Legal Implementation and Digital Enablement of Energy Communities across Europe: insights from FlexBIT project

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***Abstract*—The European Union has introduced legal frameworks for Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) through Directives (EU) 2018/2001 and 2019/944, enabling collective energy generation, storage, and sharing. However, their implementation across Member States varies due to legal complexity and limited digital support. The FlexBIT project addresses these challenges by developing and interoperable platform that enables energy sharing, flexibility management, and alignment with EU regulations. This paper presents a comparative analysis of national frameworks in Germany, Greece, Italy, Malta, and Poland, highlighting different levels of alignment with EU directives and identifying key legal and technical barriers. It also examines the role of digital tools, data governance, and smart contracts that support energy community operations. Findings show Malta as the most advanced in legislative transposition, while Germany has not yet fully aligned. FlexBIT demonstrates how digital and legal approaches can promote the energy transition from citizens and local actors.**

Keywords—Energy Communities, Legal Implementation, Energy Transition, EU Directives, Energy Sharing, FlexBIT

I. Introduction

In recent years, the European Union has actively promoted energy communities as fundamental components of a decentralised citizen-driven energy transition. Based on the legal frameworks established by the Directive (EU) 2018/2001 [1] on the promotion of the use of energy from renewable sources and the Directive (EU) 2019/944 [2] on common rules for the internal market for electricity, two related approaches have been developed: Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs). Both entities are recognised and designed to promote the collective generation, consumption, storage, and sharing of energy especially from renewable sources. Focusing on democratic governance, local ownership, and non-commercial objectives, energy communities aim to encourage citizens and small enterprises while contributing to broader goals of decarbonisation and energy resilience. The implementation of Article 15a in the Directive 2019/944 further strengthens this framework by establishing the right to energy sharing across households and small businesses, supporting the development of inclusive, flexible, and sustainable local energy systems. Through these measures, the EU consider energy communities not just as a way to meet climate goals, but also as a means to involve citizens in a direct way in the energy system, reduce energy poverty, and build greater public support for renewable technologies.

Directive (EU) 2018/2001 [1] (RED II) defines the Renewable Energy Communities (RECs) in detail and their legal foundations are supported by several provisions and recitals. According to Article 22, each Member State should enable RECs to generate, use, store, and sell renewable energy (2), ensure fair market access, reduce administrative barriers (4) and integrate them into national energy and climate strategic plans (5). RECs must be open, voluntary, and regionally controlled entities with non-profit community benefit as their main goal. Articles 15(3) and 18 mention the measures for access to information, planning and infrastructure support, and financing provisions. Recitals (26), (63), (65), (67), (70), and (71) strengthen RECs' role in promoting decentralisation, fair competition, reduced energy poverty, improved household energy efficiency, and increased public acceptance and local investments in renewables sector. RECs also participate in national renewable energy targets as it is mentioned in Article 7(2). Article 22(6) sets the fundamentals for RECs to operate across borders, create

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inclusive, locally grounded energy systems with legal and regulatory backing at the EU level.

Citizen Energy Communities (CECs) are regulated under Article 16 of Directive (EU) 2019/944 [2], which directs each Member State to enable their formation and fair participation in electricity markets. According to Article 16(1a), participation in CECs must be open and voluntary, while Article 16(1b) mentions members' free exit. CECs could maintain the rights and obligations of household customers (Article 16(1c)). Articles 16(1e) and 18 ensures members' protection from unfair or discriminatory procedures, though they may still be subject to proportionate fees and charges. Cross-border operations are allowed for Member States (Article 16 (2a)) while CECs have also the right to manage or operate distribution networks under specific conditions (Article. 16(2b), 16(4a)). This includes signing agreements with Distribution System Operators (DSOs) and Transmission System Operators (TSOs) and paying fair, disaggregated network charges among others (Article 59(7)). CECs are authorised to participate in all electricity markets (energy and ancillary services), directly or via aggregation, having equal rights and responsibilities as other markets (Article 16(3a–b)). They are also responsible for the financial system imbalances (Article 16(3c)) and may manage internal electricity allocation (Article. 16(2e)), while preserving the end users' rights. Although electricity sharing within CECs is allowed, members should comply with grid charges, which must be transparent and fair. Regarding Article 18a(3) and Article 31(2), CECs should also have access to risk management tools and be protected from unfair treatment by DSOs. Finally, Article 39(1z) requires regulators to remove barriers that delay the growth of CECs and related flexibility services, ensuring their timely connection and market integration.

