Interreg

North-West Europe

Co-funded by the European Union

E2-CUTIES

Engaged Energy Communities in Urban areas with Technology Integrated Energy Systems

Final Deliverable 1.2.4

A1.5 Comparative legal frameworks, business models and financing in E2-CUTIES

Deliverable details

Project Acronym:	**E2-CUTIES**
Project ID:	**NWE0400543**
Work Package:	**A1.5 Comparative legal frameworks, business models and financing**
Activity:	**A1.5 Comparative legal frameworks, business models and financing**
Deliverable leader (editor):	**EBO Consult – Erik Christiansen**
Deliverable version	**Version 1.0**
Submission date	**11.05.2026**

Author(s)

Surname	First Name	Project Partner	E-mail address
Christiansen	Erik	EBO	erc@ebo.dk
Respondents			
Baptist	Vlaeminck	City of Leuven	Baptist.vlaeminck@leuven.be
de Meyer	Dirk	ECOOB	dirk.demeyer@ecoob.be
Roethinger	Léa	Climate Agency of Strasbourg	lea.roethinger@agenceduclimat-strasbourg.eu
Pol-Gili	Gerard	Eurometropole Strasbourg	Gerard.POL-GILI@strasbourg.eu
McEllistrem	Sarah	CODEMA	sarah.mcellistrem@codema.ie
Loughlin	Bridget	Fingal County Council	bridget.loughlin@fingal.ie
Zwanink	Anne-Marie	City of Utrecht	annemarie.zwanink@utrecht.nl
Marselis	Ilonka	Energie Samen	Ilonka.Marselis@energiesamen.nu
Verweij	Daan	Energie Samen	Daan.Verweij@energiesamen.nu

Reviewer(s)

Surname	First Name	Project Partner	E-mail address
Reviewed and validated by all mentioned above			

Version History

Version	Date	Modifications made by
1.0	29.06.2026	Utrecht/Energie Samen – Dutch sections
Final	29.06.2026	

Table of Contents

Executive summary 8
1 Introduction 12
1.1 Objectives 12
1.2 Local Energy Communities as an Actor in EU 13
1.3 Legal and Financial Framework Of The Analysis 21
1.4 Intended Audience 22
1.5 Methodology for Legal and Financial Analysis 22
2 Analysis Based on Reports from the Pilots 23
2.1 The Seven Local Energy Communities (Pilots) 23
2.2 Setting The State and Energy Community Scenes 25
2.2.1 Belgium 25
2.2.1.1 The Energy Market 25
2.2.1.2 Setting the Scene for Energy Communities/Cooperatives 28
2.2.2 France 30
2.2.2.1 The Energy Market 30
2.2.2.2 Setting the Scene for Energy Communities/Cooperatives 31
2.2.3 Ireland 31
2.2.3.1 The Energy Market 31
2.2.3.2 Setting the Scene for Energy Communities/Cooperatives 32
2.2.4 The Netherlands 33
2.2.4.1 The Energy Market 33
2.2.4.2 Setting the Scene for Energy Communities/Cooperatives 35
2.2.5 Comparison of State and Energy Community Conditions 36
2.3 Policy Strategies 42
2.3.1 Leuven 42
2.3.1.1 Authority Roles 42
2.3.1.2 City Role 42
2.3.1.3 Local Involvement and Facilitation 43
2.3.1.4 Strategies and Financial Tools 43
2.3.2 Strasbourg 44
2.3.2.1 Authority Roles 44

2.3.2.2 City Role 44
2.3.2.3 Local Involvement and Facilitation 45
2.3.2.4 Strategies and Financial Tools 45
2.3.3 Dublin 45
2.3.3.1 Authority Roles 45
2.3.3.2 City Role 45
2.3.3.3 Local Involvement and Facilitation 47
2.3.3.4 Strategies and Financial Tools 47
2.3.4 Utrecht 48
2.3.4.1 Authority Roles 48
2.3.4.2 City Role 48
2.3.4.3 Local Involvement and Facilitation 48
2.3.4.4 Strategies and Financial Tools 49
2.3.5 Comparison of Policy Strategies 49
2.4 Policy Steering 58
2.4.1 Leuven 58
2.4.1.1 State Regulations Affecting the Energy Transition in the City 58
2.4.1.2 City Opportunities Without State Regulation 59
2.4.1.3 State Regulation on Local Energy Communities 59
2.4.1.4 Incorporation of Energy Communities 59
2.4.1.5 Possibilities and Barriers for Energy Communities 62
2.4.1.6 City Access to Energy Communities 62
2.4.2 Strasbourg 63
2.4.2.1 State Regulations Affecting the Energy Transition in the City 63
2.4.2.2 City Opportunities Without State Regulation 63
2.4.2.3 State Regulation on Local Energy Communities 63
2.4.2.4 Incorporation of Energy Communities 63
2.4.2.5 Possibilities and Barriers for Energy Communities 64
2.4.2.6 City Access to Energy Communities 64
2.4.3 Dublin 65
2.4.3.1 State Regulations Affecting the Energy Transition in the City 65
2.4.3.2 City Opportunities Without State Regulation 65
2.4.3.3 State Regulation on Local Energy Communities 65
2.4.3.4 Incorporation of Energy Communities 66
2.4.3.5 Possibilities and Barriers for Energy Communities 66

2.4.3.6 City Access to Energy Communities 66
2.4.4 Utrecht 67
2.4.4.1 State Regulations Affecting the Energy Transition in the City 67
2.4.4.2 City Opportunities Without State Regulation 68
2.4.4.3 State Regulation on Local Energy Communities 68
2.4.4.4 Incorporation of Energy Communities 68
2.4.4.5 Possibilities and Barriers for Energy Communities 69
2.4.4.6 City Access to Energy Communities 70
2.4.5 Comparison of Policy Steering 70
2.5 Economic Regulation and Organization 77
2.5.1 Leuven 77
2.5.1.1 Public Requirements for LECs 77
2.5.1.2 Consumers Preferences 78
2.5.1.3 City's Financial Involvement 78
2.5.2 Strasbourg 78
2.5.2.1 Public Requirements for LECs 78
2.5.2.2 Consumers Preferences 78
2.5.2.3 City's Financial Involvement 79
2.5.3 Dublin 79
2.5.3.1 Public Requirements for LECs 79
2.5.3.2 Consumers Preferences 80
2.5.3.3 City's Financial Involvement 80
2.5.4 Utrecht 80
2.5.4.1 Public Requirements for LECs 80
2.5.4.2 Consumers Preferences 81
2.5.4.3 City's Financial Involvement 81
2.5.5 Comparison of Economic Regulation and Organization 82
2.6 Facilitating Tools for LECs 88
2.6.1 Leuven 88
2.6.1.1 Tools from the City 88
2.6.1.2 Support for LECs 89
2.6.2 Strasbourg 89
2.6.2.1 Tools from the City 89
2.6.2.2 Support for LECs 89
2.6.3 Dublin 90

2.6.3.1 Tools from the City 90
2.6.3.2 Support for LECs 90
2.6.4 Utrecht 90
2.6.4.1 Tools from the City 90
2.6.4.2 Support for LECs 91
2.6.5 Comparison of Facilitating Tools for LECs 91
2.7 Facilitating Tools Concerning Grid Connection 98
2.7.1 Leuven 98
2.7.1.1 Barriers and Benefits 98
2.7.1.2 LECs Cooperation and Independence 98
2.7.1.3 City Support 99
2.7.2 Strasbourg 99
2.7.2.1 Barriers and Benefits 99
2.7.2.2 LECs Cooperation and Independence 99
2.7.2.3 City Support 100
2.7.3 Dublin 100
2.7.3.1 Barriers and Benefits 100
2.7.3.2 LECs Cooperation and Independence 101
2.7.3.3 City Support 101
2.7.4 Utrecht 101
2.7.4.1 Barriers and Benefits 101
2.7.4.2 LECs Cooperation and Independence 102
2.7.4.3 City Support 103
2.7.5 Comparison of Facilitating Tools Concerning Grid Connection 103
3 Conclusions 110
4 Recommendations 116

List of Tables

Contents Page

Table 1. Description of RECs and CECs 13

Table 2. Boosting energy self-production and energy sharing among citizens 16

Table 3. Differences in Governance and Legal Structure 36

Table 4. Differences in Energy Mix 37

Table 5. Differences in Pricing and Grid Finance 37

Table 6. Energy Community Roles 39

Table 7. Comparison & Summary of National and Community Conditions 39

Table 8. City Differences in Governance 50

Table 9. Comparison of Cities' Local Involvement 52

Table 10. Financial Instruments for Local Energy 54

Table 11. Comparison of Steering Policies Towards the Cities 71

Table 12. Comparison of LECs Legal Clarity and Usability 72

Table 13. Comparison of Requirements Towards LECs 82

Table 14. Comparison of Consumer Attitudes 83

Table 15. Comparison of Financial Involvement 84

Table 16. Comparison of Cities' Facilitation 95

Executive summary

Purpose and Scope of the Deliverable

This document presents an executive-level summary based on the full E2-CUTIES deliverable and is intended for senior policymakers, city leadership, and EU stakeholders. It offers a synthesized and comparative analysis of the legal frameworks, business models, and financing conditions shaping Local Energy Communities within the E2-CUTIES project, with a specific focus on pilot contexts in Leuven in Belgium, Strasbourg in France, Dublin/Balbriggan in Ireland, and Utrecht in the Netherlands. The analysis examines how legal and financial structures either enable or constrain the establishment and operation of local energy communities, compares national and local policy environments across the four countries, evaluates the role of municipalities as facilitators, partners, or co-owners, and draws cross-country insights relevant to scaling community-based energy systems. The findings also inform the development of E2-CUTIES toolboxes and roadmaps.

The study is based on a structured questionnaire completed by municipal authorities and energy community representatives, combined with a comparative policy analysis across the four EU Member States.

EU Context: Energy Communities in the European Energy Transition

Energy communities are formally embedded in European Union law through the Clean Energy Package, notably through the concepts of Renewable Energy Communities under the Renewable Energy Directive (REDII) and Citizen Energy Communities under the Electricity Market Directive (EMD). These EU-defined models emphasise open and voluntary participation, democratic control, and a primary focus on environmental, social, and local economic benefits rather than profit maximisation.

Since 2018, energy communities have gained increasing political importance across Europe, with more than 8,000 such initiatives active by 2025. The forthcoming Citizen Energy Package for 2026 further reinforces their role by framing energy communities as tools for affordability, mechanisms for grid flexibility and congestion reduction, and vehicles for citizen participation and social inclusion. Despite this growing policy attention, EU legislation deliberately refrains from prescribing specific business models, financing instruments, or legal forms, leaving substantial discretion to Member States. This has resulted in highly uneven national implementation, and none of the countries analysed has yet introduced a coherent national strategy dedicated to energy communities.

National and Local Frameworks: Comparative Insights

Governance and Legal Structures

All four countries operate within multilevel governance systems in which the EU establishes overarching principles and rights, national governments regulate energy markets and grid operations, and regions and municipalities implement policy at the local level. Within this shared structure, significant national differences emerge.

Belgium's highly fragmented federal system divides energy policy competences between federal and regional authorities, producing incoherent and occasionally contradictory frameworks. Municipal ambitions in Belgium often exceed their regulatory capacity.

France operates a strongly centralised and codified system in which local authorities primarily implement national energy strategies, relying heavily on planning law and zoning.

Ireland is also highly centralised, with strong national programmes that position local authorities mainly as facilitators and coordinators with limited legal influence over energy markets.

In contrast, the Netherlands grants municipalities explicit legal authority, particularly in the heating sector, where they are responsible for neighbourhood-scale heat transition planning and where public ownership and community ownership (warmtegemeenschap) of heat networks is embedded in national legislation.

Across contexts, a clear correlation emerges between municipal legal empowerment and the systemic relevance of energy communities, especially in relation to heating.

Energy Mix and Structural Path Dependencies

Structural differences in national energy systems further shape local energy community opportunities. In all four countries, progress in electricity decarbonisation has outpaced that in heating, with heat remaining the most challenging sector from technical, economic, and social perspectives.

France benefits from a largely low-carbon electricity mix dominated by nuclear power, which reduces urgency in the electricity sector but shifts pressure to heating and mobility.

Belgium combines a nuclear legacy with offshore wind deployment but faces distorted price signals that discourage investment in green heating solutions.

Ireland relies heavily on wind power for electricity while retaining predominantly fossil-based heating in existing buildings.

The Netherlands faces a strong historical dependence on natural gas, which has created political momentum for rapid transformation of local heat systems.

Cities, Energy Communities and City/Municipal Roles

Position of Cities/municipalities

Across all pilot cities, cities/municipalities primarily act as system integrators, aligning spatial planning, infrastructure, housing, mobility, and energy objectives. They function as facilitators rather than as energy market regulators or dominant investors and serve as anchors of legitimacy, citizen engagement, and coordination.

However, their effective leverage varies widely. Utrecht stands out as system orchestrators with legal authority to steer heat solutions and explicitly prioritize heat communities above other (public) heat providers. Strasbourg uses planning law to mandate photovoltaic deployment and district heating while offering institutional support to cooperatives. Dublin and Fingal rely largely on planning compliance mechanisms and national programmes, while

Leuven combines strong political ambition with limited regulatory and financial instruments due to Belgium's fragmented governance structure.

Energy Communities: Roles and Business Models

Energy communities in the pilot areas are evolving beyond simple ownership of renewable assets toward roles centred on service provision, flexibility, coordination, and broader system integration.

National patterns differ significantly. In Belgium, cooperatives often function as quasi-public actors and partners in infrastructure development. In France, energy communities historically emerged around feed-in tariffs and are now transitioning toward energy sharing models. In Ireland, communities focus more on mobilisation, planning, and retrofit support than on asset ownership. In the Netherlands, communities increasingly act as owners and/or co-owners of both heat and electricity infrastructure, supported by a favourable legal framework.

Despite growing legal recognition, most energy communities remain project-based and institutionally fragile, heavily dependent on subsidies and volunteer capacity, and constrained by administrative complexity and weak market incentives.

Economic Regulation, Financing, and Grid Access

Financing Barriers

Across all countries, financing barriers are most acute during early-stage project development.

The dominant challenges relate to funding feasibility studies, managing development risk prior to financial close, and accessing affordable debt and guarantees.

Municipalities rarely provide direct equity or guarantees and instead rely on the provision of public assets such as roofs and land, national and EU funding schemes, and intermediary organisations such as climate agencies or cooperative federations.

The Netherlands stands out for its comparatively advanced support mechanisms, including zero-risk development loans, dedicated subsidies for community energy, and planned equity funds, although some of these instruments are not all yet fully operational.

Grid Access and Energy Sharing

Access to energy grids has increasingly become the central structural constraint for local energy systems.

Severe grid congestion affects the Netherlands, while Ireland faces capacity and export limits, Belgium experiences growing demand-side congestion, and France benefits from relatively fewer barriers due to clearer rules for collective self-consumption.

In none of the analysed countries, energy communities enjoy privileged grid access.

Energy sharing is generally permitted by law but remains economically unattractive, and regulatory frameworks continue to favour individual connections over collective optimisation.

Heat networks represent one of the few areas without a natural monopoly, but they require high upfront investment, long payback periods, and public risk-sharing mechanisms to be viable for community-led initiatives.

Key Conclusions (ref. Chapter 3)

Comparative analysis leads to several overarching conclusions:

Legal recognition of energy communities without corresponding economic enablement is insufficient, as communities require operational rights, simplified administrative procedures, and tangible market advantages.

National and supra-local frameworks largely determine local success, with local ambition consistently exceeding local regulatory capacity.

Cities are indispensable as system integrators but lack commensurate powers and resources.

Heating emerges as the most relevant local leverage point for energy communities, yet remains financially and institutionally challenging.

Early-stage finance and project development capacity constitute critical weaknesses across all contexts, while grid regulation and congestion increasingly overshadow technology as the main barriers to scaling local energy systems.

Strategic Recommendations (ref. Chapter 4)

Strategically, the findings point to

- the need for EU-wide minimum standards for the implementation of energy communities and mandatory national strategies for energy communities,
- a shift from pilot-based support to long-term structural frameworks,
- recognition of energy communities as local system partners in grid and flexibility regulation,
- stronger empowerment of municipalities as coordinators of local energy systems,
- heat planning forming the backbone of local energy strategy, with explicit room for community ownership,
- early-stage project development and community capacity should be systematically funded, and
- social inclusion and affordability must be embedded as core design principles.

Message:
Local Energy Communities have the potential to become system-relevant actors in Europe's energy transition - but only if law, finance, grid regulation, and municipal mandates are aligned. Without this alignment, energy communities risk remaining isolated experiments instead of becoming a durable pillar of a decentralised, democratic, and resilient energy systems throughout EU.

1 Introduction

1.1 Objectives

The objective of this deliverable (D.2.1.4 – **Comparative legal frameworks, business models and financing** in E2-CUTIES) is to provide an analysis of the current legal challenges and opportunities for cities/municipalities and LECs in E2-CUTIES, to have an overview of business models and possible financing in the involved LECs.

In E2-CUTIES it is obligatory to describe and compare similarities and differences between legal and financial frameworks for the involved cities and pilot projects.

The legal and financial frameworks for the four involved countries, cities and pilot projects are described under chapter 2.

The structure of the legal and financial framework reflects a comparative approach.

The comparisons are based on a structured analysis based on some main points and under each of these several sub-points to elucidate the differences and similarities between the four countries, the four cities and seven energy communities involved and the external and internal circumstances that affect their establishment and functioning.

Main point one opens with a brief overview of the historical energy-political developments in each of the four countries and cities, establishing the foundations upon which current energy strategies are built (state and municipality).

The second main point focuses on general energy transition policy strategies and tools. It might be national strategies and legislation aimed at achieving carbon neutrality, promoting renewable energy, and improving energy efficiency and municipal strategies and regulations concerning local climate initiatives and energy plans e.g. based upon local planning tools. Identification of shared priorities such as fordable energy prices, grid modernization, electrification, and regional cooperation could be described, while pointing to differing timelines, institutional arrangements, and governance approaches.

The legal and financial framework should provide a comparative discussion of how energy communities are defined and conceptualized within each national context. It reviews the implementation of EU Directives, the emergence of citizen and renewable energy communities, and the varying degrees of legal, administrative, and financial support they receive.

Based on this input the following report is a comprehensive summary of the filled-in questionnaires from E2-CUTIES partners created with focus on summarizing the national and local energy policies seen from a local context.

To understand the context in which the legal and financial analysis take place at a supranational level, section 1.2 below describes the regulations and other measures that the EU has taken in relation to energy communities.

One main point is the EU system's regulations – another is how these are incorporated into national law in the individual countries.

1.2 Local Energy Communities as an Actor in EU

The Clean Energy Package, initially published on 30 November 2016, introduces energy communities into European legislation. The European Commission proposed for the first time to formally recognise community energy projects in European legislation. After over two years of negotiations, the approval of amendments to two Directives finalises and includes a definition for "Renewable Energy Communities" (RECs) in the recast Renewable Energy Directive (RED II)[1] and for "Citizen Energy Communities" (CECs) in the recast Electricity Market Directive[2]. Throughout this document the term "energy communities" or "local energy communities" is used to refer to CECs and RECs collectively.

The definitions of "Citizen Energy Community" (CEC) in the recast Electricity Market Directive (EMD) and of "Renewable Energy Community" (REC) in the Renewable Energy Directive (RED II) are similar but have some important differences. Both types of energy communities are entities that are set up as a legal person. They are defined by their structure. They must be effectively controlled by their shareholders or members, and their primary objective is to provide environmental, economic and social community benefits rather than financial profits. Although similar in their nature, there are a number of differences in the definition of citizen and renewable energy communities. The main differences are summarised in Table 1.

Table 1. Description of RECs and CECs.

Article 2 and 22 Renewables Directive "Renewable Energy Community"	**Article 2 and 16 Electricity Directive "Citizen Energy Community""**
A legal entity: (a) which, in accordance with the applicable national law, is based on **open and voluntary participation**, is **autonomous**, and is **effectively controlled by shareholders or members that are located in the proximity** of the renewable energy projects that are owned and developed by the legal entity; (b) the shareholders or members of which are **natural persons, SMEs or local authorities, including municipalities**; (c) the **primary purpose** of which **is to provide environmental, economic or social community benefits** for its shareholders or members or for the local areas where it operates, **rather than financial profits.** (d) **access to all suitable energy markets** both directly or through aggregation in a	A legal entity that: (a) is based on **voluntary and open participation** and is **effectively controlled by members or shareholders, including municipalities, or small enterprises,** (b) has for its **primary purpose** of which **is to provide environmental, economic or social community benefits** for its shareholders or members or for the local areas where it operates, **rather than to generate financial profits,** and (c) **may engage** in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency or charging services for electric vehicles or provide other energy services to its members or shareholders.

[1] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, amending Directive 2009/28/EC. Revised in 2023 - (EU) 2023/2413 of 18 October 2023 enables EU countries to promote energy communities in offshore wind and district heating and cooling networks. To mainstream renewable energies in buildings, countries may also decide to promote cooperation with local authorities through public procurement.

[2] Directive (EU) 2019/944 of the European Parliament and of the Council on common rules for the internal market in electricity, amending Directive 2012/27/EU.

	non-discriminatory manner, i.e. to produce, store and sell renewable energy, including through power purchase agreements and to share renewable energy within the community.	

In terms of regulatory treatment, the key difference between CECs and RECs lies in the nature of the Directives from which they emerge.

Differences exist between citizen energy communities (defined in the EMD, Articles 2 and 16) and renewable energy communities (outlined in the REDII, Articles 2 and 22). These differences stem from the distinct rationales underpinning the two Directives. The EMD emphasizes competition and efficiency in cross-border electricity markets, largely reflecting input from major utility companies. In contrast, the REDII is more explicitly designed to support the expansion of renewables and build on cooperative models and collective bargaining, often promoted by grassroots and community-based actors. As a result, the two community types differ in scope and function: citizen energy communities can operate across all segments of the electricity market, while renewable energy communities are limited to renewable energy activities. These distinctions may lead to conflicting outcomes or regulatory uncertainty, and they underscore the ambivalence embedded in the dual framework. For energy communities to realize their full potential in contributing to a decarbonized and inclusive energy system, it is essential that policymakers consider these frameworks in a complementary and integrated manner, rather than treating them as separate and unrelated legal entities.

CECs

While CECs are formally *recognised as a market actor* in the recast EMD (Article 16), the text purely aims to create a level playing field for them in the energy market.

It should be emphasized that the EMD (Article 16.3) stipulates that the state must ensure that CECs

(a) can access all electricity markets, either directly or through aggregation, in a non-discriminatory manner;

(b) are treated in a non-discriminatory and proportionate manner regarding their activities, rights and obligations as final customers, producers, suppliers, distribution system operators or market participants engaged in aggregation;

(c) are financially responsible for the imbalances they cause in the electricity system; to that extent they shall be balance responsible parties or shall delegate their balancing responsibility in accordance with Article 5 of Regulation (EU) 2019/943;

(d) regarding consumption of self-generated electricity, citizen energy communities are treated like active customers in accordance with point (e) of Article 15(2);

(e) are entitled to arrange within the citizen energy community the sharing of electricity that is produced by the production units owned by the community, subject to other requirements laid down in Article 16 and subject to the community members retaining their rights and obligations as final customers.

Finally, Member States may decide to grant citizen energy communities the right to manage distribution networks in their area of operation and establish the relevant procedures following the conditions in article 16.4.

It must be emphasized that the supporting implementation concerning CECs has been on a minimum level.

RECs

RECs on the other hand, emerge from the REDII (Article 22) which updates the framework for the promotion of energy from renewable sources. In that sense, the REDII foresees that *Member States provide an enabling framework that is subject to the provisions relevant for the different activities (supplier, aggregator, etc.) to promote and facilitate the development of RECs*. For example, according to the REDII, Member States shall consider specificities of RECs when designing support schemes to allow them to compete for support on an equal footing with other market participants.

The Affordable Energy Action Plan[3] puts forward energy communities as a solution to benefit from affordable renewable energy, emphasising the importance of strengthening these initiatives to allow local communities, citizens and companies to collectively invest in clean energy projects at local level; thereby allowing them to produce, sell and consume their renewable energy.

The Commission urges EU countries and regions, when reprogramming under the mid-term review of the Cohesion Policy[4], to contribute to the Affordable Energy Action Plan by providing support to the completion of energy communities and strengthen support for collective and citizen-driven energy actions, for example the creation of energy communities, through increasing administrative capacities to provide technical and financial advice.

In addition to introducing policy measures to achieve energy saving obligations, the recast Energy Efficiency Directive - EED - (EU) 2023/1791 requires local heating plans to assess the potential of energy communities to develop renewable energy-based heating projects.

The recast Energy Performance of Buildings Directive - EPBD - (EU) 2024/1275 requires that building renovation plans report on the role of energy communities. It also recognises renewable energy produced by an energy community as a possible energy source for zero-emission buildings and requires EU countries to put measures in place to ensure adequate information and training for all relevant market actors including energy communities.

On 10 March 2026, the Commission published the “Citizen Energy Package” (COM/2026/115) as a supporting implementation of a stronger role for energy communities in the Member States.

The package contains the following message[5]:

[3] Commission presentation on 26 February 2025 (COM/2025/79) – in October 2025 followed by action on 7 priority areas to accelerate energy price relief on industries and households.
[4] The Regional Policy of EU, also referred as Cohesion Policy, is a policy with the stated aim of improving the economic well-being of regions in the European Union and also to avoid regional disparities. More than one third of the EU's budget is devoted to this policy, which aims to remove economic, social and territorial disparities across the EU, restructure declining industrial areas and diversify rural areas which have declining agriculture.
[5] Page 1, section 4.

Citizens – for instance, farmers, rural inhabitants, small-business owners or kindergartens – should be able to team up and produce and share their self-produced energy. This takes pressure off local energy grids and prevents unnecessary investments in energy infrastructure. The financial and technical requirements to set up energy communities should be clear and simple.

The Commission sets goals on different action plans in the package. One of the most important action plans for energy communities is shown in the following table.

Table 2. Action Plan: Boosting energy self-production and energy sharing among citizens.[6]

Goal	**Tapping into the potential of energy communities to increase their installed renewable energy capacity by up to tenfold by 2030 in the EU, enabling the production of renewable power for 25–30 million households.**
Result	Potential savings of **EUR 260-550 per year** for individual households and potential financial benefit of **EUR 440-930 per year** for communities.
How	The Commission will provide **guidance to Member States on how to unleash the potential energy communities and energy self-consumption**, including sharing good practices. on the basis of an assessment of potential and existing barriers (Q1 2026); adopt an **implementing regulation on data interoperability** to ensure that energy sharing is easy to use and fully automated for consumers (2027); and issue a series of **practical, step-by-step guides** on how to set up and manage community energy projects for households and other stakeholders, including SMEs, farmers and public authorities (2026-2027).

