



## **D3.3 A Toolkit for Triggering LECs in integrated energy planning:**

**Tools, approaches and conditions for governing local energy transition in a networked setting**

**WP3**

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## 1 Introduction

This report presents relevant tools, approaches and conditions that help increase the capacity for governing energy transition in networked settings. Particular attention is given to tools that can help public authorities in developing and supporting the capacities available within their own organization and of actors in networks around them, including Local Energy Coalitions (LECs). LECs have been defined in the 2ISECAP project as “structural collaboration or cooperation by a diverse group of autonomous actors (organizations or individuals) that are organized around shared interests where local energy transition is a key element and that engage in activities to pursue these interests to address the needs of local actors in specific areas” (2ISECAP, 2022a). LECs are practical examples of cross-sectoral and cross-stakeholder cooperation in governing local energy transition. As such, the concept of LECs aligns with the growing understanding in both science and practice that governing energy transition cannot be solely done by governments, but requires involvement of a broad range of actors (Hoppe & Miedema, 2020; Kuzemko & Britton, 2020; van Popering-Verkerk et al., 2022; Wu et al., 2015).

There are multiple reasons for this cross-sectoral interdependence. These include: (1) the nature of climate and energy transition being complex, multifaceted, and shrouded in uncertainty; (2) the lack of control by governments due to the hollowing out of governmental capacity as a consequence of neoliberal tendencies that dominated many governments in the past decades; (3) the fragmented organization of the public sector, and (4) the prominent role and interests of non-governmental stakeholders in energy and climate policy and implementation (Hölscher & Frantzeskaki, 2020; Strumińska-Kutra et al., 2023; van Popering-Verkerk et al., 2022; Vringer et al., 2021).

Despite the clear need for cooperation in energy transition, “in large parts of Europe, promoting an energy transition still focuses on acceptance building for single projects rather than on reflecting on more comprehensive future strategies” (p.8: Stober et al, 2021). Hence, attention into true collaboration between multiple partners to pursue energy strategies and projects remains limited. Therefore, this report provides a first overview of the various tools and approaches documented in scientific literature that can either help develop or support such collaborations. The target audience for this report are local governments, but it can be of wider use for scientists and stakeholders (including energy companies, grid operators, energy communities, LECs, consultants, etc.) that are involved in local energy transition.

In line with the 2ISECAP project objectives, this report presents a so called ‘toolkit’ for triggering LECs. In this report, the term ‘toolkit’ does not refer to a narrow range of instruments and regulatory policy measures. Instead, a broad definition is used to also include practices, approaches and initiatives that help enhance relationships and create trust between different societal groups. Furthermore, this report starts from the notion that LECs are prominent forms of collaboration that rely on more structural forms of multi-stakeholder cooperation. It does move beyond only LECs, in also considering tools

relevant to addressing more modest, ad-hoc or narrow types of cooperation between stakeholders in energy transition (i.e., the wider local energy actor network).

This ‘toolkit’ is based on a systematic literature review of international literature. It is important to realize that it is impossible to create a one-size-fits-all toolkit for cooperation and collaboration in local energy transition. This point is also emphasized in many of the publications studied for this report (e.g., Seyfang et al., 2014; van Dam & van der Windt, 2022) and in previous reports for the 2ISECAP project (such as report 3.1 on the planning systems of the various countries) (2ISECAP, 2022b). Therefore, this toolkit is structured in a manner that enables learning about a variety of tools, approaches and conditions, but also as a checklist to help cities or regions evaluate and be inspired regarding how to develop and support LECs and the wider local energy actor network and its needs within distinct local or regional settings. Throughout the report, references will be made to examples in various countries to provide inspiration and sources for further information.

## 2 Methodology

This report is based on a systematic literature review to create an inventory and overview of the various tools, approaches and conditions for supporting (cross-sectoral) cooperation in local energy transition. The standard for systematic literature review, called the PRISMA statement (Preferred Reporting Items for Systematic reviews and Meta-Analyses) was followed (Liberati et al., 2009; Moher et al., 2009). This standard focuses on three phases: (1) selection, (2) screening; and (3) analysis.

### *Selection*

We used the scientific database SCOPUS and selected all records for “energy transition” AND “local” OR “regional” AND “collaboration” OR “cooperation” OR “participation” OR “governance networks” OR “coalitions” OR “alliance” OR “community” OR “initiative”. We only used records published before 2024 (the year in which the analysis was performed) and we limited the selection to books, book chapters and articles published in English. In this manner a total of 890 publications were found.

### *Screening*

The following eligibility criteria were applied during the screening of abstracts and full texts:

- Publication must be related to local and regional (sub-national scale) energy transition (e.g., records on collaboration between countries were removed).
- Publications must contain explicit references to tools, approaches and conditions for collaboration, cooperation, or participation are made in the record (e.g., records recommending increased collaboration as a conclusion and recommendation for future research or practice in response to their findings are removed)

- Records referring to how citizen/energy initiatives/cooperatives/grassroots organizations or other (public or private) stakeholder groups engage with each other are explicitly included.
- Records must be related to cooperation, collaboration between different organizations/cooperations (e.g., records related to (increasing) participation of individual citizens or a specific group of citizens (e.g. children) are removed because this study does not focus on increasing participation of individual citizens in projects or energy communities).
- Records referring to opposition of energy transition and increasing social acceptance are not included unless they specifically mention tools/approaches for collaboration. Usually increased collaboration is mainly a recommendation here.

After screening a total of 142 publications were selected for analysis (see Appendix I for a full list of the selected publications that were included in our sample).

### *Analysis*

Selected publications were important and analyzed using Atlas.ti. Two rounds of coding were done. In the first round of coding, each paper was coded for the following general characteristics:

- Year of publication
- Author location (country) – Note: this is not about nationality but about the location of the institute the authors are working at.
- Journal the research was published in
- Country/cases discussed (if applicable)
- Methods
- Theoretical approaches
- Relevant sections related to tools, approaches and conditions for cooperation and collaboration

A second round of inductive coding was used to identify and categorize the relevant sections related tools, approaches and conditions for collaboration and cooperation. These inductive codes form the basis for the 7 main elements of the toolkit, which will be discussed in section 4. Section 3 of this report will first provide a general overview of the literature that helps gain insight in when research on cooperation and collaboration in local energy transition gained traction, who published about this and how this research was executed.

### 3 General overview of the literature

#### Year

The analysis of the general characteristics of these publications shows that attention for cross-sectoral cooperation, collaboration and participation has been increasing significantly over the past decade (see figure 1).

#### Affiliation<sup>1</sup>

Publications in our sample were written by authors affiliated to institutions in 34 different countries. Most publications are written by authors from the global north, with a clear majority written by authors with an affiliation in the Netherlands, followed by Germany and the UK (see Figure 2). This is followed by authors affiliated to institutions in Southern European countries including Spain, Italy and France. Poland is the only central/eastern European country with more than 5 affiliated authors in our sample.

#### Publication platforms

Our sample showed 48 different journals that research was published in, and 5 books or book chapters. However, there were some journals that clearly stood out as publication platforms for this type of research (10 or more publications), including:

- Energy Research & Social Science (n=27)
- Sustainability (n=20)
- Energy Policy (n=14)
- Energies (n=10)

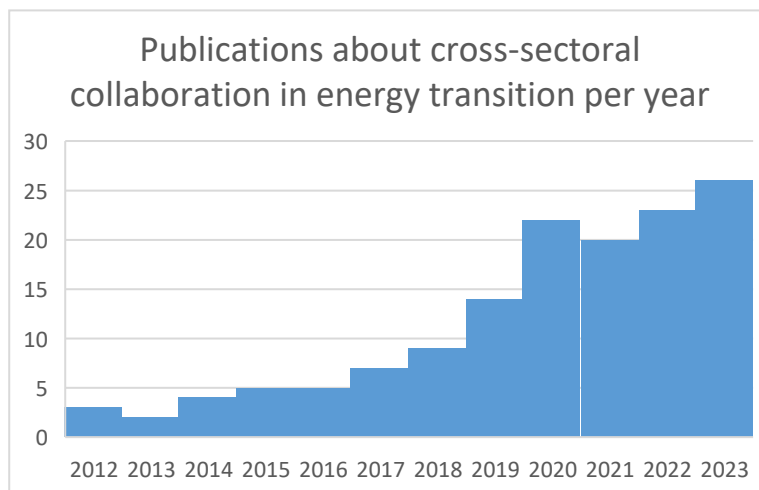


Figure 1 Number of publications in our sample per year

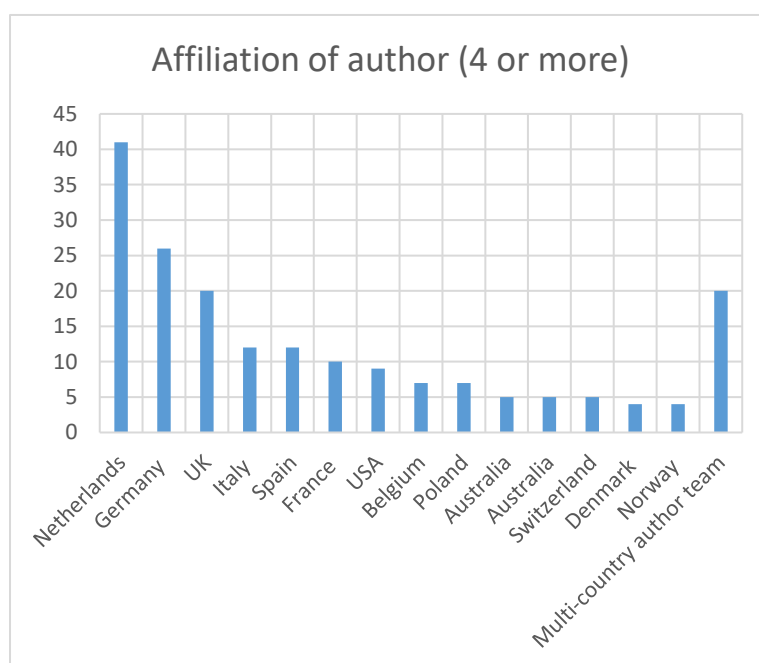


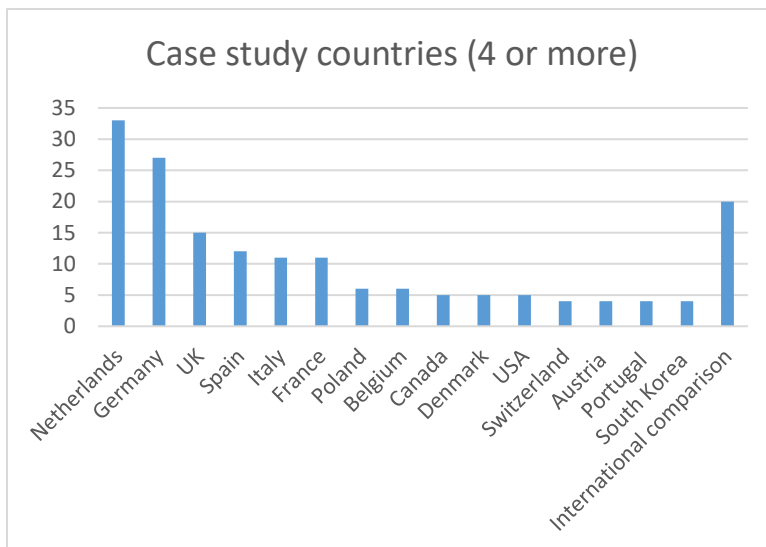
Figure 2 Affiliation of authors involved in publications in our sample (only countries with 4 or more publication by affiliated authors are mentioned).

