public authorities is particularly fundamental, as they not only provide a guarantee of credibility and oversight but also often facilitate access to spaces where solar panels can be installed. Their support helps create favorable conditions for the implementation of energy projects, reinforcing both citizen engagement through trust and the technical feasibility of these initiatives. The financial contributions of citizens play a crucial role, as they provide a significant financial leverage effect for these projects, strengthening their funding capacity and long-term viability.

This emphasis on civil society's role is again evident in the activities carried out by cooperatives, reflected in the significant role of volunteers within these organizations including widespread dissemination efforts aimed at the local population through flyers, information days, and awareness campaigns that are systematically organized by these projects and oft led by volunteers. These initiatives are fundamental at the local level, as they foster awareness and generate strong peer effects. In some cases, projects go even further by promoting educational activities aimed at building local knowledge and engagement. One particularly noteworthy trend observed in recent projects is the introduction of plug-and-play solar panels—small, user-friendly systems that simplify the transition to prosuming and make it more accessible to a wider audience.

Thanks to the active involvement of citizens and the co-construction logic of these projects, no conflicts have been observed. However, it is important to note that these findings primarily concern solar energy projects, and the dynamics could differ in the case of wind power projects.

In terms of outcomes, meetings do not focus solely on financial aspects but also address broader topics, such as environmental impact and social benefits. While the aim of lowering costs through installations and generating financial advantages for participants is important, motivations for engagement are far from individualistic. The benefits generated by these projects are often reinvested into collective initiatives, further strengthening community cohesion and fostering long-term engagement.

Regarding the participation of members, particularly at the executive level, many were already engaged in efforts to lower their energy consumption. However, what is also observed among ordinary members is their capacity to impact consumption flexibility by adapting the use of household appliances, such as dishwashers, washing machines, and electric vehicles or bikes, to better align with energy availability.

Approximately half of the participants have already engaged in activities aimed at improving their knowledge and gaining greater empowerment over their energy use. Many of them report having acquired technical skills, particularly in the use of technologies, though fewer have developed managerial or communication skills. While many actively monitor their energy consumption, only an individual reports consistently tracking it in real time using tools such as Raspberry Pi systems.

Regarding inclusivity in the members, the most discriminating criterion is age, with respondents typically being over 50, and particularly over 60. Additionally, their level of education is generally at the master's level or higher, and, once again, men are overrepresented among the respondents.

4.2.2 Germany

In Germany, we received nine responses and seven totally exploitable: eight from projects that have already been implemented and one from a project still in the planning stage.

As in France, the vision for energy community projects in Germany heavily relies on the direct engagement of citizens. However, in the German context, there is a stronger emphasis on the concept of *Gemeinschaft*—a term rooted in German sociological thought that emphasizes close-knit, communal bonds based on shared values and mutual support. This contrasts with the concept of *Gesellschaft*, which refers to more formal, contractual relationships within society. This focus on *Gemeinschaft* in Germany reflects an aspiration to foster a sense of belonging and collective identity when building energy communities, reinforcing the idea that these projects should be more than functional collaborations—they should also nurture social cohesion. As in France there is a high charge of work for maintaining and developing these projects put on the volunteers.

Although some outreach activities have been implemented, they are less widespread compared to the French initiatives. Most are limited to information stands, with only a few—just two—offering promotional distribution activities or workshops. There are no activities in schools, which is unfortunate, as they are generally considered highly effective for raising awareness. Contrary to France, in 2 cases some conflicts are highlighting concerning Conflicts due to environmental or spatial development issues even when the project is not held in a private logic.

Contrary to the previous case, the legal forms adopted in these projects are cooperatives, with a distribution of benefits focused on the mutual interest of members rather than the general interest. For instance, economic benefits are not reinvested in educational projects but are instead directed toward providing immediate advantages to the members.

From an empowerment and educational perspective, only 60% of members have been directly involved in these initiatives. While several efforts have been made to foster connections among members, informal meetings remain less frequent than in France, with one project even reporting no meetings at all. Despite this, the initiatives have shown significant potential for empowerment, as 83% of participants reported developing technical skills related to energy technologies. However, they did not report similar progress in management and communication skills.