According to Article 15a of Directive (EU) 2019/944 [2] the households, Small-Medium Enterprises, public bodies, and other eligible customers are allowed to participate in energy sharing as active customers within the same bidding zone or a defined local area, individually or through a legal entity. All Member States must guarantee the non-discriminatory access to energy sharing and allow customers to be assigned to their preferable organization for handling tasks like billing, contracts, metering, and coordination with grid operators. Moreover, participants have the right to deduct shared electricity from their consumption, use standard contract templates, and access dispute resolution. They must be treated fairly and being informed about regulatory changes. Smaller systems with installed capacity up to 10.8 kW for households and 50 kW for apartment buildings are excluded from some supplier obligations, although these limits can be adjusted. On the contrary, larger participants and installations above 6 MW face stricter conditions. System operators are demanded to monitor data, provide clear information, and ensure transparency according to this directive. Vulnerable consumers are supported by deployed of at least 10% of shared energy in public projects. Member States are also encouraged to promote small plug-in solar systems and keep administrative requirements simple, while all consumers are entitled to choose their own electricity supplier.

While EU Directives 2018/2001 (RED II) and 2019/944 for Electricity Market, have already established the legislative framework for Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs), it seems that practical implementation remains underdeveloped due to complex regulations, technical issues and lack of digital tools. FlexBIT [3] addresses this gap by developing an interoperable platform that converts legal rights into functional tools for monitoring, forecasting and managing shared energy resources. It also assists the energy communities to apply their legal provisions by giving permission to participate in energy sharing, managing local flexibility, and accessing energy markets, while also complying with legal requirements that have been set by the EU Directives. The FlexBIT project (Flexibility Exploitation for residential, tertiary and industrial buildings) under the Clean Energy Transition Partnership (CETP) aims to enhance and promote energy flexibility and accelerate the integration of 100% renewable energy in buildings and local communities. The main objective is to develop an interoperable platform capable of monitoring, forecasting, and coordinated management of low-carbon and flexible energy assets (e.g. solar PV, storage, electric vehicles and flexible loads) across residential, commercial and industrial sectors. FlexBIT intends to support RECs and CECs by facilitating energy sharing among participants and optimising energy flows within and between community structures. By integrating digital tools and smart contracts, the project will allow communities to become active players in energy markets, promoting collective self-consumption, peer-to-peer energy trading, and grid support in line with EU directives. This paper presents the national legal framework associated with energy communities in five European countries that participate in FlexBIT, namely Germany, Greece, Italy, Malta and Poland. A critical part of FlexBIT lies in investigating how effectively each country has implemented the EU Directives. FlexBIT researches the current gaps and opportunities within the existing legislation to allow for implementation of RECs and CECs without the need for legal amendments.

The FlexBIT platform exploits a modular architecture integrating Supervisory Control and Data Acquisition (SCADA), Internet of Things devices, and AI-based forecasting tools through secure APIs. It supports blockchain-based smart contracts for automating energy exchange agreements, ensuring transparency in flexibility remuneration. Polish demonstrator uses the Energy Management and Control System (EMACS) for monitoring and processing real-time energy data across devices and buildings. FlexBIT's interoperability microservices assists seamless communication between distributed systems and support horizontal (intra-community) and vertical (inter-community) energy transactions, which is a unique feature in the landscape of energy sharing platforms.

II. MATERIALS AND METHODS

Five European Countries participate in FlexBIT and contribute with their national legislation data. Partners from Germany, Greece, Italy, Malta and Poland provided the relative national legal framework across the following categories.

The first category is Energy Communities and Renewable Energy Legislation: Identification of legislation or strategies aligned with the EU Digitalisation of Energy Action Plan including (1) Directive (EU) 2019/944 on Common Rules for the Internal Market for Electricity and (2) Directive (EU) 2018/2001 (RED II) on the Promotion of the Use of Energy from Renewable Sources. The second category is Digitalisation of Energy and Data Governance: Identification of national legislation or strategies aligned with the EU Digitalisation of Energy Action Plan including (1) Data Governance Act (Regulation (EU) 2022/868) and (2) Proposed Data Act (expected adoption in 2025). The third category is Cybersecurity and Critical Infrastructure Protection: Identification of national legislation that

implements the Directive (EU) 2022/2555 (NIS2 Directive). The forth category is Blockchain, Tokenisation & Smart Contracts Regulation: Identification of any national regulatory provisions. The fifth category is Any additional relevant national regulations: Highlight of any other national law, decrees, or regulatory guidelines.