<sup>1</sup> For affiliation, we did not code separate universities, research or government organizations that authors were affiliated to, but rather in which country the university or organization was located.

- Energy, Sustainability and Society (n=10)

*Methods*

The vast majority of publications used case studies. The countries that were studied in these publications again show a bias towards the global North, with the majority again looking at the Netherlands, followed by Germany and the UK (see Figure 3). While the overall image is similar to Figure 2 (the countries where the organizations that authors are affiliated to are located), the graphs are not identical. This shows that authors do branch out to study a wider range of countries. There are 20 publications that compare insights across countries<sup>2</sup>.



**Figure 3** Case study countries examined in publications (only countries that were mentioned in 4 or more publications are included in this figure).

The majority of publications use qualitative case study methods using (a combination of) interviews, document/content analysis (including desk-research), observation and ethnographic methods, workshops, focus groups. A minority (also) uses surveys or questionnaires and existing databases.

*Theory*

The theoretical approaches used in the sample of publications were highly diverse, but there are a number of theoretical approaches that were used relatively often (in more than 5 publications):

1. governance theories (sometimes specifically multi-level or polycentric governance);
2. transition theories (including socio-technical transitions, transition management, the multi-level perspective, or strategic niche management);
3. institutional theories (including institutional/policy entrepreneurs or institutional fields);
4. (social) innovation; and
5. co-creation.

<sup>2</sup> The various countries included in these cross-country analyses were included individually in Figure 3. E.g., if a publication mentioned a comparison of cases in the Netherlands and France, they were coded with: Netherlands, France and international comparison.



## 4 Elements of the Toolkit

The toolkit is structured in a way that enables learning about a variety of tools, approaches and conditions, as well as a checklist to help cities or regions evaluate and be inspired regarding how to develop and support LECs and the wider local energy actor network in your territory and country. For this purpose, reflective questions and exercises are included throughout this report. The toolkit consists of 7 key elements, representing the main topics where (local) governments can take action to develop and support LECs and their wider local energy actor network in energy transition.

*\*You can control-click the boxes below to take you to the relevant section of this toolkit*



- 1. Polycentric, network and multi-level governance** \_\_\_\_\_ **10**
  - 1.1 General approaches for all government levels** \_\_\_\_\_ **10**
  - 1.2 National: Supportive frameworks and enforcement of broad targets** \_\_\_\_\_ **11**
  - 1.3 Local: Clear and supportive regional/local frameworks and direct support** \_\_\_\_\_ **13**



- 2. Resource sharing mechanisms** \_\_\_\_\_ **17**



- 3. Clear and inclusive definitions that enable LECs as part of a heterogenous 'local energy actor network'** \_\_\_\_\_ **19**



- 4. Learning, experimentation and evaluation** \_\_\_\_\_ **21**



- 5. Map your 'local energy actor network'** \_\_\_\_\_ **23**



- 6. Platforms for collaboration** \_\_\_\_\_ **27**



- 7. Joint understanding and goal** \_\_\_\_\_ **29**



## 1 Polycentric, network and multi-level governance

Various publications emphasize the importance of **polycentric or network governance** (e.g. Anfinson et al., 2023; Davies et al., 2018; Nochta, 2021). Polycentric governance can be defined as: “a situation where different actors regularly arrive at mutually satisfactory and binding decisions by negotiating and deliberating with each other and co-operating in the implementation of these decisions, without any of these actors being able to impose a decision on the others” (p.2) (Anfinson et al., 2023). As such, this theoretical approach is by definition aimed at increasing the capacity for governing energy transition in networked settings. This means that all tools, approaches and conditions in this report could be considered relevant for polycentric governance. However, publications also emphasize that such polycentric governance always occurs in conjunction with the traditional, hierarchical state and market mechanisms.

In this section, we will discuss the tools, approaches and conditions for governments that contribute to polycentric governance. A good starting point is the concept of **multi-level governance**, which emphasizes the importance of vertical coordination, mobilization and alignment between all government levels from national to local (Dobracev et al., 2021). Below we will provide insight in the tools, approaches and conditions specifically aimed at the national and at the local/regional governments. First, some general tools, approaches and conditions are discussed that are relevant for all government levels to help govern energy transition in networked settings.

### 1.1 General approaches for all government levels

All government levels need to acknowledge and embrace the broad, integrated nature of energy transition. Energy transition cannot be approached and dealt with in isolation; it is interconnected with various sectors and domains, including mobility, housing, industry, infrastructure, social welfare, agriculture etc. As a result, LECs are often involved in various domains. Therefore, the following approaches are important in developing and supporting LECs:

- ❑ Make sure that policy objectives and targets are **not narrowly focused on carbon reduction**, but embrace the wider scope and related goals of local governments and LECs (e.g., (energy) poverty reduction, housing, economic development and other societal debates) (Hargreaves et al., 2013; Visser et al., 2023; Warbroek & Hoppe, 2017). Similarly, a focus on narrow measurable outcomes in the form of quickly disconnecting a large number of houses from gas infrastructure among municipalities in the Netherlands was also found to limit opportunities for cross-sectoral and polycentric governance approaches (Visser et al., 2023).
- ❑ Experiment with **narrative-based evaluation**. “Abandoning tangible outcome indicators [like carbon reduction] in favor of narrative-based evaluation embraces the policy ‘silo’ transcending nature of local low-carbon energy initiatives” (p.25) (Warbroek & Hoppe, 2017). Warbroek & Hoppe (2017) mention the Provincial Open Community Fund in the Dutch province of Friesland

as an example where narrative evaluations are used (“Iepen Mienskiips Fûns” <https://www.fryslan.frl/imfaanvragen>).

- ❑ **Minimize ‘policy patching’** and ad hoc work to ‘fix’ regulatory gaps. It is important to also aim for structural and strategic measures that are part of a broader program of measures to enable polycentric governance (Warbroek & Hoppe, 2017).

#### Reflective questions:

- What targets are set within your territory for energy and climate action?
- Do you see opportunities for using narrative evaluation in your territory?



National

## 1.2 National: Supportive frameworks and enforcement of broad targets

Enabling local energy transition requires stable national government policy and supportive frameworks (Buschmann et al., 2019; Schmid et al., 2020; Seyfang et al., 2014; Soares da Silva & Horlings, 2020). The analysis revealed the following approaches and conditions at the national government level to help govern energy transition in a networked setting, including the activation of LECs:

- ❑ **Top-down enforcement** helps to create incentives and mobilize action on lower levels. For example, targets for renewable energy production, or minimum territorial shares for renewable energy. An example is provided by Anfinson et al. (2023) who describe how German federal targets for minimum territorial shares for wind power in States. Implementation occurs through spatial planning by regional and local governments, which enables local flexibility and room for experimentation. Van Alderen & Horlings (2020) describe a similar system in the Netherlands.
- ❑ Top down enforcement needs to be accompanied by **suitable (spatial planning) regulation and associated funds** from the national government for local and regional governments to enable implementation. In the Netherlands, for example, “the funds provided by the national government in the context of the Program Gas-free Neighborhoods (PAW) were important incentives for the development of innovative local plans” (p.11) (van der Schoor & van der Windt, 2023). (more information on this program can be found here: <https://www.nplw.nl/proeftuinen>)
- ❑ Create **suitable market conditions** and take away barriers to enable community energy and LECs to develop. How these actions look is highly dependent on the specific national context, but can include:
  - Ensure that legal frameworks allow for **prosumers** and **cooperative energy companies**. For example, in France, the opportunity to consume energy produced by communities and linking this to energy bills is limited (Sebi & Vernay, 2020). The Dutch Postal code scheme is often used as an example, but this was replaced by Subsidy scheme for Cooperative



Energy Generation (SCE) (<https://business.gov.nl/subsidy/subsidy-scheme-generating-cooperative-energy/>).

- Ensure that market conditions enable energy communities to participate fully in energy transition. For example, (Ziozas & Tsoutsos, 2022) describe how in Greece, “legislative modifications are required to allow Energy Communities with less than sixty members (or with the participation of local authorities) to participate in the competitive RES project bid processes” (p.92).
- Ensure that local governments can engage in long-term bilateral agreements or Power Purchase Agreements (PPAs) with local renewable energy producers. For example, in France, “local governments [...] cannot consume the electricity generated by the energy community they contribute to developing. Allowing local governments to engage in long-term bilateral agreements (or Power Purchase Agreement PPAs) would not only further empower them to take action but may also facilitate the diffusion of neighbouring energy supply BMs, which is a very promising type of energy community when considering the policy objectives of the European Commission” (p.9) (Vernay et al., 2023).
- **Direct national support**, particularly for nationally operating Local Energy Coalitions. In the Netherlands, the 2ISECAP project gave insight in the example of the Participatiecoalitie (<https://departicipatiecoalitie.nl/>), which was funded based on national government programs (2ISECAP, 2022c, 2022a). Buschmann et al (2019) mention the example of deNET (<https://www.deenet.org/>) in Germany, which also received national funding. Stability of such funding schemes is key (2ISECAP, 2022a). Another option is a national fund for risk-sharing (see the chapter resources and risk sharing mechanisms).

It is not always possible for local and/or regional governments to affect national frameworks. Nonetheless, there are some **potential actions for local governments to enable national frameworks that provide supportive structures and enforce broad targets:**



1. Create an overview of the important national frameworks, subsidy schemes and support mechanisms.
2. Keep an overview of potential gaps and barriers due to (a lack of) these frameworks and support mechanisms.
3. Local and regional governments can use existing (vertical) governmental cooperation platforms and connections to lobby for change. The LEC-like initiatives identified in the report on LECs (D2.1) are examples of such platforms where governments cooperate to exchange experiences, including many existing platforms where municipalities already cooperate. Where possible, coordinate such lobbying together with nationally operating LECs.