Regarding the decision-making process, the dominant model adopted by energy communities focuses on reserving the participation of all members for strategic decisions, emphasizing collective input on the most critical choices.

The role of public authorities in implementing specific measures to improve access to energy and reduce energy costs is generally viewed positively, though less strongly emphasized compared to France.

In Germany, the degree of inclusivity regarding gender is notably low, as all project respondents are male and over the age of 50—most being above 60. Additionally, both respondents who provided detailed feedback hold a PhD-level education.

4.2.3 Italy

For Italy, we received eleven responses and five exploitable, with all projects currently in the construction phase. This reflects the fact that energy communities in Italy are still in the take-off phase, with many initiatives in the early stages of development due to challenges related to complex regulations and technical bureaucracy, which have hindered due to the uncertainty project progress.

In Italy as well, there is a strong emphasis on the concept of community. Only one project highlighted cost savings on energy as the primary motivation, while the majority emphasized the social aspects of the initiative. It is important to note that the responses were limited to the Trentino region, which is somewhat exceptional due to the province's proactive approach in fostering bottom-up energy projects. In contrast, in other contexts, energy community models often remain influenced by private actors, raising concerns about the potential appropriation of benefits. The strong involvement of public authorities in Trentino appears to play a crucial role in preventing such risks.

One respondent also highlighted the challenges encountered when forming these projects, stressing the importance of defining roles and addressing organizational difficulties. The primary barriers identified for initiating these projects include a lack of information (mentioned by two projects), high up-front costs, and, in one case, a lack of stakeholder engagement.

Interestingly, the individuals involved are generally already well-informed. Except for one project, all respondents reported having considered practices to manage their energy consumption, reflecting an existing awareness of this issue—two even mentioned mobility-related measures.

However, despite Italy's advancements in implementing smart meters and smart grids, none of the respondents use digital tools or devices to monitor their household energy consumption. This remains a surprising paradox, as such tools are fundamental for effectively managing energy use in small-scale photovoltaic projects and maximizing self-consumption.

To facilitate project development, respondents prioritized the creation of social interactions to strengthen community ties (four out of five projects) and highlighted the need for tangible evidence of economic and environmental benefits (two out of five projects).

As in previous cases, all respondents were male, though younger on average (mostly between 40 and 49 years old) and holding master's degrees rather than PhDs.

4.2.4 Greece

For Greece, we received two responses: one from a community still in the development phase and another from an established energy community.

In the first case, while the role of business entities is acknowledged, as in other contexts, they play an important role for supporting the project development.

The motivations for participation are diverse, encompassing economic, social, and environmental factors. One notable barrier, however, is the lack of awareness and access to information within civil society. The respondent, therefore, emphasized the need for financial incentives, greater transparency, more accessible information, and the active involvement of friends and neighbours to foster engagement.

For the project already implemented, the respondent is the founder of the initiative, though providing a clear definition of the project remains challenging as it is still in an early development phase. In this context, promotional activities are planned. The presence of a business partner is noted, which can be attributed to the early stage of the project and the need for partners capable of providing resources to support its development.

While citizens contribute to the project's financing, the energy infrastructures are owned by private companies. However, other initiatives exist that aim to shift this model. There is no explicit focus on energy justice, yet efforts are made to position energy communities as inclusive spaces where everyone can express their views and propose new projects, as reflected in the agreement with the statement: "At Energy Community meetings, everyone can freely express their opinion and propose new projects".

Despite participation in educational activities, there has been no change in the timing of device usage to optimize energy consumption, although there is some awareness of energy usage, which is occasionally monitored. Additionally, no events are held outside of formal meetings, which take place only once a year.

Respondents indicated that they have only developed managerial skills and, in this case, strongly disagreed with the statement that public administration stimulated the development of their energy community. This contrasts with other governance models in different countries, where public administration appears to be more supportive.

Additionally, there is no connection made between the energy communities and mobility initiatives.