Data from the aforementioned countries was collected using an online survey directed on national information from the Energy Community Repository of the European Union. The repository has collected information from the EU Member States on their existing policies and regulations for energy communities in the Clean Energy Package context. The information is published in an openly accessible database for each country partner. Each category was accompanied with specific guidelines for the participants ensuring the cohesion and accuration of the collected data. A summary of legislative analysis guidelines is presented below:

- Identify legal provisions on energy communities, self-consumption, peer-to-peer trading, and energy sharing
- Note grid access rules and specific national mechanisms (incentives, licensing, technical standards)
- Provide the official name, reference number, and link (if available).
- Summarise key points relevant to energy data sharing, interoperability, and governance.
- Highlight any requirements for data platforms, smart meters, and data access by third-party service providers.
- Mention any national bodies responsible for energy data regulation.
- Extract the key obligations for energy infrastructure and digital platforms operators
- Indicate cybersecurity oversight for distributed systems, smart grids, and platforms.
- Note security requirements for blockchain, decentralised trading, and remote management.
- Identify regulations on blockchain in energy markets.
- Include tokenisation of energy assets or flexibility services.
- Highlight smart contracts for automated peer-to-peer trading.
- Comment on national adaptation of the Markets in Crypto-Assets Regulation.
- Assess impact on energy community operations at various levels.
- Examine deployment of flexibility platforms and decentralised services.
- Comment on implications for ownership, trading, and monetization of flexibility and renewable energy.

III. RESULTS

This section presents the analysis of national legal frameworks related to energy communities and energy sharing across the 5 European countries participating in FlexBIT. It examines how each country has incorporated key provisions of Directives 2018/2001 and 2019/944 into their national legal system. The focus is on current legal status, implementation organisations, strengths and possible necessary amendments.

A. Germany

According to the Energy Communities Repository's research, Germany has not yet fully implemented the EU provisions on energy sharing, which are outlined in Article 15a of Directive (EU) 2019/944 [2], into their national legal system. There is no specific framework for energy sharing aligned with EU requirements despite the fact that there are some rights related to broader consumer and energy laws. While the energy sharing concept was initially included in the draft amendment to the German Energy Industry Act (Energiewirtschaftsgesetz-EnWG) in §42 of the Annex (p.28-30), it has not been incorporated into this act and it remains unknown whether the authorised ministry will work on the existing proposal or will draft a new one. It seems that the context of Article 15 of Directive (EU) 2019/944 and Article 21 of Directive (EU) 2018/2001 have been partially incorporated in the German Law and important gaps remain. Even though self-consumption is allowed, power purchase agreements and tailored network charges are missing, and thus there are no direct rights for active consumers. Paragraphs 17(1) and 118(6) of EnWG mention the double charging risk whereas the German Law does not discriminate between individual and jointly acting active consumers. In alignment with Article 21 of Directive (EU) 2018/2001, the German Renewable Energy Act (EEG) supports the self-consumption of renewable energy sources but collective self-consumption faces legal gaps and remains complicated, as it demands all participants to form a single legal entity and thus creates important administrative obstacles. Paragraph 21(3) of EEG describes the "tenant electricity surcharge". It mentions that multi-apartments setups are being supported only if they apply as a single entity, rejecting in that way the community-level schemes. Last but not least, the German Law lacks essential supporting measures for low-income households and therefore the overall legal framework requires important amendments to comply with EU goals for energy market participation [4].

The Federal Ministry for Economic Affairs and Climate Actions has acknowledged the legal weaknesses and proposed a series of revisions to address energy sharing. These involve the removal of financial barriers for small-scale generation and the update of legal definitions in order to align with EU law. However, these proposals are still in early stages and have not been formally adapted into the German Law. The amendment paragraph 42c to the EnWG is a considerable effort to introduce energy sharing and thus it could regulate energy sharing among final consumers. It describes the conditions for participants, the role of an energy sharing organizer and intent to support small-scale systems through proximity rules and capacity thresholds. This revision has not been accepted yet, and thus the German legal system still needs a functioning framework to put energy sharing into practice [4].