The action plans will be followed by implementation instruments and guidance.

Summary on the role of energy communities in EU – the supranational approach

As can be seen from the above, the Directives and the supporting implementation documents from the Commission allow Member States to promote energy communities by fully incorporating the provisions of the Directives.

Several energy community friendly initiatives have been launched by the Commission within and outside the framework of the Directives especially under the Renewable Energy Directive to position energy communities at the local level.

This should be seen in the context of the fact that there are still hesitations in the individual Member States to fully incorporate the provisions of the Directive on energy communities, and there is a reluctance to simplify, for example, the process of setting up energy communities.

This report focuses through a comparative analysis on how the four Member States (Belgium, France, Ireland and the Netherlands) have incorporated EU legislation in their respective states, and how that legislation has influenced the local pilot projects in E2-CUTIES.

[6] Page 6.

The role of local authorities - municipalities

The REDII instructs Member States the following: [7]

Member States shall ensure that their competent authorities at national, regional and local level include provisions for the integration and deployment of renewable energy, including for renewables self-consumption and renewable energy communities,……

…. Member States shall, in particular, encourage local and regional administrative bodies to include heating and cooling from renewable sources in the planning of city infrastructure where appropriate, and to consult the network operators to reflect the impact of energy efficiency and demand-response programmes as well as specific provisions on renewables self- consumption and renewable energy communities, on the infrastructure development plans of the network operators.

While the Directives contain regulatory provisions concerning the states, there are very few provisions on the possibilities for local authorities – municipalities – to influence the establishment of energy communities.

Regional and local planning of energy systems for heat and electricity is the focus of the directive, but local authorities, regardless of the lack of regulatory basis for them, have wanted to promote the establishment of local energy communities.

Most importantly, local authorities can become a direct party to both types of energy communities.

The Directives do not contain any guidance on how the local authority can join the Energy Communities, except that the general provisions on the legal entity of the Energy Communities must be complied with (see Table 1).

These can be legal and financial challenges for local authorities that join energy communities because:

- the articles of association of energy communities, which are based on agreements between the parties involved, must necessarily be adapted to municipal conditions,
- there may be unfamiliar tasks for the local authority that require insight and perhaps human resources,
- there may be built-in contradictions between the role of authority and the role of member in an energy community,
- there may be conditions in legislation, including local planning basis, or administrative practice that is not in harmony with the establishment of local energy communities,
- procurement rules for public authorities must be complied with, and
- there may be legal and financial challenges in injecting municipal capital into the energy community.

[7] RED art 15,3

The above are just examples of the conditions that should be specifically considered to ensure a direct commitment to the energy community.

In addition to direct involvement, local authorities can provide assistance to local energy communities at different levels. These may be practical measures such as premises facilities, secretariat assistance or other services that help the energy communities on their way, but there may also be local opportunities to provide economic support for the establishment of energy communities based on local energy policy interests.

The role of local authorities is described in the Citizen Energy Package. The following is an extract from the package under the headline "Implementing the Existing EU Laws"[8]:

Local authorities *have a key role in supporting and engaging with citizens, but they are often insufficiently involved in policy development and* ***lack the powers and means*** *to deliver measures to citizens.*

The Commission will work with Member States and the relevant stakeholders to help implement and enforce EU laws – in particular, by adopting ***guidance and technical analysis*** *on energy communities and self-consumption including an action plan on energy communities...*

and further [9]

The Commission will also issue guidance for Member States to empower cities, supporting them to unlock the full potential of local authorities in delivering the clean energy transition.

The Commission's package states that the Member States must focus more on the implementation of energy communities by increasing the opportunities for local promotion of the instruments needed to achieve the goals set by the Commission. At the same time, it is recognised that local authorities lack opportunities to participate in the implementation of local energy communities.

This report contains an analysis of how local authorities in the four countries/cities can be a direct party and can promote the establishment and operation of energy communities in ways other than direct involvement.

General development of energy communities since 2018

According to the 10th State of the Energy Union report, published in November 2025, more than 8 000[10] energy communities exist across the EU.

The Citizen Energy Package aims to provide guidance on how consumers can participate in and benefit from renewable energy and demand response, including as part of an energy community or via energy sharing.

[8] Page 10.
[9] Page 11.
[10] Estimate based on a broad interpretation of the concept, not limited to the EU definitions alone.
The report reiterates the critical need to build a secure and resilient Energy Union providing clean and affordable energy.
The report findings will guide EU energy and climate policies on the path to 2030.

Looking at the EU efforts local energy communities are positioned to play an increasingly vital role as a complement to regional and local energy supply networks.

Energy communities have numerous energy tasks to fulfil e.g establishing renewable energy installations for local consumption, promoting energy efficiency, reducing peak demand and providing system flexibility by integrating energy production and consumption in the bigger system. Local energy communities offer a decentralized, resilient, and participatory energy infrastructure.

The great opportunity for energy communities is the development of interconnected and flexible local energy systems that integrate local renewable energy production and the management of consumption patterns over different times, with the aim of balancing local energy production with local consumption. The performance of these tasks alone, based on the participation of local actors, can be expected to have a positive impact on consumption patterns, with a consequent positive effect on the local CO_2 accounts. Local sector coupling, where heat is produced by local use of electricity from e.g. wind turbines or photovoltaics, will increase local energy efficiency for the benefit of the larger energy system.

Through the energy communities, the role of consumers is changed from being passive consumers, whose consumption is read by meters and often without influence on production and pricing, while energy communities change the role of consumers to conduct an active local energy supply with local ownership and price control.

Local ownership can take place in the forms permitted by national legislation – EU rules do not impose any restrictions, as long as the rules on influence and participation are respected.

The key focus for energy communities is shared ownership, democratic governance, and local benefit from renewable energy initiatives.

The directives and accompanying documents reflect a return to the principles of democratic participation and local ownership in energy supply. Energy systems in the EU are to a significant extent characterized by a three-part of the energy supply: production, distribution and consumption fulfilment. Around the EU, large energy companies have been established with central production facilities that have supplied the distribution network with the necessary energy. With the energy communities, the energy supply is transformed into a local matter – a decentralised system with local influence and benefits for local communities. With the equality for energy communities as players in the energy market, an energy model has been introduced that competes with that of energy companies operating according to free market principles in the liberal energy market that is dominant in the European Union. This can be expressed in the way that it is possible to choose between a specific market model or an inclusive energy model that, in addition to the energy supply, may have a social and cultural effect.

By creating equality for the energy communities as energy market players EU places energy communities at the heart of its vision for a citizen-driven energy transition.

When it comes to the implementation of the EU system's vision, the analyses in this report will show how far the participating countries – Belgium, France, the Netherlands and Ireland – have gone, especially in the context of the pilot projects included in E2-CUTIES.

Legal Structure and Financial tools in EU regulation

Neither the Renewable Energy Directive nor the Electrical Market Design Directive provide for the **type of legal entity** in which energy communities can or must be established.

The starting point is therefore the national laws or practices relating to the establishment of a legal person.

If you want to establish an energy community as a company that is covered by EU company law, this must be established according to the rules laid down therein. These are typically limited liability companies. It must be ensured that this type of company is recognised as applicable under the rules on energy communities.

EU is currently working on a new form of company law (EU Inc.), which was published by the Commission on 18 March 2026 COM (2026/320). EU Inc. will establish a new, harmonised corporate legal regime across the European Union. While particularly designed for innovative companies and startups, it will be available to any founder who considers it suitable, alongside existing national company forms.

The Proposal for an EU Inc. corporate legal framework provides faster (within 48 hours), cheaper (maximum EUR 100) and fully digital company registration, simplified procedures throughout the company life cycle, easier digital share transfers and capital operations, support for modern financing instruments, and the possibility for Member States to allow access to public equity markets.

Financially, the Directives do not contain any instructions on how the energy communities are to finance their activities.

However, there are EU regulations that can have an impact on energy communities' financing of their activities. Some chosen examples are described below.

Crowdfunding is regulated by EU in Regulation (EU) 2020/1503 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 October 2020 on European crowdfunding service providers for business and amending Regulation (EU) 2017/1129 and Directive (EU) 2019/1937.

The Crowdfunding Regulation aims to facilitate the financing of a project by raising capital from many people, each contributing relatively small amounts of investment, through a crowdfunding platform.

Guarantee from the city/municipality

It may be a prerequisite for utility companies, including energy communities, to take out a loan that a municipal guarantee is provided for the loan.

The main reasons for the requirement to levy a guarantee commission stem partly from EU state aid rules and partly from national legislation on energy supply. In relation to the EU's state aid rules, these usually apply where there is a competitive market. The protection concern here is that no aid or assistance may be granted with public funds which may distort or threaten to distort competition by favouring certain undertakings. If a municipality provides a guarantee for a company, which thereby obtains a lower interest rate on a loan, without charging a

guarantee commission, the municipality will thereby indirectly provide support to the company[11].

1.3 Legal and Financial Framework Of The Analysis

It is the intention of the analysis that both cities/municipalities (*as public authorities and/or active stakeholders in LECs*) and pilot projects (LECs) comment on the same legal and financial framework with items mentioned below. The framework and items are described in a questionnaire which is distributed to the pilot projects, i.e. cities and Local Energy Communities (LECs). The questionnaire is based on the following agenda, which must be commented on by all pilot projects:

- **Setting the scene**. Development of local energy systems (state, city and local stakeholders' roles) combined with national politics. A short presentation about historical developments of the energy mix (e.g. electricity, heating and renewable energy), overall climate policy targets, description of the energy market for each country and challenges. (It is expected that the scene setting can be described on 2-3 pages).
- **Policy and legal framework concerning LECs (state and cities)**.
    a. Policy strategies. Strategic goals and policy framework, energy development plans and programs, climate change plans, legal initiatives concerning planning and energy infrastructure.
    b. Policy steering. Instruments related to energy transition, renewable energy, and legal status of energy communities, e.g. electricity and heat supply acts and the promotion of renewable energy. Legal definition of LECs and legal forms and restrictions for LECs. LECs legal engagements.
    c. Economic regulation and organization. Description of involved authorities, controlling systems (e.g. price control), consumer protection, competition on the energy market (electricity and heat) and fees/tariff systems. How does the system influence the establishment of LECs?
    d. Facilitating tools from public authorities. Facilitating platforms (organizations) and actors (first movers), examples of projects and funding schemes promoting energy communities (including local funding).
    e. Facilitating tools concerning grid connection. Agreements with and/or regulations from district grid owners/operators (DSOs, i.e. electricity and heat) with the purpose to enhancing the establishment of LECs, e.g. possibilities to have internal grids for the LECs with a local and independent tariff system combined with supply security from the DSOs.

All pilot projects have commented on the agenda, and the comments are the backbones of this deliverable.

[11] Reference is made to the Commission's communication (2008/C 155/02).

1.4 Intended Audience

This deliverable is primarily intended for partners within the E2-CUTIES project, including cities, energy communities, research partners, and intermediary organisations working on Local Energy Communities (LECs). It provides a comprehensive overview of the main legal and financial needs and challenges experienced by the different actors involved across the various pilot projects/cities, thereby supporting shared learning within the consortium and informing the development of the E2-CUTIES toolboxes and step-based roadmap.

Beyond the E2-CUTIES partnership, this deliverable is also relevant for external stakeholders, such as local initiatives, cities/municipalities, and support organisations in other European contexts. The challenges and best practices presented can be used to better understand iterative financial, and legal challenges, to avoid legal and financial barriers for public and civic stakeholders, and to support legal and financial activities for LECs.

1.5 Methodology for Legal and Financial Analysis

The members of the steering committee agreed that the analysis should be prepared on a uniform basis. Therefore, EBO Consult prepared a draft questionnaire for all project participants, which included various thematic topics that are found relevant for a comparative analysis of law, business models and financing. The key to the questionnaire is how legal and financial barriers and opportunities are handled in the local work with energy communities. Against this background, the target group of the questionnaire is primarily the members of the energy communities and representatives from the cities involved in the project. See the themes in section 1.3 above.

The draft questionnaire was accepted by the project participants with few corrections. Subsequently, the final questionnaire was sent at the end of December 2025 to all project participants who are related to the daily work with the energy communities in the project.

In mid-March 2026, the final answers were received.

This process ensured accuracy, comparability, and contextual reliability.

The validation process took place in 2 stages with reviews and contributions from all participating pilot partners.

This deliverable was written and managed by Erik Christiansen, EBO Consult (EBO). The respondents on the questionnaire have contributed with information and texts related to the thematic focus points.

2 Analysis Based on Reports from the Pilots

2.1 The Seven Local Energy Communities (Pilots)

Belgium - Leuven

The **LEC Boomgaard** is in Leuven and initiated by the cooperatives Livez (focused on social care and housing) and ECoOB (a citizen energy cooperative with 1,300+ members), with support from the City of Leuven. It is based around two newly constructed buildings for inclusive living, designed to host 36 residents with care needs, and potentially connect to 10 surrounding houses and 2,000 nearby families for shared services. The cooperative will manage collective renewable energy infrastructure, including heat pumps, PV, and a heating network. Its goals are to deliver affordable, renewable-based energy services through an ESCO model while combining care, comfort, sustainability, and citizen participation.

The **LEC Meunierstraat** in Leuven "Nieuw Kwartier" district, focuses on creating a collective geothermal-based heat network during planned street renovations. Partners include ECoOB, the City of Leuven, a local school (De Appeltuin), the local hospital, and a social housing company. The project aims to provide a clean heating system for 112 residential buildings, 302 housing units (including student rooms), and the school, while potentially linking to hospital cooling to regenerate the borehole system. The ambition is to pilot one of Belgium's first neighborhood-scale renewable heat networks, combining technical innovation with cooperative and municipal governance. Compared to LEC Boomgaard in Leuven- focused on an inclusive living model combining care and energy- the LEC Meuniestraat is more infrastructure/ technology-driven.

France - Strasbourg

The **LEC Strasbourg** is coordinated by the Eurométropole de Strasbourg, working together with the local energy cooperative Les Brasseurs d'Energies and the Agence du Climat (climate agency). The LEC was formed within the city's climate action framework to address high energy demand and retrofit needs in multi-family housing. Its goals are to improve energy efficiency, develop renewable energy systems, and ensure inclusive participation of tenants and residents, particularly in vulnerable communities. Within the LEC, a special focus is given to the creation of at least one collective self-consumption loop. Collective self-consumption is seen as a way to address the above-mentioned challenges and objectives.

Ireland - Dublin

The **LEC Dublin-Balbriggan** brings together the Balbriggan Sustainable Energy Community (SEC), a citizen-led cooperative formed in 2021 and legally registered in 2022, and the Fingal County Council (FCC). The SEC is a small group of three local citizens who completed an Energy Master Plan (EMP) covering Balbriggan and its surroundings. Their goals are to promote community-led energy efficiency, develop renewable projects such as solar PV and a community-owned solar farm, explore local energy sharing, and integrate nature-based solutions. FCC supports through funding and coordination within the

Balbriggan Decarbonising Zone, aligning the LEC with national climate targets for 2030 and 2050.

The Netherlands - Utrecht

The **LEC Oog in Al** is organised around the Oog voor Warmte energy cooperative in collaboration with the municipality of Utrecht. The University of Applied Science of Utrecht and the energy cooperatives association Energie Samen also support the LEC. The initiative was formed by local residents who want to explore sustainable alternatives to natural gas and develop a collective energy transition strategy for their neighbourhood. The LEC goals include building resident engagement, increasing energy efficiency, and investigating medium-temperature district heating, most likely based on aqua-thermal energy from nearby canals.

The **LEC Noordoost** centres on the neighbourhood cooperative Griftstroom and is supported by the municipality of Utrecht. The University of Applied Science of Utrecht and the energy cooperatives association Energie Samen also support the LEC**.** Formed as a resident initiative, Griftstroom aims to offer a holistic district energy system with sustainable heating alternatives, PV and efficiency measures while also achieving social goals. Griftstroom aims to ensure that the transition is inclusive, affordable, and collectively owned across the eleven neighbourhoods in the area.

The **LEC Lunetten** in Utrecht is organised under Warm Lunetten, a community-driven initiative with a mission of reducing energy demand, exploring alternative heat sources, and ensuring all residents, homeowners, tenants, and homeowners associations can participate. It was formed by residents in Lunetten, supported by the municipality of Utrecht. The University of Applied Science of Utrecht and the energy cooperatives association Energie Samen also support the LEC. The main goal of LEC is to make the neighbourhood gas-free by developing a collective, sustainable, and affordable heating solution for all residents. The LEC also aims to strengthen the energy community's role in the neighbourhood, accelerate its development, ensure diverse representation of stakeholders, and foster public-civic collaboration so that local interests are reflected in municipal policy and planning.

2.2 Setting The State and Energy Community Scenes

The analysis is based on the **conditions for energy communities in the four countries**, described by respondents in each city.

It should be emphasized that 5 out of the 7 pilot projects are about heat supply, while one (in Strasbourg) is about electricity supply. The Dublin pilot project has several goals based on a comprehensive Energy Master Plan. For this reason, there may be deviations in the answers, because heat and electricity supply can have different legal and financial bases both in EU law and in national legal systems.

2.2.1 Belgium

2.2.1.1 The Energy Market

Belgian division of authorities in the energy sector

As with most policy domains, the development of Belgian energy & climate policies cannot be described without taking into account the 6 state reforms, which created an asymmetric and not-hierarchical legal structure with a (Belgian) federal government, 3 regions (Flanders, Brussels & Wallonia) and 3 “communities” (Dutch, French and German). When it comes to energy & climate policies, there is a division of authorities between the federal and regional governments.

The **federal government** is responsible for:

- the regulation of the electricity and fossil (natural gas and oil) **markets** (including energy suppliers & customer protection…)
- long-term **security of supply** (including decision-making on **nuclear** energy, **offshore** wind power, **capacity** guarantee systems (e.g. compensation for back-up electricity production), imports of fossil fuels)
- **Transmission electricity grids** (including building new connections, net balancing…) and **high-pressure natural gas grids** (including LNG terminals, gas storage)
- Taxes & VAT
- Social energy tariffs

The **regional governments** are responsible for:

- **Renewable energy development** (including support schemes for wind, solar, heat pumps, biomass, district heating…)
- **Building permits** (including those for wind turbines, transmission grids, back-up power plants on natural gas…)
- **Building regulations** (incl. energy standards for new and renovated buildings)
- Regulation of **distribution grids** (electricity & natural gas)

This division of authorities led to a different approach in the 3 regions based on the economical, special and environmental context and on political preferences. Unfortunately, it also led to **non-aligned and incoherent policies** between the regions and state-level, and sometimes even to explicit sabotages of specific policies from the federal government by the regions and vice versa.

Historical perspective on the electricity mix

Since the end of the second world war, the development in the electricity mix can be divided in 5 phases. In the period before the '70, thermal power plants with (Belgian) **coal** formed the backbone of the electricity grid, which had a centralised design. Over a period of 50 years, coal was phased out as an energy source (with the closing of the last coal-mine in 1992 and the last coal-based power plant in 2016 as the endpoints). In the 70-ties, the oil crisis leads to the development of a substantial production capacity of **nuclear** power, with a total capacity of 6 GW in 1985. Starting from the 90-ties, the production capacity increased with the building of multiple CCGT's (flexible **gas** power plants). The 4th phase is characterized by the rise of **renewable energy** and (planned) phase-out of nuclear energy. Intensive subsidisation led to an early (but expensive) roll-out of PV in Flanders and a moderate development of onshore wind. With favourable (natural) conditions, Belgium was also a frontrunner in the development of offshore wind power. After the completion of 2.261 MW of offshore wind in 2020, Belgium had the 4th largest offshore wind capacity in Europe and has afterwards only been surpassed by Denmark.

The current phase can be summarized as one of **doubt and uncertainty**. Lower product prices and higher energy prices (especially during the energy crisis in 2021-2022) have boosted the development of PV, but changes in regulations and support schemes led to multiple market collapses (and new boosts) in Flanders. Ending support schemes, higher product prices and a difficulty with building permits led to a decrease of onshore wind development in Flanders. A new public tender for offshore wind (in the Princes Elisabeth Zone) gave perspective for wind developers (including energy cooperatives who collaborated in Seacoop), but the new federal government paused the tender process. The federal government also introduced a new (highly contested) capacity support scheme (which led to the building of 2 new gas power plants) and forced a prolongation of 2 GW of nuclear power with 10 years.

General energy mix

The electricity system is of course only part of the story. Electrification is the centre of the energy transition, but the largest part of the energy consumed in Belgium, consists of **(mainly fossil) molecules** for heating & industrial processes (mainly **natural gas** in Flanders and Brussels and a combination of natural gas and **fuel oil** in Wallonia) and mobility (mainly **petrol & diesel**). With the exception of 2,5 to 3 TWh of locally produced biogas (mainly used in CHP's, all fossil fuels are imported. Natural gas (about 150 TWh/year) comes through pipelines from the Netherlands, Norway, UK and France and through an LNG terminal from Qatar, US (increasing) and Russia (decreasing). Raw oil is more diversified, with import from OPEC-countries, Norway, US, UK, Kazakhstan and Guyana (no more official import from Russia since 2023).

The **green heat transition in Flanders** is proceeding very **slowly** and is driven mainly by regulations for new buildings and support for industrial e-boilers, heat pumps and DHC. In contrast to Wallonia, biomass is not actively promoted in Flanders. The absence of substantial taxes on fossil fuels and a historical burden of many costs added to the electricity

bill (incl. public lighting, subsidies...) makes heat pumps (and DHC) financially unattractive. However, a tax shift is in practice to be expected with a combination of a shift in federal taxes, an unburdening of the electricity bill (due to a phase-out of historical subsidies and a shift in some other costs) and the implementation of ETS2, making green heat (individual and collective) more attractive. The **electrification of cars** has taken up quickly, mainly driven by an attractive fiscal framework for company-owned EV's and a breakthrough in the second-hand EV-market is expected to create a similar (but slower) impact on private-owned EV's.

Energy market description

The shift towards renewable energy and reduction of nuclear power leads to a **decentralization** of electricity production. This decentralization **diminishes the monopoly position** of some large energy companies, be it at a smaller scale (since they also invest heavily in renewable energy). The development of **offshore wind** can be seen rather as a large-scale production plant, leading to an **increased transmission capacity demand**. Belgian **distribution nets** are extremely reliable but also faced with a quick increase in capacity demand. In contrast to the transmission grid, the main driver of distribution capacity demand is the electricity demand (due to electrification of industry, heating and mobility) rather than decentral electricity production.

Local context & challenges

Although most of the energy transition is steered, regulated and facilitated by the regions and federal government, local governments are essential to enable a smart and cost-efficient transition. They are well positioned to **support and cooperate with energy communities (EC's)** and connect with **citizens**. The city-level is the right scale to **integrate** energy, management of public domain, urban development etc., both on the level of **policy** development and in the facilitation and implementation of **district (or street) transitions**. Compartmentalisation is not absent in local administrations, but collaboration between departments is much more a standard practice compared to the supra-local governments.

Although the regions acknowledge the essential role of local governments, their **(financial) support and willingness to collaborate and involve them is limited**. Since this is not only the case for energy & climate policies, cities are in practice forced to choose between investing in energy-related projects, housing policies, cultural development, poverty reduction… Integration of projects improves quality and can lead to overall cost efficiency but is no magical solution for structural underfunding. Local governments are often involved in the development of DHC, but regional funding for this is provided by a **competitive and unpredictable "call-system"**, not by structural funding. This method is designed to support industrial residual heat exchange but doesn't take the specific long-term development of urban DHC into account. Finally, there is no tradition in collective heat systems in Belgium and Flanders and thereby **the market for collective heat is underdeveloped.**

Challenges on multiple government levels also create specific **opportunities for energy communities**. EC's can be essential in creating public support & participation, providing net relieve (avoiding excessive investments in electricity grids, especially when they are active on green heat and electrical mobility). Especially when it comes to green heat development on a district level (including DHC and individual heat pumps in a virtual energy system), **EC's and local governments have complementary leverages and are natural partners**.

2.2.1.2 Setting the Scene for Energy Communities/Cooperatives

Energy communities in Flanders have historically emerged primarily as a response to market failure and as a tool for citizen participation in renewable energy production. Energy communities are mainly organized through 32 citizen cooperatives (REScoops).

Their role before 2019 was typically:

- project developer and (co-)owner of wind and later PV;
- mobilizing capital from citizens (cooperative share);
- creating public support for wind and local projects;
- also acting as an energy supplier via Ecopower.

Their historical distinctive capacity lay in governance (one person = one vote), local legitimacy, and an explicit focus on social value rather than maximum profit.

Energy communities can fulfill four public functions that traditional market players are less focused on:

- Local value creation and keeping profits local
    - Reinvesting profits in the region (renovation, energy poverty, new projects) instead of maximizing dividends.
    - Transparent cost structure and democratic control.
- Support and trust
    - Support is crucial for wind, heat, charging infrastructure, and grid reinforcement. Cooperatives have local credibility.
- Fairness through inclusive participation
    - Mechanisms such as “friends shares,” staggered entry, social tariff-like solidarity funds, or local energy saving programs.
- Collective organization of flexibility
    - Aggregation and control (batteries, smart charging, heat pumps) at the neighbourhood level: not just technology, but governance (who decides, who benefits).

Trends that increase the role

- Grid congestion and high connection costs make local optimization essential.
- Imbalance and price volatility shift value from kWh to flexibility (kW and timing).
- Heat transition requires an area-specific approach, which is pre-eminently local.
- Energy sharing and energy communities are legally possible, but still complex in economic and administrative terms: cooperatives can accelerate this process.

Energy communities are shifting from “producer-owner” to energy service provider and system partner: flexibility, energy sharing, renovation support, local energy hubs. The key

question becomes: who organizes and who owns (part of) the infrastructure and data that drive the energy transition?

How can cities and energy communities reinforce each other?

Complementary strengths

- Cities/municipalities: public legitimacy, scale, access to space, planning, procurement power, long term.
- Energy communities: mobilizing citizens, raising capital, local acceptance, governance, transparency, implementation expertise (project development).

Together, they can build a model that preserves market forces but maximizes public value.

Concrete cooperation models (Flemish realistic)

1. Cooperative concessions on public space
    a. City provides roofs/land/parking lots; cooperative develops and operates.
    b. Contractual: return ceiling, local participation, profit sharing, reinvestment obligation.
2. Joint ventures or SPVs with public and cooperative shareholders
    a. Clear governance: public goals + cooperative control.
    b. Ideal for: heating projects, charging infrastructure with neighbourhood function, neighbourhood batteries.
3. Urban “one-stop shop” + cooperative implementation
    a. City organizes service desk, data, communication; cooperative provides technical and financial support (PV, heat pump, renovation, smart charging).
    b. Fits with fairness: inclusive financing, support for vulnerable target groups.
4. Local flexibility pools
    a. City as facilitator (recruitment campaign, link with grid operator); energy community as organizer/aggregator.
    b. Focus: peak reduction, smart charging, heat pump control, neighbourhood battery.
    c. Result: less grid reinforcement, lower system costs, local revenue.
5. Social energy fund from local energy revenues
    a. Part of project revenues (PV/wind/charging infrastructure) goes toward combating energy poverty or renovating vulnerable homes.
    b. City monitors target groups; cooperative manages transparently and democratically.