4.3 Synthesis

4.3.1 France

In our case, France demonstrates a collaborative governance model that successfully pools diverse resources and fosters citizen involvement. However, despite this strong framework, there remains a heavy reliance on volunteers, raising questions about how to sustain engagement in the long term, particularly as no economic benefits or direct financial incentives are offered to participants (Dudka and Magnani 2024). France also excels in diffusing its energy community models, exemplified by the impressive spread of the Centrales Villageoises network. This approach leverages economies of scale by standardizing legal frameworks, competences, and skills, while placing a strong emphasis on civil society empowerment. Nevertheless, engaging the most vulnerable populations continues to be a significant challenge. Innovative ways to involve citizens, such as balcony photovoltaic systems, are being developed, inspired in part by German practices. However, the question of financial viability and rentability remains critical with difficulties creating jobs. To enhance attractiveness to a broader range of citizens, the model may need to expand beyond purely community-driven logics to incorporate elements of market-oriented approaches. This dual focus could help balance community objectives with broader citizen participation and economic sustainability (Dudka, Moratal, and Bauwens 2023).

4.3.2 Germany

Germany's energy community model emphasizes a hybrid approach, combining a strong focus on the mutual interests of members within the community and a market-oriented logic that supports the redistribution of economic benefits. This hybrid model is further complemented by an emphasis on technological integration,

such as the use of smart meters, which facilitates energy monitoring and efficiency. Diffusion activities in Germany are less locally grounded compared to France, often relying on newspapers and other media outlets, which may limit accessibility in some cases (Bollinger and Gillingham 2012). However, the adoption of balcony photovoltaic systems has emerged as a significant trend in Germany, closely tied to the concept of energy democracy. This approach effectively bridges individual and collective engagement, encouraging participation at both levels. As a result, there is a stronger focus on new energy practices, such as aligning electricity consumption with production, which enhances flexibility in energy use (Barnes et al. 2022). German projects also show potential for stable job creation, even as volunteers continue to play an essential role. By balancing market mechanisms with community-driven initiatives, German energy communities provide a compelling model that fosters technological adoption, encourages active participation in energy practices, and addresses key issues like energy flexibility and economic sustainability as social enterprises (Bauwens, Huybrechts, and Dufays 2019).

4.3.3 Italy

Energy communities in Italy are still in their early stages, with most projects currently in the construction phase. This reflects broader challenges in Italy's energy transition, where regulatory and technical complexities have delayed progress (Wierling et al. 2023). The Trentino region stands out as a notable exception, thanks to proactive public support that has fostered bottom-up initiatives. The role of the province is particularly fundamental in creating one-stop shops and facilitating project development, making the process more accessible and efficient. In Italy's regional ecosystems, the most advanced projects prioritize fostering a sense of community and delivering social benefits over focusing solely on cost savings (Candelise and Ruggieri 2020). This approach reflects the reality that financial benefits are often modest compared to the significant investments required to navigate bureaucratic and administrative hurdles while supporting the inherent risks of such initiatives.

The Val di Fassa project serves as a particularly relevant example by involving students in the development of energy community projects, raising awareness, and empowering participants on energy-related issues. Looking forward, establishing frameworks to better support volunteers and exploring the possibility of organizing these projects under a unified second-order organization could significantly reduce costs and alleviate the burden on human resources for management. Italy's experience, particularly in Trentino and similar contexts, highlights the importance of leveraging community gathering spaces such as schools and adopting a relational approach (Middlemiss et al. 2024). This strategy not only fosters local citizen's engagement but also provides a scalable model for innovation in energy communities (Dudka 2024). However and especially in Italy a strong attention should be given to gender representation in these organisations.

4.3.4 Greece

In Greece, despite legal challenges stemming from the coexistence of three distinct definitions of energy communities—which create confusion and complicate the legal framework for citizens seeking to establish projects—the sector is experiencing significant growth. These initiatives demonstrate a strong commitment to representativity, as evidenced by the diverse composition of members and the notable involvement of young participants, setting Greece apart from other pilot sites (with the exception of Val di Fassa). However, there are important concerns to address: the role of public administration is minimal compared to other countries, limiting

institutional support; energy consumption optimization practices are underutilized despite awareness efforts; and private ownership of infrastructures in some cases raises questions about long-term community control and inclusivity.