### 1.3 Local: Clear and supportive regional/local frameworks and direct support

Most publications in our sample emphasize that regional and local governments are key stakeholders for facilitating and stimulating local energy transition (e.g., Nochta, 2021; Soares da Silva & Horlings, 2020; Strumińska-Kutra et al., 2023; van Dam & van der Windt, 2022; van der Schoor & van der Windt, 2023; Vernay et al., 2023; Vernay & Sebi, 2020; Visser et al., 2023; Warlenius & Nettelblatt, 2023). These governments are often responsible for developing and implementing integrated energy and climate plans on the local level, including Strategic Energy and Climate Action Plans (SECAPs). Moreover, they are a key stakeholder in many LECs and energy communities (see 2ISECAP, 2022c). Again, the exact nature of regional and local government responsibilities and mandates depends on the national context (see also the 2ISECAP report on the different spatial planning and socio-economic landscapes, 2ISECAP, 2022b). A number of tools, conditions and approaches are available for local and regional governments to help govern energy transition in a networked setting, including the activation of LECs:

- ❑ Use a **range of structural policy tools**, ranging from authoritative to enabling tools (Warbroek & Hoppe, 2017) (see also Figure 4). The three types of tools identified are:
  1. **Authoritative tools** apply conventional instruments (e.g., planning/land-use requirements), sometimes in innovative ways, to structure the local energy actor network and support energy communities and LECs.
    - a. Energy communities and LECs as a policy goal,
    - b. Planning/land-use requirements/regulation,
    - c. Strategic use of land ownership,
    - d. Performance criteria,
    - e. Minimum share of local ownership (Anfinson et al., 2023)
  2. **Conditioned tools** can have characteristics of authoritative and enabling tools. Most importantly, these tools set conditions and criteria that must be met before organizations such as energy communities and LECs receive support or funding.
    - a. Energy (investment) funds. Local governments will themselves reserve budgets to support investments, which can be spend as seed money, loans or in partnership that meet certain conditions (e.g., the Fund Clean Frisian Energy, <https://www.fsfe.frl/>).
  3. **Enabling tools** use instruments that are aimed at capacity building and often allow for more ambiguous and long term outcomes.
    - a. **Start-up funds** to allow for risk sharing
    - b. **Structural co-provision** is more than just funding.
      - An example is public energy service delivery through delegating responsibility for ‘energy front desks/energy offices’ to LECs.
      - Another example is that the regional or local government set up and fund **intermediaries** that then provide support to



energy cooperatives. Such an intermediary could be a starting point for LECs (see also Element 5 of the toolkit ‘Map your local energy actor network’).

- c. Use **pilot projects** to experiment, learn and demonstrate, including with **regulatory exemptions** (see Element 4 of the toolkit ‘ Learning, experimentation and evaluation’).
- d. Create **platforms for cooperation** (see Element 6 of the toolkit ‘Platforms for cooperation’)

Modes of Governing	Policy Innovation Criterion	Overijssel	Fryslân
Governing by authority ↑	LLCEIs as policy goal, planning/land-use requirements, strategic use of land ownership, performance criteria, innovative use of conventional instruments	<i>Provincial</i> - LLCEIs as policy issue	<i>Provincial</i> - LLCEIs as policy line - Civic participation requirement in low-carbon energy installation
		<i>Local</i> - Council decision LLCEI as pilot - Civic participation requirement in low-carbon energy installation - adapting conditions of construction fees	<i>Local</i> - adapting conditions of construction fees and adapting spatial planning program - Ending lease contract
		<i>Provincial</i> - Investment Fund - Energy Pitch - Phased subsidy instrument - Energy Landscapes scheme	<i>Provincial</i> - Fund Clean Frisian Energy  <i>Local</i> - Criteria for public support
Governing through enabling ↓	Capacity building instruments (e.g., subsidies, information)	<i>Local</i> - Criteria for public support	<i>Provincial</i> - Open Community Fund - The Energy Workshop - Us Koöperaasje, North Local Sustainable
		<i>Provincial</i> - Sustainable Village scheme - Initiative Brokers scheme - New Energy Overijssel Platform	<i>Local</i> - Start-up subsidies

Figure 4 Examples of authority, conditioning and enabling policy measures in two Dutch provinces by Warbroek & Hoppe (2017)

- **Mix authoritative, conditioned and enabling tools.** A good example is the Energy Transition Fund, set up by the Municipality of Groningen. This fund provides advantageous loans for energy saving measures to people who are suffering from energy poverty and are often not eligible to loans from regular funding organizations. The municipality also set up an operating company that uses municipal land to develop solar fields/windfarms. All revenues flow into the energy transition fund. The goal is to show how energy transition is interlinked with many other domains and how investing in energy transition can help solve broader societal problems (a summary of this approach can be found here: <https://stadszaken.nl/artikel/5404/gemeente-groningen-gaat-zelf-zonne-en-windenergie-opwekken>).



- ❑ **Tools that directly support projects** by energy communities and/or LECs (van der Schoor & van der Windt, 2023):
  - Direct sponsoring of initiatives
  - Partner in acquisition of other subsidies (e.g. at the national or EU-level)
  - Cooperation in project development
  - Enabling knowledge exchange through municipal wide networks.

**Exercise on policy tools and project support:**

- Write down the authority, conditioning and enabling policy tools that are available in your territory.
- Are these tools structurally available and/or mainly aimed at individual projects?
- Are there any that you are not using but that you think could have potential?



- ❑ **Leadership approaches** within local governments are considered extremely important in studied publications (e.g., Del-Busto et al., 2022; Strumińska-Kutra et al., 2023; van Aalderen & Horlings, 2020; Young & Macura, 2023). Particularly the position of the **Mayor and the City Council** are often mentioned as crucial. Young & Macura (2023) discuss how the forward looking mayor in Priboj (Serbia) was crucial to the city becoming a front runner in energy transition. Leaders are crucial to mobilizing support for new solutions and convincing departments to collaborate. They do so through:
  - a. informal talks and informing employees and citizens (Strumińska-Kutra et al., 2023),
  - b. issuing regulations that force interdepartmental collaboration (Strumińska-Kutra et al., 2023).
  - c. Reaching out to strategic stakeholders (Del-Busto et al., 2022).
- ❑ Van Aalderen & Horlings (2020) created a framework for **accommodative leadership**, which can be used to assess current state of leadership and inspire additional actions (see Figure 5 for an overview). The more boxes checked, the more accommodative leadership is practiced. In this case, leadership is something that is not necessarily in the hand of one person (e.g. mayor), but “a form of shared, cooperative or collaborative leadership, as it deals with a variety of stakeholders and vested interests in places” (p.3) (van Aalderen & Horlings, 2020). **Professional staff** thus plays an important role in executing this type of accommodative leadership.





<i>Task:</i>	<b>Strategic awareness</b>	<b>Framing</b>	<b>Coordination</b>	<b>Common vision</b>	<b>Mobilization &amp; recruitment</b>	<b>Span boundaries</b>
<i>Function:</i>						
<b>Political-administrative</b>	Deciding on focal points of regional strategy	Strategic framing of issues	Building of trust and legitimacy within the network	Regional strategy development	Mobilize, generate and allocate resources, knowledge and individuals	X
<b>Adaptive</b>	Visionary change based on the awareness of societal issues.	X	Institutional flexibility to allow for innovation	X	Gather resources for innovation	X
<b>Enabling</b>	Create a sense of urgency	X	Allow for differentiation of set norms and standards; foster interactions within the network	X	Supporting niche development; help initiatives to overcome barriers.	X
<b>Disseminative</b>	X	X	Institutional renewal	Get newly developed ideas accepted	X	Insert newly developed ideas in networks of positional leaders
<b>Connective</b>	X	Acceptance of the applied frame by the network	Management of connections within the network; trust, integration and transparency	Collaborative strategy development	Stimulate multiple action options, mobilizing actors to search for solutions	Connect different networks

Figure 5 framework for accommodative leadership (van Aalderen & Horlings, 2020).

**Exercise on leadership:**

- Which boxes from the accommodative leadership framework (Fig. 5) can you check?
- Which boxes do you find inspiring and would you like to incorporate in your leadership style?







## 2 Resource sharing mechanisms

One of the major problems for energy communities, LECs, and also municipalities in addressing local energy transition is uncertainty and lack of financial and human resources. This was also shown by the 2ISECAP project results on LECs (2ISECAP, 2022a) and on capacity gaps (2ISECAP, 2023). The publications in our sample show a number of tools, approaches and conditions for resource sharing:

- ❑ Examine and combine opportunities for funding from national, regional and local governments AND external organizations such as banks and NGOs; i.e., **playing on multiple resources** (Buschmann et al., 2019; Soares da Silva & Horlings, 2020; Strumińska-Kutra et al., 2023; Tsagkari, 2020).
- ❑ Support LECs with **resources**:
  - **Financial**: risk-sharing mechanisms, loans, subsidies (as also mentioned above), that “provide start-up and risk capital in the initial phase of collective RE and energy efficiency projects” (p.4) (Anfinson et al., 2023). Various examples are provided in the literature, including EnRCIT and ENERCOOP in France, which are national risk-sharing mechanisms for larger cooperatives (Vernay & Sebi, 2020). Anfinson et al. (2023) mention the example of a ‘citizens’ energy fund in Schleswig Holstein (Germany) that assists “in the planning and start-up phase and to reduce financial risks” (p.4). Sebi & Vernay (2020) recognize five different types of financial schemes in different French administrative regions:
    - Communication subsidies
    - Investment subsidies
    - Feasibility subsidies
    - Call for projects
    - Bank warranty.
  - **(Structural) co-provision**: delegate responsibilities to energy communities or LECs. Examples of activities are providing front office energy services to citizens (e.g. energy coaches) or do energy related research/targeted studies (Warbroek & Hoppe, 2017).
  - **In kind**, for example physical locations to organize mentoring and training workshops so LECs can help other initiatives and citizens build confidence and capabilities for energy transition (Hargreaves et al., 2013)
  - Include financing formats that **allow for failure of experiments** (not only focus on result but on broader learning) (van der Waal et al., 2020) (see also Element 4 ‘Learning, experimentation and evaluation).



- Financial support also needs to be **structural** (not only ad hoc), and based on clear and achievable criteria (not just gut feeling and trust). Strict requirements will inhibit parties to make use of financial support mechanisms. It helps to allow funds to be spend in various manners (e.g., giving LECs the choice whether to use fund to hire expertise or finance low-carbon measures) (Warbroek & Hoppe, 2017). This will help match the need of the variety of forms of energy communities and LECs in your local actor network (see also the section on ‘clear and inclusive definitions’).

**Reflective questions on resource sharing mechanisms:**

- Which financial support structures do you offer?
- Are these supports structural in nature or ad hoc?
- Are there any support structures mentioned in this toolkit that you had not yet considered?





### 3 Clear and inclusive definitions that enable LECs as part of a heterogenous ‘local energy actor network’

Even though this review is explicitly not about energy communities, almost half of the publications (n=61) in our sample focused on community or citizen related activities in energy transition. However, in these 61 publications, 18 different terms were used to describe this phenomenon (see Table 1). All of these terms refer to initiatives, networks, projects or organizational forms that can involve a range of actors, but generally include communities and/or citizens, in energy transition related activities<sup>3</sup>. This diversity of terms and definitions is in line with findings from existing reviews on the meaning of community energy (e.g., Bauwens et al, 2022, Creamer et al, 2019).