B. Greece

Greece is one of the early adopters of energy communities' regulations adjusted to the EU Directive context and its legal framework offers a structured regulatory environment.

Law 4513/2018 [5] defines the concept of Energy Communities as cooperatives with social and solidarity goals and includes provisions for local participation, energy production, consumption, storage, and supply. The term

Renewable Energy Communities is introduced by Articles 45-61 of Law 5037/2023 [6]. This is aligned with Article 22 of the EU Directive 2018/2001 (RED II) [1] by allowing citizens, local authorities and small-medium enterprises to participate and providing a dedicated registry and support structures. Participation thresholds and territorial links that are mentioned in the Greek Law (e.g. 50%+1 members must be local) meet RED II requirements related to proximity and citizen control.

Articles 86-89 of Law 5037/2023 [6] establish a legal basis for CECs under the Electricity Market Directive in accordance with the EU Directive 2019/944. These articles include definitions, legal forms, membership rules, and rights to operate in the market. Moreover, it is ensured that CECs can produce, store, and supply energy and participate in flexibility services, aligning with Directive 2019/944.

Article 66 of the same law describes in detail the term of Collective Self-Consumption, which is a preliminary step towards energy sharing. Article 14A of Law 3468/2006 [7], as amended by 5037/2023, defines the virtual net metering scheme, which enables collective consumption of renewable energy by different entities such as municipalities, farmers, and energy communities. However, Greece has recently shifted to a virtual net billing scheme, and the virtual net metering model is no longer applicable for new installations.

Despite the notable progress, the Greek legislative framework still exhibits gaps and limitations in complete alignment with the EU Directives on energy communities and energy sharing. There is no straightforward implementation of Article 15a on energy sharing rights for active costumers. This is supported by the fact that there are no detailed rules for third-party organisations, dispute resolution, or vulnerable groups. In addition, the concept of energy sharing remains tied to virtual net metering and virtual net billing, not as a distinct legal right. The Law 4513/2018 constitutes a partial alignment with the Directive 2018/2001. The term REC is not used at a first place and it was later introduced by the amendment 5037/2023, and EU-specific definitions were also missing. This law was insufficient regarding the support mechanisms for vulnerable consumers, as it is described in Article 22(4f) of Directive 2018/2001. Market access and non-discriminatory treatment are not described in detail, especially for small RECs and CECs in comparison with larger producers. Although energy storage and aggregation services are possible, they lack clear procedures for community-scale application.

While Greece has made significant progress in local energy communities through national law, further legislative amendments are needed in order to fully implement the EU directives on RECs, CECs, and energy sharing. Discrimination between community types, non-discriminatory access to the market, and regulation on energy sharing are few proposed revisions promoting the consumers' rights protection and broader participation.

C. Italy

Italy exhibits a clear legal framework for RECs, mainly through Article 42-bis of the Milleproroghe Decree 162/2019 which was enacted into law as Law n. 8/2020 on February 28, 2020. This includes the transition directives from the EU Directive RED II (2018/2001/EU). It is further strengthened by the laws defined by the Regulation Authority for Energy, Networks, and Environment (ARERA) in resolution 318/2020/R/eel, as well as the Ministry of Economic Development's decree issued on September 16, 2020. Legislative Decree 199/2021 is the detailed implementation of RED II directive and aims to promote the use of renewable energy sources. It describes thoroughly the requirements related to the size and conditions for renewable energy plants. The following key criteria ensure their undemanding participation [4]:

- Capacity limitation to a maximum of 1MW
- Required connection to the same primary substation, which typically covers 3-4 municipalities or 2-3 neighborhoods approximately
- Pre-existing renewable energy plants prior to Legislative Decree 199/2001 implementation are allowed to join RECs. However, new Energy Communities are limited to having a maximum of 30% of their total capacity from pre-existing plants.

This regulatory framework succeed in simplifying the technical and legal requirements of RECs and promoting collective renewable energy production as well.