5 Conclusion

This report offers an initial analysis of citizen engagement in energy communities across Europe, focusing on pilot sites in France, Germany, Italy, and Greece, with plans for future data collection in the Czech Republic. By exploring key dimensions such as energy democracy, justice, empowerment, and awareness, the findings highlight the need to advance citizen engagement, particularly in addressing issues of representativity. A particularly interesting insight emerges from the regional ecosystem in Greece, where younger generations demonstrate higher levels of participation in energy communities. In contrast, in France, involvement is predominantly among individuals over 50, raising critical questions about long-term engagement and the necessity of renewing participation over time. Furthermore, as demonstrated by the Italian partner, the concept of aggregation—where a strong sense of place fosters community ties—proves to be a promising strategy for building and sustaining energy projects, aligning with the growing body of academic literature emphasizing the importance of a relational approach to the energy transition. Understanding these dynamics will be essential for developing tailored strategies that enhance inclusivity, participation, and sustainability across diverse socio-economic and cultural contexts.

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7 List of Abbreviations

EC	Energy Community
OSS	One Stop Shop
REC	Renewable Energy Community
RE	Regional Ecosystem
RED II	Renewable Energy Directive

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Febbraio 2025

RACCOLTA DI INDICATORI PER LA VALUTAZIONE DELL' IMPATTO SOCIALE E LINEE GUIDA PER LA LORO MISURAZIONE



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RIEPILOGO GENERALE

La valutazione dell'impatto sociale presenta sfide significative, in particolare nella definizione di un metodo di misura pertinente e nella considerazione della sua visibilità a lungo termine. Il Work Package 3 (WP3), in particolare attraverso le attività del Task 3.3 – “Definizione di indicatori adeguati”, mira ad affrontare queste sfide identificando le dimensioni di analisi necessarie per sviluppare un insieme di indicatori utili a valutare l'impatto sociale delle comunità energetiche. L'attenzione è posta su risultati tangibili, privilegiando le azioni rispetto alle intenzioni, le attività rispetto alle percezioni e gli artefatti rispetto ai piani. Per raggiungere questo obiettivo, è necessaria una stretta collaborazione con tutti i partner coinvolti nel progetto ECOEMPOWER.

Il Deliverable 3.3 – “Raccolta di indicatori per la valutazione dell'impatto sociale e linee guida per la loro misurazione”, si concentra sull'identificazione e la definizione di indicatori per valutare gli impatti sociali delle comunità energetiche e fornisce linee guida per la loro misurazione efficace. In quanto iniziative collaborative basate sulla produzione e gestione dell'energia rinnovabile, queste comunità hanno il potenziale per rafforzare la coesione sociale, la resilienza locale e la governance democratica. Tuttavia, i loro impatti sociali sono meno tangibili e standardizzati rispetto agli effetti economici e ambientali, rendendone più complessa la valutazione.

Questo documento introduce un quadro metodologico per colmare questa lacuna, proponendo un approccio multidimensionale alla valutazione dell'impatto sociale. Si sottolinea l'importanza di integrare metodologie qualitative e quantitative per cogliere la complessità delle comunità energetiche come fenomeno sociale. Le dimensioni chiave analizzate includono democrazia energetica, giustizia energetica, empowerment della comunità, benessere comunitario e consapevolezza collettiva. Per ciascuna di esse, vengono proposti indicatori specifici per valutare i progressi, individuare le sfide e supportare i processi decisionali.

Questo lavoro si basa su revisioni della letteratura, consultazioni con le parti interessate e analisi di siti pilota condotte in cinque paesi europei: Italia, Francia, Germania, Repubblica Ceca e Grecia. Questi siti pilota offrono prospettive preziose sull'effettiva operatività delle dimensioni proposte, permettendo di identificare indicatori empiricamente testabili e adattabili ai diversi contesti locali, tenendo conto delle variazioni legislative e politiche proprie di ciascun paese.

I risultati evidenziano l'importanza di affrontare questioni legate all'inclusività, alla governance partecipativa e all'accesso equo all'interno delle comunità energetiche. Sebbene in alcuni ambiti siano stati osservati progressi significativi, permangono sfide, in particolare per quanto riguarda l'equilibrio di genere, il coinvolgimento dei gruppi marginalizzati e la partecipazione intergenerazionale.

