DISCOVER

POLICY PAPER

The OSS as the strategic enabler for Renewable Energy Communities: From European Directives to Local Realities

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History of changes

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Deliverable Information Sheet

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INTRODUCTION

The transition toward a decentralized, citizen-led energy system is at a critical juncture. Across Europe, Renewable Energy Communities (**RECs**) and collective self-consumption schemes are recognized in law but are systematically stalling in practice. To address this execution gap, the **LIFE DISCOVER** has developed a comprehensive suite of action-oriented policy papers. This document serves as the overarching guide to this policy suite. It is designed to bridge the gap between high-level European climate ambitions and the granular, everyday realities faced by citizens, municipalities, and local businesses.

A MULTI-LEVEL READING APPROACH

To accurately capture both the systemic issues and the specific national contexts, this policy framework is structured across two interconnected levels, designed to be read in sequence:

- **The EU Level Perspective:** The document opens with the EU-Level Policy Paper. This section synthesizes three years of cross-national field evidence to address structural European bottlenecks—such as early-stage financial gaps and systemic utility grid obstructionism. It advocates for a unified continental response.
- **The National and Local Perspective:** Following the EU overview, the suite dives into five localized policy papers corresponding to the LIFE DISCOVER pilot countries: **Austria, Bulgaria, Croatia, France, and Italy**. These sections analyze the distinct regulatory landscapes, cultural barriers, and operational hurdles unique to each Member State.
- **Closing the Loop (The Unified Conclusions):** The document culminates in a final synthesis that unites the EU and National/Local levels. It proves that despite vastly different national starting points, the ultimate solution is shared across the continent: the institutionalization of local **One-Stop-Shops (OSS)** to empower communities and absorb bureaucratic complexity.

To ensure consistency, comparability, and a clear action-oriented narrative, every policy paper in this suite—whether at the EU or the national level—follows a standardized four-chapter architecture:

1. **The Landscape:** A brief assessment of the current regulatory context. It maps the existing legal frameworks, state incentives, and the baseline institutional setup in the respective territory, answering the question: *Where do we stand today?*
2. **The Urgency of Now:** An unfiltered look at the operational bottlenecks. Grounded strictly in empirical data, stakeholder workshops, and field insights from the pilots, this chapter exposes the bureaucratic, technical, and financial frictions that are actively paralyzing community energy projects.
3. **The Fork in the Road:** A comparative scenario analysis. It contrasts with the long-term financial and social costs of inaction and fragmented support (*Scenario A*) against a high-impact, optimized approach that empowers citizen action (*Scenario B*).
4. **The Recommended Pivot:** The actionable roadmap. This chapter translates Scenario B into concrete, time-bound policy recommendations organized into strategic pillars. It defines exactly what regulators, lawmakers, and DSOs must do to move from theoretical transposition to functional market realities.

The progression from the European overview to specific national challenges reveals a clear, unifying thread: **while European directives establish the legal definition of an energy community, which national legislation and institutions are supposed to give life to, OSSs provide the practical mechanism to actually build them on the ground**. This policy paper delivers the **recommendations and actions** required to translate these regulatory concepts into reality.

DISCOVER

STANDARDIZING REGIONAL ONE-STOP-SHOPS TO DELIVER EUROPE'S BUILDING DECARBONIZATION MANDATE

EU LEVEL

THE LANDSCAPE

This section maps the EU legislative framework for mandatory One-Stop-Shops (OSS), exposing regional fragmentation and positioning the OSS as the vital institutional bridge to overcome lagging national transpositions.

At the EU level, the regulatory framework for Renewable Energy Communities (**RECs**)—anchored in Directives 2018/2001 (Renewable Energy Directive **RED II**, as recast by Directive 2023/2413) and 2019/944 (Internal Energy Market – **IEM Directive**)—defines RECs as legal entities built for collective, barrier-free energy sharing, aiming to increase citizen engagement, accelerate renewable energy deployment and enhancing local energy systems. States are required to ensure an enabling framework that allows these communities to operate without disproportionate barriers. Within this architecture, **Directive 2024/1275 (Energy Performance of Buildings Directive - EPBD Recast)** establishes integrated OSS as the mandatory operational interfaces providing technical, administrative, and financial advisory services, setting a explicit target of **at least one physical OSS per 80,000 inhabitants** or per region.

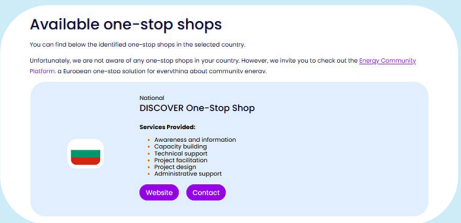
This landscape was strongly reinforced in April 2026 by **European Commission Recommendation 2026/1007**. While non-binding, it officially confirms the systemic field-level bottlenecks identified by DISCOVER pilots—specifically demanding protected transitional rights, fair network charges, guaranteed data access, and actionable regulatory sandboxes. Its publication acknowledges that these obstacles are continental, significantly strengthening the case for the binding EU Action Plan advocated by this policy paper.

However, OSS density is heavily concentrated in Northern and Western Europe, while large swaths of Southern and Eastern EU territories remain underserved. This highlights the **current fragmentation** and uneven geographical distribution of these facilities across Member States, underscoring the urgent need for a standardized operational model.

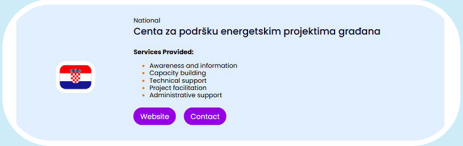
A key moment has been the **"LIFE-CET Energy Communities Contractors' meeting" event taking place on 24-25 March 2026 at COMET Louise in Brussels,** which united EU project coordinators – including DISCOVER project – to share field insights and co-create solutions to European energy community bottlenecks. It emerged that while the high-level EU objectives are clear, national transposition is lagging. There is an urgent demand for the upcoming EU Action Plan to provide strict timelines, define clear energy-sharing models, and give Member States the explicit mandate needed to prioritize RECs over traditional centralized utilities. Within this disjointed landscape, standardizing OSS emerges not just as a compliance checkbox, but as the **indispensable institutional bridge** required to guide citizens through the regulatory maze and turn EU climate ambitions into local, operational realities.

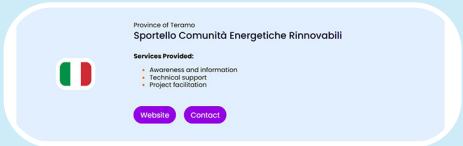
BUILDING ON SUCCESS: WHAT IS ALREADY WORKING

Communities Facility, serves as an essential tool for pan-European policy alignment. By aggregating existing hubs into a single repository, it provides decision-makers with a transparent overview of continent-wide progress. Its true strategic value lies in exposing geographical blind spots and structural fragmentation across Member States.



[EU Energy Communities Facility](#) European OSS Map, hosted by the EU Energy





THE URGENCY OF NOW

Synthesizing three years of LIFE DISCOVER and Brussels Contractors Meeting Days evidence, this chapter details the systemic bottlenecks stalling RECs: the early-stage financial "Death Valley," DSO grid obstructionism, and legal ambiguities.

Despite the unprecedented availability of public funding—including the Recovery and Resilience Facility (RRF), Cohesion Funds, and dedicated green subsidies—national rollouts are stalling due to **structural friction** within local delivery mechanisms. Synthesizing three years of LIFE DISCOVER evidence and direct feedback from the Brussels Policy Day, the crisis is rooted in three systemic bottlenecks:

- **The Execution Gap & The Early-Stage "Death Valley":** Setting up a REC involves high initial study costs. Communities are effectively paralyzed before they even begin because they lack the funds and technical capacity to design a viable business plan. Even if registration is possible, the absence of early-stage financial support makes project kick-off impossible.

- **DSO Obstructionism & Grid Connection Failures:** Across the EU, RECs are being actively hindered by Distribution System Operators (DSOs). Arbitrary connection delays, lack of data sharing, and technical hurdles completely alter the financial feasibility of projects, bringing them to failure. Without mandatory permitting periods, DSOs hold an unchecked veto power over citizen-led energy. A representative case is found in Croatia, where the incumbent DSO has advanced a legal interpretation of national transposition law (Art. 18(2) of the amended Energy Communities Act) that would retroactively strip transitional protected-prosumer status from existing solar owners who join a REC — directly undermining the "no disproportionate barriers" principle of Directive 2019/944. These are not isolated technical glitches; they illustrate how DSOs can use both system architecture and legal ambiguity as instruments of obstruction.

- **Legal Ambiguities & "Fake RECs":** Bureaucratic silos force communities to navigate uncoordinated entities. Furthermore, the lack of a clear, transposed legal framework creates immense confusion regarding membership eligibility (e.g., whether public universities can join). Poorly defined energy-sharing rules also risk incentivizing "fake RECs" that exploit loopholes without delivering real community benefits.

- **Regulatory Passivity & National Regulatory Authority (NRA) Non-Responsiveness:** Beyond DSO behavior, DISCOVER evidence reveals a further, distinct bottleneck: national energy regulators themselves can become a source of delay rather than a neutral arbiter. In Croatia, a formal complaint filed with the national regulator (HERA) went unanswered beyond statutory deadlines. Where NRAs lack enforcement teeth or accountability mechanisms of their own, even a well-designed OSS cannot substitute for absent regulatory backbone.