Code	N=
Energy community	11
Community energy (initiatives/projects/collectives)	9
Local (renewable) energy initiatives (LEI)	9
Renewable energy communities (REC)	7
Community renewable energy (project) (CRE)(P)	5
Grassroots initiatives/innovations	5
Energy cooperatives	3
Community/citizen energy companies	2
Citizen Energy Community (CEC)	1
Citizen Energy Cooperatives	1
Citizens' initiatives	1
Civic Energy Communities	1
Community initiatives	1
Energy initiatives	1
Local Action Groups	1
Local Energy Communities	1
Renewable Energy Community Cooperatives (RECC)	1
Renewable energy cooperatives (RESCOOPS)	1

**Table 1 Overview of terms for community related activities in energy transition**

In this toolkit, the term ‘energy community’ is used, because it is the one that was applied most often in the publications studied. It is important to realize that an energy community can be a LEC, but not all LECs are necessarily energy communities (2ISECAP, 2022c). Table 1 shows that existing publication prefer the term REC (in favor of CEC), whereas CECs are may be more in line with LECs.

- ❑ Check how the provisions from the EU directives (See box 1) are implemented in national law (see <https://www.rescoop.eu/policy#transposition-tracker>).

<sup>3</sup> Some publications use various terms for the same phenomenon. In these cases, the code was used that represented the dominant term throughout the publication. E.g., some papers that use the term Renewable Energy Community (REC) also refer to the term Community Energy Initiative (CEC) (both based on EU directives). In these cases the term that was used throughout the paper was coded.



- ❑ Remember: All LECs involve various actors and engage in multiple activities, often including education, knowledge exchange and facilitation of other initiatives (2ISECAP, 2022c). Ensure that definitions of LECs used in policies, regulations and support mechanisms allow for this diversity of actors and activities (Vernay et al., 2023). This will **ensure that LECs are eligible to support** (see also the section on ‘map your local energy network’ and, particularly, intermediaries).
- ❑ Importantly, Creamer et al., (2019) warn that “the establishment of a single encompassing definition is never a neutral process, but one embedded with power relations where some meanings, practices, and actors are recognised while others are not” (p.2). Consider to what extent your **definitions and interpretations match your ambitions with LECs**.

#### Reflective questions on your definition of energy communities and LECs:



- How are the EU directives interpreted in your country?
- Which stipulations related to forms and types of ‘energy communities’ and LECs are included in your local policies and resource sharing mechanisms?
- Do these national and local stipulations limit the types of initiatives that can receive support?
- Do these interpretations and stipulations match the ambitions with your LEC and which of these / how are these useful to support your LEC?



## 4 Learning, experimentation and evaluation

The importance of experimentation, evaluation and learning was mentioned in many publications in our sample. However, tools, approaches and conditions for learning seem to be less explicit. Nonetheless, some insights can be gained, including:

- ❑ **Monitoring and evaluation** of planning processes (two steps that are often forgotten) (Acosta et al., 2018; Taliép, 2022). This should be done for both plans and projects. As stated earlier, evaluation should be broader than just carbon reduction (e.g. narrative evaluation) and include evaluation of cooperative processes and of alternative (societal) achievements.
- ❑ Embedding **academic research** in the transition projects that produce learning infrastructures (Visser et al., 2023). It is noticeable that at least 16 publications in our sample are the result of EU projects. Similar to the 2ISECAP project, these EU projects seem to be important vehicles for cross-boundary learning and sharing of experiences. They help create ‘platforms for collaboration’ (see Element 6 of this toolkit ‘platforms for collaboration’).
- ❑ Be aware of resource constraints and risk-averse attitudes. These attitudes may lead to a “focus on the most efficient and simple solution [to limit] complicating the process with other, more integrated and thus more complex, options” (p.8) (Visser et al., 2023). Similar processes are observed by (van der Schoor & van der Windt, 2023) for community owned district heating initiatives, which release stricter sustainability values and opt for simpler options. Hence, it is important to be aware of these ‘domestication’ processes, and maintain an **open mindset** when working with LECs and energy communities.
- ❑ Embrace two types of learning
  - 1) **face-to-face mutual learning** by exchanging (project-based) experiences
  - 2) **codify and standardize learning** by summarizing findings in generally applicable reports and toolkits) (Hargreaves et al., 2013; Seyfang et al., 2014). Both types of learning are important activities that many LECs engage in, as can be seen from their focus on education and knowledge exchange (2ISECAP, 2022c). LECs seem to be taking ‘ownership’ of organizing learning. Ziozas & Tsoutsos (2022) found in Greece that energy communities that do not themselves run projects had more space to produce generic lessons and findings. Some of the identified LECs in 2ISECAP fall into this category of LECs that do not themselves run projects (2ISECAP, 2022c). This also shows the importance of a diverse ‘local energy actor network’ and inclusive definitions (see Element 3 ‘Clear and inclusive definitions’).
- ❑ **Regulatory ‘sandboxes’** are an important tool for experimenting with regulatory exemptions. A sandboxes is a “participatory experimentation environment for exploring revision of energy law to overcome such legal obstacles for energy transition. A main characteristic of these sandboxes is that they allow for a two-way regulatory dialogue between an experimenter and a regulator to innovate regulation and enable new socio-technical arrangements” (p.2) (van der Waal et al., 2020). For effective regulatory sandboxes it is important that:

- A broad range of actors is involved and aware in setting up experiments at various government levels. For example, Van der Waal et al. (2020) emphasize the importance of alignment between ministries, particularly including tax authorities, in regulatory exemptions.
  - Monitoring and evaluation should not only focus on replicability (which is currently often the case) but on broader learning potential of experiments.
  - Nationally operating LECs can help lobby for ‘regulatory sandboxes’ and be involved in setting up regulatory experiments at the national level that are sensitive to local needs. For example, Van der Waal et al. (2020), mentioned Energie Samen as a potential partner to involve in such a manner (Energie Samen is a member of the Participatiecoalitie, which is a LEC in the Netherlands that was identified in 2ISECAP (2ISECAP, 2022c).
- In line with the previous section on leadership, effective learning and experimentation requires “a **willingness** to create new forms of knowledge about cities and to operate beyond established practices and ways of doing things” within local governments (Urrutia-Azcona et al., 2020).

**Reflective questions** (based on Taliep’s (2022) (p.15) suggestion for evaluating multi-stakeholder processes):



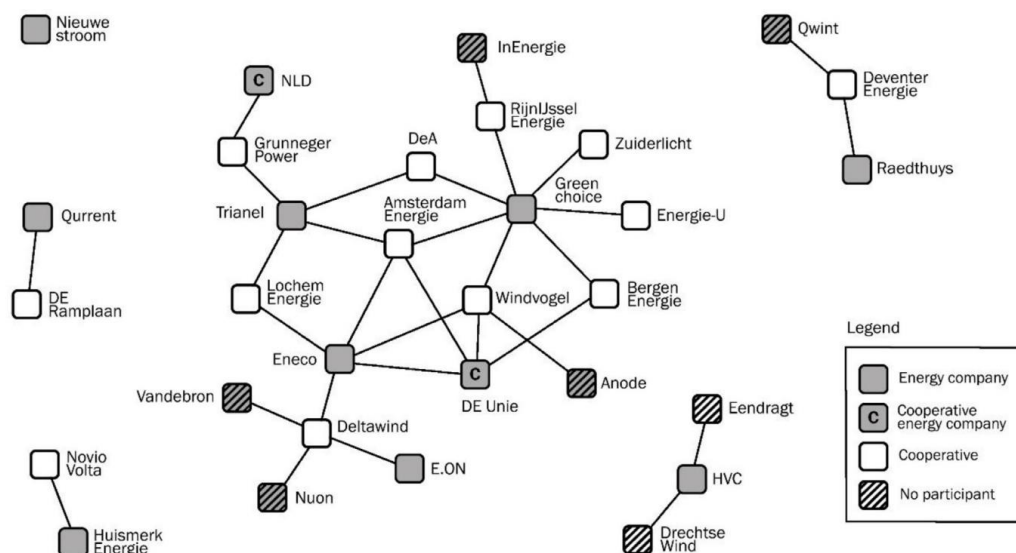
- When did various stakeholders work together and why at that moment?
- “How did the multiple stakeholders work together, negotiate solutions and make decisions?”
- How was stakeholder involvement and community participation promoted in this plan or project?
- “What are the barriers to and enablers of engaging multiple stakeholders in the development” of the plan or project?
- “What lessons can be learnt from the engagement processes to improve future” plans or projects?



## 5 Map your ‘local energy actor network’

The information in this toolkit, so far, has emphasizes the heterogenous nature of the ‘local energy actor network’, or community energy ecosystem (Vernay & Sebi, 2020). As emphasized in the 2ISECAP report on LECs (2ISECAP, 2022c), this does not mean that all the actors that are part of this network only operate on the local scale. The report on LECs shows that there are important LECs that operate on the national level (2ISECAP, 2022c). There seems to be an important role for LECs on different scales, from national to local, to empower local energy transition.

- Map your ‘local energy actor network’ and regularly update your overview. Figure 6 provide an example of such a network as created by de Bakker et al. (2020) for the Dutch context. This network does not include governments. Based on the importance of local governments (as discussed above) for energy transition, it would be recommended to include them.



*Figure 6 Example of network of partnerships between cooperatives, commercial and cooperative energy companies by De Bakker et al (2020)*

- **Identify relevant actors and their positions early on in the process** (Canzler et al., 2017; Del-Busto et al., 2022; Schilstra et al., 2021; Sedlacek et al., 2020). Publications in our sample provide various categorizations and tools for doing this (see also the 2ISECAP information on capacity building concept & approach, particularly module 1.1), including:
  - **Power-interest matrix** (e.g., Del-Busto et al., 2022)
  - Distinction between **local key actors** (e.g. mayors, head of county authorities) responsible for coordinating a regional energy transition, and **operating actors** such as cooperatives, municipal utilities, planning and consulting offices (Buschmann et al., 2019)



- ❑ Consider **the openness to development of actors**. Actors can be more active (drivers/catalyst) or more passive (wait and see). This last category tends to contain traditional incumbents actors (Canzler et al, 2017).
- ❑ Do not discount the importance of **'incumbents'**, such as large energy companies. Vernay & Sebi (2020), based on a comparison of the Dutch and French community energy ecosystems, conclude that having both competing and symbiotic relations with incumbents is more likely to transform the energy sector.
- ❑ Take into account trends of **hybridizations** where incumbents are cooperating with energy community ecosystem for mutual benefits (e.g., community energy companies (e.g., Energie van Ons - <https://energie.vanons.org/> or OM nieuwe energie - <https://www.samenom.nl/>) or energy companies that mainly work with energy communities e.g., Greenchoice, see Figure 6). It is important to realize that forms of hybridization that can be found are largely dependent on the national energy system and market regulation.
- ❑ It helps to have an **overview of types of energy communities, partnerships and hybrids** in your region. There are various ways to do this:
  - 1) One classification that could be helpful is by De Bakker et al (2020) who make a distinction between:
    - **Resale partnership**: “cooperatives do not produce electricity; they merely purchase green electricity from energy companies for distribution amongst their members, often under their own local brand” (p.5) (de Bakker et al., 2020), which can be a stepping stone for future investments in production by cooperative.
    - **Private production**: produce for self-consumption, energy companies only do administrative work (reduction from energy bill)
    - **Public production**: Energy company and cooperative need a power purchase agreement (PPA) per KWh.
    - **Co-development/co-ownership** (for public consumption): create joint entity
    - **Participation only** (e.g. crowdfunding).
  - 2) Another classification that could be helpful is by Dudka et al. (2023), who looks at the degree of citizen involvement in terms of participation (direct or indirect) and ownership (full or shared). Figure 7 shows that they identify 4 forms of energy citizenship:
    - Full citizen ownership (direct participation and full ownership by citizens)
    - Shared citizen ownership (direct participation and shared ownership with citizens)
    - Citizen crowdfunding (indirect participation and full ownership by citizens)
    - Civic participation (indirect participation and shared ownership with citizens)