Questo documento è strutturato per rivolgersi a un pubblico ampio, inclusi decisori politici, ricercatori e operatori del settore. Fornisce sia una base teorica che strumenti empirici per approfondire la comprensione e l'attuazione della valutazione dell'impatto sociale nelle comunità energetiche. Il deliverable mira a costruire un quadro teorico-analitico, supportato da strumenti metodologici, per aiutare le comunità energetiche a valutare gli aspetti sociali legati al loro funzionamento e sviluppo.

Février 2025

COLLECTE D'INDICATEURS POUR L'ÉVALUATION DE L'IMPACT SOCIAL ET LIGNES DIRECTRICES POUR LEUR MESURE



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RÉSUMÉ EXÉCUTIF

L'évaluation de l'impact social représente un défi majeur, notamment en raison de la difficulté à définir des métriques pertinentes et à prendre en compte sa visibilité à long terme. Le Work Package 3 (WP3), et en particulier la Task 3.3 – « Définition d'indicateurs adaptés », vise à relever ces défis en identifiant les dimensions d'analyse nécessaires à l'élaboration d'un ensemble d'indicateurs permettant d'évaluer l'impact social des communautés énergétiques. L'accent est mis sur des résultats concrets, privilégiant les actions plutôt que les intentions, les activités plutôt que les perceptions, et les artefacts plutôt que les plans. Pour y parvenir, une collaboration étroite avec l'ensemble des partenaires du projet ECOEMPOWER est essentielle.

Le Deliverable 3.3 – « Collecte d'indicateurs pour l'évaluation de l'impact social et lignes directrices pour leur mesure », se concentre sur l'identification et la définition d'indicateurs permettant d'évaluer les impacts sociaux des communautés énergétiques, tout en proposant des lignes directrices pour assurer une mesure efficace. En tant qu'initiatives collaboratives axées sur la production et la gestion des énergies renouvelables, ces communautés ont le potentiel de renforcer la cohésion sociale, la résilience locale et la gouvernance démocratique. Toutefois, leurs impacts sociaux sont moins facilement quantifiables et standardisés que leurs effets économiques et environnementaux, ce qui rend leur évaluation plus complexe.

Ce document introduit un cadre méthodologique visant à combler cette lacune grâce à une approche multidimensionnelle de l'évaluation de l'impact social. Il met l'accent sur l'intégration de méthodologies qualitatives et quantitatives afin de mieux appréhender les communautés énergétiques en tant que phénomène social. Les dimensions clés explorées incluent la démocratie énergétique, la justice énergétique, l'autonomisation des communautés, le bien-être collectif et la sensibilisation citoyenne. Pour chacune d'elles, des indicateurs spécifiques sont proposés afin d'évaluer les progrès, d'identifier les défis et de soutenir les processus décisionnels.

Ce travail s'appuie sur des revues de littérature, des consultations avec les parties prenantes et des analyses de sites pilotes dans cinq pays européens : Italie, France, Allemagne, République tchèque et Grèce. Ces sites pilotes offrent des perspectives précieuses sur la mise en œuvre des dimensions proposées, permettant d'identifier des indicateurs empiriquement testables et adaptables aux contextes locaux, tout en tenant compte des spécificités législatives et politiques de chaque pays.

Les résultats mettent en évidence l'importance de l'inclusivité, de la gouvernance participative et de l'accès équitable au sein des communautés énergétiques. Malgré des avancées significatives dans certains domaines, des défis persistent, notamment en matière d'égalité de genres, d'engagement des groupes marginalisés et de participation intergénérationnelle.

Ce document s'adresse à un large public, notamment les décideurs politiques, les chercheurs et les praticiens. Il propose à la fois une base théorique et des outils méthodologiques pour approfondir la compréhension et la mise en œuvre des évaluations d'impact social des communautés énergétiques. En construisant un cadre théorico-analytique soutenu par des outils opérationnels, ce livrable vise à accompagner les communautés énergétiques dans l'évaluation et l'amélioration des dimensions sociales liées à leur fonctionnement et à leur développement.