What is needed to make this work?

- Clear role agreements: city as director/condition creator, cooperative as executor/owner-partner.
- Contractual mechanisms against excess profits: transparency, audit rights, return ranges, reinvestment clauses.
- Easy participation: low threshold entry, even for people without savings (e.g., via municipal loans/guarantees or social participation funds).
- Data and measurement infrastructure: without metering, settlement, and control, energy sharing and flexibility remain a paper model.
- Coordination with grid operators: projects must explicitly contribute to grid objectives (peak reduction, congestion management).

2.2.2 France

2.2.2.1 The Energy Market

Expansion of nuclear power (1970s-1990s)

Following the oil crises of the 1970s, France embarked on a proactive policy of developing nuclear energy to ensure its energy security and reduce its dependence on imported hydrocarbons. This strategy led to the rapid construction of a large nuclear power plant fleet. By the 1990s, nuclear energy already accounted for a major share of national electricity production, marking a profound transition in the energy mix.

The beginning of the transition to renewables (2000s-2010s)

From the 2000s onwards, growing climate concerns and European policies encouraged the development of renewable energies (wind, solar, biomass, hydro). Although their initial share remained modest, these sectors gradually gained in importance, especially in electricity production.

Energy transition and diversification (2010–present)

With the adoption of national laws for energy transition (notably the 2015 law), France began setting binding targets to reduce greenhouse gas emissions, decrease the share of fossil fuels, and increase that of renewables. The Multi-Year Energy Program (PPE) set targets for increasing wind and solar capacity.

Today, the French electricity mix remains dominated by nuclear power, which continues to provide the majority of low-carbon electricity, while renewables are rapidly gaining ground. In 2024, nearly 95% of the electricity produced came from low-carbon sources (nuclear + renewables), illustrating a significant decarbonization of the electricity sector.

https://www.universite-paris-saclay.fr/actualites/quand-ca-bouge-dans-le-mix?utm_source=chatgpt.com

https://www.green-news.info/evolution-de-la-part-des-energies-renouvelables-dans-le-mix-energetique-de-la-france-un-apercu-detaille/?utm_source=chatgpt.com (in French)

The relationship between local and national authorities in France is structured as follows:

National authorities define the overall energy strategy, decarbonization targets, the Multi-Year Energy Program (PPE), and plans to achieve carbon neutrality by 2050. They set priorities for the development of renewable energies, the closure of fossil fuel power plants, and the improvement of energy efficiency.

Local authorities (regions, departments, municipalities, inter-municipal bodies) play an essential operational role. They are responsible for implementing the energy transition in their territory through:

- the development of territorial climate-air-energy plans (PCAET),
- the support and development of local renewable energy projects (solar, wind, biomass),
- the energy renovation of buildings,
- the promotion of sustainable mobility.

The multi-year energy program, established by decree, defines the measures to be taken by public authorities for the management of all forms of energy on the mainland, in order to achieve the objectives, set out in the code de l'énergie.

https://www.legifrance.gouv.fr/codes/section_lc/LEGITEXT000023983208/LEGISCTA000023985876/2024-06-10/?utm_source=chatgpt.com (in French)

2.2.2.2 Setting the Scene for Energy Communities/Cooperatives

- On December 26, 2023, the publication of the decree on energy communities finalized its definition in French law.
- Since before 2014, energy cooperatives have been operating in France by pooling resources to invest in renewable energy assets. Business models were strictly based on feed-in tariffs.

2.2.3 Ireland

2.2.3.1 The Energy Market

Ireland: energy mix and climate-policy direction

Ireland's energy transition is guided by national climate policy and regulation, implemented through energy markets, networks, incentives, and standards. Decarbonising electricity is a cornerstone because it enables low-carbon heat and transport.

Energy mix (high level)

- Electricity: growing renewable generation (wind dominant; solar rising), reducing fossil dependence over time.
- Heating: continued reliance on gas and oil in existing buildings; decarbonisation requires fabric upgrades plus system change.

- Transport: emissions shaped by commuting and settlement patterns; local infrastructure decisions strongly influence outcomes.

Roles in developing local energy systems (state, Dublin region, local stakeholders)

State / national level

- Sets targets, budgets and sector pathways; shapes energy-market design and regulation.
- Funds and steers retrofit, renewables and transport programmes; influences grid investment and connection rules.

Dublin region and county level (Fingal)

- Planning and development: density, zoning and requirements that 'future-proof' buildings for electrification and renewables.
- Delivery and coordination: retrofit and electrification of public assets, mobility interventions, and convening local partnerships.

Local stakeholders (Balbriggan DZ)

- Residents, community groups, schools and businesses drive uptake of retrofit, renewables and mobility change.
- Local intermediaries (e.g., Sustainable Energy Communities) and a DZ stakeholder group support participation and coordinated delivery.

Dublin region and Balbriggan DZ: energy-system characteristics

- Electrification (heat pumps, EVs) increases electricity demand and peak loads; outcomes depend on retrofit quality, smart controls and network readiness.
- Most building heat is still delivered via individual systems; scaling retrofit + low-carbon heat is therefore the main lever for deep reductions.
- Balbriggan baseline indicates high fossil heat dependence (gas 50%, oil 29%) and mid/low BER profiles (C3/D1/D2), reinforcing a demand-first approach.

Balbriggan DZ: key challenges to delivery to 2030

- Heat transition at scale: coordinate retrofit depth, financing and heating-system change while maintaining affordability and comfort.
- Delivery capacity and disruption: skills/contractor availability and practical, area-based delivery models.
- Infrastructure constraints: electricity network capacity and (where viable) exploration of shared solutions such as district heating.
- Transport transition: active travel, public transport improvement and EV charging rollout matched local patterns.
- Governance: Council cannot control all levers; success depends on multi-actor delivery partnerships and clear local coordination structures.

2.2.3.2 Setting the Scene for Energy Communities/Cooperatives

Before 2019, in Ireland, energy communities to support the energy transition, were being established through SEAI's Sustainable Energy Communities (SEC) programme, launched in

2015. The programme's role was less about owning energy infrastructure and more about mobilising "energy citizens": helping local groups learn about energy use, develop local energy action plans, and progress practical projects through mentoring and access to supports. By 2019, the SEC network had expanded substantially nationwide (reported at 297 community groups), reflecting a policy approach where national targets were complemented by community-led delivery capacity and local participation in efficiency and renewable actions.

2.2.4 The Netherlands

2.2.4.1 The Energy Market

The scene setting focuses specifically on the municipality of Utrecht (gemeente Utrecht) and its directing role in the local energy transition. Although the municipality is geographically located within the Province of Utrecht, the province and municipality have different responsibilities. The Province of Utrecht mainly coordinates regional spatial planning, mobility, and regional energy strategies, while the municipality of Utrecht is responsible for local spatial planning, housing policy, and neighbourhood-level energy transitions. This distinction is particularly important in the development and implementation of the Beleidsnota Warmte (Heat Policy Plan), which is led and executed by the municipality.

The municipality of Utrecht positions itself as a frontrunner in climate and energy policy in the Netherlands. Central to this effort is the Beleidsnota Warmte, which guides the development of local energy systems and coordinates the roles of municipal authorities, national government, energy companies, housing associations, and citizens. The municipal strategy is embedded within national climate policy but focuses on local implementation and neighbourhood heat transition planning.

Historical Development of the Energy Mix

The Dutch energy system historically developed around natural gas after large gas reserves were discovered in the 1950s. The national government converted most households and industries to natural gas, making the Netherlands highly dependent on gas for heating and electricity generation. Environmental concerns, earthquakes related to gas extraction, and climate policies have since accelerated the phase-down of domestic gas production and use.

Since the early 2010s, renewable electricity production has increased rapidly at the national level. Wind energy, especially offshore wind, and solar power have become key components of the electricity mix. Renewable electricity has recently surpassed fossil-based power generation. However, heating remains strongly dependent on natural gas, making it one of the most challenging sectors to decarbonise.

The municipality of Utrecht historically followed these national trends, with most homes relying on natural gas for heating. District heating systems were gradually introduced but were initially based on residual heat from waste incineration and fossil sources. In recent years, the municipality has accelerated its transition by expanding district heating networks, exploring geothermal sources, and promoting electric heat pumps. The Beleidsnota Warmte provides the long-term framework for replacing gas-based heating with sustainable alternatives within municipal neighbourhoods.

Climate Policy Targets and Strategic Direction

National climate legislation in the Netherlands aims to reduce greenhouse gas emissions by at least 55 percent by 2030 compared to 1990 levels and achieve climate neutrality by 2050. The national government establishes regulatory frameworks, subsidy schemes, and infrastructure policies that enable the energy transition. These include expanding offshore wind energy, electrifying heating and industry, developing hydrogen infrastructure, and strengthening the electricity grid.

The municipality of Utrecht focuses particularly on reducing emissions from the built environment. The Beleidsnota Warmte forms the backbone of the municipal climate strategy by defining neighbourhood heat transition plans. These plans identify the most suitable heating technologies for each neighbourhood, such as district heating, electric heat pumps, or hybrid systems. The municipality also promotes energy efficiency, building renovations, and citizen participation in local renewable energy initiatives.

Development of Local Energy Systems and Stakeholder Roles

The Beleidsnota Warmte reflects a multi-level governance structure. The national government sets climate targets, legislation, and funding mechanisms. The Province of Utrecht plays a coordinating role at regional level, particularly in spatial planning and regional energy strategies. However, the municipality of Utrecht is responsible for local implementation and decision-making regarding neighbourhood heat transitions.

The municipality coordinates neighbourhood planning, identifies suitable heating solutions, and facilitates collaboration between stakeholders. Energy companies and network operators develop and manage heat networks and electricity infrastructure. Housing associations play a key role in building renovation and connection of residential buildings to sustainable heating systems. Citizens and local energy cooperatives contribute through renewable energy projects and public participation. The municipality actively encourages citizen engagement to strengthen social acceptance of the transition.

Energy Market Structure

The Dutch energy market is liberalised and integrated into European markets. Electricity production operates in a competitive market, while transmission and distribution networks are regulated monopolies. Renewable electricity increases variability in supply, creating demand for storage, flexibility, and grid expansion. The recently adopted Energy Law (2025) introduces the legal term energy community in the Netherlands and allows for a form of energy sharing. In 2026 this activity of energy sharing will be changed and updated.

The heating market is more locally organised, as district heating networks often function as local monopolies due to infrastructure costs. The recently adopted Collective Heating Law (2025) prescribes public- or community ownership of district-heating projects larger than 1500 connections, with commercial companies only allowed to operate district heating networks smaller than that.

Within the municipality of Utrecht, the local energy market is shifting toward decentralised and integrated energy systems. The municipality promotes local renewable electricity production through solar and wind projects, sustainable district heating expansion, and smart

energy systems linking electricity, heat, and mobility. These initiatives support sector coupling and increase system efficiency.

Key Challenges for the Municipality of Utrecht

The municipality faces several significant challenges. The heat transition requires large infrastructure investments and building renovations. District heating expansion demands long-term planning and coordination among stakeholders. Grid congestion limits the speed at which renewable electricity projects and electrification measures can be implemented.

Affordability and social acceptance remain important concerns. The municipality must ensure that transition costs are distributed fairly among residents and businesses. Additionally, local implementation depends on national funding and regulatory clarity, requiring continuous coordination between governance levels. Uncertainty surrounding emerging technologies such as hydrogen and large-scale energy storage also requires flexible planning strategies.

Conclusion

The municipality of Utrecht demonstrates a city-led approach to energy transition, focusing strongly on neighbourhood heat planning and development of local energy systems. The Beleidsnota Warmte provides a strategic framework for replacing natural gas with sustainable heating solutions while clarifying stakeholder responsibilities. Although regional and national authorities provide important frameworks and support, the municipality plays the leading role in implementing the transition locally. Utrecht's integrated and participatory strategy highlights the importance of municipal leadership in achieving climate neutrality and transforming urban energy systems.

2.2.4.2 Setting the Scene for Energy Communities/Cooperatives

Until 2019 there were beginnings of citizen initiatives concerning local heating networks, for example Warm Tuindorp and the energy group Lunetten. In 2020 they, and other initiatives joined the learning program Expeditie Warmte (organised by the Municipality).

A joined COP (Community of Practice) of heating initiatives and the Municipality started. There were expert sessions, for example on how to engage in the local democratic system. And dialogues on the role of civic organisations in the energy transition. The direct contact helps to maintain good relations between the heating cooperatives and the municipality.

Other cooperatives

Before 2019, two energy cooperatives with broader goals can be identified. The first cooperative, Energie-U, was set up in 2010 focussing on reducing energy usage, local generation, and resident participation. Since 2010, it has organized energy coaching programs, group purchases, and neighbourhood projects.

Also, in October 2018, Rijne Energie was established to enable residents to become co-owners of local wind and solar energy projects.

2.2.5 Comparison of State and Energy Community Conditions

The comparison is grounded in the content of sections 2.2.1-4 and synthesizes it on an analysis of energy community conditions in Belgium, France, Ireland, and the Netherlands, focusing on legal, governance, and financial aspects of the energy system and energy transition, and highlighting similarities, differences, and unique national situations.

Governance & Legal Structure

Key Similarities:

- **Multi-level governance everywhere**:
  All four countries combine **national strategic control** (targets, market regulation, grid rules) with **sub-national or local implementation** (planning, permitting, local delivery).
- **EU-driven framework**:
  Energy markets, climate targets, and the legal concept of **energy communities** are shaped by EU directives in all four cases.

Major Differences:

Table 3. Differences in Governance and Legal Structure.

Aspect	Belgium	France	Ireland	Netherlands
State structure	Highly federalised & asymmetric	Strongly centralised	Centralised with local delivery	Decentralised but coordinated
Policy coherence	Fragmented across regions	High national coherence	Moderately coherent	High, with clear role-splitting
Legal clarity at local level	Often unclear	Clear but limited autonomy	Limited formal powers	Strong municipal mandate

Unique Situations:

- **Belgium**:
  The division of competences between **federal and regional governments** leads to **non-aligned or even conflicting policies**, especially on renewables, nuclear power, and grids. This is structurally unique in Europe.
- **France**:
  Local authorities act largely as **implementers of a national plan** (PPE), not as independent system designers.
- **Ireland**:
  Local governments (e.g., Fingal County) have **delivery responsibilities without control over most system levers**, relying on national programmes.
- **Netherlands**:
  Municipalities (e.g., Utrecht) play a **directing role**, legally responsible for **neighbourhood heat-transition planning**, which is exceptional.

Energy Mix & Path Dependency

Shared Patterns:

- Electricity decarbonisation is central everywhere.
- Heat remains the **hardest sector to decarbonise**, financially and socially.
- Fossil fuels are still dominant in **heating and transport**.

Diverging National Profiles:

Table 4. Differences in Energy Mix.

Country	Structural Feature
Belgium	Historic nuclear base + growing offshore wind
France	Nuclear-dominated system (>90% low-carbon electricity)
Ireland	Wind-led electricity, fossil-heavy heat
Netherlands	Gas-based legacy, now forced transition

Unique Trajectories:

- **France**: Nuclear energy provides long-term price stability and low-carbon electricity, reducing urgency in the power sector but shifting pressure to heat and mobility.
- **Belgium**: Heavy electrification faces **grid constraints and policy uncertainty**, while gas remains cheap due to distorted taxation.
- **Ireland**: High dependence on **individual heating systems** makes district-scale solutions difficult.
- **Netherlands**: The gas legacy and earthquakes created **political consensus** to exit gas, driving strong heat policy.

Energy Markets & Financial Structures

Common Ground:

- Electricity markets are **liberalised**, with regulated grids.
- Distribution grids face **capacity stress** due to electrification.
- Increasing importance of **flexibility (timing, peak power)** rather than pure energy volume.

Key Differences:

Table 5. Differences in Pricing and Grid Finance.

Dimension	Belgium	France	Ireland	Netherlands
Electricity pricing	Distorted by historic levies	Nuclear dampens volatility	Wind-driven volatility	Market-based, high congestion
Heat pricing	Fossils under-taxed	Regulated where DH exists	Largely private systems	Strong public oversight

Dimension	Belgium	France	Ireland	Netherlands
Grid cost allocation	Contentious	Central planning	National investment	Increasingly localised

Unique Financial Features:

- **Belgium**:
  Heat pumps and district heating are **financially unattractive** due to low fossil taxes and electricity surcharges—an inversion of climate logic.
- **France**:
  Feed-in tariffs historically dominated cooperative economics; market exposure is newer.
- **Ireland**:
  Financing focuses on **retrofit grants and programmes**, not collective assets.
- **Netherlands**:
  The **Collective Heating Law (2025)** requires **public or cooperative ownership** for large district-heating systems (>1500 connections), a major legal innovation.

Role of Local Authorities

Shared Roles:

- Planning, coordination, public engagement.
- Addressing affordability and social acceptance.

Degrees of Power:

- **Weakest formal power**: Ireland (coordination without control).
- **Moderate**: France (implementation within national constraints).
- **Fragmented**: Belgium (important role but structurally underfunded and constrained).
- **Strongest**: Netherlands (municipal system leadership).

Unique Local Models:

- **Belgium**: Cities are forced to trade energy investments against housing or social policy due to limited funding.
- **Ireland**: Area-based initiatives (e.g. Balbriggan DZ) show **experimental governance without strong legal anchors**.
- **Netherlands**: Utrecht operates as a **system architect**, aligning housing, heat, grids, and participation.

Energy Communities & Cooperatives

Shared Trends:

- Citizen participation framed around **EU energy community law**.
- Shift from generation ownership to **services, flexibility, and local coordination**.

Country-Specific Roles:

Table 6. Energy Community Roles.

Country	Dominant Community Role
Belgium	Infrastructure co-owner & system partner
France	Asset owner under national schemes
Ireland	Mobiliser & facilitator
Netherlands	Co-owner of heat & power infrastructure

Unique Situations:

- **Belgium**:
  Energy cooperatives (REScoops) act as **quasi-public actors**, compensating for fragmented governance.
- **Ireland**:
  Communities focus on **behaviour, learning, and project enabling**, not ownership.
- **Netherlands**:
  Legal backing for **community ownership of heat networks** gives cooperatives long-term strategic relevance.
- **France**:
  Cooperatives historically depended on feed-in tariffs, limiting systemic roles until recently.

Summary of All Comparisons of National and Community Conditions

Table 7. Comparison & Summary of National and Community Conditions.

Dimension	Belgium	France	Ireland	Netherlands
Governance coherence	Low	High	Medium	High
Local leadership	Conditional	Limited	Facilitative	Strong
Heat transition strategy	Weak & fragmented	Centralised	Retrofit-led	Neighbourhood-based
Community role	System integrator	Project developer	Mobiliser	Infrastructure co-owner
Unique risk	Policy incoherence	Nuclear rigidity	Delivery capacity	Grid congestion

Key Insight Across Countries

- **Belgium** struggles with *coordination*.
- **France** excels in *scale and consistency*.
- **Ireland** relies on *social mobilisation* without structural power.
- **The Netherlands** stands out for its **legal empowerment of municipalities and communities**, especially in heat.

Conclusions on state and energy community conditions

The analysis shows that it is the **EU** that drives the states to introduce rules for energy communities' access to the energy market, just as a decentralized energy system is more open to energy communities' entry into the local energy market.

It can be noted that none of the states has a **legal binding national strategy for energy communities**. There are several parameters that create the framework for the energy communities, and this is where municipalities/cities can play a significant role if there are legislative opportunities.

Another interesting aspect that the analysis points to is the **structure of the energy market**. The more the energy market is dominated by single-tier sources of supply such as nuclear power, the more difficult it is to get through with a locally based energy market that is open to alternatives to the central supply. In these areas, "everything is as it was" – virtually no changes in structure since the electricity liberalization in the late 1990s.

A third aspect is the **economic framework** that affects the energy market in each country. The analysis shows that there are large variations in the financial impact on energy prices and financial instruments intended to secure (affordable) energy supply. The extremes are the free market without subsidies, as opposed to the state-subsidised intervention in the price regulation of fossil fuels, for example. These extremes make it very difficult to establish energy communities because a free market tends to put pressure on the conditions for access to energy infrastructure technical solutions, such as access to multi-player grids where the economically strongest wins the access, while the state-subsidised market makes it difficult for an energy community to compete with a state-subsidised energy supply. A national strategy for energy communities that supports the communities' opportunities to enter the energy markets must be able to solve these structural challenges.

A fourth aspect is the **role of local authorities**. Here, the analysis documents widely different positions for the local authorities, ranging from coordination to leadership in relation to projects involving energy communities. The roles are defined by the national rules for municipalities/cities' involvement in energy communities, and the analysis shows that there is still a great deal of uncertainty in relation to the extent of the commitment.

The fifth aspect is the **positioning of the energy communities** in the national energy markets. The analysis shows that all states are working towards more local involvement in energy change, but that the framework for the energy communities is very different. Although the EU directives clearly prescribe rights and obligations for the energy communities, the four countries have very different perceptions of how this should be interpreted. There is a range from a role as a communicator of ideas to a role as an owner of and decisive influence on local energy projects.

Recommendations for EU and nations

Energy communities are essential to delivering EU climate, energy security, and social objectives. They mobilise citizens, accelerate local deployment of renewables and low-carbon heating, provide flexibility to overstressed grids, and increase public acceptance of infrastructure investments.

Despite recognition in the Clean Energy Package, their impact remains limited by **fragmented national rules, administrative complexity, short-term funding, and unclear**

system roles. EU- and national-level actions are needed to align general conditions and unlock scale.

Key recommendations

- Set EU-wide minimum standards for the implementation of energy communities
Ensure all Member States guarantee core rights for energy communities to produce, consume, store, share, and aggregate energy, with explicit recognition of democratic governance and limited-profit orientation. This reduces legal fragmentation and creates investment certainty. Make sure all Member States create an enabling framework for energy communities as prescribed by the RED, focusing on the economic enablement. Make it obligatory for all Member States to formulate national strategies for energy communities.

- Standardise energy sharing and administrative procedures
Develop an EU/national reference framework for energy sharing and collective self-consumption, including standard data access, metering, settlement principles, and contractual templates. This moves energy sharing from pilots to mainstream deployment.

- Integrate energy communities into grid and flexibility regulation
Recognise energy communities as local system partners in EU/national grid and flexibility rules. Require Member States and DSOs to enable community participation in congestion management and to consider community-based flexibility as an alternative to grid reinforcement.

- Reform EU and national funding: from pilots to structural support
Redirect EU and national instruments towards structural and long-term support: operating capacity, revolving funds, guarantees, and sustained financing for heat networks and shared infrastructure.

- Anchor municipalities as key enablers
Formally recognize municipalities as implementers, facilitators and partners of energy communities in EU/nations guidance and funding conditions, while preserving local autonomy. Promote clear division of roles: municipalities as facilitators/partners, communities as organisers/owners. Strong municipal-community partnerships are critical for effective local delivery. The impact is a strengthening of democratic legitimacy and improvement of spatial and social integration.

- Embed social inclusion by design
Make social inclusion a minimum requirement for energy-community-related funding and regulation: low-threshold participation, solidarity mechanisms, and protection for tenants and vulnerable households to ensure a just transition.

- Position energy communities as heat-transition actors
Explicitly include energy communities in EU/national heating and cooling, district heating, and Renovation Wave frameworks, enabling community (co-)ownership of heat infrastructure and long-term consumer protection.

- Reframe energy communities as public-value system actors
Update EU monitoring to value not only renewable production, but also social impact, grid cost avoidance, local reinvestment, and resilience. This aligns energy policy with wider EU/national cohesion and democratic goals.

2.3 Policy Strategies

2.3.1 Leuven

2.3.1.1 Authority Roles

The EU, Belgian federal state, regions and local governments each state specific climate and energy targets. Local authorities are free to state general targets. Supra-local authorities have **some influence on the setting of local targets, but a large impact on the achievability of these targets**.

In practice, the EU has encouraged local governments to state specific targets in programs such as the **Convenant of Mayors** (CoM) and the **Mission for Climate Neutral & Smart Cities**. The Flemish government provided additional encouragement and support to subscribe to the 202020 CoM ambitions and created its own framework with the "**Local Energy & Climate Pact**" (LEKP), which linked funding for climate action to the endorsement and execution of the LEKP. However, the new Flemish government ended the LEKP program and funding earlier than planned.

The hierarchy and lines of influence are transparent when it comes to the setting of overall targets. However, the impact of multiple government agencies and other organizations on the pathways towards achieving them is more complex. On both the federal and regional level, there is a triangle of actors, which each have their own objectives and frame: the governments (political government and government agencies), the regulators and the net operators. One could state that each actor focusses on 1 part of the energy trilemma: net operators want energy security, regulators want affordability and governments want to achieve climate targets. This would certainly be an oversimplification, especially given the political sensitivity on both energy security and affordability. We will provide a brief description of the influence of each of the (6) actors on climate and energy targets in general before describing the impact on (the achievability of) local target.

2.3.1.2 City Role

The city **cannot influence the climate and energy goals as such but has tools to make the roll-out of supra-local programs** (e.g. renovation strategies, heat pump plans, DHC plans) **tangible, achievable, integrated and qualitative**.

On the one hand, the city can use its knowledge of the local context, planned housing projects and contacts with stakeholders and citizens to **refine supra-local programs**. For example: the city actively provides input from local developments, DHC-planning, mobility planning (incl. charging infrastructure for EV's) to steer the planning of DSO Fluvius for investing in net capacity. Choosing to centralize public charging on central squares instead of spreading through all streets in the city centre, can lower the need to increase net capacity in those streets. The roll-out of DHC similarly decreases the need for additional net capacity for heat pumps.

In addition, the city has **some instruments to achieve district energy planning, be it indirectly**. The city has no regulatory authority to oblige buildings to use heat pumps, install PV, use thermal energy from DHC (a connection to the DHC is in theory possible, but does not imply consuming this thermal energy) or phase out gas-networks. It can use its role as licensing authority to demand a connection to DHC as a precondition for a building permit but can't oblige the consumption of thermal energy from the DHC, or the use of alternatives, such as an existing gas boiler or an individual heat pump (although it can set preconditions

for a new heat pump). It can also make its public domain available for geothermal energy and set preconditions for those who want to make use of it. Specifically, for DHC, the city can also support the rollout by adding its own buildings (and those of other large building-owners, such as school groups, the University, social housing companies…) as potential customers, or to provide space for technical installations such as heat and circulation pumps.