These failures are not isolated national pathologies — they are systemic EU-wide bottlenecks rooted in the current absence of a harmonized, **minimum-standard OSS model**. The breaking point has been reached..

These systemic regulatory barriers are not theoretical; they represent direct field evidence aggregated through DISCOVER stakeholder engagement at **both local and international levels**. Validated during strategic consultations with DG ENERGY and peer EU initiatives at the **Brussels Contractors Meeting days**, breaking this deadlock requires immediate, non-negotiable interventions.

THE FORK IN THE ROAD

This section contrasts two divergent European policy trajectories: a fragmented status quo (Scenario A) of passive utility consumption and regional inequalities, against a harmonized, evidence-based pathway (Scenario B) — anchored in DISCOVER's pilot evidence — where regional OSSs dynamically adapt to empower active energy communities.

SCENARIO A |

THE RISKS OF MAINTAINING THE STATUS QUO

This path relies on scattered, uncoordinated market solutions, purely digital information portals, and isolated municipal initiatives operating without a standardized regional physical presence or institutional backing. Under this scenario, national governments will continue to support only large, regional utility projects, leaving citizens treated as passive consumers.

The impact is predictable: Member States will miss their legally binding **2030 climate targets**; regional **disparities** between well-resourced municipalities and underfunded areas will deepen; EU grants risk systematic underutilization; and vulnerable populations remain exposed to persistent **energy poverty** due to the total absence of neutral, hands-on technical assistance.

The multi-disciplinary nature of Energy Communities — spanning energy, legal, financial, social, and territorial dimensions — makes informal or fragmented **support structures particularly** inadequate. Even where formal mediation mechanisms such as regulatory sandboxes exist on paper, their absence of binding outcomes or measurable KPIs – as observed in at least one DISCOVER pilot country – renders them largely symbolic, reinforcing rather than resolving the underlying power imbalance between citizens and incumbent utilities.

SCENARIO B |

THE RECOMMENDED, HIGH-IMPACT APPROACH

This path deploys a harmonized network of physically and digitally integrated **Regional OSS** that manage the full end-to-end user journey: from community engagement, project planning and legal establishment to permitting, financing, installation, operation, and ongoing management.

Crucially, as advocated during the Bruxelles Consortium Meeting, **the OSS must dynamically "follow the REC"**, adapting to organic, territory-led needs rather than forcing citizens into rigid, top-down bureaucratic processes. It transforms EU legislation into a practical, replicable and accessible public service supporting communities from initial mobilisation to implementation and long-term operation.

By bringing **expertise** and services together under a coordinated regional (local) framework, the OSS **reduces fragmentation**, facilitates citizen participation, creates economies of scale for **community-led energy investments**, and provides the **trusted institutional interface** needed to attract public and private financing. Most importantly, it **empowers** citizens to move beyond their traditional role as energy consumers and become active participants, co-owners, and beneficiaries of the energy transition.

This scenario sends a clear message to citizens: *"You are not just a customer; you have the power and institutional backing to produce and manage your own energy."*

DISCOVER

Across the project's pilot regions, local OSSs developed tailored territorial instruments and established a stable point of contact between local governments, DSOs, and citizens, enhancing transparency, speeding up administrative processes, and reducing service fragmentation. This consistency across diverse national contexts is what gives the model its replicability: the same core architecture proved adaptable to **different regulatory and territorial conditions**, while still delivering **measurable gains in efficiency and trust**. Three years of cross-national stakeholder evidence from DISCOVER therefore directly validate Scenario B's feasibility, cost-effectiveness, and citizen uptake potential.

THE RECOMMENDED PIVOT

"The Recommended Pivot" outlines five synchronized operational pillars designed to standardize the EU-wide OSS network, protect community energy from utility bottlenecks, and secure early-stage financial risk mitigation.

Policy Recommendation: Establish a standardized, EU-wide network of Regional Integrated OSSs to unify technical, financial, and legal services for RECs - in full compliance with Article 18 EPBD and in support of the Renovation Wave Strategy - while imposing strict market rules on DSOs and creating dedicated EU financial facilities.

Activating the Pivot: Common Actionable Pillars across DISCOVER partners

To transition from the current fragmented reality to the integrated approach outlined in Scenario B, the policy must be deployed through three synchronized pillars, each bound to a strict operational timeline to guarantee momentum and institutional accountability..

- **Pillar 1: Legislative Modernization & Regulatory Stability | Timeline: Months 0–24** - A stable and predictable regulatory framework is essential for scaling RECs. The EU should establish minimum standards for regional OSS, clarify eligibility rules, and introduce a strong grandfathering principle to protect operational communities from future regulatory changes. Long-term policy certainty will reduce investment risks and strengthen citizen trust. The role of associations of co-owners in RECs should be clarified as well.
- **Pillar 2: Mandated DSO Enforcement & Open Sharing | Timeline: Months 12-24** - Break the utility bottleneck by mandating short, binding grid-connection timelines backed by regulatory penalties and automatic approval ("silent consent") if deadlines are exceeded. DSOs must legally open grid and load data to the regional OSS network to eliminate arbitrary rejections and "fake RECs." Crucially, where Member States deploy regulatory sandboxes as a mediation tool between RECs and DSOs, these must produce binding outcomes with measurable KPIs and strict deadlines, preventing open-ended consultative delays.
- **Pillar 3: Multi-Level Financial Facilities for Early-Stage financing and project Derisking | Timeline: Months 3–12** - Establish a dedicated EU Financial Facility operating at both European and national levels to bridge the early-stage "death valley." Administered through the OSS, this facility will fund the prohibitive upfront costs of technical feasibility studies and business plan development, ensuring no Member State is left behind due to a lack of initial capital.
- **Pillar 4: Capacity Building & Community Empowerment | Timeline: Months 6–18** - Launch an officially certified, pan-European training curriculum for OSS facilitators to build widespread trust. The OSS must dynamically "follow the REC" and adapt to organic, territory-led needs, providing the continuous guidance required to scale up citizen participation and shift communities from passive consumers to autonomous energy operators. Dense urban sectors should not be left out if the room.
- **Pillar 5: Permanent public funding & Local Green Jobs | Timeline: Months 6–18** - Secure permanent public funding for the OSS network, shifting from short-term project grants to guarantee long-term operational stability. As a trusted facilitator, the OSS will forge strategic partnerships between local industries and citizen cooperatives. To eliminate consumer risk and build public trust, the OSS will maintain a strict registry of certified local installers, ensuring that energy investments remain within the regional economy to directly drive green employment and local entrepreneurship.

KEY ROLE OF THE DISCOVER PROJECT at EU level

The LIFE DISCOVER project provides empirical evidence of how **integrated local OSSs deliver EU energy objectives**. By unifying technical, financial, legal, and engagement services, DISCOVER eliminates fragmentation, streamlines project development, and builds local capacity to manage RECs. This place-based model effectively coordinates local authorities, SMEs, cooperatives, and citizens—facilitating funding, securing quality green jobs, and offering a scalable roadmap for OSS ecosystems across Europe.

DISCOVER

FURTHER ADVANCING ENERGY COMMUNITIES IN AUSTRIA – STATUS QUO AND CHALLENGES

AUSTRIA

A picture of an Upper Austrian landscape around Salzkammergut, with energy transmission lines in the background

THE LANDSCAPE

"The Landscape" outlines the current state of the (legal) ecosystem in Austria for energy communities.

Austria transposed RED II and IEM through the Renewable Energy Expansion Act (EAG, 2021) and ElWOG 2010 amendments, establishing the framework for Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs). The EAG covers energy community functioning, feed-in premiums, and investment grants. Energy sharing operates across local, regional, and national levels, with benefits mainly from reduced grid tariffs based on proximity.

RECs are voluntary, non-profit-oriented groups of individuals, businesses, or public bodies jointly producing, consuming, and sharing renewable electricity locally. Incentives are indirect: lower network charges, cheaper shared energy replacing retail purchases, and access to EAG support schemes. No dedicated per-kWh premium exists for virtually shared energy.

Responsibilities are divided among BMIMI (policy), E-Control (regulation, tariffs, grid access), OeMAG (financial support), and the Coordination Office for Energy Communities (guidance).

On 11 June 2026, Austria passed the Renewable Energy Expansion Acceleration Act (EABG), implementing RED III with a one-stop-shop permitting procedure, "overriding public interest" project status, four procedure types, and binding state-level targets for PV, wind, hydropower, and battery storage.

BUILDING ON SUCCESS: WHAT IS ALREADY WORKING

The portal energiegemeinschaften.gv.at supports citizens and businesses with information, founding guidance, calculation tools, a service provider directory, and advisory services. Nine state-level One-Stop-Shops provide additional regional support — though both face challenges described below.

THE URGENCY OF NOW

Driven by DISCOVER activities and Pixel Energy Solutions' field insights, this chapter exposes critical barriers: fragmented processes across 200+ DSOs, double-taxed storage, and transitional uncertainties before the October 2026 EIWG launch.

Austria's energy community system is already relatively advanced and well-functioning. The country benefits from a centralised energy data system and a highly mature smart meter roll-out based good legislation, which provides a strong technical foundation for energy sharing. However, current smart meters still have limited functionality, and user interfaces for accessing real-time data are often not very user-friendly, making it harder for participants to fully utilise the available information.