Februar 2025

SAMMLUNG VON INDIKATOREN ZUR BEWERTUNG SOZIALER AUSWIRKUNGEN UND LEITLINIEN ZU IHRER MESSUNG



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ZUSAMMENFASSUNG

Die Bewertung sozialer Auswirkungen stellt erhebliche Herausforderungen dar, insbesondere bei der Definition aussagekräftiger Messgrößen und der Berücksichtigung ihrer langfristigen Sichtbarkeit. Das Work Package 3 (WP3), insbesondere durch die Aktivitäten von Task 3.3 – „Definition geeigneter Indikatoren“, zielt darauf ab, diese Herausforderungen zu bewältigen, indem es die Analysebereiche identifiziert, die zur Entwicklung eines Satzes von Indikatoren erforderlich sind, um die sozialen Auswirkungen von Energiegemeinschaften zu bewerten. Der Schwerpunkt liegt auf greifbaren Ergebnissen, z. B. Handlungen statt Absichten, Aktivitäten statt Wahrnehmungen und Artefakte statt Pläne. Um dies zu erreichen, ist eine enge Zusammenarbeit mit allen am ECOEMPOWER-Projekt beteiligten Partnern erforderlich.

Der Deliverable 3.3 – „Sammlung von Indikatoren zur Bewertung sozialer Auswirkungen und Leitlinien für ihre Messung“, konzentriert sich auf die Identifizierung und Definition von Indikatoren zur Bewertung der sozialen Auswirkungen von Energiegemeinschaften und bietet Richtlinien für ihre effektive Messung. Als gemeinschaftliche Initiativen zur Produktion und Verwaltung erneuerbarer Energien haben Energiegemeinschaften das Potenzial, den sozialen Zusammenhalt, die lokale Widerstandsfähigkeit und die demokratische Verwaltung zu stärken. Ihre sozialen Auswirkungen sind jedoch weniger greifbar und standardisiert als ihre wirtschaftlichen und ökologischen Effekte, was eine umfassende Bewertung erschwert.

Dieses Dokument stellt einen methodischen Rahmen vor, um diese Lücke zu schließen, indem es einen multidimensionalen Ansatz zur Bewertung sozialer Auswirkungen präsentiert. Es legt den Fokus auf die Integration qualitativer und quantitativer Methoden, um die Komplexität von Energiegemeinschaften als soziales Phänomen zu erfassen. Die untersuchten zentralen Bereiche umfassen Energiedemokratie, Energiegerechtigkeit, Stärkung der Gemeinschaft, gemeinschaftliches Wohlbefinden und gesellschaftliches Bewusstsein. Für jede dieser Dimensionen werden spezifische Indikatoren vorgeschlagen, um Fortschritte zu bewerten, Herausforderungen zu identifizieren und Entscheidungsprozesse zu unterstützen.

Diese Arbeit basiert auf Literaturanalysen, Stakeholder-Konsultationen und Pilotstudien, die in fünf europäischen Ländern durchgeführt wurden: Italien, Frankreich, Deutschland, Tschechien und Griechenland. Diese Pilotstandorte bieten wertvolle Einblicke in die Umsetzung der vorgeschlagenen Dimensionen, um empirisch überprüfbar und an verschiedene lokale Kontexte anpassbare Indikatoren zu identifizieren, wobei Unterschiede in den rechtlichen und politischen Rahmenbedingungen der beteiligten Länder berücksichtigt werden.

Die Ergebnisse unterstreichen die Bedeutung von Inklusivität, partizipativer Governance und gleichberechtigtem Zugang innerhalb von Energiegemeinschaften. Obwohl in einigen Bereichen erhebliche Fortschritte erzielt wurden, bestehen weiterhin Herausforderungen, insbesondere im Hinblick auf die Geschlechterbalance, die Einbindung marginalisierter Gruppen und die Förderung der intergenerationellen Beteiligung.

Dieses Dokument richtet sich an ein breites Publikum, darunter politische Entscheidungsträger, Wissenschaftler und Praktiker. Es bietet sowohl eine theoretische Grundlage als auch empirische Werkzeuge, um das Verständnis und die Umsetzung der Bewertung sozialer Auswirkungen von Energiegemeinschaften voranzutreiben. Das Deliverable zielt darauf ab, einen theoretisch-analytischen Rahmen, unterstützt durch methodische Werkzeuge, bereitzustellen, um Energiegemeinschaften bei der Bewertung der sozialen Aspekte ihrer Funktionsweise und Entwicklung zu unterstützen.