D. Malta

Malta has made significant progress in implementing the EU's Directives for energy communities and energy sharing into national law. The regulatory framework for Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) is set by Subsidiary Legislations S.L. 545.35 [8], which is aligned with Directive (EU) 2018/2001 (RED II) and Directive (EU) 2019/944.

RECs creation and operation are supported by S.L. 545.39 [9]. According to this, renewable generation is promoted by setting up a competitive bidding mechanism with financial support in the form of Contracts for Difference (CfDs) for approved installations over 40kW. The Promotion of Energy from Renewable Sources Regulations (S.L. 545.35) portray the fundamental national legislation for implementing RECs in accordance with RED II. This regulation was first issued on 28 December 2021 and later amended by Legal Notice 53 of 2023, establishing RECs as legal entities entitled to produce, consume, store, sell, and share renewable energy. Articles 22(4f) and (4e) of RED II are fulfilled by the Article 24(2c) of S.L. 545.35 for free and non-discriminatory market access. Article 24(4f) mentions the promotion of the participation of low-income and vulnerable consumers in alignment with Recital 67 of Directive 2018/2001. Cross-border participation is allowed according to Article 24(6), while administrative simplification and fair cost procedures are provided through Articles 24(4a) and 24(4b).

Regarding CECs, it seems that there is no legal text referring clearly to the concept or the definition of CECs as it is introduced in Article 2(11) of the EU Directive 2019/944.

Article 23 of S.L 545.35 aligns with Directive 2019/944 on the energy sharing concept by allowing joint renewable energy self-consumption, including multi-unit buildings. In addition, according to Article 23(6), third-party operation is permitted without altering the characterization of operators to consumers. Paragraphs 7 and 8 of Article 23 mentions the necessity of a national framework to support the participation of all consumers' types and enable access to energy markets.

While the core legislative instruments are established, there is no clear legal distinction between RECs and CECs as defined in EU laws. CECs are mentioned solely within the context of REC participation, without being treated as separate legal entities. Key CECs rights remain undefined,

including access to aggregation, participation in flexibility markets, and non-discriminatory access to all electricity markets, as demanded in Article 16 of the EU Directive 2019/944. RECs provisions require more core community-based elements, such as community control, non-commercial purpose, and focus on social/environmental benefits, as described in RED II (Articles 2(16), 22, Recitals 71-72). Energy sharing organisers have not a defined legal role while the fundamentals for participants in energy sharing arrangements (e.g. contract templates, supplier exemptions, dispute resolution mechanisms) lack of formal provisions. Although vulnerable and low-income consumers are being supported by the Maltese legislation framework, there are not mandatory measures such as minimum energy quotas in public-led projects. Malta applies a legal exception in Article 23(9) of S.L. 545.35, under Article 66 of the EU Directive 2019/944, which is possible to set the limit in the full scope of implementation, specifically for active consumers' rights and CEC market roles. While financial and technical support measures for development of energy communities are mentioned, their specificity and enforcement remain limited and thus the practical uptake of RECs and energy sharing models are still restricted.

Even though the available legislative data for Malta seem to cover most of REC and self-consumption requirements of RED II, they fall short on fully implementing the most recent provisions of Directive 2019/944, especially the distinct role of CECs and energy sharing's comprehensive mechanisms. These omissions indicate that while Malta has made a significant progress aligning its national legal framework with EU directives on energy communities through their Subsidiary Legislations, further regulatory amendments are needed for complete alignment.

E. Poland

Poland is implementing Directive (EU) 2018/2001 (RED II) and Directive (EU) 2019/944 through a combination of legislative reforms and national strategies aimed at transforming its energy system [1], [2]. The Renewable Energy Sources Act has been amended to support the development of renewable energy communities and to meet the EU's binding targets for renewable energy consumption [11]. Meanwhile, the Energy Law has been updated to define and support citizen energy communities, ensuring their access to energy markets and the grid [12]. These changes reflect Poland's broader commitment to decentralizing energy production, empowering consumers, and aligning with the EU's climate and energy goals.

The Energy Law (Prawo energetyczne) in Poland, originally enacted in 1997, serves as the foundational legal framework for the functioning of the national energy market. It regulates the generation, transmission, distribution, and trade of electricity, gas, and heat, ensuring energy security and market transparency [12]. The act also defines the roles and responsibilities of energy companies, regulatory authorities, and consumers, including provisions for licensing and tariffs. Recent amendments have incorporated EU directives, such as enabling the development of energy communities and promoting consumer rights in the energy transition [12].