At the same time, several **structural and regulatory challenges** remain. One major issue is regulatory complexity and legal uncertainty. The legal framework (EAG, ElWOG and the upcoming EIWG) is comprehensive but still evolving, which creates uncertainty for projects and investors. Important aspects such as data access, billing procedures, and the treatment of storage are not yet fully clarified, and the transition to the new rules from October 2026 leaves some implementation details - especially market processes - still open. Overall, there is a clear need for simpler, more stable, and transparent regulation. Critically is, that the **integration of storage and flexibility is still limited. The legal and financial treatment of storage solutions is not yet fully defined**, and current policies do not sufficiently reward demand response, peak shaving, or flexible consumption. This suggests a need for stronger policy support for flexibility and storage technologies. The expansion and growth of renewable energy communities will strongly depend on the possibility to involve larger community battery storages, where the grid fees are not applied two times (for storage in the battery and delivery to a consumer).

The official support centers "energiegemeinschaften.gv.at" and the 9 federal state centers are a good basis for REC support in Austria, however a major problem is limited capacity for direct support.

There are also ongoing grid-related challenges. Coordination with distribution system operators (DSO) is often difficult, slow and the electricity grid itself was originally designed for centralised systems rather than decentralised energy sharing. Issues such as grid fees for feed-in, limited flexibility, and the need for smarter tariffs and infrastructure further complicate operation. Furthermore, Austria has more than 200 DSOs and almost all have completely different processes and work approaches. Some do much better work than others.

In addition, renewable energy communities are confined to specific grid areas, such as transformer zones, and some models face restrictions in how they can use the grid or who can participate. Some DSO's provide good maps and information for proper planning, **some do not**.

A major challenge in scaling citizen led energy communities constitutes the complexities to finance and build energy production plants.

Finally, the current approach has a limited sectoral scope, as policies mainly focus on electricity. There is still little regulation for energy communities involving heat, gas, or other sectors, highlighting the importance of broadening integration to areas such as heating, mobility, and hydrogen.

THE FORK IN THE ROAD

This chapter contrasts the risk of a status quo that favors large, traditional utilities (Scenario A) against an optimized path enabling community storage, flexibility markets, and multi-vector integration (Scenario B).

SCENARIO A |

THE RISKS OF MAINTAINING THE STATUS QUO

Maintaining the current system (Scenario A) is not a neutral choice - it is the most costly and risky path over time. Inaction would slow the growth of RECs, as complex procedures, regulatory uncertainty, and technical barriers continue to discourage new participants, limiting access to larger, well-equipped actors and weakening their inclusive role.

The economic costs would quickly accumulate delayed or unrealized projects mean lost investments, unrecovered development costs, and reduced use of public funds. The gap between available resources and real demand would widen, while higher uncertainty increases financing costs and reduces viable projects.

There is also a significant opportunity cost. RECs can lower energy bills, stabilize prices, and generate local value. Without their expansion, households and businesses face higher costs and local economies lose competitiveness.

A functioning REC ecosystem can be part of an infrastructure that supports renewable energy expansion and ideally local consumption of the energy. Not utilizing the full potential might prevent to some extent the renewable energy expansion and therefore prolong dependency on imported (fossil) energy, making the country more prone to effects from energy crises.

Overall, inaction delays a more resilient and flexible energy system, increases long-term costs, erodes trust, and puts national targets at risk.

SCENARIO B |

THE RECOMMENDED, HIGH-IMPACT APPROACH

Scenario B is directly shaped by the insights gained from several RECs operated or serviced by Pixel Energy Solutions in Austria. The main challenges identified - unclear regulatory frameworks, complexities to build energy production plants, barriers for community storage projects and lack of other energy forms.

Currently elaborated market rules and processes should enhance the capabilities of RECs and not limit them unnecessarily. Until 10/2026 the transitional period of the new EIWG (electricity economy law) is ongoing and details of the actual operational implementation are elaborated and discussed. Here lies a major lever to enhance the capabilities of REC, or to limit them. Since all major energy utility companies and grid operators have strong relations to politics (mainly or partly state owned), there is danger of decision making towards large scale utility benefits. Since PV plants are the mainly used types of electricity production in RECs it is crucial to foster an unrestricted policy setting for complementary technologies – energy storage.

In addition, schemes and incentives for other types of energy shall be considered and implemented.

THE RECOMMENDED PIVOT

Derived from Scenario B, “The Strategic Pivot” outlines the market and regulatory rules needed to transform incoming legislative ordinances into genuine enablers for local energy assets.

Policy proposal: Austria must keep the leading role in Europe to enable citizen led energy initiatives to play a key role for a future-proof and resilient renewable energy system – therefore, implementation of market rules and ordinances based on newly established laws have to be enablers instead of limitations for RECs and their development.

Activating the Pivot: The Actionable Pillars

These pillars provide a short-to-mid-term roadmap to expand RECs, highlighting key interventions like the 20-year grid fee storage exemption (§127 ElWG) and multi-carrier integration.

- **Pillar 1. Clear regulatory implementation for RECs (Short-term, 0–12 months)** - RECs should be explicitly permitted to operate larger energy storage facilities under §127 ElWG, which exempts system-supportive storage from network charges for 20 years. E-Control and the Federal Ministry must establish clear legal ordinances, market rules, and tariff structures to reduce uncertainty and support investment.
- **Pillar 2. Enable grid-coupled community energy storage (Short-term, 0–12 months)** - RECs should gain access to flexibility and demand response markets via aggregators and simplified prequalification. Targeted incentives for grid services (storage, peak shaving, islanding) and dedicated funding for combined generation and storage assets are needed, alongside clear rules for data access, smart metering, and digital infrastructure.
- **Pillar 3. Support schemes for alternative energy forms (Mid-term, 1–2 years)** - Dedicated funding, investment grants, and market incentives should cover green hydrogen, biogas, geothermal, and advanced storage. Regulatory frameworks should allow RECs to integrate multiple energy carriers and participate in new value chains, supported by pilot projects to test business models and reduce financial risks.
- **Pillar 4. Grid expansion following the NOVA principle (Mid-term, 1–2 years)** - Grid planning should follow the ElWG’s NOVA principle (optimise → reinforce → expand). All DSOs should publish coordinated network development plans, and flexible grid access must integrate RECs faster. Targeted funding should prioritise high-REC-density regions to ensure grid capacity keeps pace with EABG renewable targets.
- **Pillar 5. One-Stop-Shop support** - Each federal state operates a regional OSS providing legal, grid, and funding advisory services, complemented by the national platform energiegemeinschaften.gv.at. This infrastructure has contributed significantly to Austria’s rapid EC growth, with over 5,000 active energy communities and collective self-consumption schemes.

KEY ROLE OF THE DISCOVER PROJECT in Austria

PIXEL Energy Solutions plays a key role in its active areas in Austria, where RECs are supported and managed. A great effort goes into spreading the word, informing citizens, companies and public bodies about their possibilities and opportunities to take part in citizen led energy initiatives. Pixel together with partners drive the development of new community energy projects and identify challenges directly by going through the complete life cycle of CEPs. Pixel manages and operates several RECs with its own “Operator” software, an all-in-one tool to manage members, energy data and billing.

PIXEL energy

DISCOVER

UNLOCKING THE POTENTIAL OF ENERGY COMMUNITIES

BULGARIA

THE LANDSCAPE

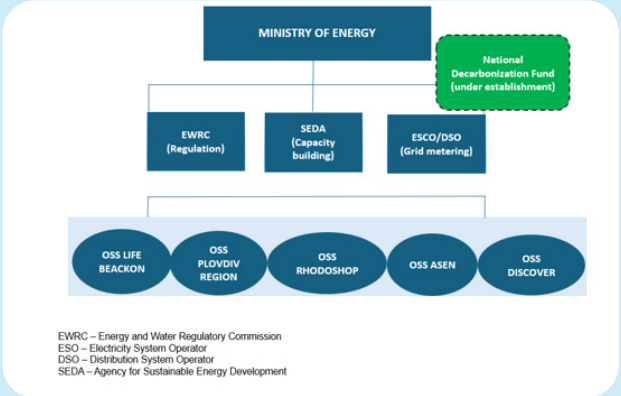
"The Landscape" outlines Bulgaria's developing regulatory architecture, which formally transposed EU directives into national law through amendments in 2023 and 2026, but it remains at an early stage with new developments planned by the adoption of a National Decarbonisation Fund to provide a dedicated support to different CEPs scheme.

1. Bulgaria transposed Directive (EU) 2018/2001 (RED II) and Directive (EU) 2019/944 (IMED) through amendments to the Energy from Renewable Sources Act and the Energy Act in 2023. These introduced Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs), enabling citizens, municipalities and SMEs to jointly produce, consume, store, share and sell renewable energy. Further revisions to the Energy Act and the Rules for Electricity Trading in 2026 strengthened the framework for energy sharing and collective self-consumption.
2. A REC is a legal entity based on open and voluntary participation by individuals, local authorities, SMEs and other organizations. Its main purpose is to deliver environmental, economic or social benefits rather than profit. Members may jointly own renewable energy installations and share electricity through the public distribution network.
3. The 2026 trading rules established procedures for allocating shared electricity among members but these rues need to be further . specified and justified.
4. Regulatory oversight is provided by the Energy and Water Regulatory Commission (EWRC), while the Electricity System Operator (ESO) and distribution system operators (DSO) manage grid connection, metering and data exchange. The Agency for Sustainable Energy Development (SEDA) supports awareness-raising and capacity building. Still, the practical implementation is at an early stage, with few operational energy communities to date.