Únor 2025

INDIKÁTORY PRO HODNOCENÍ SOCIÁLNÍHO DOPADU A POKYNY PRO JEJICH MĚŘENÍ



The project ECOEMPOWER - ECOSystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

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SHRNUTÍ

Hodnocení sociálního dopadu představuje významné výzvy, zejména pokud jde o definování smysluplných metrik a zohlednění jejich dlouhodobé relevantnosti. Pracovní balíček 3 (WP3), a zejména aktivity v rámci Úkolu 3.3 – „Definice vhodných indikátorů“, se snaží tyto výzvy řešit prostřednictvím identifikace analytických dimenzí nezbytných pro vývoj souboru indikátorů k hodnocení sociálního dopadu energetických komunit. Důraz je kladen na hmatatelné výsledky, přičemž akce mají přednost před záměry, aktivity před dojmy a artefakty před plány. K dosažení tohoto cíle je nezbytná úzká spolupráce všech partnerů zapojených do projektu ECOEMPOWER.

Výstup 3.3 – „Indikátory pro hodnocení sociálního dopadu a pokyny pro jejich měření“, se zaměřuje na identifikaci a definici indikátorů pro hodnocení sociálních dopadů energetických komunit a poskytuje pokyny pro jejich efektivní měření. Jako spolupracující iniciativy zaměřené na výrobu a správu obnovitelné energie mají energetické komunity potenciál přispět k sociální soudržnosti, odolnosti místních komunit a demokratickému řízení. Jejich sociální dopady jsou však méně hmatatelné a standardizované než jejich ekonomické a environmentální účinky, což komplikuje jejich komplexní hodnocení.

Tento dokument představuje metodologický rámec, který se snaží tuto mezeru vyplnit, a nabízí multidimenzionální přístup k hodnocení sociálního dopadu. Zdůrazňuje integraci kvalitativních a kvantitativních metodologií, aby bylo možné zachytit složitost energetických komunit jako sociálního fenoménu. Klíčové zkoumané dimenze zahrnují energetickou demokracii, energetickou spravedlnost, posilování komunit, komunitní blahobyt a společenské povědomí. Pro každou z těchto dimenzí jsou navrženy specifické indikátory k hodnocení pokroku, identifikaci výzev a podpoře v rámci rozhodovacích procesů.

Tato studie vychází z literárních rešerší, konzultací se zainteresovanými stranami a analýz pilotních lokalit provedených v pěti evropských zemích: Itálii, Francii, Německu, České republice a Řecku. Tyto pilotní lokality poskytují cenné poznatky o operacionalizaci navrhovaných dimenzí a umožňují identifikovat empiricky testovatelné a adaptabilní indikátory na různé místní kontexty, přičemž zohledňují legislativní a politické rozdíly jednotlivých zemí.

Zjištění zdůrazňují význam inkuzivity, participativního řízení a rovného přístupu v rámci energetických komunit. Přestože v některých oblastech bylo dosaženo významného pokroku, přetrvávají výzvy, zejména pokud jde o genderovou rovnováhu, zapojení menšinových skupin a mezigenerační participaci.

Tento dokument je strukturován tak, aby oslovil široké publikum, včetně tvůrců politik, výzkumníků a odborníků z praxe. Poskytuje jak teoretický základ, tak empirické nástroje pro lepší pochopení a implementaci sociálního dopadu energetických komunit. Výstup si klade za cíl vytvořit teoreticko-analytický rámec, podpořený metodologickými nástroji, který pomůže energetickým komunitám při hodnocení sociálních aspektů jejich fungování a rozvoje.