In addition, the city can **bundle the execution** of large-scale programs on a **district or street level**. Combining public works in greening, DHC, sewage systems, distribution nets and charging infrastructure reduces the costs of execution and nuisance for citizens. It also provides the opportunity to design public space as a whole and involve citizens in the overall process.

2.3.1.3 Local Involvement and Facilitation

The supralocal level provides **some tools for local stakeholder involvement in general**, be it limited and mostly not specifically aimed at the development of local energy projects.

Some city-level instruments that may (positively or negatively) impact local energy projects provide a framework for (or even obligate) stakeholder (and citizen) involvement. **Spatial planning instruments**, such as the general building code (which can specify preconditions for the instalment of PV or HP's) or special implementation plans (which can specify the location of technical installations to ease a connection to DHC when constructed) often require a public inquiry. The same applies for new municipal regulations for heat and for Heat Plans (as described in the EED).

Apart from these legal obligations in some cases, the city of Leuven has a **preference and tradition** to involve stakeholders where useful or demanded. For the development of the "District-related Energy Strategy" (2021-2022), an advisory board was established (including experts and local stakeholders), and the Heat Program (2025) explicitly took the agenda, interests and viewpoints of (large) building owners into account.

Participatory trajectories often are an essential part of the process of street renewal (e.g. Pilot C. Meunier) or climate or energy projects at district level (e.g. Climate-District Ter Elst). This includes both local stakeholders and citizens.

As for the facilitation and support of local energy projects that are not an initiative from the city itself (e.g. citizen-led initiatives), the city can create favourable preconditions. The city has involved LEC ECoOB as project partner in some EU-funded projects and has added citizen participation as a parameter in a tender for third party instalment and investment in PV at its own rooftops. When it comes to more general preconditions in favour of LEC's (in regulations, preconditions for the use of public domain,…), no prospection has been done.

2.3.1.4 Strategies and Financial Tools

There are **no specific tools to promote local energy supply**, but multiple types of **financial tools exist to promote renewable energy production in general**. These can also be used for local energy supply. From the local level, the general financial context for local energy supply is sometimes perceived as **unstable and incoherent**.

On a **national level**, no specific tools exist for local electricity supply. Funding schemes are mainly focused on national energy supply security. There are currently 2 mayor systems. The first is a **Capacity Remuneration mechanism** to guarantee electricity production at all times (partly replacing nuclear power, partly as back-up for renewable electricity), which supports (mainly) gas power plants and stabilizing assets (e.g. large-scale BESS and flexible demand

capacity). The other is a support system for new **offshore wind power**, based on a (two-sided) contracts-for-difference model (for which a tender is expected to be launched soon, after multiple delays). In addition, a system for **social energy tariffs** provides compensation for energy suppliers who have to offer a lower tariff for social customers. This system applies for electricity, natural gas, oil and (since 2022) **green heat**. The introduction of a social green heat tariff with compensation for suppliers made DHC for social housing financially more attractive.

On a **regional level**, there have been support schemes for local renewable energy production. For **large scale solar and wind power**, “green power certificates” (first with fixed compensation, later adapted to electricity prices) have been used for a long time, but were ended in 2022. The Flemish government is currently considering re-installing a similar system for wind power. No specific financial tools currently exist for PV, due to low investment costs.

For **green heat**, the regions provide financial support in the form of **CHP-certificates** and a (yearly) **call for green heating projects**. This call for investment subsidies is competitive (based on demanded support in comparison to investment cost and CO_2-reduction) and supports (large-scale) heat pumps, geothermal energy, usage of residual heat and DHC. The **Flemish government is considering a “sub-call” to support small-scale DHC**, which could be supportive for local energy supply.

The **local energy & climate strategies often include a financial strategy, but lack substantial resources** to back the targeted amount of additional local energy production. Leuven aims to set up a Climate City Fund but is lacking sufficient financial capacity to unlock private financing.

2.3.2 Strasbourg

2.3.2.1 Authority Roles

National government: « Stratégie Nationale Bas Carbone » (SNBC, Low-carbon National Strategy) that includes a « Programmation Pluriannuelle de l’Energie » (PPE, Pluri-annual energy program) that sets goals for each technology.

Regional government: each Region drafts its « SRADDET, Schéma régional d'aménagement, de développement durable et d'égalité des territoires » (regional plan for land use, sustainable development, and territorial equality), a regional version of the national goals. Together, all SRADDET add-up for the PPE national goals.

Metropolitan government: “Plan Climat Air Energie Territorial” (PCAET, Territorial Climate-Air-Energy Plan) is a strategic document to improve air quality, reduce energy consumption, increase local energy production and limit greenhouse gas emissions at the local level. Mandatory for intermunicipal communities with more than 20,000 inhabitants, it needs to comply with its regional SRADDET goals.

2.3.2.2 City Role

The city, as part of a metropolis or inter-municipal community, has the freedom to draft its PCAET, Territorial Climate-Air-Energy Plan as detailed as wanted. In Strasbourg, the “energy” section of its PCAET was drafted separately in an “Energy Roadmap 100% Renewables in 2050”.

Additionally, local governments can use other tools such as Urban Zoning Plan to push its energy planning agenda. For instance, Strasbourg's zoning plan mandates to install 7 Wp/m² of PV in new buildings or heavily refurbished buildings. It also mandates a connection to nearby district heating when building a new building.

2.3.2.3 Local Involvement and Facilitation

The city and the metropolis have been supporting community energy since 2018 with a specific program that included facilitation for the creation of a local energy cooperative, tendering public roofs to energy cooperatives, buying shares of local cooperatives and other facilitations (meeting rooms, communication via official channels, etc).

The setting up of Strasbourg's Climate Agency includes a role in promoting community energy and specific tools to facilitate the creation of energy sharing schemes (including specific legal framework to massify energy communities, the so-called "PMO Territoriale")

2.3.2.4 Strategies and Financial Tools

France still has some feed-in tariffs schemes for small and medium solar (<500 kWp) and small hydropower. These schemes include specific tariffs for excess electricity for self-consumption installations.

Nevertheless, these tariffs are being reduced as time goes by, with an overall goal of pushing small PV to self-consumption and energy sharing.

Some regional mechanisms exist, such as "Climaxion" in Grand Est region, where some subsidies are available for engineering or investment in some very specific cases.

2.3.3 Dublin

2.3.3.1 Authority Roles

Department of the Environment, Climate and Communications (DECC): Sets the overarching national climate policy, provides funding for local climate teams (Climate Action Coordinators/Officers), and approves the national Climate Action Plan, with which local authorities must align.

Sustainable Energy Authority of Ireland (SEAI): Acts as the national energy authority, providing advice, technical support, and the Monitoring & Reporting (M&R) system to track local authority energy performance.

2.3.3.2 City Role

Spatial Planning and Development Management

Fingal County Council (FCC) has significant influence over climate and energy goals, as well as locally oriented programs for districts, primarily through its statutory planning functions, regulatory tools, and strategic action plans.

- **Fingal Development Plan 2023-2029:** This serves as the primary blueprint for land use and can influence the location of renewal energy facilities. This plan sits with a hierarchy of planning documents.
- **Climate Action Energy Statements:** The council requires significant new developments or refurbishments to submit a Climate Action Energy Statement. This ensures projects align with energy efficiency standards and explore renewable energy options.

- **District Heating Enabling:** The Council promotes, and in certain developments requires, that new buildings are "district heating enabled" to capture waste heat (e.g., from data centres) and reduce reliance on fossil fuels.

National Level (Strategic Overarching Policy)

National Planning Framework (NPF): Part of Project Ireland 2040, this is the highest level of planning policy, providing a 20-year strategy for social, economic, environmental, and cultural development. The updated NPF (2025) outlines settlement hierarchies focused on Regional Growth Centres and Key Towns.

National Development Plan (NDP): Sets out 10-year capital investment to support the spatial priorities of the NPF.

Section 28 Guidelines: Issued by the Minister for Housing, Local Government and Heritage, these are statutory guidelines that planning authorities must follow, such as Sustainable Residential Development and Compact Settlements Guidelines.

The Office of the Planning Regulator.

Regional Level (Strategic Co-ordination)

Regional Spatial and Economic Strategies (RSES): Prepared by the three Regional Assemblies (Eastern and Midland, Southern, Northern and Western), these strategies translate the NPF into specific regional goals and co-ordinate local authority plans.

Irish Green Building Council.

Local Level (Development Management)

City and County Development Plans: These are statutory documents created by local authorities every 6 years to guide development in their area, including zoning, infrastructure, and environmental objectives.

Local Area Plans (LAPs): These provide more detailed, site-specific policies for specific towns or areas (usually with a population of 2,000–5,000+) to ensure, in detail, the proper planning of that area.

Regulatory Tools and Infrastructure

- **Sustainable Drainage Systems (SuDS):** The Council requires the integration of green infrastructure (e.g., green roofs, swales, permeable surfaces) in new developments to manage surface water and mitigate flood risks.
- **Electric Vehicle (EV) Infrastructure:** The council facilitates the rollout of EV charging points through updated planning regulations and by identifying suitable locations.
- **Public Lighting Retrofits:** Fingal is participating in the National Public Lighting Energy Efficiency Project (PLEEP)
- **Waste Management:** The Council promotes a "circular economy" by increasing recycling facilities at amenity sites (Swords and Coolmine) and implementing green procurement strategies.

Locally Oriented Programs and Funding

- **Community Climate Action Funding:** Through its Environment, Climate Action, and Sports Department, the Council provides grants to local clubs, community centres, and non-profits to install solar panels, improve insulation, and upgrade lighting, with over €1.1 million in funding announced in late 2025.
- **Active Travel Strategy:** The Council employs dedicated Walking and Cycling officers to promote sustainable transport, developing protected cycleways and greenways to reduce car dependency. Funding is secured through National Transport Authority.
- **Sustainable Energy Communities (SECs):** The Council works with the Sustainable Energy Communities in providing bridge financing for Energy Master Plans
- **Fingal Biodiversity Action Plan 2023- 2030:** The Fingal Biodiversity Action Plan translates national and international nature conservation and climate change policy into action on the ground in Fingal.

Direct Operations and Leadership

- **Social Housing Retrofitting:** The Council acts as a direct agent of change by retrofitting its own social housing stock to higher energy performance standards via the National Retrofit Programme for Social Housing.

2.3.3.3 Local Involvement and Facilitation

Fingal County Council operates a Memorandum of Understanding with SEAI to support the provision of Energy Master Plans to be developed by Sustainable Energy Communities.

New Private Wires legislation in Ireland should support local energy system development.

2.3.3.4 Strategies and Financial Tools

National-level financial tools (Ireland)

Grants and capital supports for local generation

- SEAI Solar PV grant (homes): The SEAI Solar PV scheme is funded under the Government's Microgeneration Support Scheme, providing grant support for households to install rooftop PV.
- SEAI community grants: SEAI provides community grant funding (capital + support) for community projects, which can include energy measures and (in many cases) on-site renewables as part of broader upgrades. Post Energy Master Plan, the SEAI options are the Community Energy Framework (renewable energy generation) and Community Energy Grant (building retrofitting)..

Ongoing payment for exporting locally generated electricity

- Clean Export Guarantee (CEG): National regulation requires that microgenerators can be remunerated for electricity exported to the grid (a revenue stream that improves PV economics).

Community Benefit Funds tied to renewable projects

- Under RESS (Renewable Electricity Support Scheme), projects must establish a Community Benefit Fund for local initiatives; the contribution is set at €2/MWh of generation. This can indirectly support local energy and climate initiatives in affected

communities. Local authority delivery finance: Energy Performance Contracting and public capital support

- Fingal's Climate Action Plan includes use of Energy Performance Contracts (EPCs) (an "invest-to-save" model where upgrades are financed and repaid through guaranteed savings) and explicitly notes identifying funding streams to close the gap to 2030 targets.
- SEAI Pathfinder funding as capital support for aggregated public building retrofit projects (which can include renewables like PV)

2.3.4 Utrecht

2.3.4.1 Authority Roles

From top to bottom:

National authorities: Ministry of Climate Policy and Green Growth (in Dutch: Ministerie van Klimaat en Groene Groei) & Ministry of Economic Affairs (in Dutch: Ministerie van Economische Zaken) - Sets national climate laws and energy frameworks (e.g., Climate Agreement, CO_2 reduction targets, regional energy strategy energy system policies)

Province of Utrecht: Provinces coordinate regional spatial planning and act as catalysts and funders. Provinces can require municipalities to follow certain spatial criteria, approve or block regional energy developments, and guide RES (regional energy strategy) targets.

Municipality Utrecht: Municipalities set the actual local targets—but within limits set by national and provincial policy by writing the Heat Policy Paper (in Dutch: Beleidsnota Warmte) and the Local Heat transition plans (in Dutch: Transitievisie Warmte).

Besides you have multiple entities such as Energie Samen and Energie van Utrecht, which are committed to fair legislation and regulations through lobbying, policy advice and education.

2.3.4.2 City Role

The municipality has the directing role in planning, scoping and assigning general solution of the projects by making a heat plan (warmteprogramma) and by drafting a heat plot plan (in Dutch: kavelplan). Municipality of Utrecht also designation a heat company that can assign itself to a heat plot plan.

2.3.4.3 Local Involvement and Facilitation

The municipality of Utrecht embedded in the Heat Policy Paper (Beleidsnota Warmte) the following:

"Warmtegemeenschappen (energy communities) are in favor to be the designated heat company if they can come up with an affordable offer.

By stating, the municipality is giving preference to local ownership over larger parties (such as heating companies) and hopes to motivate residents to draw their own plans for a heat system.

On top of this the Collective Heating Law specifies to obligations to municipalities:

When drafting a heat plot plan (kavelplan) they have to see if a heating community is active in that area, and if so, they are obligated to collaborate with them and help support them with organising.

On top of that, this law prescribes an enabling framework for heating communities, which is supposed to support them and their stakeholders (=municipalities) with collaborating. This framework is however not yet operational.

2.3.4.4 Strategies and Financial Tools

Municipalities use a 'local ownership ordinance'. This is a municipal scheme that offers residents and local entrepreneurs the opportunity to become (co-)owners of large-scale energy projects, such as wind turbines or solar panels. The aim is to achieve a fairer distribution of the benefits and burdens (financial gains) of the energy transition, often with a target of 50% local ownership. The province of Utrecht included this in their RES (focused on wind energy) at the time.

Furthermore, several subsidies are available within the provinces, ranging from making your home more sustainable to climate adaptations. The provinces also offer subsidies for heat communities to assist with research or communication.

The municipality of Utrecht has an initiative fund which offers subsidies that heat communities can apply for to help their initiative grow. Heat communities can use money from this fund for member recruitment or community building activities, for example.

Nationally there are no subsidies available from the government which support district-heating communities. But there is a government fund of 25 million euro which offers 1 million euro loans to district-heating communities to pay for the developmental phase of a project, called the 'Ontwikkelfonds Warmte'. This is a zero-risk loan: if the project does not reach financial close, the community does not have to pay back the loan. There is also a state subsidy for district heating infrastructure available for all types of entities, called the WIS.+-

Other than that there is a more general subsidy for all district-heating projects called the District-heating investment subsidy (Warmtenet investerings subsidie). For renewable production done by energy communities there is the national SCE subsidy. And more generally we have the SDE++ subsidy for production projects.
And also a fund with loans for the developmental phase, filled by the ministry called the Ontwikkelfonds Opwek.

2.3.5 Comparison of Policy Strategies

A **comparative analysis** of **policy strategies, roles, local involvement, facilitation, and legal/financial aspects** for **Leuven, Strasbourg, Dublin (Fingal/Dublin context), and Utrecht**, based on the descriptions in sections 2.3.1-4, is included in this section.
The comparison highlights **similarities, differences, and nationally specific frameworks** that shape what cities can and cannot do.

Overall Governance and Policy Strategies (Legal Framing)

Common Pattern:

All four cities operate within **multi-level governance systems** where:

- **National and EU levels** set binding climate and energy targets.
- **Regional/metropolitan levels** translate these into spatial and sectoral frameworks.
- **Cities/municipalities do not set energy market rules**, but **operationalize**, spatially embed, and facilitate implementation.

This creates a **shared structural constraint**: cities are implementers and coordinators rather than sovereign energy policymakers.

Key Differences:

Table 8. City Differences in Governance.

City	National–Local Legal Relationship	Distinctive Feature
Leuven (BE)	Fragmented energy authority across federal, regional, and regulatory actors	Strong dependency on supra-local network operators and regulators
Strasbourg (FR)	Highly codified and hierarchical planning system	Strong legal mandates via zoning and PCAET
Dublin / Fingal (IE)	Centralized national policy with strong planning compliance	Planning law is main leverage for energy action
Utrecht (NL)	Explicit legal empowerment of municipalities in heat transition	Municipal “directing role” in district heating

Role of the City: Powers and Limitations

Shared Characteristics:

All cities:

- **Cannot regulate energy markets or tariffs**
- **Cannot mandate energy production directly**
- Rely on **planning law, permitting, and public assets** to steer outcomes
- Act as **enablers, coordinators, and aggregators**

City-Specific Roles:

Leuven:

- **Indirect steering role**
- Integrates energy goals into:
    - Permits
    - Public works coordination

  - Use of public buildings and land
- Cannot mandate connection *and* consumption of district heating—only the former

➞ **Legal limitation**: Strong separation between spatial authority and energy regulation.

Strasbourg:

- **Strong regulatory planning role**
- Can legally:
  - Mandate PV installation in zoning plans
  - Require connection to district heating
- Uses PCAET as a **binding strategic instrument**

➞ **High local regulatory power**, rooted in France's centralized planning tradition.

Dublin (Fingal):

- **Planning-led authority**
- Uses:
  - Development Plans
  - Climate Action Energy Statements
  - District heating "readiness" requirements
- Strong influence through compliance with national frameworks (NPF, NDP, RSES).

➞ **Legal leverage is procedural and compliance-based**, rather than directive.

Utrecht:

- **Explicit directing role in heat transition**
- Municipality:
  - Defines heat solutions per area
  - Drafts heat plot plans
  - Can designate a heat company
- Legal preference for **energy communities** embedded in Heat Policy Paper.

➞ **Uniquely strong municipal mandate over heat systems.**

Local Involvement and Facilitation

Shared Tendencies:

All cities recognize that:

- Citizen and stakeholder involvement is essential for legitimacy

- Participation is often **legally required through planning procedures**
- Cities go beyond minimum legal requirements when capacity allows

Comparative Depth of Local Involvement:

Table 9. Comparison of Cities' Local Involvement.

City	Type of Local Involvement	Legal Status
Leuven	Advisory boards, district pilots, project-based participation	Mostly voluntary
Strasbourg	Climate Agency, energy cooperatives, PMO Territoriale	Programmatic + legal tools
Dublin	SEAI-backed communities, Energy Master Plans	Enabled via national frameworks
Utrecht	Heat communities legally prioritized	Embedded in national law

Notable Differences:

- **Utrecht** is the only case where **municipalities are legally obliged** to collaborate with energy communities if active.
- **Strasbourg** stands out for **formalized cooperative support**, including municipal shareholding.
- **Leuven** relies most on **tradition and policy culture**, rather than legal obligation.
- **Dublin** emphasizes **capacity building and funding alignment**, less local ownership by default.

Financial Instruments and Economic Leverage

Shared Constraints:

Across all cities:

- **Municipal budgets are insufficient** to finance large-scale energy transitions
- Cities rely on:
    - National subsidy systems
    - EU funding
    - Private investment
- Financial instability or policy changes at higher levels directly impact local action.

National Financial Contexts Compared:

Belgium (Leuven):

- No dedicated support for local energy supply
- Focus on:
  - Capacity remuneration
  - Offshore wind
  - Certificates (mostly ended)
- Local strategies lack matching financial instruments.

→ Mismatch between ambition and financing.

France (Strasbourg):

- Feed-in tariffs still exist (declining)
- Regional subsidies (e.g. Climaxion)
- Gradual shift toward self-consumption and energy sharing.

→ More predictable but declining support landscape.

Ireland (Dublin/Fingal):

- Strong mix of:
  - Grants (SEAI)
  - Export guarantees (CEG)
  - Community Benefit Funds (RESS)
- Use of EPCs and “invest-to-save” models.

→ Most diversified and structured funding ecosystem.

Netherlands (Utrecht):

- Rich toolbox:
  - WIS, SCE, SDE++
  - Zero-risk development loans (Ontwikkelfonds Warmte)
  - Heat network investment subsidies
- Explicit support for community-led heat

→ Most community-oriented national financing model.

Key differentiations:

- **Level of diversity and predictability** of funding
- **Support for community/local ownership**
- **Use of grants vs. market-based revenues vs. loans**
- **Municipal control over financial instruments**

Table 10. Financial Instruments for Local Energy.

City	Overall financial strength for local energy	Main weakness
Leuven	Weak–moderate	Fragmented, unstable regional support
Strasbourg	Moderate	Declining national tariffs
Dublin (Fingal)	Strong	Local ownership not structurally embedded
Utrecht	Very strong	Complexity of instruments

Unique National and Local Situations

Leuven – Fragmentation Challenge

- Strong coordination role
- Weak financial and regulatory leverage
- Dependent on supra-local coherence

Strasbourg – Planning Powerhouse

- Strong legal mandates
- Institutionalized community energy support
- Clear hierarchy from national to local

Dublin – Compliance and Capital

- Local action driven by national alignment
- Strong funding access
- Less emphasis on local ownership structures

Utrecht – Municipal Energy Governance

- Legal authority over heat transition
- Explicit preference for community ownership

- Best alignment between law, finance, and participation

Cross-City Similarities and Differences

Commonalities:

- Cities act as *system integrators*
- Planning law is the main legal lever
- Financial dependence on higher levels
- Growing recognition of citizen energy

Key Differences:

- Degree of legal authority (highest in Utrecht, lowest in Leuven)
- Stability and diversity of financial tools (Netherlands & Ireland strongest)
- Formalization of community energy (Utrecht & Strasbourg strongest)

Conclusions on strategy policies

While all four cities pursue similar climate ambitions, what they can do in practice differs dramatically due to:

- National legal traditions
- Energy market structures
- Availability and design of financial instruments

Utrecht and Strasbourg operate in systems that legally empower municipalities,
Dublin benefits most from financial structuring and national alignment,
and Leuven exemplifies the challenges of ambition without matching legal or financial control.

Leuven struggles with financial instability and fragmentation, Strasbourg relies on planning + fading tariffs, Dublin leverages diverse, performance-based finance, and Utrecht stands out with development loans, ownership rules, and aligned subsidies.

Below are overall conclusions drawn from the comparative analysis of Leuven, Strasbourg, Dublin (Fingal), and Utrecht. They synthesise common patterns, strengths, and gaps across governance levels, city roles, stakeholder involvement, and financial tools.

Local ambition is strongly shaped by supra-local frameworks

Across all cases, EU, national, and regional authorities largely define climate and energy targets, financial mechanisms, and regulatory boundaries. Cities rarely set binding energy targets independently; instead, they translate, operationalize, and spatially anchor higher-level strategies. This makes policy stability and coherence at supra-local level critical for local achievability (e.g. early termination of the Flemish LEKP weakened local momentum in Leuven).

Cities are implementation integrators, not primary rule-setters

Cities have little direct regulatory control over energy markets or infrastructures, but they play a decisive integrative role:

- Aligning spatial planning, public works, mobility, heating, electricity, and public space design.
- Bundling investments at district or street level to reduce costs and disruption.
- Translating abstract targets into concrete, local, and socially acceptable pathways.

This integrator role is strongest where planning tools are explicit (Strasbourg zoning rules, Fingal development plans, Utrecht heat plot plans).

Heat and district energy planning is a key local leverage point

In all cities, heating decarbonisation emerges as the main domain where municipalities can meaningfully steer outcomes:

- Heat plans, zoning mandates, and district heating enablement (Strasbourg, Fingal, Utrecht).
- Strategic alignment with grid operators significantly improves feasibility (Leuven).

However, cities generally cannot obligate actual consumption choices, only connections or technical readiness—limiting impact without complementary national regulation.

Citizen and stakeholder involvement improves feasibility but varies in institutionalization

All cases show that participation improves acceptance, quality, and speed, especially for district-based projects.

- Strasbourg and Utrecht have more formalized support for energy communities and local ownership.
- Leuven and Fingal rely more on project-based or voluntary participation traditions.

Structural, long-term frameworks for citizen energy (legal clarity, financing, scaling instruments) remain uneven or incomplete in all contexts.

Financial tools are fragmented and often misaligned with local energy goals

While many funding schemes exist, they are often:

- Technology-specific rather than system-oriented.
- Unstable or time-limited, undermining investor and community confidence.
- Insufficiently accessible for smaller, local, or community-led projects.

Cities frequently lack the balance-sheet capacity or revolving funds needed to crowd in private or cooperative finance.

Recommendations

Strengthen policy coherence and long-term stability across governance levels

- Supra-local authorities should avoid abrupt termination of successful local programmes and instead design predictable, multi-cycle funding frameworks.
- Align climate targets, grid investment planning, and financial instruments across energy, housing, and spatial planning policies.

Empower cities as system integrators, not just facilitators

- Formalise the city role in coordinating grid operators, regulators, developers, and heat companies, especially for district-scale energy systems.
- Provide municipalities with stronger legal mandates to align building permits, zoning, and heat planning with decarbonisation pathways.

Make heat planning the backbone of local energy strategies

- Mandate local heat plans/transition visions with binding timelines and spatial differentiation.
- Combine connection requirements with national-level consumer protection and affordability mechanisms, enabling cities to move beyond “connection without use”.
- Support small-scale and community-led district heating through tailored sub-calls, development funds, and risk-sharing instruments.

Institutionalise citizen energy and local ownership

- Move from ad-hoc participation to structured frameworks for energy communities, including:
    - Preferential access to heating projects, public roofs and land.
    - Priority or rights of first refusal in local heat or renewable projects.
    - Standardised legal and contractual templates to reduce complexity.
    - Economic enabling and other support measures offered by local and national authorities.
- Set clear local ownership targets (e.g. 50%) and support the development of communities to make the target feasible (where socially and economically feasible).

Create local financial vehicles that unlock private and community capital

- Establish municipal or regional climate funds (blended finance, revolving funds, guarantees) to de-risk early-stage projects.
- Enable cities to pool demand and investment across districts and public assets.
- Simplify access to national and regional funds for small municipalities and cooperatives.

Focus on integrated district-scale execution

- Promote bundled neighbourhood approaches combining heat, electricity, mobility, water, public space, and greening.
- Use major public works as **trigger moments** for energy transitions, reducing costs and social disruption.
- Invest in internal municipal capacity (energy planners, participation specialists, financial engineers).