BUILDING ON SUCCESS: WHAT IS ALREADY WORKING

ENERGY COMMUNITY SUPPORT ECOSYSTEM IN BULGARIA

In Bulgaria, apart from the regulatory structures, there are several One-Stop-Shops (OSS) providing assistance to energy communities and decarbonization initiatives, most of which established through EU-funded projects. In parallel, a **National Decarbonization Fund** is currently being set up under the National Recovery and Resilience Plan, with the aim of supporting renewable energy deployment and delivering technical assistance through targeted financing and a one-stop-shop approach.



EWRC – Energy and Water Regulatory Commission
ESO – Electricity System Operator
DSO – Distribution System Operator
SEDA – Agency for Sustainable Energy Development

THE URGENCY OF NOW

Grounded in working sessions conducted during the DISCOVER project lifecycle, “The Urgency of Now” addresses why Bulgarian energy communities stumble and remain scarce.

Bulgaria remains at an early stage in the development of operational energy communities, with no large-scale deployment of functioning energy-sharing schemes to date. Although EU legislation has been formally transposed into national law, renewable energy communities are still a few.

During a series of working sessions with key project stakeholders under the DISCOVER lifetime - including the Chamber of Energy Communities in Bulgaria, the Sustainable Energy Development Agency, and the Energy Efficiency and Renewable Sources Fund (currently undergoing restructuring into a National Decarbonization Fund) - a range of administrative, regulatory, digital and market-related barriers were identified as key factors making the establishment of energy communities a complex process.

These gaps have been consolidated into five main barriers, highlighting the need for urgent reform. There is a clear requirement to establish operational rules, strengthen digital infrastructure, and ensure regulatory certainty to enable meaningful participation in the energy market.

The first and most critical barrier is the absence of a binding operational framework for energy sharing. Although energy communities are legally recognized, there are no enforceable rules defining how electricity is allocated between members, how time-based settlement is calculated, or how distribution of system operators must interact with these processes. Without this framework, energy communities cannot function beyond purely formal legal status.

The second barrier is limited access to standardized and interoperable metering data. Effective energy sharing depends on automated data exchange between distribution system operators and energy communities, including granular (hourly or 15-minute) consumption and generation data. However, current systems do not consistently provide such data in a structured, timely, or machine-readable format. This prevents accurate settlement and makes operational energy sharing effectively unworkable.

The third barrier is regulatory uncertainty regarding the legal and operational status of energy communities. Secondary legislation and binding implementation guidelines remain incomplete, resulting in inconsistent interpretation across institutions. Key aspects such as balancing responsibilities, participation in electricity markets, and operational obligations are not clearly defined, reducing predictability and limiting investment and participation.

The fourth barrier is administrative fragmentation and procedural complexity. Processes related to registration, connection, and regulatory interaction are not sufficiently standardized and often require significant technical or legal expertise. This creates high entry barriers for municipalities, cooperatives, and citizen-led initiatives, slowing down deployment and increasing transaction costs.

The fifth barrier is the lack of adapted network tariff structures for local energy sharing. Current methodologies do not consistently distinguish between locally shared electricity and system-wide flows, leading to charges that do not reflect actual grid usage. This creates structural economic disincentives and weakens the financial viability of energy communities.

Bulgaria has established the legal basis for energy communities but lacks the operational framework needed for their effective functioning. Key regulatory, technical, and administrative barriers prevent energy communities from becoming a viable market reality. Addressing these gaps through coherent secondary legislation, standardized procedures, and digital infrastructure is essential to unlock their social, economic, and environmental benefits and support Bulgaria’s energy transition.

THE FORK IN THE ROAD

The Fork in the Road highlights the critical choice Bulgaria faces between maintaining a stagnant status quo (Scenario A) or implementing systemic market reforms (Scenario B).

SCENARIO A |

THE RISKS OF MAINTAINING THE STATUS QUO

ENERGY COMMUNITIES ADDRESSING ADMINISTRATIVE CONSTRAINTS

Maintaining the status quo would **leave energy communities trapped between legal recognition and operational reality**. The existing barriers – lack of operational rules for energy sharing, limited access to metering data, regulatory uncertainty, administrative complexity, and non-adapted network tariffs – will continue to prevent energy communities from functioning in practice. As a result, RECs would remain largely formal structures with very limited real-world impact. Projects would face delays, high transaction costs, and low participation, especially from municipalities and citizens. Economic losses would accumulate through missed investments, inefficient use of public funds, and inability to unlock local renewable energy potential. Households and businesses would continue facing higher energy costs, while Bulgaria would miss opportunities for local energy resilience and system flexibility.

SCENARIO B |

THE RECOMMENDED, HIGH-IMPACT APPROACH

OPERATIONAL ENERGY COMMUNITIES

Scenario B addresses the core barriers through **five linked reforms**: operational rules for energy sharing, digital infrastructure for smart metering data, regulatory clarity, administrative simplification, and network tariff reform. First, **binding rules** enable real energy allocation and settlement within communities. Second, **DSOs provide standardized, automated data access** to ensure transparency and accurate billing. Third, **clear legal status** defines RECs as full market participants with predictable rights and obligations. Fourth, simplified procedures and **one-stop-shop mechanisms** reduce administrative burden and entry barriers. Finally, **tariff reform** aligns network charges with actual grid usage, removing disincentives for local energy sharing. Together, these measures convert RECs from a legal concept into a functioning system, enabling citizen participation, local investment, and more efficient use of renewable energy without direct subsidies.

THE RECOMMENDED PIVOT

Serving as the direct operational derivation of Scenario B, “The Strategic Pivot” outlines the systematic national reforms necessary to transition Bulgaria’s RECs to fully fledged operational entities.

Policy proposal: to realize this objective, Bulgaria needs to reform operational rules for energy sharing, access to smart metering data, clear legal status, simplify procedures, and adopt fair network tariffs.

Activating the Pivot: The Actionable Pillars

By phasing interventions from immediate energy-sharing operational rules to network tariff restructuring, these five pillars convert a legal concept into a functioning marketplace.

- **Pillar 1. Energy Sharing Operational Framework | Short-term (0–12 months)** - Establish binding rules for how energy is shared within renewable energy communities, including allocation of locally produced electricity, settlement between participants, and interaction with DSOs. Without these rules, energy communities cannot function beyond legal formality.

- **Pillar 2. Digital Infrastructure and Data Access | Short term – up to 12 months)** - Require DSOs to provide standardized, automated access to metering data via interoperable digital interfaces. Data should be available on a near real-time or day-ahead basis to enable accurate settlement and transparent energy sharing.

- **Pillar 3. Regulatory Clarity and Legal Status | Short to Mid-term (1-2 years)** - Define the legal form of energy communities as full market participants with clear rights, obligations, and balancing responsibilities. Ensure uniform and predictable application of rules across institutions, removing regulatory ambiguity.

- **Pillar 4. Administrative Simplification | Short to Mid-term (1–2 years)** - Introduce a one-stop-shop model and streamline procedures through standardized documentation and data reuse. Reduce administrative burden to make participation easier for citizens, municipalities, and cooperatives.

- **Pillar 5. Network Tariff Reform | Mid-term (2–3 years)** - Adapt network tariffs to reflect actual grid use in local energy sharing. Introduce cost-reflective treatment for locally exchanged electricity to remove structural disincentives for community energy projects.

KEY ROLE OF THE DISCOVER PROJECT in Bulgaria

The DISCOVER OSS in Sofia facilitates and accelerates the establishment of REC across the country, targeted initially on Sofia and Gabrovo Region municipalities.
Its primary role is to raise awareness and provide tailored advisory services through its CEP Real Life Modelling (CEP-RLM) framework, guiding initiators across all stages of project development. By offering tailored advice, modelling tools, and stakeholder coordination, it reduces administrative complexity, regulatory uncertainty, and knowledge gaps that currently hinder REC development in Bulgaria.
In parallel, IESDI engages with policymakers, regulators, municipalities, industry, research organizations, and civil society to support the development of enabling legislative and regulatory frameworks. This multi-stakeholder approach helps identify barriers, inform evidence-based policy, and bridge the gap between regulatory design and practical implementation.

IESDI

FROM LAW TO PRACTICE: REMOVING DSO BARRIERS TO CITIZENS' ENERGY COMMUNITY OPERATION

CROATIA

Bez granica - Energetska zajednica Sjevernog Jadrana (EZSJ)
Rijeka, Croatia

THE LANDSCAPE

"The Landscape" outlines Croatia's legal framework for Citizens' Energy Communities (EZG) under the ZOIEVUK act, defining the regulatory oversight of HERA and the technical responsibilities of the national DSO, HEP ODS.

Croatia transposed EU Directive 2019/944/EU (Internal Electricity Market) and RED II into national law through ZOIEVUK (NN 111/2021), subsequently amended by ZID-ZOIEVUK (NN 78/2025). The 2025 amendment introduced the formal legal concept of the **energetska zajednica građana (EZG)** — a Citizens' Energy Community — establishing the right to form, operate, and share energy within a licensed community. Regulatory oversight is assigned to **HERA** (Croatian Energy Regulatory Agency), while the national distribution system operator **HEP ODS** is designated as the technical counterparty responsible for enabling energy sharing through its metering and data exchange infrastructure.