The 2023 amendment to Poland's Energy Law introduced significant provisions to support the development of flexibility services in the electricity market. These include the legalization and simplification of direct lines, which allow energy to be transmitted directly from producers to consumers without using the public grid—enhancing local balancing and reducing grid congestion [13]. The amendment also aligns with EU market directives by promoting demand-side response, distributed generation, and energy storage as tools for improving system flexibility. Additionally, the Energy Regulatory Office (URE) is tasked with overseeing these developments and ensuring that flexibility services contribute to the operational security and efficiency of the national power system 1.

In Poland, energy cooperatives (spółdzielnie energetyczne) are legally defined and regulated under the Renewable Energy Sources Act (Ustawa o odnawialnych źródłach energii) [10] and the Energy Law (Prawo energetyczne) [11], both of which have been amended to align with EU directives. These cooperatives are designed to operate in rural areas and small municipalities, enabling local communities to produce, consume, and manage renewable energy collectively. The law requires that energy cooperatives be registered in a dedicated national register and operate on a non-profit basis, with democratic governance structures where each member has equal voting rights.

The 2021 amendments introduced specific provisions to simplify the creation and operation of energy cooperatives, including streamlined administrative procedures and access to financial support mechanisms. Energy cooperatives are allowed to generate electricity from renewable sources, store it, and distribute it among their members, with surplus energy sold to the grid under favorable conditions. The legislation also grants them priority access to the distribution network and exempts them from certain grid fees, promoting local energy autonomy. European perspective of polish Energy communities is given in [14] and [15].

Despite these supportive measures, the practical implementation of energy cooperatives still faces challenges, such as limited awareness, technical barriers, and the need for further regulatory clarity. Nevertheless, the legal framework reflects Poland's commitment to decentralizing energy production and empowering local communities in the energy transition.

TABLE I summarises key technical parameters of energy community regulations, including capacity limits, geographic scope, and balancing period, providing a better illustration of the practical differences across national frameworks.

TABLE I: TECHNICAL SUMMARY OF NATIONAL ENERGY COMMUNITY PROVISIONS

Country	Max. Capacity	Domain of application	Balancing period	Energy sharing allowed?	Eligible participants
Germany	Not capped for RECs, CECs in development	Regional (DSO zone)	Not explicitly defined	Limited	Cooperatives, municipalities
Greece	1 MW (REC) / 3 MW (Energy Community)	Same MV substation (updated)	30 min (virtual net billing)	Yes	Citizens, municipalities, farmers
Italy	1 MW	Same primary substation (3–4 municipalities)	15 min (pilot)	Yes	Households, SMEs, public bodies
Malta	Not defined	Within same building/block (Art. 23)	Not defined	Yes (partial)	Households, public bodies
Poland	Proposed 1 MW	To be defined (likely DSO level)	15–30 min (expected)	Planned	Energy cooperatives

IV. DISCUSSION

Energy communities represent an innovative way to achieve a cost-effective and socially inclusive energy transition to low-carbon future. By enabling citizens and local actors to generate, share, and manage renewable energy, energy markets are being democratised, social engagement is strengthened, and grid stability is ensured. However, the implementation of energy communities remains uneven across Europe, due to varying levels of legislative maturity. Among the five countries analysed, Malta shows the most complete alignment with EU directives, while Germany lags behind, and Greece, Italy, and Poland stand between.

As with every new concept, legislation develops and mature with project deployment. Early implementations expose legal and technical gaps, resulting in gradual legal adaptation. In this context, the FlexBIT platform uses blockchain-based smart contracts to help energy communities manage real-time energy sharing both within and between groups. Its digital tools support EU legal requirements while improving transparency and user control. Pilot projects expect to show promising results. Over 10% expected reduction in emissions, up to 20% lower energy costs, and over 60% use of renewables across participating countries. To scale this impact, national authorities should simplify legal processes, provide support services, ensure digital systems can communicate securely, and allow pilot testing through regulatory sandboxes. Ensuring broad, inclusive participation will be key to making energy communities a core part of the energy transition.

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