Effective local energy and climate policy is **less about setting new targets** and more about **making higher-level ambitions work on the ground**. Cities succeed when they are empowered as **coordinators, planners, and trusted convenors**, supported by stable supra-local policies, robust heat planning, meaningful citizen ownership, and coherent financial tools. Without this alignment, even the most ambitious local strategies risk remaining aspirational rather than achievable.

2.4 Policy Steering

2.4.1 Leuven

2.4.1.1 State Regulations Affecting the Energy Transition in the City

State regulations affect the development of energy transition in the city:

- Flemish Energy Decree
  - Role divisions (including role for regulator to determine grid tariffs, including limitations of roles of DSO in energy production and supply)
  - Definition of EC
  - Support mechanisms
  - Building energy performance regulations
  - Obligations to install PV (for large energy consumers)
  - Exclusion of PV in retrofit limitations of heritage
  - Ban on fossil fuels for new spatial developments
  - Spatial regulations for wind turbines
- Decree for local governments
  - Basis to determine authorities of local governments (e.g. usage of authority to grant licenses to make buildings ready to connect to district heating)
  - Basis to determine options of local governments to set-up, participate and invest in local energy companies
- Belgian energy legislation:
  - Electricity act as framework for the energy market (defining and limiting development of EC's)
  - Social Energy Regulations (e.g. social heat tariffs)
  - Legislation on the "capacity remuneration mechanism" (e.g. financial support for local battery parks)

2.4.1.2 City Opportunities Without State Regulation

Leuven has opportunities to operate by itself taking into account limitations set-up in the state regulations.

- Develop energy projects on own assets (e.g. PV on city-owned buildings, wind turbines on city-owned terrains), or provide these assets for third parties
- Facilitate partnerships and aggregation
- Act as anchor customer (e.g. buy renewable energy for its own electricity consumption or heating of buildings)
- Act as a producer, district heating net operator and supplier of green heat.

2.4.1.3 State Regulation on Local Energy Communities

What state regulations affect the development of LECs in Leuven?

Flemish Energy Decree:

- Transposition of RED II and Electricity Market Directive. Specifically for LECs, the Flemish Energy Decree has a chapter on the “Citizen Energy Community” and “Renewable Energy Community”, as part of the title “organisation of the electricity- and natural gas market
- Definition of EC
- Energy sharing principles (which fundamentally differ from for example the Brussels region regulations)

Belgian company legislation: definition of cooperative. This legislation makes no distinction based on ICA-principles and provides no specific legal status distinction between citizen cooperatives and “fincoops” (cooperative structures set-up by and controlled by private companies, without direct citizen ownership of energy infrastructure)

Belgian energy legislation:

- Transposition of RED II was limited to offshore windpower, and therefore not relevant for local authorities (impact on onshore energy was ruled as out of the federal legal authority by the constitutional court)
- Transposition EMD: a definition of a citizen energy community, but only in the framework of federal authorities (e.g. offshore wind power, electricity transmission, consumer protection,…)

Leuven takes multiple initiatives to promote local involvement.

- Create investment opportunities in public procurement (but not always)
- Through communication (e.g. LICHT Leuven)
- Support local energy communities by involving them in EU-funded projects.

2.4.1.4 Incorporation of Energy Communities

In theory, these regulations have been fully incorporated in the Flemish Energy Decree and the federal electricity act). But the current framework limits the potential for LEC development in practice. The energy sharing system has no impact on net tariffs, comes with a high administrative cost, and shifts much of the administrative burden on energy suppliers.

In practice, the additional potential to develop new energy systems in the LEC-framework is limited. Peer-to-peer energy sharing is only financially interesting with high energy consumption and production and with specific compatible energy profiles (e.g. a combination of large-scale rooftop solar on a building with little energy demand and a large energy-consumer with high electricity demand in summer and little potential for rooftop-solar). In addition, energy-sharing between buildings with the same owner can in some cases be profitable. But for the main part of consumers/producers, the amount of energy shared is too low to cover administrative costs. For very large consumer, LEC has no additional benefits compared to traditional (green) PPA's.

The **Flemish Energy Decree** states a definition for both an energy community of citizens and a renewable energy community.

An Energy Community of Citizens is a legal entity based on the open and voluntary participation of its partners or members, with the primary objective of providing ecological, economic or social benefits to its partners, members or the environment in which it operates, and which is not profit-oriented or has a profit motive that is secondary to its primary objective, and that can develop activities mentioned in Art.4.8.1§1:

- 1° producing energy from an installation, directly connected or indirectly connected via the connection of partners or members of the citizens' energy community to an electricity distribution network, the local electricity transmission network, a closed electricity distribution network or a heating or cooling network, where the citizens' energy community owns or has the rights to use the production installation;
- 2° self-consumption of the energy referred to in point 1°;
- 3° storing energy;
- 4° offering or participating in energy services;
- 5° acting as a flexibility service provider or participant in flexibility or aggregation;
- 6° selling the energy referred to in point 1°, including under a power purchase agreement;
- 7° offering charging services for electric vehicles;
- 8° sharing energy between partners or members,

The partners or members are, in their capacity as consumers or purchasers of thermal energy, each connected to an electricity distribution network, the local electricity transmission network, a closed electricity distribution network or a heating or cooling network.

Natural persons, local authorities or small enterprises that are not involved in large-scale commercial activities and for whom the energy sector does not constitute their main economic activity have control over the activities of the citizens' energy community of which they are a partner or member.

A **renewable energy community** is a legal entity based on the open and voluntary participation of its partners or members, with the primary objective of providing ecological, economic or social benefits to its partners, members or the environment in which it operates, and which is not profit-oriented or has a profit motive that is secondary to its primary objective.

Every renewable energy community may carry out the activities referred to in the first paragraph (Art. 4.8.1§1, as mentioned above) if the energy referred to in the first paragraph, 1°, relates to green electricity from an installation connected directly or indirectly via the connection of partners or members of the renewable energy community to an electricity

distribution network. The renewable energy community always remains the owner of the production facilities.

A renewable energy community limits participation based on technical or geographical proximity, taking into account the function of the objectives or activities that the renewable energy community wishes to achieve.

With the aim of stimulating innovative projects within the framework of low-regulation zones for energy, as referred to in Title XIV/1, the Flemish Government may allow energy communities of citizens or renewable energy communities to manage distribution networks within their coverage area, provided that this does not conflict with the applicable regulations.

The **federal electricity act** also states 2 definitions:

Art. 2, 106°: An "**energy community of citizens**" is a legal entity that:

a) is based on voluntary and open participation and whose members or shareholders, who are natural persons, local authorities, including municipalities, educational institutions, associations, other energy communities, or small and medium-sized enterprises, have effective control,

b) whose main purpose is to provide environmental, economic, or social community benefits to its members or shareholders or to the local areas where it operates rather than to make a profit, and

c) may engage in production, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services, electric vehicle charging services, or other energy services to its members or shareholders;

Art. 2, 107°: "**renewable energy community**": an energy community of citizens:

a) which is based on open and voluntary participation, is autonomous and carries out its activities within Belgium,

b) whose shareholders or members are natural persons, local authorities, including municipalities, educational institutions, associations, other citizen energy communities, or SMEs, provided that their participation does not constitute their main commercial or professional activity,

c) whose main purpose is to provide environmental, economic, or social benefits to its shareholders or members, and not to making a profit,

d) where the energy community of citizens holds shares in a legal entity that owns renewable energy projects developed for that legal entity,

e) where, with regard to energy production, self-consumption, storage, sale, and sharing, these relate only to energy from renewable energy sources,

f) which carries out its activities exclusively in the territorial sea and the exclusive economic zone.

The current landscape of energy communities in Flanders mainly consists of citizen-owned energy cooperatives (REScoops) and SPV's with (direct or indirect) cooperative citizen participation. These EC's were already developed within the existing regulatory framework

before the translation of the RED II and EMD. The new LEC framework provides little benefits to the existing LEC's.

2.4.1.5 Possibilities and Barriers for Energy Communities

The LEC regulations at least do provide a legal recognition of LEC's in itself. There are also two fiscal stimuli that promote the formation of LECs, but they are not part of the LEC regulations or specific for the energy sector. The first one is a tax shelter for sustainable investments, which is a strong incentive for citizens to participate financially in a starting LEC. The second one is an exemption from taxes on dividend from cooperatives (with limitations).

There are little barriers for the establishment of energy communities, although there are some licensing and compliance costs and administrative steps to be taken. The more fundamental barriers lie in the development of activities as an energy community, for which the LEC-framework provides little benefits (e.g. grid tariffs, market access,…).

LEC regulations do not provide additional/new forms of legal structures. Existing energy communities can be organized as cooperative companies (mainly used in practice), non-profit associations or limited liability companies.

Templates for energy communities have been developed together with the establishment of the first citizen cooperatives (RESCoops) and circulate among multiple RESCoops and multiple federations & umbrella organisations (including REScoop Flanders, FEDCOOP, Coopkracht). The articles of association of most RESCoops are quite similar. They usually only differ in some specific aspects (mission statement, value of shares,…).

There are little legal barriers for LECs to raise capital, both in establishment and for capital growth. Only for capital raises above 5 million euros per year, a prospectus is required. For lower amounts, an information note is required. Specific fiscal support is focused on starting cooperatives, and in practice, addition capital raises require organizational trust an a track record of stable dividends.

2.4.1.6 City Access to Energy Communities

The city of Leuven does not participate directly in LECs at the moment. In theory it could, but most LECs don't foresee participation of governments, so they would not be different from a participating citizen. This usually means that the government would have 1 vote in the general council and a maximum amount of shares (usually between 5.000 and 25.000 euro), the same as each individual citizen.

The city can also collaborate in other ways with the LECs, for example as a project partner in a structure (e.g. an SPV) in which the city and the LEC as a whole would participate.

Apart from the fact that most (currently existing) LECs don't foresee a specific statue for a government as participant, the city is also bound to public procurement rules and needs to justify its participation as stated in the Decree for Local Governments. So participation is not impossible but usually doesn't make sense.

The LEC framework does not include any loosening of public procurement rules. It is possible for a city to provide public space for LECs, but public procurement is often time-consuming and a framework for a more easy provision of public space is currently missing (e.g. preconditions to use public domain as a heat source, with separate criteria for citizen initiatives or LECs).

2.4.2 Strasbourg

2.4.2.1 State Regulations Affecting the Energy Transition in the City

State regulations affecting the development of energy transition in the Strasbourg:

- Feed-in tariff schemes (S21 Decree)
- Self-consumption regulation (Code de l'énergie, Articles L315-2 à L315-8)
- LEC / energy sharing regulation:
  - Need to establish a single legal vehicle for each operation (PMO) for dialog with DSO
  - Specific tax on grid access for shared local energy
  - Geographical limitation for energy sharing loops (2 km in urban areas)
- Overall national energy strategy: official communication mishaps around renewable energies leading to widespread distrust, low electricity prices due to historically subsidized nuclear energy, etc.

2.4.2.2 City Opportunities Without State Regulation

The city can develop local RE within the national framework. But it can also try to find the best project setup that can make RE exist without government help schemes and imagining its own support schemes.

The city and the metropolis have been supporting community energy since 2018 with a specific program that included facilitation for the creation of a local energy cooperative, tendering public roofs to energy cooperatives, buying shares of local cooperatives and other facilitations (meeting rooms, communication via official channels, etc).

The setting up of Strasbourg's Climate Agency includes a role in promoting community energy and specific tools to facilitate the creation of energy sharing schemes (including specific legal framework to massify energy communities, the so-called "PMO Territoriale")

2.4.2.3 State Regulation on Local Energy Communities

State regulations affecting the development of LECs in the city are Article L291-1 to -3 of the Energy Code of France (here) – (in French)

2.4.2.4 Incorporation of Energy Communities

The definition of RECs and CECs in French law was introduced by the Climate Energy Act of 2019 and the Ordinance of March 3, 2021, and were subsequently clarified by the APER Act of 2023 and the Decree of December 26, 2023 on energy communities. RECs and CECs are now defined in articles L291-1 to L293-4 and R291-1 to R293-1 of the French Energy Code.

The definition's inclusion of associations of different member types, and of enterprises that are intended to provide social utility, demonstrate the potential for using energy communities to pursue socio-economic benefits. Furthermore, there are strong requirements for autonomy and effective control, and participation of different categories of participants, which can help promote inclusiveness and prevent corporate hi-jacking. However, the reference to the autonomy requirement under the EU's Recommendation on RECs could actually make it hard for energy communities to create special purpose vehicles (SPVs), which could significantly limit the potential to mature and take on more complex activities, and to create second level energy communities.

There is no monitoring role assigned to the regulatory authority to oversee registration of energy communities, check for abuse, and monitor challenges around how the definition is

implemented. For instance, geographic proximity varies depending on member type, and it will inherently shape effective control requirements, which could pose challenges particularly for local authorities participating in more than one energy community. These issues need to have channels for identification and proposal for solutions.

Source: https://www.rescoop.eu/policy/transposition-tracker/rec-cec-definitions/france-rec-cec-definitions

2.4.2.5 Possibilities and Barriers for Energy Communities

In France, it may have some indirect financial barriers to the establishment of energy communities since it depends on the type of project the project holders want to set up and the renewable technology they want to implement locally.

For example, France still has some feed-in tariffs schemes for small and medium solar (<500 kWp) and small hydropower. Energy communities mostly invest in projects of this scale. These schemes include specific tariffs for excess electricity for self-consumption installations. Nevertheless, these tariffs are being reduced as time goes by, with an overall goal of pushing small PV to self-consumption and energy sharing.

In France special legal corporate forms have developed for local energy projects. They are stipulated in the “Personne Morale Organisatrice” or the “PMO”. Specifically, in collective self-consumption, the PMO is the entity that provides technical and administrative liaison between the Public Distribution Network Operator (GRD) and the participants in the collective self-consumption operation (ACC). Its form is not imposed: it can be an association (under the 1901 law), a company, a local authority, etc.

The PMO is considered to be a facilitator of collective self-consumption. Legally, it brings together the producers and consumers within it in such an operation.

Article L291-3 of the Energy Code now elaborates which legal entities are allowed to become energy communities, including joint-stock companies, collective interest cooperative societies, and associations.

French federation of community energy (Energie Partagée) proposes templates. Other local government associations such as AMORCE or FNCCR have been working with templates to be used by local governments.

2.4.2.6 City Access to Energy Communities

Strasbourg has a double strategy:

- Via the metropolis, is a co-owner of the Brasseurs d’Energies cooperative and helps its development
- Via its Climate Agency, by proposing legal corporate form to be reused by citizens in order to create their LEC
- It has created its own SPV to create its own LEC to maximize self-consumption via RE facilities installed on its grounds.

There are no barriers to the city's direct participation as a member or co-owner from an investment point of view. Nevertheless, its participation as a consumer in a LEC raises concerns regarding public procurement.

Tendering must be organized in order to provide public space to third parties. This needs time and validation from the assembly.

2.4.3 Dublin

2.4.3.1 State Regulations Affecting the Energy Transition in the City

Several national regulations and statutory frameworks shape what can realistically be delivered in the Balbriggan DZ. The DZ work itself is *created by national legislation and policy*, and many of the big delivery levers (planning permission, environmental consents, grid, and reporting) sit inside national regulatory systems.

Climate-action legislation and statutory planning requirements

Climate Action and Low Carbon Development (Amendment) Act 2021: the DZ chapter notes that, under this Act, every local authority is required to produce a detailed Climate Action Plan, and that DZs must be included in those plans under national guidance.

National Climate Action Plan 2019: the DZ chapter states that every local authority is required to plan a Decarbonising Zone under this national plan.

DCEE Local Authority Climate Action Plan Guidelines (2023): the framework the local authority climate action plans are prepared under, supporting how LAs operationalise national targets locally.

In Ireland, the development of Local Energy Communities (LECs) broadly categorized as Renewable Energy Communities (RECs) and Sustainable Energy Communities (SECs)—is governed by a combination of EU-derived statutory instruments, national planning laws, and regulatory frameworks from the Commission for Regulation of Utilities (CRU) The Small Scale Renewable Energy Support Scheme and SEAI Community Enabling Framework provide regulatory frameworks for local renewable energy development.

2.4.3.2 City Opportunities Without State Regulation

The city have no opportunities to develop local renewable energy and heat supply, without government regulation.

Dublin promotes local involvement in local energy projects by working with the SEC, mentors assigned by SEAI , Fingal County Council supports the development of SEC's across the county. Action C10 of Fingal Climate Action Plan 2024-2029: Promote and support SEAI's Better Energy Communities and Sustainable Energy Communities

Through the MoU FCC supports the preparation of Energy Master Plans for SECs.

2.4.3.3 State Regulation on Local Energy Communities

Ireland has incorporated parts of the EU framework for "energy communities" (RED/EMD) into national policy and regulation, but key legislation relevant to SECs (especially "energy sharing" across multiple meters) are still being developed and implemented. The Commission for Regulation of Utilities is still developing enabling regulatory frameworks for energy communities, and in early 2026 it was still consulting on the conceptual design for energy sharing (private wires) and multiple supply contracts (linked to newer EU electricity market design rules and dependent on smart-meter data). Transposing the updated renewables directive (RED III) has been complex and Ireland has faced delays, which also slows the rollout for community-energy sharing. Peer to peer energy trading examples in Ireland, such as Graiguenamanagh SEC Community Virtual Power Platform.

Ireland can still have other community-led models—for example, community projects set up as a co-operative, company limited by guarantee, or other community group that develops renewables and shares benefits locally. These groups can participate in the energy transition through routes like self-consumption/microgeneration or exporting power, but they do not receive the specific EU "energy community" rights unless they meet the EU definitions and regulatory requirements.

2.4.3.4 Incorporation of Energy Communities

SECs are not defined as one of the EU "energy community" legal forms (like a Renewable Energy Community under RED or a Citizen Energy Community under the Electricity Market Directive), and they do not have a regulated "task profile." An SEC is essentially an SEAI programme label for community groups that organise local energy action (learn–plan–do, mentoring, project development), while the EU energy-community categories are regulatory market roles that can generate, supply, share or trade energy under rules set by the Commission for Regulation of Utilities.

2.4.3.5 Possibilities and Barriers for Energy Communities

There are no "SEC regulations" that give SECs a special market status. However, there is the SRESS process which gives favourable tariffs are on offer where an SEC is involved. In Ireland, an SEC is mainly an SEAI support programme—it promotes the *formation and activity* of SECs through mentoring, guidance and access to supports, rather than through market privileges. If an SEC wants a special position in the energy market (e.g., become an "energy community" that can participate in markets), it typically has to form a separate legal/regulated entity and meet the relevant regulatory requirements.

Balbriggan SEC input - We were told by Plan Energy that we meet the requirements for energy community status and benefits through the Community Enabling Framework.

Energy communities can face both legal and financial barriers: legally, groups often need a formal legal entity and clear governance to sign contracts, own assets, and must comply with CRU rules. Financially, projects can struggle with high upfront development costs (feasibility, legal, grid connection, planning), capital cost, and difficulties securing affordable finance—this is why national supports are needed to help communities become investment-ready.

There can be legal and practical barriers, mainly because an SEC is a programme/community grouping (often not a legal entity), so it cannot automatically borrow money, own assets, or enter long-term contracts.

There are practical templates and "ready-made" structures, but they mostly come from SEAI, not from SEC-specific regulation. For SEC work, SEAI provides the Learn–Plan–Do approach and supporting materials, including an Energy Master Plan (EMP) process (with guidance/templates) that communities use like a simple project "business plan" to set a baseline (electricity, heat, transport), identify opportunities, and prioritise actions.

2.4.3.6 City Access to Energy Communities

Dublin does not participate directly in the LEC's foundation and work as expert, organiser, member or co-owner.

Barriers for Dublin's participation are

- **Lack of Statutory Function:** A local authority cannot act outside of the functions assigned to it by legislation. There is no specific, streamlined legislation that empowers Irish local authorities to directly hold shares in, or act as a primary member

of, community-owned renewable energy cooperatives, complicating the legal basis for direct investment.

- **Complex Governance Structure:** LECs and SECs usually operate as voluntary-led, not-for-profit entities. Integrating a statutory body (the Council) into this structure creates issues with decision-making authority.
- **Permitting and Planning:** Even with support, the regulatory landscape for energy sharing and community-owned generation remains complex, making direct participation in projects high-risk for a public body. A council, in its role as a planning authority (e.g., the Development Plan 2023-2029), must make decisions based on proper planning and sustainable development. Being a co-owner of a project could create a conflict of interest, as the council cannot objectively regulate a project in which it holds a stake
- **High Upfront Costs and Funding Access:** Energy community projects face significant hurdles in accessing capital for initial development phases. Local authorities, facing budgetary constraints, find it challenging to directly finance these ventures.
- **Administrative Burden:** Managing, developing, and operating community energy assets is time-consuming. Relying on volunteers is common, but this is unsuitable for a local authority which must adhere to strict public procurement and governance standards.
- **Risk Management:** Public accountability requires that investments are safe, yet renewable energy projects involve long-term financial risks that might not align with short-term council budget cycles.
- **Grid Access Challenges:** Securing grid connections for community-owned projects is difficult. A local authority faces the same infrastructural, technical, and regulatory bottlenecks as other community groups.
- **Energy Sharing Limits:** Existing legal frameworks have historically made it challenging to generate electricity in one location and share it amongst multiple users within a community, a key aspect of an SEC

A form of Public Private partnership might be an option down the line.

Dublin cannot easily provide public space to LECs or other citizens initiatives.

2.4.4 Utrecht

2.4.4.1 State Regulations Affecting the Energy Transition in the City

The Dutch Climate Agreement is the most relevant state regulation on the energy transition, find it here: https://www.rijksoverheid.nl/documenten/rapporten/2019/06/28/klimaatakkoord. (in Dutch)This aims to reduce greenhouse gas emissions by at least 55 percent by 2030 compared to 1990 levels and achieve climate neutrality by 2050. This sets a clear target of minimal 50% local ownership in renewable production projects. It also sets the target to not use natural gas for heating homes any more in 2050.

Other than this, the Dutch Energy Law (in Dutch) and the Collective Heating law (in Dutch) offer the relevant legal frameworks. The energy law offers the legal definition of an energy community and describes energy sharing. The heating law offers a definition of a ‘heating

community' = an energy community that operates as a district-heating company. On top of this the Collective Heating Law specifies two obligations to municipalities:

When drafting a heat plot plan (kavelplan) they have to see if a heating community is active in that area, and if so, they are obligated to collaborate with them and help support them with organising.

On top of that, this law prescribes an enabling framework for heating communities, which is supposed to support them and their stakeholders (=municipalities) with collaborating. This framework is however not yet operational

The law Municipal Instruments for Heating Transition offers (in Dutch) the legal framework for municipalities to quit the use of natural gas in existing neighborhoods which are now using natural gas. It describes which planning proces (in Dutch) the municipality needs to follow; including the Municipal Heat Plan (warmteprogramma) they need to make, and the change in their 'Omgevingsplan', which they need to do, based on the spatial planning law 'Omgevingswet' (in Ducth).

The ACM prioritisation kader (in Dutch) offers the framework for grid connections, and the prioritisation within the waiting list for grid connections (transportation capacity). Since all district heating projects will need additional grid connections, this kader is highly relevant. Because almost the entire Netherlands has grid congestion, so it takes years to get a connection.

2.4.4.2 City Opportunities Without State Regulation

Utrecht have no opportunities to develop local renewable energy and heat supply, without government regulation.

The city takes the initiative to promote local heat projects an*d for wind also to some extent (at least 50% local ownership).*

2.4.4.3 State Regulation on Local Energy Communities

There is almost a complete regulation. There is a clear definition of a LEC in the Energy Law and the heating law, and we have the activity of Energy Sharing embedded in the Energy Law.

However, while there is an enabling framework in place for heating communities, there is no equivalent framework for electricity-producing energy communities. Moreover, the existing framework has neither been allocated a budget nor made operational.

2.4.4.4 Incorporation of Energy Communities

There is one definition of an energy community, but it consists of options so that makes both forms of energy communities possible. In this letter of parliament the government explains it: https://www.rijksoverheid.nl/documenten/kamerstukken/2025/09/29/de-rol-van-energiegemeenschappen-in-het-energiesysteem (in Dutch).

There are no other forms of energy communities allowed than those mentioned in EU legislation.

The Dutch climate agreement sets the target of 50% local ownership in production projects, which promotes the formation of their activities

The heating law makes it obligatory for municipalities to study if there are heating communities active and if so, they need to collaborate with them and support them in organising.

On top of that the heating law subscribes an enabling framework for heating communities.

The recent parliament letter on energy communities has announced 13 more measures to promote the formation of LECs including the support of regional federations of energy communities to strengthen capacity building, and support for municipalities on how to collaborate with energy communities: https://www.rijksoverheid.nl/documenten/kamerstukken/2025/09/29/de-rol-van-energiegemeenschappen-in-het-energiesysteem (in Dutch).

2.4.4.5 Possibilities and Barriers for Energy Communities

The biggest legal barrier is the unclarity around procurement regulations; sometimes a government holds ground or rooftops on which an energy production project can be build; and they want to give it to a local community, but they think they need to do a procurement procedure which often results in a commercial entity winning. And it has been proven in court that the municipality does not need to do this procurement procedure, they can just choose the local community if they have clear local policies on local ownership.

Financial barriers are mostly present in the early stages of energy communities. Subsidies are needed to make the first steps in a community project = hiring spaces for gatherings, printing flyers, hiring research companies for feasibility studies etc. Some municipalities offer subsidies, but not all; so this creates an unlevel playing field for LECs across the country. We want a national subsidy for the initial steps.
Because of the developmental funds earlier described, it is possible to finance the developmental phases. However, these are both pilots and therefor temporary. They need to be continued in the future
In terms of financing of the projects, we speak of debt and equity.

Getting debt (loans) for production projects is not a problem because of the Dutch realization fund (in Dutch) for LECs.

Getting loans for district heating LECs is more difficult. There is no state guarantee, which means that the LECs have to ask for a municipal guarantee if they want access to low interest-rate loans from public banks. Not all municipalities can offer this. The state is currently working on a state-guarantee for all district heating projects, but it is at the moment unclear if LECs will be allowed to access it. That will be a big barrier if not.

In terms of equity the LECs face barriers when the projects require a large amount: in district heating this can go up to 3 to 15 million needed as equity. To support this, Energie Samen is starting an equity fund, but it is not yet operational. So currently this is a big barrier.

When a project needs only limited equity, up to a few million, they are able to raise this successfully through financial participation of members, using a platform provided by Econobis (previously part of Energie Samen).

For heating communities special legal corporate forms developed for local energy projects are described on this webpage (in Dutch), but in short, it is a cooperative which owns a limited liability company; with all shares of the company being owned by the cooperative. And the cooperatives members are the users of the district heating. Strictly legal speaking it is

possible to do this with only the cooperative, but projects add the limited company because otherwise banks will not finance the projects.

For energy production projects (windmills/solar parks) they often only have the legal entity of the cooperative.