As of mid-2026, only **three EZGs hold an official operating licence** in Croatia**. EZSJ (Energetska zajednica Sjevernog Jadrana)** — based in Rijeka — is the second, licensed by HERA on 24 July 2024. EZSJ operates a pilot involving photovoltaic installations on approximately 30 households, in cooperation with the City of Rijeka, and is developing an advanced **battery energy storage system (BESS) optimisation methodology** within the ENERCOM Facility-funded SMART STORAGE COMPASS project. EZSJ uses a purpose-built **ECAS (Energy Community Aadministration System)** platform for real-time energy allocation among members. EZSJ activities are fully supported by CEP OSS established in Rijeka during summer 2025 and operated by **NGO Without Borders** within context of **LIFE DISCOVER** project.

Croatia's legal framework in theory enables energy communities to register with a simplified procedure; share electricity among members within the entire territory of Republic of Croatia; apply cost-reflective network charges; and protect the pre-existing rights of members (including net metering status) upon joining an EZG. However, this framework exists primarily **on paper - Not a single kWh of electricity has yet been exchanged within the energy communities**.

BUILDING ON SUCCESS: WHAT IS ALREADY WORKING

An energy community isn't just an idea — it's an organization that needs up-to-date data every day. How much did our community produce yesterday? How much does each member save compared to the network plan? Did HEP correctly calculate all bills? These questions are answered by the **EZG Dashboard** (eng. Energy Community Advanced Simulation Services **ECASS**) — an open web application developed within the LIFE DISCOVER project that provides the community leader with an insight into all key aspects of the functioning of the energy community.

EZG Dashboard is an analytical platform for citizen energy communities (EZG) that collects data from smart meters, automatically downloads HEP bills from the portal and based on actual measurements, calculates a fair distribution of common solar energy per each member. In one interface, the community manager can monitor energy flows in real time, compare HEP billing with smart meter measurements and generate a financial report for each billing period.

THE URGENCY OF NOW

Grounded in operational evidence from the Rijeka pilot and local stakeholders, this chapter exposes critical bottlenecks stalling energy sharing: DSO compliance failures, legal risks to transitional net-metering rights, and unadapted grid tariffs.

Energy sharing is still not operational in Croatia — not because the law does not allow it, but because the distribution system operator still has not completed the technical and contractual adaptations required to enable it. This is not a marginal delay: it is a systemic barrier that renders the entire EZG framework non-functional in practice.

Barrier 1 — DSO Non-Compliance with Data Exchange Obligations

NN 78/2025 introduced specific obligations for HEP ODS to provide EZGs with **timely, structured, and standardised metering data** necessary for energy allocation. In direct negotiations over the **Data Exchange and Energy Sharing Contract** with energy communities, HEP ODS has: (a) refused to commit to specific data delivery timelines; (b) rejected standardised API-based data exchange in favour of manual file transfers; (c) claimed the right to unilaterally modify technical specifications without EZG consent; and (d) refused to acknowledge the EZG's right to data on its own production and consumption. These positions are incompatible with Art. 15 of Directive 2019/944/EU and with Recital 66 of the same directive, which require non-discriminatory, timely access to metering data.

Barrier 2 — Unresolved Transitional Rights (KVP/Net Metering)

A significant number of prospective EZG members have specific protected status — Croatia's transitionally-protected net metering entitlement under čl. 51 ZOIEVUK. Legal analysis of the regulatory framework reveals a critical ambiguity: Art. 15(8) of the Pravilnik o općim uvjetima opskrbe contains an explicit prohibition on **simultaneous protected net metering + EC status**. Critically, **HEP ODS's** own materials acknowledge this question still remains operationally unresolved. Citizens who wish to join an EZG thus face the prospect of **losing valuable pre-existing rights**, with no formal legal protection in place. This directly contradicts point 36 of EC Recommendation 2026/1007, which calls on member states to protect the transitional rights of prosumers.

Barrier 3 — Regulatory Sandbox Without Binding Outcomes

Regulatory sandboxes are becoming an increasingly relevant topic in Croatia, but there is still a lack of practical experience and a clear vision of how to implement them in practice. HERA has unofficially proposed a **Regulatory Sandbox** process as a mechanism to resolve the operational impasse, but how it will be formally implemented is not yet known. However, HERA's unofficial proposal **contains no binding obligation on HERA itself to issue a regulatory opinion** or adopt enforceable measures upon conclusion of the sandbox. Without this, the sandbox becomes a procedural deferral mechanism rather than a genuine resolution tool. EC Recommendation 2026/1007, points 22 and 28, explicitly state that regulatory sandboxes must lead to concrete regulatory outcomes and must not be used to delay market access for energy communities.

Barrier 4 — Network Charge Methodology Not Adapted

Croatian network charge methodology does not account for the **reduced grid load** resulting from local energy sharing. EZG members sharing energy within the same distribution area are charged full grid tariff components on virtually shared energy — charges that are disproportionate under Art. 16 of Directive 2019/944/EU, which requires **cost-reflective, non-discriminatory charges** for energy communities. EC Recommendation 2026/1007, points 15–16, directly address this: charges on shared energy must reflect actual grid usage and must **not constitute a structural disincentive to community energy participation**.

THE FORK IN THE ROAD

This chapter contrasts the costs of a stalled status quo that keeps communities in energy poverty (Scenario A) against a high-impact pathway using empirical pilot data to enforce regulatory compliance and unlock citizen investment (Scenario B).

SCENARIO A |

THE COST OF INACTION

Maintaining the status quo **is not a neutral choice**. If no corrective action is taken, the two EZGs currently licensed in Croatia remain **effectively non-operational indefinitely** — unable to deliver energy sharing to their members, unable to fulfil HERA licensing conditions, and unable to attract new investment. Citizens who hold KVP net metering rights will continue to face legal uncertainty that deters EZG membership. The opportunity cost is substantial: **household energy bills remain unnecessarily high**, the untapped capacity of rooftop PV systems continues to be curtailed, and communities in energy poverty remain excluded from the benefits of the energy transition. Each year of delay compounds the disadvantage of early movers who have invested in the model. At the system level, a DSO that faces no binding enforcement timeline has no incentive to prioritise EZG infrastructure over conventional grid work. Croatia risks becoming a case study of **transposition without implementation** — satisfying formal EU compliance requirements while failing citizens in practice.

SCENARIO B |

THE HIGH-IMPACT PATH, INFORMED BY THE EZSJ PILOT

The EZSJ experience provides a practical template: a licensed EZG with real infrastructure, a functioning software platform, and a measurable pilot base of ~30 households demonstrate **what works and precisely where the system breaks down**. The impasse over the data exchange contract, the KVP ambiguity, and the unenforced sandbox are not abstract policy concerns — they are live operational failures documented in formal correspondence and regulatory filings. Scenario B uses this evidence base to drive **three targeted regulatory interventions**: (1) a binding DSO obligation with an enforceable timeline for EZG data exchange; (2) an explicit legal determination protecting transitional KVP status upon EZG membership; and (3) a reformed regulatory sandbox mechanism with a mandatory HERA opinion within a defined period. Alongside these, a **cost-reflective network charge methodology** for virtually shared energy would remove the structural financial disincentive. Together, these changes would cost the state nothing in direct subsidy while unlocking citizen investment in community energy at scale.

THE RECOMMENDED PIVOT

"The Strategic Pivot" defines a targeted policy framework designed to bridge the gap between Croatia's formal legal text and real-world deployment by imposing time-bound obligations on the DSO.

Policy proposal: Croatia must close the gap between EZG legal recognition and operational reality by **imposing binding, time-bound obligations on the Distribution System Operator** and by **clarifying the rights of EZG members** — using the EZSJ pilot as an evidence base and the HERA Regulatory Sandbox as a structured implementation pathway.

Activating the Pivot: The Actionable Pillars

These pillars provide a 24-month roadmap to mandate standardized data exchanges, amend regulations to protect KVP rights, secure binding sandbox outcomes, and implement cost-reflective local network charges.

- **Pillar 1 - Short-term 0–12 months - Binding DSO Data Exchange Obligations** - HERA must issue a binding regulatory decision establishing specific, enforceable timelines for HEP ODS to implement standardised EZG data exchange (M71/M72/M75/M76 NEMA-format files or equivalent API). Non-compliance must trigger financial penalties. The current practice of open-ended negotiations without deadlines must end.

- **Pillar 2 - Short-term 0–12 months - Legal Clarity on net-metering Transitional Rights** -HERA and the Ministry of Economy must issue a binding determination clarifying that existing net metering rights are preserved upon EZG membership. Art. 15(8) of the Pravilnik must be amended to remove the prohibition on simultaneous NM + EZG status. Citizens should not be forced to choose between pre-existing rights and energy community participation.

- **Pillar 3 - Short-to-mid-term 6–18 months - Reformed Regulatory Sandbox with Binding Outcomes** - Future HERA's Regulatory Sandbox framework must be amended to require a binding regulatory opinion within a defined period upon conclusion of a sandbox process. The sandbox must include KPIs, defined cost-allocation rules, and an explicit right for EZG participants to seek external legal counsel. Without binding outcomes, the sandbox is a delay mechanism, not a resolution tool.

- **Pillar 4 - Mid-term 12–24 months - Cost-Reflective Network Charges for Virtually Shared Energy** - HERA should update network charge methodology to reflect actual grid usage by EZG members sharing energy within the same distribution area. Charges on virtually shared energy must be proportionate, non-discriminatory, and distinguish between energy exchanged locally and energy transported across the national grid, in line with Art. 16 of Directive 2019/944/EU and EC Recommendation 2026/1007, points 15–16.