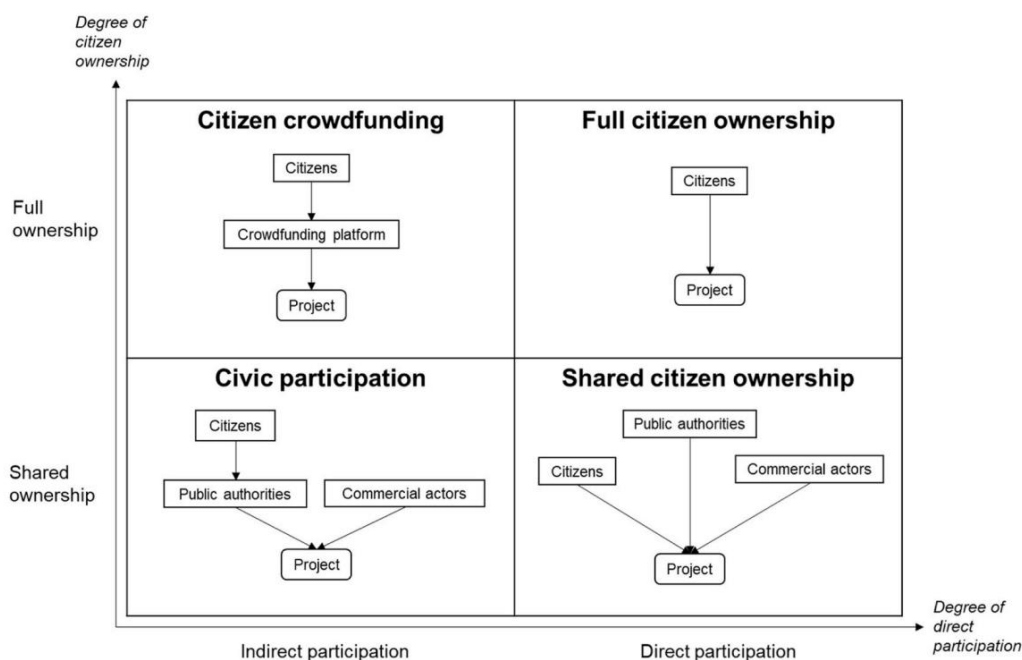


Figure 7 A typology of energy citizenship by Dudka et al. (2023)

- ❑ Make sure you identify and include **intermediaries, which can be LECs**. They are the ‘spiders in the web’ in your local energy actor network and may not always fit within the above typologies. They are considered of key importance for local energy transition in many publications in our samples (Buschmann et al., 2019; Canzler et al., 2017; Cappellaro et al., 2019; Dudka et al., 2023; Hargreaves et al., 2013; Seyfang et al., 2014; Soares da Silva & Horlings, 2020; Tsagkari, 2020; van der Waal et al., 2020; Vernay et al., 2023; Vernay & Sebi, 2020; Ziozas & Tsoutsos, 2022). Sometimes they are called ‘boundary spanners’, or ‘local capacity builders’<sup>4</sup>. According to Vernay et al. (2023), intermediaries (these may be LECs) fulfill four roles:
  1. “helping to **standardize processes** (e.g. by developing tools, standard contracts, etc.) to make it easier for focal actors to coordinate a group of heterogeneous actors;
  2. providing **tailored support locally** with the aim of allowing initiators to gain the capabilities that are necessary to operate autonomously (this is especially important in the emergence phase and when initiators are non-energy actors that lack sectorial expertise) [**i.e., capacity building**];
  3. taking actions to **increase the legitimacy** of the business models in the eyes of both organisations that could develop them and external audiences [...];
  4. **facilitating networking** between initiators to foster the sharing of best practices.”
- ❑ Intermediaries, including LECs, can play an important role as ‘**third parties**’, especially in schemes where citizen involvement is less direct in the framework of Dudka et al. (2023) (see figure 7).

<sup>4</sup> This is not to say that intermediaries are by definition LECs, however, many of the initiatives classified as intermediaries might be considered LECs. This is an interesting avenue for further research.



- ❑ **Ensure support for intermediaries, including LECs** (see also the section on definitions). Similar to the 2ISECAP project findings on barriers and accommodating factors for LECs (2ISECAP, 2022a), multiple publications saw resource constraints as a major limitation to intermediaries, who had “to concentrate on their own survival rather than on contributing to the development of an institutional infrastructure for the sector as a whole” (p.875) (Hargreaves et al., 2013)(also Vernay & Sebi, 2020).
- ❑ **Try to identify wide scoped, nationally operating LECs**, who can help particularly for more complex tasks and mapping exercises. The 2ISECAP project identified Participatiecoalitie (NL - <https://departicipatiecoalitie.nl/>), Enostra (Italy - <https://www.enostra.it/>) and Econactiva (Spain - <https://www.econactiva.es/>) (2ISECAP, 2022c). Literature gave the examples of TEPOS (France - <https://tepos.fr/>) and deNET (Germany - <https://www.deenet.org/>) (Buschmann et al., 2019)

#### Exercise



- Try to draw your local energy actor network
- Talk to the most important actors that you have already identified to see if there are connections and actors that you have not yet identified (or do this in a joint session with them).
- Give explicit attention to identifying LECs (the spider’s in the web) and involve them in drawing the network.



## 6 Platforms for collaboration

Multiple publications in our sample emphasize the importance of platforms for collaboration (also called arenas of exchange) where the local energy actor network can meet and exchange ideas (Buschmann et al., 2019; Canzler et al., 2017; Escario-Chust et al., 2023; Nochta, 2021; Strumińska-Kutra et al., 2023). Such platforms can be stepping-stones for increased long-term collaboration can help start and intensify collaboration (Buschmann et al., 2019). As such, these platforms and networks can be starting points for LECs.

- ❑ Platforms can be both **physical and digital, and both formal and informal** with the goals to exchange information or instigate actions both in formal and informal ways (e.g, reports, resources, events, meet-ups, whatsapp groups)
- ❑ **Living labs** are often mentioned as a good way to kick start such platforms. This is illustrated by the 2ISECAP project and by the literature (Canzler et al., 2017; Cappellaro et al., 2019). The 2ISECAP transnational living lab is a good example of this (<https://2isecap.eu/transnational-living-lab/>)
- ❑ Think about **boundaries**. Platforms may target different types of communities. These can follow strict territorial boundaries or at the other extreme target broader participation of all interested stakeholders. Warlenius & Nettelblatt (2023) describe how ‘**communities of interest**’, without physical boundaries, can draw members and resources from a wider area and therefore might be better able to scale up compared to locally rooted communities.
- ❑ Think about the goal of these platforms. Nochta (2021, p120) identifies the follow types of processes, each with their own consequence for decision-making:
  - **information exchange;**
  - **networking and professional relationship-building** and **resource pooling;**
  - expert **advice and consultation;** and
  - **co-production**
- ❑ It is important to realize that the **tradition of collaboration** with stakeholders is stronger in Northern European countries. Therefore, platforms for collaboration and associated relationships of trust might be more difficult to establish in Southern European countries, where stakeholders may have less experience or trust in such collaboration. Nonetheless, Escario-Chust et al. (2023) show the example of the Mesa de Transición Energética (MTE – Energy Round Table) in Spain, which was “a multi-stakeholder, participatory and inclusive mechanism to define the roadmap towards achieving the energy transition and urban sustainability” (p.1). This roundtable is in essence a platform that enables stakeholders to meet and negotiate energy transition solutions.
- ❑ Support and update existing online platforms for **information sharing** with up to date information regularly (Hargreaves et al., 2013) (e.g., the RESCOOP database, the 2ISECAP database of practice etc., local websites with information for stakeholders).

**Reflective questions:**

- Do you already have platforms for collaboration?
- Who can join these platforms?
- What are their goals?
- Are you a member of the 2ISECAP transnational living lab?





## 7 Joint understanding and goals

As has become clear from this report, the local energy actor network consists of a diverse range of actors that can cooperate in various constellations. To ensure cooperation between such diverse actors is successful, a number of tools, approaches and conditions are mentioned as crucial in the publications studied:

- ❑ Understand and embrace multiple, co-existing **discourses, values and backgrounds** of members of LECs, energy communities and other stakeholders involved in integrated energy planning (Berg et al., 2021; Dudka et al., 2023; Urrutia-Azcona et al., 2020). It is important to create mutual understanding of these discourses and values. That does **not** mean creating one single discourse or agreeing on all values shared. Rather, it means learning about each other's point of view, because it will help create mutual understanding of how and why stakeholders hold certain positions in negotiations and collaborative processes (Berg et al., 2021; Dudka et al., 2023). This means that it helps to invest sessions at the start of the processes on **getting to know stakeholders**, and making sure **stakeholders get to know each other and their values and views** (see also the Module 2.2 on Empathising & Defining challenges that was developed in the 2ISECAP project as part of the Living Lab Learning Modules <https://2isecap.eu/living-lab-training-modules/>)
- ❑ Often, these discourses, values and backgrounds are also related to **regional culture and mentality**. Adhering to regional cultures and using 'regional language' in collaborative processes and communication helps to connect to the people living in the region (Stober et al., 2021; Van Der Schoor et al., 2016).
- ❑ Do **not** use collaborative processes just for legalistic reasons (just to meet formal requirements without efforts to improve outcomes) (Stober et al., 2021), which may be a risk that governments face. Instead, it is advisable for governments willing to consider forms of collaboration to assess their rationale for entering or developing such collaboration. Stober et al. (2021, p.3) identify three different rationales for collaborative approaches that create benefits in terms of trust-building, and resource sharing:
  - Substantive rationale: lay judgments are as sound as, or sounder than, those of experts; lay people see issues and solutions that experts might miss and improve the quality of decisions; policy goals can be changed.
  - Normative rationale: the public is competent enough to be involved in decision making that affects them; the participation process is maximum open and fair.
  - Instrumental rationale: effective participation makes decisions more legitimate and is oriented towards improving the results; values are to be implemented into the decisions; policy goals are not open for discussion.
- ❑ Where possible, **define goals jointly** (e.g., aim for a normative or substantive rationale in collaborative approaches). When adhering to an instrumental rationale where policy goals are not up for debate, research shows that collaborative approaches show more limited benefits in building trust and



sharing resources, albeit some of these benefits still remain. Purely legalistic reasons, where the aim of participation is just to meet formal requirements without efforts to improve outcomes, are not recommended (Stober et al., 2021).