But sometimes there is a limited liability company of which some of the shares are held by a cooperative, and some are owned by a public or private entity = shared ownership.

There are examples for statutes and internal regulations, made by the federation Energie Samen.

2.4.4.6 City Access to Energy Communities

In the Netherlands LECs are always a Cooperative with democratic decision-making between members = one man one vote. So, if the municipality is a member of that cooperative they only have 1 vote at the general assembly. That makes this not a very effective way to establish the relationship.

The relationships are established in several ways: often starting with a letter of intent between municipality and cooperative. And some policies at municipal level. After that a collaboration agreement is drawn up; dividing roles and responsibilities between the LEC and municipality.

After that, when the municipality want to be a co-owner, this is done by starting a limited company of which part of the shares are owned by the cooperative, and the other part by the municipality. When a municipality does not want to be co-owner but does want to have some transparency and decision-making influence on the heating community, other arrangements can be made. For example, in the statutes of the cooperative provisions can be written which state that the municipality needs to agree with certain decisions. Or a collaboration agreement can be written up. Or the municipality can be offered a place on the advisory board of the heating community.

However, this is not common knowledge. Many (if not all) municipalities are not familiar with this route, and a lot of legal advisors are being hired to look into these questions, and a lot of time and effort is lost on it currently.

2.4.5 Comparison of Policy Steering

Below is a **comparative analysis of policy steering in Leuven, Strasbourg, Dublin, and Utrecht**, focusing on **state regulation, municipal room for manoeuvre, and the legal-financial treatment of energy communities** in the urban energy transition. The comparison highlights **similarities, differences, and distinctive national/local features**, with explicit attention to **legal authority, financial mechanisms, and access to energy communities**.
The analysis is based on the sections 2.4.1-4.

State Policy Steering and Regulatory Frameworks

Commonalities:

All four cities operate in **strongly state-steered energy systems**, shaped by:

- EU energy directives (RED II / RED III, Electricity Market Directive),
- National transposition choices,
- Centralised regulation of grids, tariffs, and market roles.

None of the cities has full autonomy to redesign market rules or energy sharing mechanisms; **core levers remain national**.

Differences and national specificitets:

Table 11. Comparison of Steering Policies Towards the Cities.

City	Regulatory character
Leuven (Belgium/Flanders)	Fragmented competencies between federal and regional levels. Strong regulatory detail but limited functional incentives for LECs.
Strasbourg (France)	Highly codified national framework with specific instruments for collective self-consumption and energy sharing (PMO).
Dublin (Ireland)	Centralised, state-led climate governance with incomplete energy community regulation, is still under development.
Utrecht (Netherlands)	Highly ambitious national climate targets with detailed municipal obligations, especially for heat transitions.

Unique situations:

- **Belgium**: Constitutional limits mean RED II was only fully transposed offshore, constraining onshore LEC potential.
- **France**: Strong national legal clarity, but restrictive geographic and fiscal rules.
- **Ireland**: Energy communities exist more as *programmes* (SECs) than as regulated market actors.
- **Netherlands**: Energy communities are structurally embedded in heat policy, less so in electricity.

City Opportunities Without State Regulation

A key point of comparison is **how far cities can act independently of national steering**.

Range of municipal autonomy:

Leuven has the widest practical scope:

- Develop renewables on city assets,
- Act as producer, heat network operator, or anchor customer,

- Enable partnerships and aggregation. This reflects Belgium's relatively strong municipal competence framework.

Strasbourg can act creatively within national rules:

- Supporting cooperatives since 2018,
- Tendering public roofs,
- Creating SPVs,
- Using the Climate Agency as a facilitative intermediary.

Dublin and Utrecht report *no meaningful ability* to develop energy supply outside national regulation.

- Both rely heavily on **state-enabled programmes** and planning mandates rather than autonomous local initiatives.

Key difference
Leuven and Strasbourg can **actively shape projects**, while Dublin and Utrecht mainly **implement national frameworks**.

Legal Incorporation of Energy Communities

Similarities:

- All four countries formally recognise energy communities.
- Legal forms are usually **existing corporate types** (cooperatives, associations, LLCs), not new bespoke entities.
- EU definitions structure access to rights, but interpretation varies strongly.

Differences in legal depth and usability:

Table 12. Comparison of LECs Legal Clarity and Usability.

City	Legal clarity	Practical usability
Leuven	Clear definitions (CEC & REC)	Limited benefits; high admin burden
Strasbourg	Very detailed legal codification	Functional but restrictive
Dublin	Partial and evolving	Fragmented and uncertain
Utrecht	Comprehensive (esp. heat)	Promising but not fully operational

Distinctive features:

- **Leuven/Flanders**: Energy sharing exists but does not affect grid tariffs, limiting financial viability.

- **France**: The PMO structure is unique and central to collective self-consumption.
- **Ireland**: SECs are *not* legal energy communities, but facilitation programmes without market rights.
- **Netherlands**: Heating communities have a statutory role; electricity communities lack an equivalent enabling framework.

Financial Conditions for Energy Communities

Shared challenges

Across all cities:

- High **upfront development costs** (feasibility studies, legal work, grid access),
- Limited revenue certainty,
- Difficulty scaling beyond pilot projects.

Financial contrasts:

Leuven

- Strong fiscal incentives for cooperatives (tax shelter, dividend exemptions),
- Capital raising is legally easy,
- But weak operational incentives once established.

Strasbourg

- Feed-in tariffs still support small projects,
- Tariffs are declining by design,
- Energy sharing faces additional grid taxes.

Dublin

- Heavy reliance on national supports (SEAI, SRESS),
- Without these, projects struggle to reach investment readiness,
- Communities often lack legal personality to borrow or own assets.

Utrecht

- Advanced financial ecosystem for LECs:
  - National realisation fund for loans,
  - Planned equity funds,
- Major gaps remain for **district heating**, especially lack of state guarantees.

Key differentiation
Utrecht and Leuven offer **stronger cooperative finance ecosystems**, while Dublin and Strasbourg remain more dependent on public support schemes.

Cities' Access to Energy Communities

Patterns of municipal participation:

- **Indirect support is the norm**.
- Direct ownership or membership is legally possible in all cities, but:
    - Often symbolically weak (one vote in a cooperative),
    - Complicated by public procurement and governance obligations.

City-specific situations:

- **Leuven**
    - Does not participate directly,
    - Can collaborate via SPVs,
    - Procurement rules and limited added value discourage deeper involvement.
- **Strasbourg**
    - Most proactive:
        - Co-ownership in cooperatives,
        - City-backed SPVs,
        - Legal toolkits provided by Climate Agency.
- **Dublin**
    - Effectively excluded from direct participation due to:
        - Lack of statutory basis,
        - Conflict-of-interest risks,
        - Financial and organisational constraints.
- **Utrecht**
    - Highly flexible in theory:
        - Municipal co-ownership possible,
        - Provision of public space without procurement allowed,
    - In practice hindered by:
        - Legal uncertainty,
        - Limited awareness among municipalities.

Conclusions

Across the four cities, policy steering largely determines what is possible, more than local ambition. Where law, finance, and municipal competence align (notably Utrecht for heat and Leuven for cooperative finance), energy communities can scale. Where they do not (Dublin, and partly Leuven for electricity sharing), energy communities remain symbolic or pilot-based.

The comparison shows that legal recognition alone is insufficient: operational rights, financial instruments, and clear municipal roles are decisive for integrating energy communities meaningfully into urban energy transitions.

Supra-local regulation largely determines local possibilities

Across all cases, national and regional frameworks define the playing field for local energy transitions. Key elements such as grid tariffs, energy sharing rules, market access, support schemes, and public procurement obligations are set above the city level.
As a result, cities' ambitions often exceed their regulatory room for manoeuvre, especially for electricity markets and energy communities.

Cities are strongest as implementers and coordinators, not market actors

All cities have limited direct authority over energy markets, but play a crucial role in:

- Translating national targets into spatial, district-level action
- Coordinating planning, public works, infrastructure upgrades, and stakeholder engagement
- Acting as anchor customers, conveners, or facilitators rather than suppliers

This integrator role is essential but often under-recognised and under-resourced.

Heat transition offers the clearest local steering capacity

Compared to electricity, heating policy consistently offers more leverage for municipalities, through:

- Local heat plans, zoning, and permitting
- District heating enablement
- Obligations to explore or prioritise collective solutions

However, even here, cities often **cannot fully mandate end-use choices**, making success dependent on national affordability rules and financing mechanisms.

Legal recognition of energy communities is necessary but insufficient

All countries now recognise energy communities in law, largely through RED II / EMD transposition. This provides legitimacy and clarity, but:

- Practical market advantages are weak or absent
- Administrative burden is high
- Financial benefits (e.g. tariff reductions, grid advantages) are limited or non-existent.

As a result, most energy communities struggle to scale beyond niche or early-phase projects.

Early-stage financing and development capacity are universal bottlenecks

Across all cities, the most critical barriers are upfront and non-technical:

- Development risk (feasibility studies, legal work, permitting)
- Lack of patient capital or guarantees
- Limited municipal budgets and staff capacity

Even where production subsidies exist, projects fail before reaching investment readiness.

Public procurement and role confusion constrain city–community collaboration

In all contexts, uncertainty over procurement, conflict of interest, and statutory roles limits:

- Direct municipal participation in energy communities
- Preferential access for citizen initiatives to public land or roofs

This creates a conservative approach, even where legal options do exist.

Recommendations

Strengthen coherence between climate targets and market rules

- Align **energy-market regulation, grid tariffs, and support schemes** with decarbonisation and local energy objectives.
- Ensure **policy stability and predictability**, especially for programmes that directly support local implementation.

Formally empower cities as energy-system coordinators

- Recognise municipalities as **system integrators** in legislation and funding schemes.
- Provide cities with:
    - Stronger mandates to coordinate grid planning and heat strategies
    - Dedicated funding for planning, facilitation, and stakeholder processes

Make local heat planning the structural backbone of urban energy policy

- Mandate and finance **local heat transition plans** with clear links to national targets.
- Combine connection requirements with **national consumer-protection and affordability frameworks**, enabling real uptake.
- Explicitly include **energy communities and local ownership options** in heat-planning processes.

Move energy community policy from legal recognition to real enablement

- Reduce administrative and transaction costs for energy sharing.

- Introduce **tangible market advantages** for energy communities (e.g. tariff incentives, simplified grid access, priority connection).
- Clarify and operationalise **enabling frameworks**, rather than leaving them symbolic or unfunded.

Invest structurally in early-stage project development

- Create **national or regional development funds** for:
    - Feasibility studies
    - Community organisation and governance
    - Legal and financial structuring
- Provide guarantees or zero-risk loans that cover the **development phase**, not only construction.

Clarify and simplify city–community collaboration rules

- Provide **clear guidance on public procurement and conflict-of-interest issues**, including when and how cities can:
    - Provide public space to citizen initiatives
    - Co-own projects
    - Act as anchor customers
- Develop **standard templates** (contracts, statutes, cooperation agreements) usable across municipalities.

Across very different national systems, the same pattern emerges:
Local governments are expected to deliver ambitious energy transitions without being given commensurate regulatory, financial, or institutional tools.

Success depends less on inventing new local targets and more on **aligning higher-level regulation with local implementation capacity**, especially for heat systems and energy communities. Without this alignment, local action risks remaining fragmented, slow, and dependent on exceptional projects rather than becoming systemic.

2.5 Economic Regulation and Organization.

2.5.1 Leuven

2.5.1.1 Public Requirements for LECs

In general, the registration of a LEC as a legal entity is sufficient. For specific activities, an additional registration with the DSO and/or regulator may be required.

The registration as a legal entity takes a maximum of a few weeks. The registration in total costs between 1.400 and 2.000 euro, including the notary fees, registration tax and publication.

There are no requirements for LEC's as such, but a business plan may be needed as a basis for a capital raise (limited), to apply for a loan, or for governmental participation.

As a standard, the LEC's operate in a free market. Energy regulators apply price controls for the net operators, with new tariffs based on an investment plan (per 2 years). The federal regulator regulates the tariffs of the transmission system operator, and the regional regulator regulates tariffs of the distribution system operator. LECs can't replace activities of the net operators.

In addition, the federal regulator enforces regulations on price transparency and is authorized to issue fines. LEC's that include activities with energy sharing, are not forbitten to make profits on these activities, but cannot set these activities up with the aim to make profits.

2.5.1.2 Consumers Preferences

There is a competition between renewable solutions, rather than between market players (e.g. individual heat pumps vs DHC, green power contracts vs individual PV vs cooperative wind & solar power). With the exception of DHC and cooperative wind & solar power, these markets are more regional than local.

In general, the DHC-market in Flanders is considered immature (with almost no individual existing dwellings connected to DHC). The heat pump market for existing dwellings is also rather small. Most heat pumps are currently installed in new buildings and in non-residential buildings. In addition, some PV-installers also start offering more integrated solutions (with charging infrastructure, heat pump boilers and heat pumps).

The juridical added value of the LEC framework for these local solutions is limited.

Citizens' decisive roles in LECs have no influence on preferences.

2.5.1.3 City's Financial Involvement

At the moment, Leuven is not financially involved in an LEC, but equity participation, collaboration agreements and concession agreements are in theory possible.

2.5.2 Strasbourg

2.5.2.1 Public Requirements for LECs

There is no public approval required in France. France has not set up a central registry of energy communities.

For now, there is no monitoring role assigned to the regulatory authority to oversee registration of energy communities, check for abuse, and monitor challenges around how the definition is implemented.

2.5.2.2 Consumers Preferences

Consumers decisive influence depends on the type of project and whether consumers of the LEC's project are already involved in the setting up of the project.

If future consumers of a project are participating at the setting up, they might have a quite strong influence on the project' orientations and the price establishment.

On the other side, at the very beginning of a project there is no consumers, and it comes that the LEC needs to find some later (as it is the case with the Brasseurs d'Energies) the LEC may impose its own conditions such as the price for the energy sharings. However, consumer interest must always be taken into account in the establishment of the project since the project holder takes the risk not to find people or enterprises interested enough to take part in the operation.

There are no real competitors for the Brasseurs, as the projects they want to carry out are small-scale and their goal is not to generate large profit margins.

In addition, where possible, the city can provide the Energy Brewers with rooftops on which to install solar panels.

Finally, Strasbourg remains a city with great potential for solar development. The Brewers can therefore also turn to a number of private homes.

2.5.2.3 City's Financial Involvement

Strasbourg is not financially involved in the LEC through direct economic participation or through agreements or other commitments.

2.5.3 Dublin

2.5.3.1 Public Requirements for LECs

LEC is a new concept through E2-CUTIES for Dublin / Ireland. SEC can be set up by individuals under the SEAI programme, there's no need for public approval.

SEAI SEC membership registration is done through a short online form, after which SEAI reviews the application and gets in touch. In terms of cost, there is no fee to register/join the SEC network, so the main costs tend to be indirect, like setting up the SEC to operate. The costs start with the Energy Master Plan which is reimbursement based and often requires bridging finance of 20,000 euro.

To progress projects, communities are expected to develop an Energy Master Plan (EMP) . The EMP sets a baseline of energy use across electricity, heat and transport, identifies existing renewables, creates a Register of Opportunities (potential efficiency/renewables projects), and then selects priority projects for the first three years with targets and a way to track progress over time.

SECs are not subject to price controls as SECs. An SEC is an SEAI-supported community programme that helps energy communities plan and deliver projects. If an SEC starts selling energy or operating a network, then it enters the regulated energy market: the CRU is Ireland's independent regulator, which sets price controls for the electricity and gas networks, and oversees consumer protection and competition in supply. Meanwhile, retail supply is generally a competitive market (suppliers set tariffs commercially), under CRU oversight to ensure fair competition and consumer protection—so it's not a "free market without regulation," but a competitive market with regulation. The SRESS process provides more favourable energy export tariffs for community-led projects. I'm not sure why SRESS is being overlooked here.

2.5.3.2 Consumers Preferences

Consumer interests are central to both establishing and running an SEC, because SECs are built around delivering local benefits that households and local organisations actually want. In practice that means priorities like lower energy bills and more affordable warmth, better comfort/health in homes, access to grants and supports, and practical local improvements (e.g., community building upgrades, rooftop solar, EV charging). SEAI positions the SEC programme as enabling communities to achieve their energy goals through local action and participation. Ideally, a co-operative model would allow for local investment and community benefits such as more affordable energy costs.

Large renewable energy corporations are driving renewable energy development in Ireland.

2.5.3.3 City's Financial Involvement

There is no mechanism as yet but a partnership arrangement might work well.

2.5.4 Utrecht

2.5.4.1 Public Requirements for LECs

Overall, registering a heat community (a heating company owned, operated, and managed by end users) in the Netherlands usually involves establishing a legal entity, such as a cooperative, and registering it in the Trade Register of the Chamber of Commerce (in Dutch: KvK).

However, deciding whether to register as a heat community has to do with the number of connections you are aiming to roll-out. There are 3 categories:

≤ 10 connections: very small heating company
10–1500 connections: medium-sized heating company
> 1500 connections: large heating company (subject to licensing)

Obligations ≤ 10 connections: very small heating company

- No ACM licence required.
- Must comply with maximum heat tariffs set by ACM (NMDA principle).
- Basic responsibility for security of supply (no formal continuity plans needed).
- Must keep internal records of outages, but reporting obligations are limited.
- No obligation to connect all customers (no connection obligation).
- Must provide clear consumer contracts with proper rights and terms.
- Must ensure fair metering, maintain consumption administration, and issue annual bills.

Obligations 0–1500 connections: medium-sized heating company

- No ACM licence required (under the new heating law, starting 1 jan 2027 you are required to have an ACM licence).
- Must follow ACM's maximum tariffs for heat and component-related charges.
- Must have procedures for outages, continuity, and basic emergency handling.
- Must comply with consumer protection rules in heat supply contracts.

- Must install heat meters or cost allocation systems; must provide annual billing.
- May be required to report incidents or respond to ACM in case of complaints.
- Must maintain an internal complaints procedure and participate in a dispute resolution body.
- Must provide transparent information on tariffs, rights, and obligations to consumers.

Obligations > 1500 connections:

- ACM supply licence is mandatory.
- Must provide annual operational and financial reports to ACM.
- Must formally report supply interruptions and outages.
- Must meet strict technical and operational security-of-supply standards.
- Must maintain detailed administrative, metering, and billing systems.
- May be obligated to connect customers depending on network type and regulatory rules.

Must prepare and maintain an emergency or calamity plan as part of licensing conditions.

The process of registration itself can be completed quickly (within one day). However, practical experience shows that taking on responsibilities such as heat exploitation can take years. There are guidelines, no legal rules towards official recognition of a heat community.

Costs for formal incorporation (mandatory) 700-2500 euro.

In practice heat communities must prepare a business plan when developing or operating a heat project. This is mostly done to apply for subsidies to prove their legitimacy.

For generation projects such as wind and solar, price regulation is done via the market. The ministry is still drawing up rules for heat price regulation, they will work with maximum heat tariffs for district-heating up to 1500, and above that they will work with cost-based maximum tariffs.

2.5.4.2 Consumers Preferences

Decisive consumer influence is the premise of a LEC. The end-users have decision-making power of the establishment and operation. This is organised through the legal entity of the cooperatives, where the general assembly is the highest decision-making power, where all members have a vote and a certain mandate is given to the board and working groups of the cooperative. That is a preference for the consumer.

The rise of heat pumps will jeopardize the full operation of a heat network. It is up to residents to decide whether to install a heat pump, but they are making it more difficult for people who want to connect to heat network as their business case becomes smaller and smaller.

2.5.4.3 City's Financial Involvement

There are conversations held regarding the financial guarantee of the municipality on loans for heat communities.

2.5.5 Comparison of Economic Regulation and Organization

Below is a **comparative analysis of public requirements, consumer preferences, and city financial involvement** in **Leuven, Strasbourg, Dublin, and Utrecht**, focusing on **legal and financial aspects** of local/energy communities (LECs).
The comparison highlights **common EU-level patterns**, **national regulatory differences**, and **distinct local practices**, based on the sections 2.5.1-4.

Public Requirements for Energy Communities

Legal Registration, Regulation, and Market Position

Shared similarities:

- **Legal-entity registration is the baseline** in all four cities. Energy communities are generally set up as cooperatives, non-profits, or similar legal forms.
- **No prior political approval** is required in any case; compliance is structured via company law and sectoral energy regulation.
- **Energy communities cannot replace regulated network operators** (DSOs/TSOs) anywhere; grid operation remains a regulated monopoly.
- **Business plans are de facto required** almost everywhere when applying for subsidies, loans, or public participation, even if not legally mandatory.

Key differences:

Table 13. Comparison of Requirements Towards LECs.

Aspect	Leuven (BE)	Strasbourg (FR)	Dublin (IE)	Utrecht (NL)
Central registry	Yes (general legal registry)	No specific LEC registry	SEC register via SEAI	Chamber of Commerce (KvK)
Market regulation	Free market, except network tariffs	Limited oversight, still evolving	Competitive supply under CRU oversight	Highly structured heat regulation
Sectoral focus	Electricity & mixed	Solar, energy sharing	Multi-energy (electricity, heat, transport)	Strongly focused on heat
Scale-related obligations	Limited	Limited	Limited unless selling energy	Strong tiered obligations

Unique national/local situations:

- **Leuven / Flanders**: LECs may generate surplus but cannot be *set up* with the primary aim of profit—an important legal distinction.

- **Strasbourg / France**: Absence of a national monitoring framework for LECs creates legal openness but also uncertainty and limited consumer protection oversight.
- **Dublin / Ireland**: The **SEC model** is not a market role but a *state-supported pathway*; LECs only become regulated entities once they supply energy.
- **Utrecht / Netherlands**: Heat communities face **graduated regulatory burdens** based on number of connections; from 2027, medium-sized heat companies will also require licensing.

Consumer Preferences and Influence

Decision-making power, motivation, and market context

Shared similarities:

- In all cities, **consumer interest is essential for viability**, especially for small-scale, local projects.
- **Economic motivation (cost savings, energy autonomy)** remains stronger than ideological motivations.
- **Competing technologies** (PV + heat pumps vs. district heating) shape consumer choices everywhere.

Key differences:

Table 14. Comparison of Consumer Attitudes.

Aspect	Leuven	Strasbourg	Dublin	Utrecht
Formal decision power	Limited impact	Depends on project phase	Central to SEC model	Core principle
Consumer priority	Cost/technology	Project-specific pricing	Bills, comfort, grants	Collective control
Market maturity	Immature DHC & HP	Emerging solar	Corporate-led renewables	Heat transition hotspot

Unique local dynamics:

- **Leuven**: Citizen “decisive roles” in LECs do **not significantly alter consumer preferences**; technology choice dominates.
- **Strasbourg**: Consumer influence is **stronger if involved early**; if not, projects set conditions unilaterally.
- **Dublin**: Consumer preferences are institutionalized - SECs exist *because* of member needs (energy poverty, retrofit access).

- **Utrecht**: Cooperative governance (one-member-one-vote) is itself a **consumer preference**; however, private heat pumps undermine collective heat networks.

Cities' Financial Involvement

Equity, guarantees, assets, and indirect support

Shared similarities:

- **No city directly owns or operates LECs**.
- **Indirect financial facilitation** (roofs, guarantees, programme support) is preferred to direct equity.
- **EU and national funding** play a larger role than municipal budgets.

Key differences:

Table 15. Comparison of Financial Involvement.

Aspect	Leuven	Strasbourg	Dublin	Utrecht
Equity participation	Possible, not used	Used in other cases, not current	None	None
Municipal guarantees	No	No	No formal mechanism	Actively discussed
Asset contribution	Limited	Public roofs	Programme-led	Policy preference
Financial risk posture	Cautious	Enabling, hands-off	Programme-based	Strategic but risk-aware

Unique local situations:

- **Leuven**: Keeps options open (equity, concessions) but remains financially disengaged.
- **Strasbourg**: Combines **strong non-financial support** (zoning rules, climate agency, roofs) with no direct investment.
- **Dublin**: Financial support is largely **national (SEAI, RESS, SRESS)** rather than municipal.
- **Utrecht**: Municipal loan guarantees are emerging as a **critical enabler for heat communities**, given lack of national guarantees.

Cross-City similarities, Differences, and Structuring Factors

Structural similarities

- LECs are framed as **complements**, not alternatives, to national energy systems.

- Cities act primarily as **facilitators**, not investors.
- Consumer engagement is universally valued but institutionalized differently.

Main differences

- **Regulatory maturity** (highest in the Netherlands, lowest in France).
- **Role of the state** (Ireland's SEC model vs. market-based Belgium/Netherlands).
- **Technology focus** (heat in Utrecht, solar in Strasbourg, mixed in Leuven and Dublin).

What explains the variation

- **National energy law traditions** (e.g. Dutch heat regulation vs. French flexibility).
- **Local transition pressures** (urban heat transition in Utrecht).
- **Policy instruments available to cities** (zoning in Strasbourg; programme funding in Dublin).

Conclusions

Across Leuven, Strasbourg, Dublin, and Utrecht, energy communities operate under broadly aligned EU principles but diverge sharply in **regulatory depth, consumer empowerment, and municipal financial risk-taking**.

Below are overall conclusions and they focus on how local energy systems and energy communities are economically regulated, organised, and enabled, rather than on technical or spatial aspects.

Economic regulation frames local energy initiatives as complementary, not transformative

Across all cases, economic regulation treats local energy communities (LECs) and municipal initiatives as adjuncts to the central energy system, not as alternatives.

- Network operation remains a regulated monopoly everywhere.
- Market access, tariffs, and supplier roles are tightly controlled at national level.

This fundamentally limits the scale, autonomy, and business viability of local initiatives, regardless of political ambition.

Legal recognition does not equal economic viability

All countries studied have transposed EU definitions of energy communities, providing legal recognition and legitimacy. However:

- Few concrete economic advantages (tariff reductions, grid incentives, priority access) are attached to this status.
- Administrative complexity and compliance costs often outweigh financial benefits, especially for small projects.

As a result, energy communities tend to remain project-based and fragile, rather than evolving into stable economic actors.

Early-stage economics are the key bottleneck

Across all cities, the most critical gap lies before investment, not during construction:

- Feasibility studies, legal structuring, and community organisation are hard to finance.
- Cities and communities face high development risks with limited balance sheets.
- Available subsidies focus on assets, not on project development and organisational capacity.

This leads to underutilisation of citizen initiative and slows project pipelines.

Municipal financial involvement is structurally constrained

In all cases, cities are **extremely cautious economic actors**:

- Direct equity participation is rare or absent.
- Guarantees are legally unclear, politically sensitive, or budgetarily constrained.
- Public procurement, state-aid rules, and conflict-of-interest concerns discourage experimentation.

Cities therefore rely mainly on indirect economic roles: asset provision, programme funding, facilitation, or acting as anchor customers.