KEY ROLE OF THE DISCOVER PROJECT in Croatia

BEZ GRANICA
WITHOUT BORDERS
RIJEKA

Bez Granica in cooperation with EZSJ has developed a transferable technical and governance model applicable to future EZGs in Croatia and regionally. The model and developed tools are successfully applied in the first OSS for energy communities in Croatia (Rijeka). Its Simulation tools and ECAS energy community administration software is operational and HEP/HERA-compliant; its SMART STORAGE COMPASS methodology provides a structured approach to BESS integration in community energy; and its documented regulatory disputes create a **body of evidence** — contractual, legal, and technical — that can directly inform regulatory reform. The City of Rijeka's prospective membership would create Croatia's first **municipal-citizen hybrid EZG**, demonstrating a governance model that aligns local authority infrastructure with citizen-led energy participation. This model — when supported by the four regulatory pillars above — provides a scalable blueprint for community energy across Croatia's coastal and urban regions.

DISCOVER

ENERGY COMMUNITIES IN CITY CENTERS: THE CHALLENGE OF MAKING CONDOMINIUMS PART OF IT

FRANCE

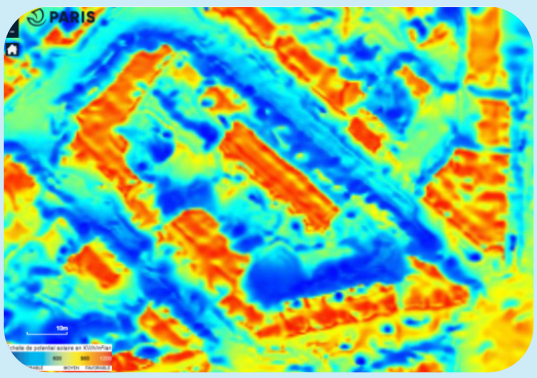
THE LANDSCAPE

The Landscape outlines the contrasted legal situation for energy communities in France, the drastic reduction of financial incentives and how it makes collective self-consumption operations more necessary than ever, while highlighting the structural gaps that still overlook the private collective housing sector.

1. France transposed RED II and IMED directives into its Energy Code through the **Law for Energy and Climate of 8 November 2019**, which gave a definition to RECs, the **Ordinance of 3 March 2021**, which gave a definition to CECs, and the **Law for the Acceleration of Renewable Energies of 10 March 2023**, which clarified several aspects of the definition of both RECs and CECs.
2. **RECs** members are limited to individuals, SMEs, associations, and local authorities and their groups, who should be in proximity to the renewable energy project. Any type of actor can be part of a **CEC**, but its effective control is not allowed to large-scale commercial players or actors for which energy is their primary activity. For both REC and CEC, the sharing of electricity falls within the scope of **individual and collective self-consumption** (CSC).
3. Financial incentives targeting self-consumption have been available since the tariff order of 6 October 2021, with a premium for investment, **feed-in tariffs for surplus electricity**, and tax alleviation for electricity shared among members of a CSC operation (accise tax put to zero euro). The Law of 10 March 2023 prompted local authorities to plan “Acceleration Zones” with advantageous administrative conditions for photovoltaic projects. However, no incentives have ever been attached to RECs or CECs, and feed-in tariffs have been **reduced to almost zero in June 2026**.
4. Energy projects lead by local authorities or local economic actors (social housing, offices, plants…) can be supported by regional energy advisors **Les Générateurs**, partly funded and coordinated by the French National Energy Agency, Ademe. Citizen-lead initiatives of production cooperatives have long been supported by the **association Energie Partagée**, also co-funded by Ademe. However, none of these supporting bodies target private residential sectors, and especially not the **private collective housing sector** which make nonetheless for a third of French households in France, and the majority of city centers like in Paris.

BUILDING ON SUCCESS: WHAT IS ALREADY WORKING

Locally developed solar cadastre are widely used services in France. The City of Paris and Apur developed in 2023, as part of a European project, the first solar cadastre of France. It is still a very useful tool. APC uses the cadastre to estimate solar yields and analyse technical opportunity for a PV projects. Thanks to this tool, among others, APC can deliver a reliable service to condominiums.
The image on the left shows the level of details available. Although accessible to everyone, very few people would know how to use it. The OSS’s role is both technical and educational there.



THE URGENCY OF NOW

Grounded in the field experience of APC under the DISCOVER project, “The Urgency of Now” highlights the main challenges of making inhabitants of city centers and condominiums take part in the movement of energy communities considering their specific barriers to photovoltaic production and collective self-consumption.

With the view of the City of Paris to produce **20% of renewable energy in its energy mix by 2050**, and with approximately 70% of the households gathered into co-owned buildings, the City of Paris gave Paris Climate Agency (APC) the mission to focus on **condominiums** for that purpose. The absence of previous projects in this realm in France makes this a challenge, shared by cities who wish to develop community energy projects within their dense **city centre**.

Today, Parisians can invest individually into PV plants located elsewhere from their home but Paris-based 1 MW **citizen cooperative EnerCitIF** has struggled in vain to make condominiums take part in their production effort. As heard at one workshop, few visionary people convinced of the benefits of photovoltaics, still struggle to secure **collective decisions** or even initiate group momentum within their condominium. General assemblies are risk-averse and need a **turnkey** model. But no such model currently exists - whether for production or self-consumption. A major building administrators representative admitted not being legally able to assist co-owners. However, as a legal expert has asserted to APC, such complex project does need professional **assistance**.

The **one-stop shop** developed by the APC provides a first response to current challenges but does not fully resolve them.

PV plants on condominium roofs are generally small (typically under 36 kW) and do not attract usual energy players, who would call for **aggregation** models for shared investment. Such models are still to be defined. Also, most PV-equipped condominiums will have to **make use of surplus electricity** (because of time mismatch between production and consumption). National feed-in tariffs were drastically lowered in June 2026 (to 1,1 cents of euros per kWh), making the selling of surplus through CSC operations virtually the only pathway.

With no administrative body in charge of registering RECs in France, and no incentive attached to this legal form, energy sharing happens through **CSC operations** which, for one, benefit from a stable, operational framework. The number of CSC operations is doubling each year, reaching almost 2000 by the 31st of March 2026 but barely no CSC operation includes any condominium. The European Court of Auditors recommends strongly clarifying the conditions of access of apartment co-owners to production and sharing of renewable energy (Special report 10/2026, recommendation n°1).

Installing rooftop PV panels requires specific design features that were not originally considered in most **existing buildings.** Rooftops need technical adaptation but established energy renovation processes hardly begin to incorporate these particular features. PV also need proper architectural integration for heritage protection and urban quality, which adds a layer of complexity.

Endorsing the **responsibility of an electricity producer** to manage data and interoperate between multiple stakeholders, is a key issue that condominiums are not used to tackle. Existing third-party solutions are generally costly and risk compromising the economic balance of such communities.

Accepting long-term payback on high initial investment is not natural in a sector where turnover and capital expenditure capacity are low and the fear of losing money is high. It acts as a **barrier to investment.** No banking product nor subsidies compensate for it. If economic advantage to self-consumption is made clear, and demand starts to grow, then the equation will be: how to retain and share the added value of PV among **co-owners, tenants and neighbours.**

THE FORK IN THE ROAD

By contrasting the long-term social and environmental penalties of systemic inertia (Scenario A) against a model that empowers collective action of residential buildings (Scenario B), “The Fork in The Road” frames comprehensive reform as the only viable path forward.

SCENARIO A |

THE RISKS OF MAINTAINING THE STATUS QUO

Maintaining the status quo may seem relatively painless for the time being, but obstacles such as administrative and regulatory complexity, the lack of a professional network, investment difficulties, and technical constraints, will continue to **discourage condominiums** to take part in the movement of energy communities and play its role of prosumer in the energy sector.

Leaving condominium rooftops devoid of photovoltaic panels would mean leaving city centres more dependent than other territories for their electricity needs. It would prevent most inhabitants of city centres to benefit from self-consumption. Their bills could **grow higher and fluctuate** with the market. Rooftops suitable for PV systems and local projects that fail to materialise would be pure **waste of potential** local added value.

Trust in the transition towards renewable energies would be hampered. Electricity furniture would be left to capitalistic and specialist players in cities, overlooking the inclusive and local potential of city centres that energy communities are meant to offer to **all Europeans**.

SCENARIO B |

THE RECOMMENDED, HIGH-IMPACT APPROACH

With the recommended approach below, condominiums are **legally** recognized as potential energy communities by nature and their role to become such is clarified. They are **incited financially** to develop a community energy project. Attention is given to allow vulnerable people to participate.

Building management firms are trained and staffed to support their co-owner clients into these projects. The **local one-stop-shop** offers neutral and independent guidance for all inhabitants. Electricity surplus from solar roofs is allocated, and easily reallocated when needed, to identified consumers in an economically and socially just way.

According to this vision, Paris city centre does its share of the regional effort towards **a renewable energy society**. It ensures trust at a larger scale. Although quantitatively minor in the city energy mix, it is symbolic. Energy communities can include any inhabitant and offer lower bills for the people in need. City prosumers share an understanding of where energy comes from and why to save it.

Condominiums are organized as **neighbourhood-scale** unions of syndicates to share their electricity with citizens and small and medium enterprises with no roof. The local school and other public buildings produce a surplus electricity that is self-consumed primarily by low-income households.