- ❑ Have a **clear and mutual understanding of the goals** that you are working towards in collaborative processes (Stober et al., 2021; Van Der Schoor et al., 2016). This need not imply that goals have to be narrow or defined explicitly a-priori. A Stober et al. (2021), for example, suggest that participatory processes that were designed to fulfill multiple goals and where outcomes were not yet defined, were valued most highly by participants. Hence, it is crucial is to allow **time and resources to let clarity and mutual understanding emerge** within the process of establishing collaboration.

**Reflective questions:**

- What were your reasons for organizing participative processes (legalistic, instrumental, normative, or substantive?)
- What are your vision and goals for energy transition?
- When were they established and who was involved in establishing them?
- To what extent is there room for joint establishment and change of these goals together with stakeholders?
- Have you held session to understand various values, interests and needs both within your organization, and with other stakeholders?



## 5 Discussion and conclusion

Local Energy Coalitions (LECs) are examples of more structural forms of collaboration between a variety of stakeholders to advance energy transition. As such, they offer opportunities to share knowledge, expertise and resources among actors to generate a higher capacity for action towards energy transition. In the meantime, next to LECs, also other forms of collaboration that may rely on more narrow or ad hoc forms of collaboration or that are more formalized as partnerships of companies may offer similar opportunities. This reports offers an overview of the various tools and approaches documented in scientific literature that can either help develop or support such collaborations.

This report is based on a systematic literature review of 142 publications. It is impossible to design a one-size-fits-all toolkit that is fit-for-purpose for all relevant stakeholders and regions that aim to pursue collaboration in energy transition. Differences in national planning systems (see 2ISECAP, 2022b) and local context play an important role, as do the specific ambitions and capacities of involved stakeholders. Therefore, this toolkit is structured as a checklist with evaluative questions and exercises to help local governments (and other interested actors) gain insight in their local energy actor network and in tools, approaches and conditions that help activate this network.

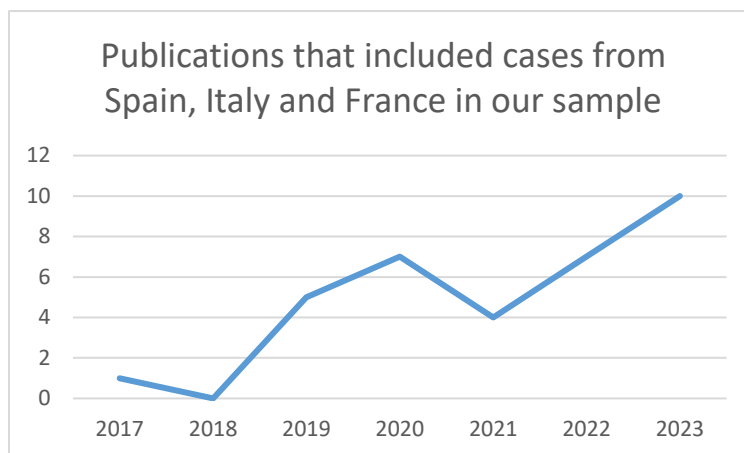
Inductive analysis of the selected publications provided insight into 7 key elements of the toolkit, representing the main topics where (local) governments can take action to develop and support LECs and their wider local energy actor network in energy transition:

- (1) Multi-level governance with supportive frameworks and enforcement on the national level and clear and supportive regional and/or local frameworks;
- (2) Resource sharing mechanisms;
- (3) Clear and inclusive definitions that enable LECs as part of a heterogenous ‘local energy actor network’;
- (4) Learning, experimentation and evaluation;
- (5) Mapping your local energy actor network;
- (6) Creating platforms for collaboration;
- (7) Developing a joint understanding and goals.

The literature clearly shows the importance of polycentric governance, which includes all government layers and a wide range of stakeholders for energy transition. Most importantly, the analysis shows that the local energy actor network is widely diverse and support mechanisms need to recognize this. Moreover, it is important to recognize the plural goals of the local energy actor network, including LECs and RECs, which goes beyond just energy transition. They are often not only involved in energy transition but support the broader development of “human welfare and wellbeing” (Sebi & Vernay, 2020).

This analysis shows that publications that provide insight in collaboration, cooperation and participation in local and regional energy transition in general focus almost

exclusively on the global north, and prominently feature the Netherlands and Germany. Escario-Chust et al. (2023) also emphasize that “these transition governance experiences require special attention in southern European countries, since they lack a consolidated participatory tradition and institutional trust has been socially reviled”, with one of their participants explicitly remarking “we are not the Netherlands” (p.9). Nonetheless, there is an increase in publications, especially in recent



*Figure 4 Publications including cases in Spain, Italy and France*

years. When looking at publications that focus on Spain (n=12), Italy (n=11) and France (n=11), a clear increase can be observed from 2019 onwards in these countries (see figure 8). As figure 4 shows, central and eastern European countries are also largely underrepresented. Only Poland was mentioned as a case more than once or twice. Cultural differences and differences in planning systems again can play a large role here (as emphasized by e.g. Young & Macura, 2023). Future research could examine how a toolkit such as this one may be best adapted to these various contexts, and which parts would need to be strengthened.

As a result of the fragmented literature with a wide range of theoretical and conceptual approaches, it is possible that our search did not capture all publications that relate to cross-sectoral collaboration, cooperation and participation in local and regional energy transition. Nonetheless, saturation was achieved in the main elements of the toolkits. It can therefore be expected that additional publications would not significantly change the nature of the toolkit; at best, it might add some additional examples. The focus of this study was to explore the tools, approaches and conditions for cross-sectoral collaboration, cooperation and participation in existing research within the context of energy transition. Future research could compare the insights from this literature review to existing theoretical debates on polycentric and network governance, governance capacity and institutional change to see if additional theoretical insights could be added (e.g., Klijn & Koppenjan, 2015; van Popering-Verkerk et al., 2022; Wu et al., 2015).



## 6 References

- 2ISECAP. (2022a). *Barrier & Accommodation Factors for Local Energy & Climate Coalitions in Urban Areas*.
- 2ISECAP. (2022b). *Integrating SECAP Planning into Spatial Planning and Socioeconomic Landscapes*.
- 2ISECAP. (2022c). *Local Energy Coalitions: Nature and Characteristics*.
- 2ISECAP. (2023). *Institutional Capacity & Social Capacity Development for Integrated and Participatory SECAP Planning*.
- Acosta, C., Ortega, M., Bunsen, T., Koirala, B. P., & Ghorbani, A. (2018). Facilitating energy transition through energy commons: An application of socio-ecological systems framework for integrated community energy systems. *Sustainability (Switzerland)*, 10(2). <https://doi.org/10.3390/su10020366>
- Anfinson, K., Laes, E., Bombaerts, G., Standal, K., Krug, M., Di Nucci, M. R., & Schwarz, L. (2023). Does polycentrism deliver? A case study of energy community governance in Europe. *Energy Research and Social Science*, 100. <https://doi.org/10.1016/j.erss.2023.103093>
- Berg, P., Narayan, R., & Rajala, A. (2021). Ideologies in Energy Transition: Community Discourses on Renewables. *Technology Innovation Management Review*, 11(7/8), 79–91. <https://doi.org/10.22215/timreview/1458>
- Buschmann, P., Moser, P., Nadaï, A., & Régnier, Y. (2019). A-disciplinary considerations of two networks of local climate energy initiatives: Paper part of the Special issue entitled: “Unlocking Energies, Unpacking the Entanglements and Temporalities of Local Initiatives.” *Local Environment*, 24(11), 1053–1072. <https://doi.org/10.1080/13549839.2018.1520822>
- Canzler, W., Engels, F., Rogge, J. C., Simon, D., & Wentland, A. (2017). From “living lab” to strategic action field: Bringing together energy, mobility, and ICT in Germany. *Energy Research and Social Science*, 27, 25–35. <https://doi.org/10.1016/j.erss.2017.02.003>
- Cappellaro, F., Chiarini, R., Meloni, C., & Snels, C. (2019). Smart community co-creation: The case of centocelle project. *International Journal of Sustainable Energy Planning and Management*, 24, 155–162. <https://doi.org/10.5278/ijsepm.3339>
- Davies, M., Swilling, M., & Wlokas, H. L. (2018). Towards new configurations of urban energy governance in South Africa’s Renewable Energy Procurement Programme. *Energy Research and Social Science*, 36, 61–69. <https://doi.org/10.1016/j.erss.2017.11.010>
- de Bakker, M., Legendijk, A., & Wiering, M. (2020). Cooperatives, incumbency, or market hybridity: New alliances in the Dutch energy provision. *Energy Research and Social Science*, 61. <https://doi.org/10.1016/j.erss.2019.101345>

- Del-Busto, F., Mainar-Toledo, M. D., & Ballestín-Trenado, V. (2022). Participatory Process Protocol to Reinforce Energy Planning on Islands: A Knowledge Transfer in Spain. *International Journal of Sustainable Energy Planning and Management*, 34, 5–18. <https://doi.org/10.54337/ijsepm.7090>
- Dobravec, V., Matak, N., Sakulin, C., & Krajačić, G. (2021). Multilevel governance energy planning and policy: a view on local energy initiatives. *Energy, Sustainability and Society*, 11(1). <https://doi.org/10.1186/s13705-020-00277-y>
- Dudka, A., Moratal, N., & Bauwens, T. (2023). A typology of community-based energy citizenship: An analysis of the ownership structure and institutional logics of 164 energy communities in France. *Energy Policy*, 178. <https://doi.org/10.1016/j.enpol.2023.113588>
- Escario-Chust, A., Vogelzang, F., Peris-Blanes, J., Palau-Salvador, G., & Segura-Calero, S. (2023). Can southern Europe lead an urban energy transition? Insights from the Energy Transition Roundtable in Valencia, Spain. *Energy Research and Social Science*, 100. <https://doi.org/10.1016/j.erss.2023.103047>
- Hargreaves, T., Hielscher, S., Seyfang, G., & Smith, A. (2013). Grassroots innovations in community energy: The role of intermediaries in niche development. *Global Environmental Change*, 23(5), 868–880. <https://doi.org/10.1016/j.gloenvcha.2013.02.008>
- Hölscher, K., & Frantzeskaki, N. (2020). *Transformative Climate Governance: A Capacities Perspective to Systematise, Evaluate and Guide Climate Action*. Palgrave Macmillan. <https://doi.org/https://doi.org/10.1007/978-3-030-49040-9>
- Hoppe, T., & Miedema, M. (2020). A governance approach to regional energy transition: Meaning, conceptualization and practice. *Sustainability*, 12(3), 1–28. <https://doi.org/10.3390/su12030915>
- Klijn, E.-H., & Koppenjan, J. F. M. (2015). *Governance networks in the public sector*. Routledge. <https://doi.org/10.4324/9781315887098>
- Kuzemko, C., & Britton, J. (2020). Policy, politics and materiality across scales: A framework for understanding local government sustainable energy capacity applied in England. *Energy Research and Social Science*, 62. <https://doi.org/10.1016/j.erss.2019.101367>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of Clinical Epidemiology*, 62(10), e1–e34. <https://doi.org/10.1016/j.jclinepi.2009.06.006>
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., Antes, G., Atkins, D., Barbour, V., Barrowman, N., Berlin, J. A., Clark, J., Clarke, M., Cook, D., D’Amico, R., Deeks, J. J., Devereaux, P. J., Dickersin, K., Egger, M., Ernst, E., Gøtzsche, P. C., ... Tugwell, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: The