Consumer behaviour remains market-driven, not community-driven

Economic regulation largely assumes individual consumer rationality:

- Cost, comfort, and technological convenience dominate decision-making.
- Collective solutions (e.g. district heating, energy sharing) struggle when individual alternatives are cheaper or simpler.
- Cooperative governance increases legitimacy but does not compensate for weaker economics.

Without regulatory correction, market incentives often undermine collective energy solutions.

Heat regulation is more economically structured than electricity

Among all sectors, district heating shows the strongest economic organisation:

- Tiered regulation, licensing, consumer protection, and affordability rules exist (most clearly in the Netherlands).
- This provides long-term investment certainty but increases complexity and entry barriers.

Electricity-producing energy communities face less structure but also less support, leaving them exposed to market volatility.

Recommendations

Shift economic regulation from neutrality to enablement

- Move beyond “technology-neutral” market rules where they structurally disadvantage local and collective solutions.
- Introduce targeted economic incentives for energy communities (e.g. reduced tariffs, priority grid access, simplified supplier obligations).

Couple legal recognition of energy communities with concrete economic value

- Attach clear, usable benefits to energy-community status:
    - Simplified market entry
    - Reduced administrative requirements
    - Preferential access to public assets or support schemes
- Ensure these benefits outweigh transaction costs, especially for small initiatives.

Systematically fund the development phase

- Establish national or regional development funds covering:
    - Feasibility studies
    - Legal and financial structuring
    - Community organisation and governance
- Use zero-risk loans or grants that are written off if projects do not reach financial close.

Clarify and normalise municipal economic roles

- Provide clear national guidance on:
    - When municipalities can provide guarantees
    - How they can co-own or co-develop projects
    - How procurement rules apply to citizen initiatives
- This reduces risk aversion driven by legal uncertainty rather than by substance.

Align consumer economics with collective system goals

- Adjust tariffs, taxes, and subsidies so that:
    - Collective heat and energy systems are not penalised versus individual solutions
    - Long-term system efficiency is rewarded over short-term individual optimisation
- Complement price signals with consumer protection to maintain social acceptance.

Treat heat communities as long-term economic infrastructure

- Continue developing clear, stable heat regulation frameworks with:
    - Long investment horizons
    - Predictable returns
    - Explicit pathways for citizen and municipal participation
- Ensure that energy communities have equal access to guarantees and financing instruments available to commercial operators.

Across all four cities, economic regulation remains the **decisive constraint** on scaling local energy systems. While governance, participation, and planning are increasingly ambitious, **economic rules still favour centralised, incumbent models**.

For local energy communities and cities to move from experimentation to system relevance, economic regulation must evolve from **passive allowance** to **active structuring**, explicitly recognising the public value of local, collective energy organisation.

2.6 Facilitating Tools for LECs

2.6.1 Leuven

2.6.1.1 Tools from the City

Leuven takes multiple initiatives to promote local involvement.

- Create investment opportunities in public procurement (but not always)
- Through communication (e.g. LICHT Leuven)
- Support local energy communities by involving them in EU-funded projects

The city has taken the LICHT-initiative. The aim of this was to bring citizens together to form LECs. This approach did not entirely match with the existing landscape of citizen cooperatives (which are more city-region oriented) and could not make use of benefits from the LEC framework.

There has been a lot of exchange of experience and expertise between public servants from different (mainly Flemish) cities. These practices aim more at supporting the development and growth of LECs than the establishment itself. The LICHT-initiative is an exception, but had little impact.

Locals have taken some initiatives. These include the development of a principle framework (aiming for citizen participation in local energy projects) and the initiation of specific cooperative projects.

The city has facilitated LECs by involving them in EU-funded projects, offer visibility through city-wide communication and by tendering assignments to provide advice and support directly to citizens.

2.6.1.2 Support for LECs

Citizen-led energy projects have been favoured in specific (regional) subsidies for large scale PV and wind turbines. The city has not taken initiatives to directly financially support or reward citizen involvement, but did favour citizen participation in some public tenders.

LECs are advised by other LECs, cooperative federations and in some cases by public agencies. In some cases, public authorities have also funded advisors to support starting LECs.

There are no direct restrictions or opportunities at the moment concerning financing from crowdfunding, private institutions, foundations or other.

2.6.2 Strasbourg

2.6.2.1 Tools from the City

Strasbourg and the metropolis have been supporting community energy since 2018 with a specific program that included facilitation for the creation of a local energy cooperative, tendering public roofs to energy cooperatives, buying shares of local cooperatives and other facilitations (meeting rooms, communication via official channels, etc).

The setting up of Strasbourg's Climate Agency includes a role in promoting community energy and specific tools to facilitate the creation of energy sharing schemes (including specific legal framework to massify energy communities, the so-called "PMO Territoriale").

Local governments can use other tools such as Urban Zoning Plan to push its energy planning agenda. For instance, Strasbourg's zoning plan mandates to install 7 Wp/m² of PV in new buildings or heavily refurbished buildings. It also mandates a connection to nearby district heating when building a new building.

Collaboration with the Climate Agency, particularly within the framework of E2-Cuties, but also by creating the PMO with it, which facilitates the deployment of energy sharing projects, particularly by citizen energy communities, are ways of encouraging the deployment and operations of LECs.

2.6.2.2 Support for LECs

At the regional level, there are several organizations, particularly those specializing in renewable energy, that can advise LECs.

- The Energy Department of the Eurometropole of Strasbourg is perfectly capable of playing this advisory role in order to move towards green funds, if they exist.
- The Strasbourg' Climate Agency has the same role.

The Alsace Alter Energies association can also provide advice and refer you to such funds.

There is no explicit mention in either the Climate and Energy Law or the Energy Code prohibiting financing practices such as crowdfunding, private institutions, foundations or other.

2.6.3 Dublin

2.6.3.1 Tools from the City

FCC supports the establishment of SECs through the SEAI mentorship programme. Action C10 of Fingal Climate Action Plan 2024-2029: *Promote and support SEAI's Better Energy Communities and Sustainable Energy Communities*

Dublin found inspiration for the establishment of LECs

- Through the E2-CUTIES initiative, Fingal collaborates with other European cities (Leuven, Utrecht, Strasbourg) to overcome challenges in governance, technical expertise, and legal barriers. This partnership helps transition from conventional energy models to LECs.
- Inspiration is derived from the need to address specific neighborhood-level challenges, such as installing solar energy, energy-sharing schemes, and home retrofits, rather than relying solely on top-down approaches

Locals, including NGOs, have been instrumental in putting LECs on the local political agenda mainly through the SEAI SEC Network.

2.6.3.2 Support for LECs

The state or the city the opportunity to support the establishment or operation promote renewable energy projects through The SEAI Community Enabling Framework and SRESS support community groups.

If an SEC registers as a CLG they need to hire an accountant for making returns, unless an accountant is on the SEC committee.

SECs can raise money from crowdfunding, private sponsors, foundations or donations, but the route chosen affects what's allowed. If raising donations/grants that is generally straightforward, but if raising investment money from the public through crowdfunding, that is regulated under the EU Crowdfunding Regulation and must be done through an authorised crowdfunding service provider supervised in Ireland by the Central Bank. A further opportunity is community benefit funds linked to renewable projects under Ireland's RESS scheme, which are designed to fund local climate/energy initiatives in communities near projects.

There are options for social enterprise development through energy trading and energy generation.

2.6.4 Utrecht

2.6.4.1 Tools from the City

The municipal heat policy document expresses a preference for heat communities which nudges the establishment of LECs in other ways than through direct involvement.

Utrecht has introduced several instruments and support programs, including:

- An Initiatives Fund (Initiatievenfonds) managed by district offices (wijkbureaus), which supports local community projects with subsidies.

- A neighbourhood-oriented approach (Buurtaanpak) that stimulates collaboration and local energy initiatives.

'Expeditie Warmte', a program aimed at supporting and accelerating the transition to sustainable heating solutions.

Inspiration has been drawn from examples in other cities such as Amsterdam. Relevant examples include:

- The public–civil pathway to a sustainable energy transition: Eindrapport Energiegemeenschappen
- Project: Ketelhuis WG
- Umbrella organizations for energy cooperatives in the Netherlands: Energie Samen.

The city facilitates LECs by providing access to meeting and working spaces. The city can reserve rooms for the residents at district offices (wijkbureaus), and the residents may also use public spaces such as the city office and libraries for meetings and community activities. A public officer must attend the meetings.

2.6.4.2 Support for LECs

Energie van Utrecht, the regional federation of LECs has been instrumental in putting LECs on the local political agenda. Also the provincial natuur&milieu federation and other citizen-initiative federations.

Energie van Utrecht and Energie Samen are consultants in financial issues (but this is very limited advise as these federations themselves have limited capacity and funding to offer this advice).

Some municipalities offer subsidies. Getting loans for district heating LECs is difficult, there is not yet state guarantee, which means that the LECs have to ask for a municipal guarantee if they want access to low interest-rate loans from public banks. Not all municipalities can offer this.

Because of the developmental funds, it is possible to finance the developmental phases.

To support LECs, Energie Samen is starting an equity fund, but it is not yet operational.

2.6.5 Comparison of Facilitating Tools for LECs

Below is a **comparative analysis of municipal tools and legal–financial support frameworks for local/energy communities (LECs)** in **Leuven, Strasbourg, Dublin, and Utrecht**, focusing on **legal instruments, financial support, and governance conditions**. The comparison highlights **similarities, differences, and unique national/local specificities**, drawing explicitly on the sections 2.6.1-4.

Overall comparison

Shared patterns:

- All four cities **politically support energy communities** but **rarely fund them directly**.

- Cities mainly act as **facilitators**, using **planning tools, communication, EU projects, or access to space**, rather than as investors.
- **Regional or national frameworks** (rather than municipal law) largely determine what is possible legally and financially.
- Advisory support is often **externalised** to climate agencies, federations, or NGOs.

Key differences:

- **Strasbourg** stands out for its **strong legal and institutional embedding**.
- **Dublin** is most shaped by **national regulation and compliance rules**.
- **Utrecht** uses a **soft-governance, process-oriented approach**, especially around heat.
- **Leuven** relies heavily on **experimentation and EU projects**, with limited structural impact so far.

City-by-city comparison: tools, legal context, and finance

Leuven

Tools from the city

- Facilitation through **EU-funded projects** and **visibility campaigns** (e.g. LICHT Leuven).
- Occasional inclusion of citizen participation in **public procurement**, without structural guarantees.
- Knowledge exchange between Flemish cities focuses on **scaling and professionalisation**, not on start-up support.

Legal and governance context

- The **LICHT initiative** aimed to stimulate LEC formation but did not align well with the **existing cooperative landscape**, which is more regional than city-based.
- The Flemish LEC legal framework exists, but Leuven has not structurally leveraged it.

Financial aspects

- **No direct municipal financial incentives** for citizen participation.
- Citizen-led projects benefit indirectly from **regional subsidies** (e.g. for PV and wind).
- No specific restrictions or incentives regarding **crowdfunding or private finance**.

Distinctive feature

- Leuven illustrates the limits of **project-based and experimental approaches** when they are not aligned with existing cooperative ecosystems.

Strasbourg

Tools from the city

- A **dedicated municipal/metropolitan programme** supporting community energy since 2018.
- Concrete actions: **tendering public roofs**, **buying cooperative shares**, providing **meeting space and communication**.
- Strong use of **urban planning law**, including PV obligations and district heating connections.

Legal and governance context

- Creation of a **territorial legal framework for collective self-consumption** (PMO Territoriale).
- The **Climate Agency** plays a formalised, ongoing role in promoting and operationalising LECs.

Financial aspects

- No prohibition in national law on **crowdfunding or private financing**.
- Strong access to **public-sector expertise** for navigating green funds.
- Advisory ecosystem is dense (Climate Agency, Eurometropole, Alsace Alter Énergies).

Distinctive feature

- Strasbourg shows the strongest example of **legal institutionalisation of energy communities at local level**, combining planning law, ownership, and facilitation.

Dublin / Fingal

Tools from the city

- Municipal role is largely **supportive and promotional**, aligned with national bodies (SEAI).
- Use of **mentorship programmes**, learning networks, and EU collaboration (E2-CUTIES).
- NGOs and local actors were crucial in pushing SECs onto the political agenda.

Legal and governance context

- SECs are strongly shaped by **national legal forms** (e.g. Company Limited by Guarantee).
- Administrative obligations (accounting, compliance) can be burdensome for volunteers.

Financial aspects

- Multiple national schemes: **SEAI Community Enabling Framework**, **SRESS**, **RESS community benefit funds**.

- **Crowdfunding and public investment are regulated**, requiring authorised intermediaries under EU law.
- Clear pathways for **donations and grants**, but investment routes are legally complex.

Distinctive feature

- Dublin reflects a **highly regulated but well-funded national framework**, where municipal influence is limited compared to state agencies.

Utrecht

Tools from the city

- Policy preference for **heat communities**, embedded in municipal heat policy.
- Use of **soft instruments**: Initiatives Fund, neighbourhood approach (Buurtaanpak), Expeditie Warmte.
- Provision of **meeting and working spaces** through district offices.

Legal and governance context

- Reliance on **process-based governance** rather than formal mandates.
- Strong role of **umbrella organisations** (Energie van Utrecht, Energie Samen) in representation and lobbying.

Financial aspects

- Access to **developmental funds** for early project stages.
- Major bottleneck: **financing district heating**, due to lack of state guarantees.
- Municipal guarantees may unlock public bank loans, but not all municipalities can offer this.
- Planned **equity fund** (Energie Samen) is not yet operational.

Distinctive feature

- Utrecht highlights the importance—and limits—of **financial de-risking mechanisms**, especially for capital-intensive heat infrastructures.

Cross-cutting similarities and contrasts

Similarities:

- Municipalities rarely act as direct financiers.
- Advisory roles are mostly delegated to **intermediary organisations**.
- EU projects function as important **catalysts** but not substitutes for structural policy.

Key contrasts:

Table 16. Comparison of Cities' Facilitation.

Aspect	Leuven	Strasbourg	Dublin	Utrecht
Legal embedding	Weak	Strong	Nationally driven	Moderate
Municipal planning power	Low	High	Low	Medium
Financial barriers	Lack of incentives	Access to expertise	Regulatory burden	Access to loans
Role of city	Experimental facilitator	Institutional partner	Network supporter	Process enabler

- **Strasbourg** represents the most **mature and institutionalised model**, where cities actively shape legal and financial conditions.
- **Dublin** demonstrates how **national regulation and funding dominate**, limiting municipal autonomy but offering scale.
- **Utrecht** shows the strengths of **neighbourhood-based governance**, but also the vulnerability of LECs without state-backed finance.
- **Leuven** illustrates how **alignment with existing cooperative ecosystems** is crucial for local initiatives to succeed.

Together, the cases show that **municipal ambition alone is insufficient**: durable energy communities depend on the **fit between local tools, national law, and financial risk-sharing mechanisms**.

Conclusions

Below are **common conclusions on facilitating tools**, synthesised across **Leuven, Strasbourg, Dublin (Fingal), and Utrecht**, focusing on **what municipalities actually use to enable local/energy communities (LECs)** and where these tools structurally succeed or fail.

Municipal facilitation is widespread but structurally weak

All four cities actively support energy communities in principle, yet facilitation is mostly:

- Indirect (information, space, networking, EU projects)
- Non-binding (soft encouragement rather than enforceable rights)
- Project-based rather than structural

As a result, facilitation often helps individual initiatives but rarely builds a self-sustaining local ecosystem.

Cities mainly act as enablers, not financiers or owners

Across all cases, municipalities avoid:

- Direct investment
- Long-term financial commitments
- Operational responsibility

Instead, they rely on:

- Planning tools
- Access to public roofs or land
- Communication and legitimacy
- Delegation to intermediaries (climate agencies, NGOs, federations)

This limits risk exposure but also limits leverage and continuity.

National and regional frameworks determine the effectiveness of local tools

Local facilitating tools work only when aligned with higher-level regulation and finance.
Where national frameworks are supportive (Ireland's SEAI programmes, Dutch heat law), local tools scale more easily.
Where they are fragmented or unstable, municipal facilitation remains **stop-and-start** (Leuven, partly Strasbourg).

Intermediary organisations are critical but unevenly embedded

In all cities, third-party intermediaries (climate agencies, energy federations, NGOs):

- Provide legal, technical, and organisational capacity
- Translate policy into practice
- Reduce the burden on volunteers and city staff

However, their role is often:

- Not structurally mandated
- Project-funded
- Dependent on political cycles

Access to space and planning leverage is more effective than funding alone

Among all facilitating tools, the most impactful are:

- Access to public roofs, land, and infrastructure
- Clear planning rules (PV obligations, heat connection requirements)

These tools reduce uncertainty and transaction costs more than small grants or campaigns.

Early-stage support is insufficient everywhere

Despite different approaches, all cases show a persistent gap in:

- Start-up financing
- Legal and organisational support
- Time and capacity for volunteer-led initiatives

Without early-stage facilitation, many initiatives fail before becoming investable.

Recommendations

Move from project-based facilitation to structural support

- Replace one-off pilots and EU projects with standing municipal frameworks for energy communities.
- Ensure facilitating tools are continuous, predictable, and aligned with local climate strategies.

Institutionalise intermediary support roles

- Formally mandate and finance climate agencies, umbrella organisations, or cooperatives hubs to support LECs.
- Reduce reliance on volunteers for legal, financial, and compliance-heavy tasks.

Use public assets as a strategic facilitation tool

- Systematically open public roofs, land, and infrastructure to citizen initiatives.
- Create standard procedures and criteria to avoid case-by-case legal uncertainty.
- Treat access to public assets as a core policy instrument, not an exception.

Clarify municipal roles and legal boundaries

- Provide clear guidance on:
    - When municipalities can cooperate, co-own, or prioritise LECs
    - How procurement and state-aid rules apply
- Reducing legal ambiguity will lower risk aversion and internal delays.

Invest in early-stage enabling capacity

- Establish local or regional start-up support mechanisms (grants or zero-risk development funding).
- Support activities that markets do not finance: community building, feasibility studies, governance design.

Align facilitation tools with national finance and regulation

- Ensure municipal tools are explicitly linked to national subsidy schemes, guarantees, and tariffs.
- Avoid “orphan initiatives” that rely solely on local enthusiasm without financial follow-through.

Across all four cities, facilitating tools are **necessary but insufficient**. Municipalities are willing to enable energy communities, but current tools are **too soft, fragmented, and dependent on external programs** to achieve scale on their own.

Effective facilitation requires **institutional embedding, stable intermediaries, access to public assets, and alignment with higher-level regulations**. Without this, local energy communities remain vulnerable experiments rather than durable components of the urban energy system.

2.7 Facilitating Tools Concerning Grid Connection

2.7.1 Leuven

2.7.1.1 Barriers and Benefits

The LECs cannot replace any activities that are the responsibility of the DSO, and therefore, their area of potential activities is limited to those of the current markets (production, optimization beyond the meter, dynamic contracts,…). In practice, grid congestion starts to become a barrier, mainly on the electricity demand side, which includes green heat production.

At the moment, there are no real favourable conditions for LECs, compared to the existing energy markets. There is a potential role in the deployment of green heat infrastructure (for which there is no state monopoly), but due to other limiting factors (gas price ratio, complexity, lack of regulatory framework,…), this potential has not yet been fully explored or exploited.

There is a specific compensation system for relieving the distribution grid, but this is limited. There is a similar system for grid balancing (organised by the TSO), but this requires a certain scale. Both systems are not set-up for nor exclusively accessible for LECs.

In theory, LECs have the opportunity to be responsible for heat production and supply with DHC. In practice however, there are (at least) 2 fundamental barriers:

- setting up structures requires specialisation, with little perspective on using those structures on a larger scale
- investments in DHC requires high upfront investments with little and uncertain returns.

2.7.1.2 LECs Cooperation and Independence

LECs can share energy between multiple stakeholders, but this requires complex metering, little margins on pricing and comes with administrative costs. There is also no exclusion from

distribution tariffs. In practice, there are not many cases in which energy sharing comes with a profitable (or even break-even) business case. Current regulations push towards optimizing "behind the meter".

The LEC has entered into connection agreements and balancing and supply contracts. These contracts do not bypass the public electricity grid.

The LECs grid is linked to the public grid. It hase internal pricing autonomy, but this is limited and heavily influenced by grid tariffs.

2.7.1.3 City Support

The city has no direct influence on the collaboration between the LECs and the electricity grid (although it is co-owner of this grid). It can influence the collaboration with heat grids through regulation (with local regulations on the use of public domain for heat production and distribution), the creation of opportunities for the LECs to participate and by participation itself.

2.7.2 Strasbourg

2.7.2.1 Barriers and Benefits

On the territory of Eurometropole of Strasbourg there is no specific barrier to LEC's connections to existing infrastructure.

As part of the rollout of solar panel infrastructure, there is a mechanism run by the Grand Est region and ADEME (the French Environment and Energy Management Agency) that provides funding for part of the studies and investment required for a solar panel installation project led by a community initiative.

LECs are not rewarded for their activities by the overall energy system.

2.7.2.2 LECs Cooperation and Independence

The LEC will enter into agreements with the local DSO since it is needed to draft and sign a convention between the producer of solar energy and the grid operator, which is *Strasbourg Electricité Réseaux (SER)* at Strasbourg.

Prior to this, a declaration of implementation of the ACC operation will also be sent to the grid operator. This declaration allows the project leader to inform the grid operator of the transition in operation carried out at their solar energy production plants and to share the list of meters of consumers involved in the collective self-consumption loop.

LECs are able to share energy between multiple stakeholders through different options:

- **Individual self-consumption** refers to the total or partial production and consumption of electricity by a single individual or legal entity. The LEC share the energy it produces to its own building.
- **Collective self-consumption** consists of the local sharing of electricity from one or more producers with one or more end consumers, either free of charge or for a fee. Such an operation can involve a wide variety of participants (individuals, small or large businesses, municipalities, social housing providers, farmers, schools, associations, etc.).

For this, there are only three conditions for collective self-consumption:

- Members must form a legal entity, known as the organizing legal entity (PMO).
- They must be geographically close to each other: in 2024, the scope of an ACC operation is set, unless otherwise specified, at 2 km in cities, 10 km in suburban areas, and 20 km in rural areas (these distances are measured as the crow flies, between the producer and the consumer furthest apart).

As of a decree dated February 21, 2025, the cumulative power of production facilities must be less than or equal to 5 MW (compared to 3 MW previously). This maximum may be increased to 10 MW, but only for heritage ACC projects.

LEC Strasbourg does not intend to deploy a fully-fledged local electricity network. However, within the collective self-consumption loop deployed by Brasseurs d'Energies as producers and project leaders, the price of energy shares is set freely by Brasseurs d'Energies. However, electricity market prices have a major influence on the choice of this price, as it will be offered to consumers who purchase their electricity on the traditional market. It is therefore necessary to ensure that the price difference between the collective self-consumption loop and the market is not too great. The aim is both to attract consumers and to ensure the economic profitability of the producer.

2.7.2.3 City Support

No answer.

2.7.3 Dublin

2.7.3.1 Barriers and Benefits

The biggest barrier is usually the electricity network itself: SEC-led solar PV, EV charging or heat-pump rollouts can be slowed by limited local grid capacity, the need for connection applications and technical compliance, and (for larger-than-micro installations) export limit rules that sometimes require an approved export-limiting scheme. For bigger community generation or storage projects, timelines can also be affected by Ireland’s grid connection policy/queues (EirGrid “Enduring Connection Policy”), and by the practical need for network reinforcement. At Balbriggan DZ level, SEC/DZ projects may depend on upgrades outside community control. Land acquisition and access to publicly owned spaces are also a challenge.

There are favourable conditions that make it easier for them to access and deploy local infrastructure: once a community joins the SEAI SEC network, it can receive mentor support that helps move from planning to project delivery, and SEAI offers 100% grant funding for an external expert to develop an Energy Master Plan, which helps turn ideas into projects. On the infrastructure side, national planning rules have also become more enabling for local solar: updated planning exemptions for rooftop solar were introduced to simplify and speed up permitting for many rooftop installations. More support through the SEAI Community Enabling Frameowkr and SRESS would help to develop local projects.

Reward for the SEC usually comes through flexibility and demand-response markets/programmes, not automatically just for SECs. In Ireland, ESB Networks (the DSO) is rolling out paid local flexibility products (e.g., its Demand Flexibility Product, launched end-2024) that pay Flexibility Service Providers to reduce demand at specific locations and times to relieve distribution-network constraints. For households and small users, the “reward” is often smaller and programme-based (e.g., ESB Networks’ Beat the Peak / “Is This a Good Time?” initiatives that offer rewards for reducing peak-time use). The EU Citizen Energy Package may provide better rewards. SRESS offers favourable tariffs.

A Sustainable Energy Community (SEC) can help initiate and grow local heat projects, but an SEC is not automatically allowed to operate and expand a heat supply network as a "utility" just by being an SEC (it's an SEAI community programme, not a regulated heat supplier). If an SEC wants to be responsible for expanding heat supply to new consumers (e.g., via district heating), it usually needs to set up or partner with a dedicated operator entity that can meet regulatory and consumer-protection requirements—because Ireland's district heating suppliers must register with the CRU under S.I. 350 of 2022 and provide specified information to consumers. SECs typically focus on building fabric and electricity options. Heat pumps could be noted here.

2.7.3.2 LECs Cooperation and Independence

An SEC does not automatically enter formal agreements with electricity system operators (DSO/TSO) or heat suppliers just by being an SEC. Most SECs' agreement is with SEAI (many move into a 3-year SEC Partnership Agreement focused on planning and delivery support), rather than with ESB Networks/EirGrid. If an SEC develops a specific project, it can end in operator-facing arrangements, but these are usually standard project contracts that any customer/developer would sign—for example grid connection/export arrangements for a PV site. Some SECs are working with utilities such as Arden Energy.

In Ireland, an SEC does not have its own independent grid with its own electricity prices—it's mainly an SEAI-supported community programme for organising local energy action, and SEC projects typically connect to the national electricity system (ESB Networks' distribution grid) and operate within the normal market rules. That means prices affecting SEC members are mostly set by the wider system: wholesale energy prices are formed in the Single Electricity Market (SEM) and flow through to retail tariffs, while the CRU regulates the monopoly network charges (the "wires" costs) that suppliers pass on to customers. .

SECs generally cannot "share electricity" between multiple stakeholders over the public grid, unless the arrangement is behind a single connection point (private wiring / same meter) or routed through a licensed supplier/market arrangement.

That's because "energy sharing" as a regulated retail-market service is still being designed by the regulator (CRU) and is explicitly linked to smart meter data and new EU rules.

Energy trading via digital platforms is the main option at this point. Such an approach may develop into energy sharing as legislation progresses.

2.7.3.3 City Support

Fingal County Council can influence how electricity/heat system operators collaborate with SECs, but mostly by enabling and structuring collaboration, not by directing operators' internal priorities.