Conviviality has turned back to cities among neighbours. What is achieved then, apart from energy sharing, is the revitalization of a **sense of collective action**, which fosters the city’s capacity for robustness and resilience.

Photovoltaic panels, along with other renewable energy sources, are now part of the Parisian **landscape**. Each renovation of condominium considers the valuation of its rooftop, whether it be through a photovoltaics or another usage. Energy sources, impacts and sharing is now a casual topic of conversation in Parisian cafés.

THE RECOMMENDED PIVOT

Serving as the direct operational derivation of Scenario B, 'The Strategic Pivot' outlines the systematic reforms required within the French context to legally recognize condominiums as energy entities.

Policy proposal: to foster the development of photovoltaics, self-consumption and energy communities within dense city center, **condominiums must be legally recognized in the French Law as energy entities and be supported** for the good of its co-owners, tenants and neighborhood.

Activating the Pivot: The Actionable Pillars

By phasing interventions from immediate legal integration to long-term public-private alignment, the following actionable pillars translate the vision of Scenario B into a scalable reality.

- **Pillar 1. Legal integration of condominiums into REC and CSC schemes | Timeline: Short-term (0–12 months)** - Add Union of syndicates, and syndicates of condominiums to the list of bodies eligible to REC. Clarify their role in CSC operation schemes, as well as the role of co-owners and tenants. Allow administratively simplified and economically accessible self-consumption schemes for syndicates owning multiple points of access to the grid.
- **Pillar 2. Technical integration of PV into residential building reference systems | Timeline: Mid-term (1–2 years)** - Integrate an electricity audit, and photovoltaic and self-consumption opportunity analysis to the refence system for the energy renovation of condominiums (Energy Performance Diagnostic – DPE, Global Technical Diagnostic – DTG, Multi Annual Plan – PPT, energy audit…). Define a shared reference system for the architectural integration of PV systems, especially in heritage protection sites.
- **Pillar 3. User-friendly environment for condominiums to operate just and viable projects | Timeline: Short to mid-term (2–3 years)** - Value the non-profit nature of RECs though the establishment of adapted financing schemes, bonified loans and public aids. Train and incite building management firms to develop and operate CSC operations through all-inclusive pathways: how to include both co-owners and tenants, especially low-income or vulnerable households; how to manage data and interoperate with the distribution system operator and energy providers; and, how to contract with insurance firms.
- **Pillar 4. Integration of non-profit private initiatives into public CSC operations | Timeline: Mid to long-term (2–4 years)** - Allowing local authorities to easily buy energy to non-profit private producers, within CSC operations or RECs, would enable public-private joint action for energy communities.
- **Pillar 5. Sustainability of OSS for energy communities | Timeline: Long-term** - Ensure the financial sustainability of French one-stop-shop for energy community and give them the means to support projects in the specific realm of condominiums.

KEY ROLE OF THE DISCOVER PROJECT in France

These recommendations stem from the **15-year experience** of APC as one-stop-shop for the energy renovation of condominiums in Paris, and continuous exchanges with key stakeholders and condominiums throughout the DISCOVER project. Recommendations should bridge the main gaps. They should allow Paris city to participate to a just and viable energy landscape as a **capital city** in the World, and a dense urban centre of Europe.

Agence Parisienne du Climat

APC has observed how many people are willing to act, and how well-kwon hurdles hinder their action. Legal and technical integration of condominiums, social inclusion and economic viability are needed. APC can act as a **trusted party for complex association of public and private** stakeholders around condominiums. APC will eventually strive for the replication of good practices in other French cities.

DISCOVER

SCALING RENEWABLE ENERGY COMMUNITIES IN ITALY: SIMPLIFICATION, DIGITALIZATION AND PROVINCIAL ONE-STOP SHOPS

OSS AGENA Teramo

ITALY

Energy Bringing Communities Together: Renewable Energy Communities between the Mountains and the Coast in the province of Teramo.

THE LANDSCAPE

"The Landscape" maps the robust yet intricate legal and technical architecture governing Europe's energy transition at the local level. In Italy, this framework has evolved into a highly regulated ecosystem where community-driven energy sharing is backed by explicit state incentives and strictly defined geographical perimeters.

1. Italy transposed the RED II and IEM directives through Legislative Decrees 199/2021 and 210/2021. In January 2023, ARERA adopted Resolution 727/2022 (TIAD), regulating requirements, procedures, and access to widespread self-consumption (individual, collective, Renewable Energy Communities -RECs), while simplifying the framework. TIAD entered into force with Ministerial Decree 414/2023 (DM CACER), published in January 2024, which defines incentive rules and values granted by GSE (Energy Services Manager S.p.a) for 20 years on energy produced and "virtually" shared within RECs. On 23rd February 2024, GSE issued implementing rules to register RECs and start energy sharing.
2. A REC is a legal entity whose members may include individuals, SMEs (if not their main activity), local authorities, and various public/private bodies. It must include at least two members and two distinct connection points (consumption unit and generation plant). Renewable energy is shared among users connected to the same primary substation via the national grid, enabling "virtual" sharing.
3. Incentives include: a 20-year premium tariff on shared energy; remuneration of self-consumed electricity via tariff components (TIAD); compensation for energy fed into the grid through the GSE "Ritiro Dedicato" (RID) scheme. Until 30th November 2025, RECs in municipalities under 50,000 inhabitants can access grants up to 40% of eligible costs (infrastructure, storage, technical/ legal support).
4. GSE (https://www.gse.it/en): manages incentives; verifies technical, regulatory, and geographical compliance; calculates shared energy using DSO data; handles financial flows (incl. RID); provides tools and operational support; monitors and promotes RECs.

BUILDING ON SUCCESS: WHAT IS ALREADY WORKING

This tool identifies conventional areas via POD code, address, geographic coordinates . Knowing the primary substation is essential for a REC, as it defines the geographical and technical boundary within members can share energy and benefit from state incentives. It also shows registered RECs and qualified configurations.

One of the most widely used services is the primary substation mapping tool.

https://www.gse.it/servizi-per-te/autoconsumo/mappa-interattiva-delle-cabine-primarie

THE URGENCY OF NOW

Grounded in three years of LIFE DISCOVER field experience, 'The Urgency of Now' highlights the critical friction between ambitious national targets and the complex GSE procedures and volatile funding mechanisms currently stalling local progress.

CACERs stand for Self-Consumption Configurations for the Sharing of Renewable Energy. **CACERs are still far from the 5 GW target set for 2028**. The administrative, regulatory, technical, and financial challenges outlined below highlight the need to strengthen management processes, with a focus on bureaucratic simplification, greater regulatory stability, and enhanced digital infrastructure, to effectively support the development of energy communities in the country.

The list of recognized configurations represents a useful tool to encourage the participation of new members in RECs; however, there is still room for improvement. It would be advisable to include at least one contact reference (e.g. an email address) to allow interested individuals and entities to request information and join. In addition, the **irregular updating of the list** limits the ability to maintain a consistently up-to-date overview of the existing landscape, thereby reducing the visibility of more recently established RECs.

One of the main challenges lies in the complexity of the administrative procedures required to access financial incentives. **Registration, verification, and validation processes are often intricate and not user-friendly**, requiring technical and legal expertise that may not be readily available, especially for small entities or private citizens. This is further compounded by lengthy and unpredictable processing times, which delay the operational launch of communities and create uncertainty.

These issues are exacerbated by a **regulatory framework that is still evolving** and not always well-coordinated. Such instability creates interpretative difficulties for both REC promoters and market operators and is also reflected in the implementation procedures adopted by the GSE.

From a technical perspective, additional **challenges arise in the management and integration of energy production and consumption data**. The proper functioning of RECs relies on complex systems for data collection and validation across multiple consumption and generation points, requiring a high level of interoperability among distribution system operators, the GSE, and other involved stakeholders. **Any misalignment or delay in data availability may compromise the calculation of incentives** and reduce transparency for community members.

Moreover, there is still a **lack of fully efficient and user-friendly digital tools**. Operational issues with the GSE web portal, combined with often redundant documentation requirements, hinder data collection, configuration, and updating activities for RECs, leading to delays and technical bottlenecks in the recognition process. This situation generates economic uncertainty for both operators and citizens, further aggravated by delays in grid connection processes.

Additional concerns relate to the incentive mechanisms. The non-repayable grant introduced under the National Recovery and Resilience Plan (NRRP), initially amounting to €2.2 billion for installations within RECs or Collective Self-Consumption Schemes, **has undergone significant changes over time**. Initially restricted to municipalities with fewer than 5,000 inhabitants, it was later extended to municipalities with up to 50,000 inhabitants, and the application deadline was postponed. However, **the subsequent revision of the NRRP reduced the available funding** to €795.5 million, despite applications reaching approximately €1.46 billion (corresponding to around 3.34 GW).

These considerations are the result of a three-year process of **continuous interaction** and collaboration with local **authorities, citizens, and REC promoters**. Most of the issues were identified during the **stakeholder workshops phase**, further explored through meetings, workshops, and dedicated exchange sessions aimed at comparing different REC experiences and energy-sharing models.

THE FORK IN THE ROAD

"The Fork in the Road" conceptualizes the critical decision point where policymakers must choose between the high-risk inertia of fragmented systems (Scenario A) and a transformative, integrated approach (Scenario B). At this critical juncture, Italy must choose between two distinct paths regarding the deployment of Renewable Energy Communities (RECs) and regional support structures.