- PRISMA statement. In *PLoS Medicine* (Vol. 6, Issue 7). Public Library of Science. <https://doi.org/10.1371/journal.pmed.1000097>
- Nochta, Timea. (2021). *Network governance and energy transitions in European cities*. Routledge.
- Schilstra, N., Willems, E., & Heller, R. (2021). Collaboration in the local DHC-chain: A bottom-up integrated framework fostering broad-based solutions. *Energy Reports*, 7, 37–46. <https://doi.org/10.1016/j.egyr.2021.09.042>
- Schmid, B., Meister, T., Klagge, B., & Seidl, I. (2020). Energy Cooperatives and Municipalities in Local Energy Governance Arrangements in Switzerland and Germany. *Journal of Environment and Development*, 29(1), 123–146. <https://doi.org/10.1177/1070496519886013>
- Sebi, C., & Vernay, A. L. (2020). Community renewable energy in France: The state of development and the way forward. *Energy Policy*, 147. <https://doi.org/10.1016/j.enpol.2020.111874>
- Sedlacek, S., Tötzer, T., & Lund-Durlacher, D. (2020). Collaborative governance in energy regions – Experiences from an Austrian region. *Journal of Cleaner Production*, 256. <https://doi.org/10.1016/j.jclepro.2020.120256>
- Seyfang, G., Hielscher, S., Hargreaves, T., Martiskainen, M., & Smith, A. (2014). A grassroots sustainable energy niche? Reflections on community energy in the UK. *Environmental Innovation and Societal Transitions*, 13, 21–44. <https://doi.org/10.1016/j.eist.2014.04.004>
- Soares da Silva, D., & Horlings, L. G. (2020). The role of local energy initiatives in co-producing sustainable places. *Sustainability Science*, 15(2), 363–377. <https://doi.org/10.1007/s11625-019-00762-0>
- Stober, D., Suškevičs, M., Eiter, S., Müller, S., Martinát, S., & Buchecker, M. (2021). What is the quality of participatory renewable energy planning in Europe? A comparative analysis of innovative practices in 25 projects. *Energy Research and Social Science*, 71. <https://doi.org/10.1016/j.erss.2020.101804>
- Strumińska-Kutra, M., Dembek, A., Hielscher, S., & Stadler, M. (2023). Innovating Urban Governance for Sustainable Energy Transitions: Between Institutional Design and Institutional Adaptation. *Environmental Innovation and Societal Transitions*, 48. <https://doi.org/10.1016/j.eist.2023.100751>
- Talip, N. (2022). A Community Engagement Model for an Inclusive Just Energy Transition in the South. *Social and Health Sciences*, 20(1–2). <https://doi.org/10.25159/2957-3645/11411>
- Tsagkari, M. (2020). Local energy projects on islands: Assessing the creation and upscaling of social niches. *Sustainability (Switzerland)*, 12(24), 1–18. <https://doi.org/10.3390/su122410431>

- Urrutia-Azcona, K., Tatar, M., Molina-Costa, P., & Flores-Abascal, I. (2020). Cities4ZERO: Overcoming carbon lock-in in municipalities through smart urban transformation processes. *Sustainability (Switzerland)*, 12(9). <https://doi.org/10.3390/SU12093590>
- van Aalderen, N., & Horlings, L. G. (2020). Accommodative public leadership in wind energy development: Enabling citizens initiatives in the Netherlands. *Energy Policy*, 138. <https://doi.org/10.1016/j.enpol.2020.111249>
- van Dam, K. I. M., & van der Windt, H. J. (2022). Islands as Playing and Breeding Grounds for Incumbents, Entrepreneurial Technologists, Policymakers, and Engaged Citizens: The Case of Energy Transition on Ameland. *Sustainability (Switzerland)*, 14(13). <https://doi.org/10.3390/su14137839>
- van der Schoor, T., & van der Windt, H. J. (2023). Negotiating Dutch citizen-led district heating projects: Managing internal, external, and material networks to achieve successful implementation. *Energy Research and Social Science*, 102. <https://doi.org/10.1016/j.erss.2023.103166>
- Van Der Schoor, T., Van Lente, H., Scholtens, B., & Peine, A. (2016). Challenging obduracy: How local communities transform the energy system. *Energy Research and Social Science*, 13, 94–105. <https://doi.org/10.1016/j.erss.2015.12.009>
- van der Waal, E. C., Das, A. M., & van der Schoor, T. (2020). Participatory experimentation with energy law: Digging in a ‘regulatory sandbox’ for local energy initiatives in the Netherlands. *Energies*, 13(2). <https://doi.org/10.3390/en13020458>
- van Popering-Verkerk, J., Molenveld, A., Duijn, M., van Leeuwen, C., & van Buuren, A. (2022). A Framework for Governance Capacity: A Broad Perspective on Steering Efforts in Society. *Administration and Society*, 54(9), 1767–1794. <https://doi.org/10.1177/009539972111069932>
- Vernay, A. L., & Sebi, C. (2020). Energy communities and their ecosystems: A comparison of France and the Netherlands. *Technological Forecasting and Social Change*, 158. <https://doi.org/10.1016/j.techfore.2020.120123>
- Vernay, A. L., Sebi, C., & Arroyo, F. (2023). Energy community business models and their impact on the energy transition: Lessons learnt from France. *Energy Policy*, 175. <https://doi.org/10.1016/j.enpol.2023.113473>
- Visser, V., van Popering-Verkerk, J., Minkman, E., & van Buuren, A. (2023). Unleashing or domesticating the vitality of citizens’ initiatives? The paradoxical relationship between governments and citizens’ initiatives in the energy transition. *Cities*, 137. <https://doi.org/10.1016/j.cities.2023.104300>
- Vringer, K., de Vries, R., & Visser, H. (2021). Measuring governing capacity for the energy transition of Dutch municipalities. *Energy Policy*, 149. <https://doi.org/10.1016/j.enpol.2020.112002>

- Warbroek, B., & Hoppe, T. (2017). Modes of governing and policy of local and regional governments supporting local low-carbon energy initiatives; exploring the cases of the dutch regions of Overijssel and Fryslân. *Sustainability (Switzerland)*, 9(1). <https://doi.org/10.3390/su9010075>
- Warlenius, R. H., & Nettelbladt, S. (2023). Scaling up community wind energy: the relevance of autonomy and community. *Energy, Sustainability and Society*, 13(1). <https://doi.org/10.1186/s13705-023-00411-6>
- Wu, X., Ramesh, M., & Howlett, M. (2015). Policy capacity: A conceptual framework for understanding policy competences and capabilities. *Policy and Society*, 34(3–4), 165–171. <https://doi.org/10.1016/j.polsoc.2015.09.001>
- Young, J., & Macura, A. (2023). Forging Local Energy Transition in the Most Carbon-Intensive European Region of the Western Balkans. *Energies*, 16(4). <https://doi.org/10.3390/en16042077>
- Ziozas, N., & Tsoutsos, T. (2022). Clean Energy Transition in Southeast Europe: The Paradigm of Greece from a Fossil Fuel Mediator to a Community Energy Hub. In *Renewable Energy Communities and the Low Carbon Energy Transition in Europe* (pp. 75–95). Springer International Publishing. [https://doi.org/10.1007/978-3-030-84440-0\\_4](https://doi.org/10.1007/978-3-030-84440-0_4)

## Appendix I

- Acosta, C., Ortega, M., Bunsen, T., Koirala, B. P., & Ghorbani, A. (2018). Facilitating energy transition through energy commons: An application of socio-ecological systems framework for integrated community energy systems. *Sustainability (Switzerland)*, *10*(2). <https://doi.org/10.3390/su10020366>
- Afeltowicz, Ł., Nawojczyk, M., & Tyrała, R. (2024). Entrepreneurial actions in energy transition: A study of three local energy clusters in Poland. *European Urban and Regional Studies*, *31*(2), 132–148. <https://doi.org/10.1177/09697764231179667>
- Ahlemeyer, K., Griese, K. M., Wawer, T., & Siebenhüner, B. (2022). Success factors of citizen energy cooperatives in north western Germany: a conceptual and empirical review. *Energy, Sustainability and Society*, *12*(1). <https://doi.org/10.1186/s13705-022-00354-4>
- Anfinson, K., Laes, E., Bombaerts, G., Standal, K., Krug, M., Di Nucci, M. R., & Schwarz, L. (2023). Does polycentrism deliver? A case study of energy community governance in Europe. *Energy Research and Social Science*, *100*. <https://doi.org/10.1016/j.erss.2023.103093>
- Argyriou, I. (2020). Urban energy transitions in ordinary cities: Philadelphia's place-based policy innovations for socio-technical energy change in the commercial sector. *Urban Research and Practice*, *13*(3), 243–275. <https://doi.org/10.1080/17535069.2018.1540654>
- Baron, G., Brinkman, J., & Wenzler, I. (2012). Supporting sustainability through smart infrastructures: the case for the city of Amsterdam. In *Int. J. Critical Infrastructures* (Vol. 8, Issue 3). <http://www.worldbank.org>
- Bayulgen, O. (2020). Localizing the energy transition: Town-level political and socio-economic drivers of clean energy in the United States. *Energy Research and Social Science*, *62*. <https://doi.org/10.1016/j.erss.2019.101376>
- Berg, P., Narayan, R., & Rajala, A. (2021). Ideologies in Energy Transition: Community Discourses on Renewables. *Technology Innovation Management Review*, *11*(7/8), 79–91. <https://doi.org/10.22215/timreview/1458>
- Blanchet, T. (2015). Struggle over energy transition in Berlin: How do grassroots initiatives affect local energy policy-making? *Energy Policy*, *78*, 246–254. <https://doi.org/10.1016/j.enpol.2014.11.001>
- Braunholtz-Speight, T., McLachlan, C., Mander, S., Hannon, M., Hardy, J., Cairns, I., Sharmina, M., & Manderson, E. (2021). The long term future for community energy in Great Britain: A co-created vision of a thriving sector and steps towards realising it. *Energy Research and Social Science*, *78*. <https://doi.org/10.1016/j.erss.2021.102044>
- Brisbois, M. C. (2020). Shifting political power in an era of electricity decentralization: Rescaling, reorganization and battles for influence. *Environmental Innovation and Societal Transitions*, *36*, 49–69. <https://doi.org/10.1016/j.eist.2020.04.007>