Φεβρουάριος 2025

ΣΥΛΛΟΓΗ ΔΕΙΚΤΩΝ ΓΙΑ ΤΗΝ ΑΞΙΟΛΟΓΗΣΗ
ΤΟΥ ΚΟΙΝΩΝΙΚΟΥ ΑΝΤΙΚΤΥΠΟΥ ΚΑΙ
ΚΑΤΕΥΘΥΝΤΗΡΙΕΣ ΟΔΗΓΙΕΣ ΓΙΑ ΤΗ
ΜΕΤΡΗΣΗ ΤΟΥ



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Εκτελεστική Περίληψη

Η αξιολόγηση του κοινωνικού αντίκτυπου παρουσιάζει σημαντικές προκλήσεις, ιδιαίτερα όσον αφορά τον καθορισμό ουσιαστικών δεικτών και τη λήψη υπόψη της μακροπρόθεσμης ορατότητάς του. Το Work Package 3 (WP3), και ειδικότερα οι δραστηριότητες του Task 3.3 – «Καθορισμός κατάλληλων δεικτών», στοχεύει στην αντιμετώπιση αυτών των προκλήσεων μέσω της αναγνώρισης των διαστάσεων ανάλυσης που απαιτούνται για την ανάπτυξη ενός συνόλου δεικτών προκειμένου να αξιολογηθεί ο κοινωνικός αντίκτυπος των ενεργειακών κοινοτήτων. Η έμφαση δίνεται στα απτά αποτελέσματα, προτιμώντας τις πράξεις έναντι των προθέσεων, τις δραστηριότητες έναντι των αντιλήψεων και τα υλοποιημένα έργα έναντι των σχεδίων. Η επίτευξη αυτού απαιτεί στενή συνεργασία με όλους τους εταίρους που συμμετέχουν στο έργο ECOEMPOWER. Το Deliverable 3.3 – «Συλλογή δεικτών για την αξιολόγηση του κοινωνικού αντίκτυπου και κατευθυντήριες οδηγίες για τη μέτρησή του», εστιάζει στον προσδιορισμό και τον καθορισμό δεικτών για την αξιολόγηση του κοινωνικού αντίκτυπου των ενεργειακών κοινοτήτων και παρέχει κατευθυντήριες γραμμές για την αποτελεσματική μέτρησή τους. Οι ενεργειακές κοινότητες, ως συνεργατικές πρωτοβουλίες που επικεντρώνονται στην παραγωγή και διαχείριση ανανεώσιμων πηγών ενέργειας, έχουν τη δυνατότητα να συμβάλουν στην κοινωνική συνοχή, την τοπική ανθεκτικότητα και τη δημοκρατική διακυβέρνηση. Ωστόσο, ο κοινωνικός τους αντίκτυπος είναι λιγότερο απτός και τυποποιημένος σε σύγκριση με τις οικονομικές και περιβαλλοντικές επιπτώσεις τους, καθιστώντας την ολοκληρωμένη αξιολόγησή του πιο απαιτητική.

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Η παρούσα μελέτη συνδυάζει βιβλιογραφικές ανασκοπήσεις, διαβουλεύσεις με ενδιαφερόμενους φορείς και αναλύσεις πιλοτικών τοποθεσιών, που πραγματοποιήθηκαν σε πέντε ευρωπαϊκές χώρες: Ιταλία, Γαλλία, Γερμανία, Τσεχία και Ελλάδα. Οι πιλοτικές αυτές τοποθεσίες παρέχουν πολύτιμες πληροφορίες σχετικά με την εφαρμογή των προτεινόμενων διαστάσεων, επιτρέποντας την αναγνώριση εμπειρικά ελέγξιμων και προσαρμόσιμων δεικτών σε διάφορα τοπικά περιβάλλοντα, λαμβάνοντας υπόψη τις διαφοροποιήσεις στη νομοθεσία και στις πολιτικές στις εμπλεκόμενες χώρες.

Τα ευρήματα υπογραμμίζουν τη σημασία της αντιμετώπισης της συμπερίληψης, της συμμετοχικής διακυβέρνησης και της ισότιμης πρόσβασης στις ενεργειακές κοινότητες. Παρότι έχουν σημειωθεί σημαντικές πρόοδοι σε ορισμένους τομείς, εξακολουθούν να υπάρχουν προκλήσεις, ιδιαίτερα όσον αφορά τη βελτίωση της ισορροπίας των φύλων, την ενσωμάτωση περιθωριοποιημένων ομάδων και την ενίσχυση της διαγενεακής συμμετοχής.

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