SCENARIO A |

THE RISKS OF MAINTAINING THE STATUS QUO

Maintaining the current system (Scenario A) is not a neutral choice—it is the most costly and risky path over time. Inaction would slow the growth of RECs, as complex procedures, regulatory uncertainty, and technical barriers continue to discourage new participants, limiting access to larger, well-equipped actors and weakening their inclusive role.

The economic costs would quickly accumulate delayed or unrealized projects mean lost investments, unrecovered development costs, and reduced use of public funds. The gap between available resources and real demand would widen, while higher uncertainty increases financing costs and reduces viable projects.

There is also a significant opportunity cost. RECs can lower energy bills, stabilize prices, and generate local value. Without their expansion, households and businesses face higher costs and local economies lose competitiveness.

Overall, inaction delays a more resilient and flexible energy system, increases long-term costs, erodes trust, and puts national targets at risk.

SCENARIO B |

THE RECOMMENDED, HIGH-IMPACT APPROACH

Scenario B is directly shaped by the insights gained from the Italian pilot, where AGENA acts as a One Stop Shop (OSS) for RECs at the provincial level. The challenges identified—limited access to information, administrative complexity, and operational barriers—have guided the development of targeted solutions.

First, the scenario includes the **continuous updating of existing configurations through a provincial registry and mapping of RECs**. This mapping goes beyond a simple list, providing direct contact details (phone numbers, email addresses, websites) to enable users to easily connect with the REC of interest and foster participation.

In addition, **AGENA OSS provides practical support to citizens, public authorities, and businesses through standardized tools**—such as roadmaps, checklists, energy and economic simulator - SHARE and templates—that simplify and speed up the collection and submission of required data on the GSE platform. AGENA OSS works particularly on matching producers and consumers. This approach reduces errors, shortens timelines, and lowers entry barriers, making the overall process more accessible and efficient.

THE RECOMMENDED PIVOT

Serving as the direct operational derivation of Scenario B, 'The Strategic Pivot' outlines the systematic reforms required within the Italian context to transform complex GSE and regulatory frameworks into a streamlined, digitalized ecosystem rooted in administrative simplification and stable governance.

Policy proposal: to scale RECs effectively, **GSE's role must be strengthened** through **simplification, digitalization, and stable regulation.**

Activating the Pivot:The Actionable Pillars

By phasing interventions from immediate GSE procedural reforms to long-term provincial capacity building, the following actionable pillars translate the vision of Scenario B into a scalable national reality.

- **Pillar 1. Administrative Simplification and Process Reform | Timeline: Short-term (0–12 months)**
  Simplify and standardize REC registration and incentive procedures, avoiding repeated data requests by allowing GSE to reuse existing information. Introduce fast-track processes for routine updates (e.g. member entry/exit), reducing current delays, and improving flexibility and attractiveness.

- **Pillar 2. Digital Infrastructure and Data Integration | Timeline: Short to mid-term (1–2 years)**
  Upgrade digital platforms to ensure interoperability among DSOs, GSE, and institutions, with improved usability and automated data validation. Strengthen coordination between GSE and RSE (Research on the Energy System) for accurate, centralized mapping of primary substations. Require public contact details for each REC to enhance transparency and collaboration.

- **Pillar 3. Regulatory Clarity and Governance Stability | Timeline: Mid-term (2–3 years)**
  Ensure a stable, coherent, and clearly interpretable regulatory framework for RECs. Reduce fragmentation and provide binding guidelines that align implementation practices across institutions. Introduce defined service-level agreements (SLAs) for application processing and modification requests, increasing predictability and accountability in GSE operations.

- **Pillar 4 Capacity Building and Stakeholder Engagement through One-Stop Shops | Timeline: Mid to long-term (2–4 years)** Create provincial OSS across Italy as single access points to support REC development. OSS should provide guidance, templates, and assistance, improve coordination, reduce errors, and feed local insights into national policymaking for continuous system improvement.

KEY ROLE OF THE DISCOVER PROJECT in Italy

The creation of provincial OSS can support more adaptive national policies, reduces gaps between local and central implementation, and strengthens the resilience and scalability of the REC framework, restoring stakeholder confidence and boosting participation. In this context, the **AGENA OSS** model provides a **practical benchmark** to move **from a fragmented system to a coordinated, action-oriented approach**.

AGENA OSS has shown how local support structures can bridge informational, technical, and administrative gaps through advisory services, stakeholder coordination, and knowledge sharing. Provincial OSS can also foster mutualization and exchange among community actors, helping overcome development barriers and enabling scaling. By promoting peer learning, sharing best practices, and aggregating local experience, **OSS can accelerate REC development**

CONCLUSIONS

The transition to a decarbonized, citizen-led energy system cannot be achieved through abstract directives alone. The evidence gathered across the LIFE DISCOVER pilots clearly demonstrates that while the overarching European framework (RED II/III, EPBD Recast) provides the legal mandate, the actual deployment of RECs is systematically stalling at the "last mile" of implementation. This paralysis is caused by identical structural bottlenecks across all analyzed Member States: utility grid obstructionism, prohibitive early-stage study costs, and paralyzing bureaucratic complexity.

To break this deadlock, the European Union and its Member States must urgently shift their focus from legislative transposition to operational execution. **The singular, indispensable mechanism to achieve this is the mandatory deployment, standardization, and funding of regional OSS.**

THE OSS AS THE STRATEGIC ENABLER: EVIDENCE FROM THE GROUND

The LIFE DISCOVER pilots prove that when citizens and municipalities are left alone to navigate the regulatory maze, projects fail. Conversely, where dedicated OSS structures exist, they act as the definitive catalyst for scaling community energy. The national policy papers produced within this project reveal that the OSS pillar is a common denominator capable of resolving local market failures:

CROATIA (EZSJ - RIJEKA): The Croatian pilot, operating Croatia's second licensed Citizens' Energy Community supported by DISCOVER project (~30 active members and connection points), highlights two compounding failures: DSO non-compliance — including system-level barriers to new membership and contested interpretations threatening to retroactively strip transitional prosumer rights — and national regulator (HERA) passivity, evidenced by unanswered formal complaints and a non-binding mediation sandbox. The local OSS, hosted at Bez Granica community centre, acts as the essential mediator and technical advocate, leveraging its ECAS platform to demonstrate that transparent, real-time energy accounting is achievable, while pushing back against utility monopolies and safeguarding prosumer rights. Notably, the European Commission's own Recommendation 2026/1007, issued in April 2026, substantively validates the Croatian pilot's legal positions on transitional rights, data access, and the need for binding sandbox outcomes — confirming that these are not isolated national pathologies but EU-wide structural gaps.

Austria (Pixel Energy Solutions): Even in a highly advanced, market-driven landscape with mature smart-metering, the Austrian pilot exposes severe bottlenecks related to double-taxed community storage and fragmented DSO processes. The regional OSS network (supporting over 5,000 schemes) and Pixel's "Operator" software provide the vital administrative buffering required to manage complex REC life cycles and unlock multi-vector (storage) flexibility.

France (APC): In dense urban environments, the Parisian pilot demonstrates that condominiums are effectively locked out of the REC movement due to immense legal and technical complexities. In Paris, the APC's OSS is the only entity capable of translating specialized tools (like the solar cadastre) and complex problems (energy production and consumption embedded in building management), into actionable, turn-key business models that risk-averse co-owners can trust and engage into.

Bulgaria (IESDI): In an environment where RECs are emerging, the Bulgarian OSS (and its CEP-RLM framework) provides the fundamental awareness and early-stage capacity building needed to move projects from legal theory into operational reality, directly bridging the gap between missing operational rules and local community ambition.

Italy (AGENA): The Italian experience highlights that the main challenge is not the absence of incentives, but the complexity of navigating regulatory, administrative, and technical requirements. The provincial One-Stop Shop model provides practical support through standardized procedures, digital simulators, and stakeholder coordination, helping citizens, municipalities, and SMEs move more efficiently from project idea to implementation.

The European Commission's upcoming Action Plan must formally recognize that an energy community is only as viable as the local support structure that sustains it. The EU must move beyond defining what a REC is, and explicitly mandate how it must be supported.

CLOSING THE LOOP: DISCOVER SPEAKS TO MEMBER STATES AND EUROPE

To "close the loop" between EU ambition and local reality, DISCOVER addresses a clear message to Member States and Europe.

Member States must:

- **Enforce DSO Compliance:** Use the OSS as a public shield to enforce strict, short, and legally binding grid-connection and data-sharing mandates on DSOs.
- **Fund the "Death Valley":** Establish multi-level EU Financial Facilities that directly subsidize the administrative and technical operations of the OSS, allowing them to provide zero-cost early-stage feasibility studies to nascent communities.
- **Institutionalize the OSS:** Integrate the OSS directly into National Energy and Climate Plans (NECPs) as the mandatory, permanent public infrastructure required under the EPBD.

Europe must:

- **Strengthen EU-Level Oversight:** Beyond setting the legal framework, the European Commission must actively monitor and enforce Member States' progress on this front — through reporting requirements, compliance reviews, corrective mechanisms etc. — to ensure Article 18 EPBD compliance delivers real, consistent support for RECs across the Union.

The LIFE DISCOVER project proves that citizens are ready to become active market players. They do not lack ambition; **they lack the institutional vehicle to act**. Standardized, well-funded OSSs provide the practical infrastructure needed to bridge this gap. With the core legal frameworks now largely established, the focus must officially shift from theoretical transposition to structured, operational implementation across all Member States.

DISCOVER