2.7.4 Utrecht

2.7.4.1 Barriers and Benefits

The barriers are twofold: the lack of available transport capacity and the required upfront payment for the grid connection.

The main barrier is grid congestion. In large parts of the Netherlands, transport restrictions apply to both electricity feed-in and consumption. This means that a LEC may be able to obtain a physical grid connection, but cannot obtain transport capacity, or only limited capacity. There will be a possible connection stop on the electricity grid starting this summer

for the provinces of Utrecht, Gelderland and Flevoland (see article: Aansluitstop dreigt: provincie Utrecht en gemeenten roepen Rijk op tot gezamenlijke crisisaanpak | provincie Utrecht)

Part of the province of Utrecht is now officially facing connection restrictions and, in some areas, an effective connection stop for new electricity demand and feed-in due to severe grid congestion and lack of available transport capacity.

In addition, the system is legally structured around individual connections rather than collective entities. Transport rights are linked to a single connection and not to a group. This makes collective optimisation difficult.

Other barriers include:

- Long waiting times (often several years).
- Uncertainty regarding prioritisation.
- Lack of transparency in the justification of congestion decisions.
- Grid codes that do not yet sufficiently accommodate energy hubs, collective flexibility arrangements and energy sharing.

There is also no structural possibility for a LEC to contract transport capacity collectively.

The required upfront payment for the grid connection is another major barrier for many projects. This payment significantly affects the liquidity of the LEC for many years, sometimes more than 10 years. During this period, the connection is not yet realised and therefore does not generate any return, while the financial resources cannot be used for other objectives of the LEC.

At present, there are no specific conditions for LECs that provide formal priority access rights to the grid.

However, there are developments that offer opportunities, such as:

- Congestion Management Contracts (CSC contracts).
- Energy hub pilots.
- Pilot locations where regulatory exemptions or experimental arrangements are applied.

These developments are still project-based and have not yet been structurally embedded in the regulatory framework.

Compensation to the LEC may be available through congestion management contracts.

2.7.4.2 LECs Cooperation and Independence

In several projects, the LEC has entered into additional agreements with the grid operator regarding the collective use of grid capacity.

This can take the form of a group transport agreement (GTO) or similar pilot arrangements, in which multiple participants jointly use the available transport capacity within predefined limits.

In Dutch projects such as Zonnedorpen and ACCU, agreements are also made on information exchange with the grid operator, for example regarding the load of the local distribution transformer. Based on this information, the LEC can coordinate local generation and consumption to prevent grid congestion.

These agreements enable more efficient use of the existing grid and create room for local energy projects without the need for immediate grid reinforcement. At present, such agreements are largely still in a pilot and development phase and are not yet structurally available.

The LEC has not entered into agreements with system operators for supply of heat, so far all existing LECs that do district-heating have their own local heat source.

Since the introduction of the new Energy Act in 2026, administrative energy sharing has become legally possible based on smart meter data.

However, its scope is not unlimited. Energy sharing:

- does not provide any additional transport rights.
- must take place through administrative allocation, while each participant retains their own individual grid connection and transport contract.
- requires the use of an Energy Management System (EMS) to organise and optimise the distribution.
- does not guarantee physical supply if the grid is congested.

For the time being, energy sharing is also limited to participants within the same energy supplier, which restricts the freedom of supplier choice.

The grid of LECs in the Netherlands is connected to the public grid operated by the system operators. In exceptional cases, this may be organized within a Closed Distribution System, but this occurs rarely, if at all.

Prices are therefore influenced by:

- Grid tariffs
- Supply tariffs
- Taxes and levies

However, LECs can offer electricity to their members at a lower price, for example based on a cost price model. In this case, the price is based on local production costs, possibly including an additional margin to cover organisational costs and risks.

2.7.4.3 City Support

Utrecht is in contact with grid operator Stedin and public energy and waste management company HVC. We can inform them about the LECs and how we collaborate with them however, we cannot influence Stedin when it comes to what extent they want to cooperate with LECs.

Not legally speaking, but informally yes. They can facilitate conversations and processes for collective decision-making and better collaboration.

2.7.5 Comparison of Facilitating Tools Concerning Grid Connection

Below is a **structured comparative analysis** of *facilitating tools for grid connection* for **energy communities / LECs** in **Leuven, Strasbourg, Dublin and Utrecht**, focusing on **barriers and benefits**, **cooperation and independence**, and **city support**, and highlighting **similarities, differences, and unique national/local contexts**.
The comparison is based on the content in sections 2.7.1-4.

Barriers and Benefits for Grid Connection

Key similarities:

- **Grid congestion** is a relevant or growing barrier in **Leuven, Dublin and Utrecht**, especially on the electricity demand side and for electrification of heat.
- In **all four cities**, LECs operate **within existing market and grid rules**; there is no full exemption or preferential grid access purely because they are community-based.
- **Financial uncertainty and upfront investment costs** (grid connections, infrastructure, studies) are recurrent barriers.

Key differences:

Utrecht faces the **most severe and structural grid congestion**, including:

  - Transport capacity shortages for both feed-in and consumption,
  - Long waiting times,
  - Risk of connection stops,
  - High upfront grid-connection payments with delayed returns.

Dublin experiences capacity constraints but mainly through:

  - Lengthy connection processes,
  - Export limits,
  - National queueing policies (EirGrid),
  - Dependence on grid reinforcements outside community control.

Leuven faces congestion mainly on the **demand side**, notably for green heat, and lacks favourable conditions compared to traditional energy markets.

Strasbourg stands out positively:

  - No specific grid-access barriers are identified.
  - Regional and national support mechanisms (Grand Est, ADEME) partially fund feasibility studies and investments for community solar.

Unique national/local situations:

- **Leuven**: potential role for LECs in district heating exists, but is limited by market complexity, gas-price ratios, and lack of a clear regulatory framework.
- **Strasbourg**: collective self-consumption is well-defined and legally enabled, with clear distance and capacity thresholds.
- **Dublin**: benefits mainly come via **support programmes**, flexibility schemes and grants rather than direct grid privileges.
- **Utrecht**: experimentation (energy hubs, congestion management contracts) exists, but mostly in pilots, not structurally embedded.

Cooperation with Grid Operators and Level of Independence

Key similarities:

- In **all four cities**, LECs:
  - Remain **connected to the public grid**,
  - Do **not own or operate fully independent electricity grids**,
  - Are strongly influenced by **regulated grid tariffs and market prices**.
- True physical energy sharing over the public grid is **limited or complex** everywhere.

Key differences:

- **France (Strasbourg)** has the **clearest legal framework** for collective self-consumption:
  - Formalised role of an organising legal entity (PMO),
  - Defined geographical proximity rules,
  - Explicit capacity caps.
- **Netherlands (Utrecht)** allows:
  - Experimental group transport agreements,
  - Information-sharing arrangements with DSOs,
  - Administrative energy sharing (from 2026), but without additional transport rights.
- **Belgium (Leuven)** and **Ireland (Dublin)** push LECs mainly towards **behind-the-meter optimisation**, as broader sharing is often economically or administratively unfeasible.

Independence and pricing:

- **Leuven and Utrecht**: limited internal pricing autonomy exists, but pricing remains heavily shaped by grid tariffs, taxes and market prices.
- **Strasbourg**: producers can set prices freely within collective self-consumption loops but must remain competitive with market prices.
- **Dublin**: SECs have virtually no pricing autonomy; prices are determined by the Single Electricity Market and regulated network charges.

Unique national/local situations:

- **Ireland**: energy sharing as a retail-market function is still under regulatory development; current solutions rely on trading platforms or licensed suppliers.
- **Netherlands**: administrative energy sharing is legally possible but does not solve physical congestion.
- **France**: collective self-consumption enables multi-actor cooperation within a well-defined legal perimeter.

- **Belgium**: cooperation exists, but margins are small, administrative burdens high, and profitability rare.

City Support and Local Government Role

Key similarities

- Across all cities, **municipalities have limited direct power** over DSOs and TSOs.
- City support is mostly **facilitative, enabling or connective**, not directive.

Key differences

- **Leuven** can actively shape **heat-grid development** through:
  - Regulation of public space use,
  - Creating participation opportunities,
  - Acting as a participant itself.
- **Utrecht** and **Dublin** play strong **broker roles**:
  - Facilitating dialogue between LECs and grid operators,
  - Supporting collective decision-making and coordination.
- **Strasbourg** shows limited explicit city-level involvement in grid cooperation in the material provided.

Unique national/local situations:

- **Ireland**: Fingal County Council supports collaboration structurally but cannot influence operator priorities.
- **Netherlands**: Utrecht engages informally with the DSO (Stedin) and public utilities, especially relevant under severe congestion.
- **Belgium**: Leuven's co-ownership of the grid does not translate into stronger operational influence.
- **France**: regional and national actors (ADEME, Grand Est) play a larger enabling role than the city itself.

Comparative Synthesis

Shared patterns:

- LECs are **system-integrated, not system-defining** actors.
- Grid access is increasingly the **critical bottleneck**, especially under electrification and decentralised generation.
- Cities mainly act as **enablers, conveners and facilitators**, not regulators of grid access.

Main contrasts:

- **Strasbourg**: most mature legal framework for collective self-consumption.
- **Utrecht**: most constrained by congestion, but also most active in experimentation.
- **Dublin**: strongest reliance on national support programmes and flexibility markets.
- **Leuven**: constrained by market design and regulatory gaps, especially for heat.

While all four cities recognise the strategic value of energy communities, **national grid regulation and congestion conditions predominantly shape what is possible**. Local policy can facilitate cooperation and experimentation, but **structural change depends on national frameworks** governing grid access, transport rights and market design.

Conclusions

Grid access is the dominant structural bottleneck for local energy initiatives

Across all four cases, access to electricity grid capacity—rather than technology, motivation, or local ambition—is the main limiting factor for scaling local energy projects.
Grid congestion, long waiting times, and export or transport constraints increasingly affect:

- Renewable electricity generation
- Electrification of heat (heat pumps, district heating)
- EV charging and flexibility deployment

LECs have no privileged position in grid regulation

In none of the studied contexts do LECs enjoy formal priority or differentiated rights when accessing the grid:

- They face the same connection rules, tariffs, and queues as commercial actors.
- Existing compensation or flexibility mechanisms are scale-dependent and market-driven, not community-specific.

LECs are therefore treated as **regular market participants**, despite their local public value.

Energy sharing and collective optimisation remain administratively possible but economically weak

While energy sharing is legally possible everywhere:

- It does not reduce grid tariffs or increase transport rights
- It comes with high administrative and metering complexity
- Margins are small and rarely sufficient to support stand-alone business cases

Current frameworks mostly push LECs toward “behind-the-meter” optimisation, limiting their systemic relevance.

Heat networks offer opportunities, but with high risk and complexity

Heat infrastructure is the only domain without a natural monopoly, theoretically enabling LEC leadership.
In practice, however:

- High upfront investment
- Long payback periods
- Regulatory fragmentation and uncertainty
  make heat networks difficult to realise for communities without strong public backing.

Cooperation with grid operators is mostly informal and project-based

All cities show informal facilitation roles toward DSOs and TSOs, but:

- Municipalities cannot direct grid operators' priorities
- Cooperation with LECs mainly occurs through pilots, experiments, or individual agreements
- Structural frameworks for collective grid use are still rare or under development

Pilot mechanisms show promise but lack structural embedding

Across cases, promising tools exist:

- Congestion management contracts
- Local flexibility products
- Energy hubs and collective transport agreements

However, these remain temporary, experimental, and location-specific, creating uncertainty for long-term planning.

Recommendations

Recognise grid capacity as a public-policy constraint, not a technical side issue

National and regional authorities should explicitly treat grid congestion and access rules as core energy-transition policy issues, closely linked to climate and housing targets.

Create differentiated grid-access frameworks for collective/local projects

Introduce tailored regulatory treatment for LECs, such as:

- Priority or conditional access for community projects with proven local benefits
- Collective transport rights or group connection models
- Reduced upfront connection payments for non-profit or cooperative initiatives

Move from pilot-based flexibility to structural market access

Flexibility and congestion-management tools should:

- Be made structurally available (not only as pilots)

- Allow participation at smaller, community-relevant scales
- Provide predictable revenue streams, not only short-term incentives

Strengthen collective grid-use and energy-hub models

Regulation should better accommodate:

- Group transport agreements
- Energy hubs and neighbourhood-level optimisation
- Shared Energy Management Systems (EMS)

This requires adapting grid codes from individual-connection logic to collective-use logic.

Support heat networks through risk-sharing and guarantees

If LECs are expected to play a role in district heating:

- Public guarantees or pooled financing mechanisms are essential
- Development risks must be socialised, not left to volunteers
- Clear, long-term regulatory frameworks are required

Formalise the municipal coordination role

Municipalities should be:

- Recognised as legitimate brokers between LECs and grid operators
- Given procedural roles in coordinating demand, supply, and grid planning at district level
- Supported with capacity and data access to play this role effectively

Across Leuven, Strasbourg, Dublin, and Utrecht, **grid connection and capacity constraints** are emerging as the **central limiting factor** for local energy systems. While technical and organisational solutions exist, current regulation treats them as **exceptions rather than norms**.

Without structural reforms that enable **collective grid use, prioritise local public value, and integrate flexibility at community scale**, LECs will remain marginal actors—able to optimise at the edges of the system, but unable to meaningfully contribute to solving congestion, electrification, and decarbonisation challenges at scale.

3 Conclusions

Below is a consolidated summary of all conclusions from Chapter 2. Conclusions relate to the main themes of the individual sections.

Strategic and Regulatory Context

- The European Union is the principal driver of the legal recognition of energy communities through the Clean Energy Package, RED II/III and the Electricity Market Directive. However, **none of the analysed Member States has adopted a coherent national strategy for energy communities**, resulting in fragmented and uneven implementation.
- **Energy market structures strongly influence the viability of energy communities**. Decentralised systems are generally more open to local and collective actors, while highly centralised or nuclear-dominated systems tend to reproduce legacy market structures that limit local alternatives.
- Legal recognition alone is insufficient. **Operational rights, administrative simplification, and economic incentives/empowerments are decisive** for enabling energy communities to move beyond pilot or niche activities.

Role of National and Supralocal Frameworks

- National and regional frameworks define the effective “room for manoeuvre” for cities and energy communities. Key elements such as grid tariffs, energy sharing rules, procurement law, market access, and support schemes are predominantly set above the local level.
- As a result, **local ambition consistently exceeds local regulatory capacity**, particularly in electricity markets. Policy coherence and long-term stability at supralocal level are therefore critical for local achievability.
- Abrupt policy changes or early termination of programmes undermine local momentum and investment confidence.

Role of Cities and Municipal Authorities

- Cities primarily function as **implementers and system integrators**, not as rule-setters. Their added value lies in coordinating spatial planning, public works, housing, mobility, heating, electricity infrastructure, and stakeholder engagement.
- Municipal leverage is strongest where planning instruments are explicit and binding. Where such instruments are weak or fragmented, municipal action is correspondingly constrained.
- Across all cases, **municipal roles and mandates remain unclear or underdefined**, particularly regarding participation in, or co-ownership of, energy communities.

Heat Transition as a Key Local Leverage Point

- Heating decarbonisation emerges as the **most significant domain of municipal steering capacity**. Local heat plans, zoning rules, and district-heating enablement offer concrete entry points for cities and energy communities.

- Nevertheless, municipalities can generally mandate technical readiness or connection, but **cannot oblige end-use choices or consumption**, limiting impact without complementary national affordability and consumer-protection measures.

Energy Communities: Positioning and Practical Viability

- Across all countries, energy communities are formally recognised but **rarely economically empowered**. Administrative burdens are high, while tangible market advantages (e.g. tariff reductions or priority grid rights) remain weak or absent.
- Consequently, most energy communities remain **project-based, fragile, and dependent on external support**, rather than evolving into stable, system-relevant actors.
- The positioning of energy communities varies widely: from facilitators and mobilisers, to infrastructure co-owners in specific contexts.

Economic Regulation and Financing

- Economic regulation generally frames energy communities as **complements to the central energy system, not transformative alternatives**. Network operation remains a regulated monopoly everywhere, constraining scale and autonomy.
- **Early-stage project development is the dominant bottleneck**. Feasibility studies, legal structuring, and community organisation are difficult to finance, while most subsidies target assets rather than development capacity.
- Municipal financial involvement is structurally constrained. Cities act cautiously, relying mainly on indirect instruments (public assets, facilitation, anchor demand) rather than equity participation or guarantees.

Grid Access and Energy Sharing

- **Grid capacity and access are the most critical structural constraints** on local energy initiatives. Congestion, long waiting times, and high upfront connection costs increasingly limit renewable deployment, electrification of heat, and EV charging.
- Energy communities have **no privileged position in grid regulation** and are treated as regular market participants despite their local public value.
- Energy sharing is legally possible in all contexts but remains **administratively complex and economically weak**, often pushing communities toward “behind-the-meter” optimisation rather than system-level contributions.

Facilitation Tools and Intermediaries

- Municipal facilitation is widespread but largely **soft, indirect, and project-based**. It supports individual initiatives but rarely creates durable ecosystems.
- **Intermediary organisations** (climate agencies, cooperatives federations, NGOs) are critical for legal, technical, and organisational capacity, yet are unevenly embedded and often dependent on short-term project funding.
- Access to **public assets and clear planning rules** is generally more effective than small grants or awareness campaigns.

Cross-Cutting Conclusion

- Across all cases, **local governments are expected to deliver ambitious energy transitions without commensurate regulatory, financial, or institutional tools**.
- Effective delivery depends less on setting new local targets and more on collaboration with energy communities, for which is needed: **aligning EU and national regulation, economic incentives/empowerments, and grid frameworks with local implementation capacity**, particularly for heat systems and energy communities.
- Without such alignment, local energy communities risk remaining fragmented experiments rather than becoming durable components of Europe's energy system.

Alignment of E2-CUTIES Conclusions with EU Legal and Policy Framework

This section maps the conclusions of the E2-CUTIES comparative analysis to **binding EU legislation and key policy initiatives**, demonstrating coherence with EU climate, energy, and social objectives, while highlighting implementation gaps at national and local level.

1) Fit for 55 Legislative Package[12]

Relevant legal acts

- European Climate Law – Regulation (EU) 2021/1119
- Renewable Energy Directive (EU) 2018/2001 as amended by Directive (EU) 2023/2413 (RED III)
- Energy Efficiency Directive (EU) 2023/1791 (recast)

Alignment

- The analysis confirms that **EU climate-neutrality obligations (Art. 2–4 of Regulation 2021/1119)** depend on effective local implementation.
- Cities act as **system integrators**, translating binding EU targets into spatial and district-level action, but lack sufficient enabling tools.
- **Decarbonisation of heating** - explicitly addressed in RED III and the EED—is identified as the strongest local leverage point.

Key message

Fit for 55 targets cannot be met through national policy instruments alone; they require empowered municipalities and operational energy communities.

[12] Under the European Climate Law, the EU committed to reduce its net greenhouse gas emissions by at least 55% by 2030. The 'Fit for 55' package of legislation makes all sectors of the EU's economy fit to meet this target. It sets the EU on a path to reach its climate targets in a fair, cost-effective and competitive way.

2) REPowerEU[13]

Relevant legal and policy texts

- REPowerEU Communication (COM(2022) 230 final)
- Recovery and Resilience Facility amendments (Regulation (EU) 2023/435)

Alignment

- REPowerEU emphasises **local renewables, energy efficiency, and citizen participation** as pillars of energy security.
- The analysis shows that energy communities can contribute to resilience and fossil-fuel reduction, but face structural barriers in **grid access, market design, and development finance**.
- Community energy potential is **insufficiently embedded in national REPowerEU chapters**.

Key message

Energy communities are strategically aligned with REPowerEU objectives but are not yet structurally enabled as security-of-supply actors.

3) Citizens Energy Package (2026)

Relevant policy text

- Citizens Energy Package Communication (COM(2026) 115 final)

Alignment

- The Package aims to empower citizens to **produce, consume, share, and manage energy collectively**.
- The analysis confirms the Package's diagnosis that **legal recognition alone is insufficient**; practical rights and economic incentives remain weak.
- Energy poverty and inclusiveness objectives are undermined by market rules favouring individualised solutions.

Key message

The transition from "consumer" to "energy citizen" requires binding operational frameworks to Member States, not guidance alone.

[13] REPowerEU is a strategy adopted by the European Commission in May 2022 in response to the sharp rise in energy prices and the energy security risks that followed Russia's full-scale invasion of Ukraine.

4) Renewable Energy Directive (RED III)

Relevant legal act

- Directive (EU) 2018/2001 as amended by Directive (EU) 2023/2413

Alignment

- RED III strengthens provisions for **Renewable Energy Communities (Art. 2(16), Art. 22)** and energy sharing.
- The analysis demonstrates that **national enabling frameworks remain fragmented**, with high administrative costs and limited economic benefits.
- Energy sharing remains legally possible but **financially marginal** in most contexts.

Key message

Without full and coherent implementation of RED III enabling frameworks, energy-community potential remains underutilised.

5) Energy Efficiency Directive (EED – Recast 2023)

Relevant legal act

- Directive (EU) 2023/1791

Alignment

- The revised EED introduces **mandatory local heating and cooling plans** (Art. 25(6)).
- The analysis confirms the relevance of this obligation but highlights critical gaps in **municipal capacity, financing, and risk-sharing**.
- Energy communities are well-suited to support implementation but are rarely integrated systematically.

Key message

EED objectives require not only planning obligations, but also structural support for local delivery actors.

6) Social Climate Fund and Just Transition

Relevant legal acts

- Social Climate Fund Regulation (EU) 2023/955
- Just Transition Fund Regulation (EU) 2021/1056

Alignment

- EU law recognises the need to protect vulnerable households and territories during the transition.

- The analysis shows that **early-stage barriers and lack of development finance** exclude smaller and community-led initiatives.
- Market-neutral regulation often disadvantages collective solutions with high social value.

Key message

Energy communities function as social infrastructure and should be treated accordingly within just-transition instruments.

Cross-Cutting Conclusion

Across Fit for 55, REPowerEU, RED III, EED and the Citizens Energy Package, energy communities and municipalities are consistently recognised as key actors. However, they remain **structurally constrained by lack of binding targets, insufficient and fragmented implementation in member states, market design, grid regulation, procurement law, and insufficient financial empowerment.**

Policy implication

To move from pilot projects to systemic impact, EU energy policy must evolve from legal recognition towards concrete enablement - particularly in heating, grid flexibility, and community-based energy systems.

4 Recommendations

Below is a **summary of all recommendations from chapter 2**, consolidated and aligned with **current EU energy and climate policies**.

1) Establish Enabling Frameworks for Energy Communities

- **Set EU-wide minimum standards** for the implementation of energy communities, guaranteeing the right to produce, consume, store, share and aggregate energy, with requirements for democratic governance and limited-profit orientation.
- **Mandate national strategies for energy communities** in all Member States to ensure coherent transposition and implementation.
- Move energy-community policy **from legal recognition to real enablement**, attaching concrete market advantages to energy-community status (e.g. simplified market entry, reduced administrative burdens, preferential access to public assets).

Alignment: Fit for 55; RED III; Citizens Energy Package

2) Standardise Energy Sharing and Administrative Procedures

- Develop **EU and national reference frameworks** for energy sharing and collective self-consumption, including standardised rules for:
  - data access and interoperability,
  - metering and settlement,
  - contractual templates.
- Reduce transaction costs and make energy sharing a **mainstream option rather than a pilot-based exception**.

Alignment: RED III; EED; REPowerEU

3) Integrate Energy Communities into Grid and Flexibility Regulation

- **Recognise energy communities as local system partners** within grid and flexibility regulation.
- Require DSOs to enable community participation in:
  - congestion management,
  - local flexibility markets,
  - energy hubs and collective transport rights.
- Move flexibility and congestion-management tools **from pilot schemes to structural market access**, accessible at community scale.

Alignment: Fit for 55; RED III; REPowerEU

4) Reform Funding: From Pilots to Structural Support

- Shift funding frameworks from short-term pilot projects to **long-term, structural support**, including:
    - operational support for community capacities,
    - revolving funds and guarantees,
    - sustained financing for heat networks and shared infrastructure.
- **Systematically fund the early development phase** (feasibility studies, legal and financial structuring, community organisation) using grants or zero-risk loans.

Alignment: REPowerEU; Fit for 55; RED III; EED

5) Anchor Municipalities as Key Enablers

- **Formally recognise municipalities** as system integrators and enablers of energy communities in EU and national guidance and funding rules.
- Clarify the division of roles:
    - municipalities as planners, coordinators and facilitators,
    - energy communities as organisers, owners and operators.
- Provide municipalities with **stronger legal mandates and dedicated resources** for coordinating grid planning, heat strategies and stakeholder processes.

Alignment: EED; Citizens Energy Package; RED III

6) Make Heat Planning the Backbone of Local Energy Policy

- Mandate and resource **local heat transition plans** with binding timelines and spatial differentiation.
- Combine connection obligations with **national-level affordability and consumer-protection mechanisms**.
- Explicitly include energy communities in heating and cooling, district-heating and Renovation Wave frameworks, enabling **(co-)ownership of heat infrastructure**.

Alignment: EED; RED III; Fit for 55; REPowerEU

7) Institutionalise Citizen Energy and Local Ownership

- Move from ad-hoc participation to **structured frameworks** for citizen energy, including:
    - preferential access to public roofs and land,
    - priority or rights of first refusal in local energy projects,

- standardised legal and governance templates.

- Set **clear local ownership targets** (e.g. 30–50%) where socially and economically feasible.

Alignment: Citizens Energy Package; RED III

8) Embed Social Inclusion by Design

- Require low-threshold participation, solidarity mechanisms and safeguards for tenants and vulnerable households as **minimum conditions** in funding and regulation.
- Align consumer economics (tariffs, taxes, subsidies) with **collective system goals**, ensuring that community solutions are not penalised relative to individual alternatives.

Alignment: Citizens Energy Package; EED; Social Climate objectives

9) Use Public Assets and Intermediaries Strategically

- Systematically open **public roofs, land and infrastructure** to citizen initiatives through clear, standardised procedures.
- **Institutionalise and finance intermediary organisations** (climate agencies, cooperative federations, community hubs) to provide legal, technical and organisational support, reducing reliance on volunteers.

Alignment: RED III; Citizens Energy Package; EED

10) Strengthen Policy Coherence and Stability

- Avoid abrupt termination of programmes; design **predictable, multi-cycle funding and policy frameworks**.
- Align climate targets, grid investment planning and financial instruments across energy, housing and spatial-planning policies.

Alignment: Fit for 55; REPowerEU

Policy Message

To scale up local energy systems and energy communities, EU and national policies must evolve from fragmented pilots towards **structural enablement**, aligning market rules, grid regulation, financing instruments and municipal mandates with climate, energy-security and social objectives.