- Buschmann, P., Moser, P., Nadaï, A., & Régnier, Y. (2019). A-disciplinary considerations of two networks of local climate energy initiatives: Paper part of the Special issue entitled: “Unlocking Energies, Unpacking the Entanglements and Temporalities of Local Initiatives.” *Local Environment*, 24(11), 1053–1072. <https://doi.org/10.1080/13549839.2018.1520822>
- Canzler, W., Engels, F., Rogge, J. C., Simon, D., & Wentland, A. (2017). From “living lab” to strategic action field: Bringing together energy, mobility, and ICT in Germany. *Energy Research and Social Science*, 27, 25–35. <https://doi.org/10.1016/j.erss.2017.02.003>
- Cappellaro, F., Chiarini, R., Meloni, C., & Snels, C. (2019). Smart community co-creation: The case of centocelle project. *International Journal of Sustainable Energy Planning and Management*, 24, 155–162. <https://doi.org/10.5278/ijsepm.3339>
- Cappellaro, F., D’Agosta, G., De Sabbata, P., Barroco, F., Carani, C., Borghetti, A., Lambertini, L., & Nucci, C. A. (2022). Implementing energy transition and SDGs targets throughout energy community schemes. *Journal of Urban Ecology*, 8(1). <https://doi.org/10.1093/jue/juac023>
- Carrosio, G., & Magnani, N. (2020). District heating and ambivalent energy transition paths in urban and rural contexts. *Journal of Environmental Policy and Planning*, 22(4), 460–472. <https://doi.org/10.1080/1523908X.2020.1767548>
- Cheung, G., Davies, P. J., & Trück, S. (2019). Transforming urban energy systems: The role of local governments’ regional energy master plan. *Journal of Cleaner Production*, 220, 655–667. <https://doi.org/10.1016/j.jclepro.2019.01.179>
- Cheung, T. T. T., Fuller, S., & Oßenbrügge, J. (2023). Mobilising change in cities: A capacity framework for understanding urban energy transition pathways. *Environmental Policy and Governance*, 33(5), 531–545. <https://doi.org/10.1002/eet.2048>
- Cheung, T. T. T., & Oßenbrügge, J. (2020). Governing urban energy transitions and climate change: Actions, relations and local dependencies in Germany. *Energy Research and Social Science*, 69. <https://doi.org/10.1016/j.erss.2020.101728>
- Chodkowska-Miszczuk, J., Martinat, S., & Cowell, R. (2019). Community tensions, participation, and local development: Factors affecting the spatial embeddedness of anaerobic digestion in Poland and the Czech Republic. *Energy Research and Social Science*, 55, 134–145. <https://doi.org/10.1016/j.erss.2019.05.010>
- Coenen, F. H. J. M., & Hoppe, T. (2022). Renewable Energy Communities as a New Actor in Home Energy Savings. *Urban Planning*, 7(2), 108–122. <https://doi.org/10.17645/up.v7i2.5088>
- Dall-Orsoletta, A., Romero, F., & Ferreira, P. (2022). Open and collaborative innovation for the energy transition: An exploratory study. *Technology in Society*, 69. <https://doi.org/10.1016/j.techsoc.2022.101955>

- Davies, M., Swilling, M., & Wlokas, H. L. (2018). Towards new configurations of urban energy governance in South Africa's Renewable Energy Procurement Programme. *Energy Research and Social Science*, 36, 61–69. <https://doi.org/10.1016/j.erss.2017.11.010>
- de Bakker, M., Lagendijk, A., & Wiering, M. (2020). Cooperatives, incumbency, or market hybridity: New alliances in the Dutch energy provision. *Energy Research and Social Science*, 61. <https://doi.org/10.1016/j.erss.2019.101345>
- De Boer, J., Zuidema, C., & Gugerell, K. (2018). New interaction paths in the energy landscape: the role of local energy initiatives. *Landscape Research*, 43(4), 489–502. <https://doi.org/10.1080/01426397.2018.1444154>
- de Boer, J., Zuidema, C., van Hoorn, A., & de Roo, G. (2018). The adaptation of Dutch energy policy to emerging area-based energy practices. *Energy Policy*, 117, 142–150. <https://doi.org/10.1016/j.enpol.2018.02.008>
- De Vidovich, L., Tricarico, L., & Zulianello, M. (2023). How Can We Frame Energy Communities' Organisational Models? Insights from the Research 'Community Energy Map' in the Italian Context. *Sustainability (Switzerland)*, 15(3). <https://doi.org/10.3390/su15031997>
- Del-Busto, F., Mainar-Toledo, M. D., & Ballestín-Trenado, V. (2022). Participatory Process Protocol to Reinforce Energy Planning on Islands: A Knowledge Transfer in Spain. *International Journal of Sustainable Energy Planning and Management*, 34, 5–18. <https://doi.org/10.54337/ijsepm.7090>
- Delicado, A., Pallarès-Blanch, M., García-Marín, R., del Valle, C., & Prados, M. J. (2023). David against Goliath? Challenges and opportunities for energy cooperatives in Southern Europe. *Energy Research and Social Science*, 103. <https://doi.org/10.1016/j.erss.2023.103220>
- Della Valle, N., Gantioler, S., & Tomasi, S. (2021). Can Behaviorally Informed Urban Living Labs Foster the Energy Transition in Cities? *Frontiers in Sustainable Cities*, 3. <https://doi.org/10.3389/frsc.2021.573174>
- Dobracev, V., Matak, N., Sakulin, C., & Krajačić, G. (2021). Multilevel governance energy planning and policy: a view on local energy initiatives. *Energy, Sustainability and Society*, 11(1). <https://doi.org/10.1186/s13705-020-00277-y>
- Drewello, H. (2022). Towards a Theory of Local Energy Transition. *Sustainability (Switzerland)*, 14(18). <https://doi.org/10.3390/su141811119>
- Dudka, A., Moratal, N., & Bauwens, T. (2023). A typology of community-based energy citizenship: An analysis of the ownership structure and institutional logics of 164 energy communities in France. *Energy Policy*, 178. <https://doi.org/10.1016/j.enpol.2023.113588>
- Ehrtmann, M., Holstenkamp, L., & Becker, T. (2021). Regional electricity models for community energy in Germany: The role of governance structures. *Sustainability (Switzerland)*, 13(4), 1–24. <https://doi.org/10.3390/su13042241>



- Elkjær, L. G., & Horst, M. (2023). Rights or resources? Local actor roles in ‘participation’ and ‘co-creation’ in wind energy transitions. *Energy Research and Social Science*, 97. <https://doi.org/10.1016/j.erss.2023.102966>
- Emelianoff, C. (2014). Local Energy Transition and Multilevel Climate Governance: The Contrasted Experiences of Two Pioneer Cities (Hanover, Germany, and Växjö, Sweden). *Urban Studies*, 51(7), 1378–1393. <https://doi.org/10.1177/0042098013500087>
- Escario-Chust, A., Vogelzang, F., Peris-Blanes, J., Palau-Salvador, G., & Segura-Calero, S. (2023). Can southern Europe lead an urban energy transition? Insights from the Energy Transition Roundtable in Valencia, Spain. *Energy Research and Social Science*, 100. <https://doi.org/10.1016/j.erss.2023.103047>
- Fischer, J., Alimi, D., Knieling, J., & Camara, C. (2020). Stakeholder collaboration in energy transition: Experiences from urban testbeds in the baltic sea region. *Sustainability (Switzerland)*, 12(22), 1–12. <https://doi.org/10.3390/su12229645>
- Fuchs, G., & Hinderer, N. (2014). Situative governance and energy transitions in a spatial context: case studies from Germany. *Energy, Sustainability and Society*, 4(1), 1–11. <https://doi.org/10.1186/s13705-014-0016-6>
- Germes, L. A. M. H., Wiekens, C. J., & Horlings, L. G. (2021). Success, failure, and impact of local energy initiatives in the Netherlands. *Sustainability (Switzerland)*, 13(22). <https://doi.org/10.3390/su132212482>
- Giraldo, M. E., & Gutiérrez, E. A. (2023). Governance in socio-environmental research: an analysis of multi-stakeholder cooperation mechanisms in two research laboratories in Yucatan, Mexico. *Tapuya: Latin American Science, Technology and Society*, 6(1). <https://doi.org/10.1080/25729861.2022.2162744>
- Grimley, M., & Chan, G. (2023). “Cooperative is an oxymoron!”: A polycentric energy transition perspective on distributed energy deployment in the Upper Midwestern United States. *Energy Policy*, 172. <https://doi.org/10.1016/j.enpol.2022.113328>
- Gritsenko, D. (2022). Local energy transition in Russia: a multi-actor perspective on the case of Yakutia. *Environmental Politics*, 31(7), 1139–1160. <https://doi.org/10.1080/09644016.2021.2020016>
- Hager, C., & Hamagami, N. (2020). Local Renewable Energy Initiatives in Germany and Japan in a Changing National Policy Environment. *Review of Policy Research*, 37(3), 386–411. <https://doi.org/10.1111/ropr.12372>
- Hargreaves, T., Hielscher, S., Seyfang, G., & Smith, A. (2013). Grassroots innovations in community energy: The role of intermediaries in niche development. *Global Environmental Change*, 23(5), 868–880. <https://doi.org/10.1016/j.gloenvcha.2013.02.008>
- Hasanov, M., & Zuidema, C. (2018). The transformative power of self-organization: Towards a conceptual framework for understanding local energy initiatives in The Netherlands.

*Energy Research and Social Science*, 37, 85–93.  
<https://doi.org/10.1016/j.erss.2017.09.038>

- Hecher, M., Vilsmaier, U., Akhavan, R., & Binder, C. R. (2016). An integrative analysis of energy transitions in energy regions: A case study of ökoEnergiewelt in Austria. *Ecological Economics*, 121, 40–53. <https://doi.org/10.1016/j.ecolecon.2015.11.015>
- Heldeweg, M. A., Sanders, M., & Harmsen, M. (2015). Public-private or private-private energy partnerships? Toward good energy governance in regional and local green gas projects. *Energy, Sustainability and Society*, 5(1). <https://doi.org/10.1186/s13705-015-0038-8>
- Heuninckx, S., Boveldt, G. te, Macharis, C., & Coosemans, T. (2022). Stakeholder objectives for joining an energy community: Flemish case studies. *Energy Policy*, 162. <https://doi.org/10.1016/j.enpol.2022.112808>
- Hicks, J., & Ison, N. (2018). An exploration of the boundaries of ‘community’ in community renewable energy projects: Navigating between motivations and context. *Energy Policy*, 113, 523–534. <https://doi.org/10.1016/j.enpol.2017.10.031>
- Hisschemöller, M., & Sioziou, I. (2013). Boundary organisations for resource mobilisation: Enhancing citizens’ involvement in the Dutch energy transition. *Environmental Politics*, 22(5), 792–810. <https://doi.org/10.1080/09644016.2013.775724>
- Hooimeijer, F. L., Puts, H., & Geerdink, T. (2016). Successful Development of Decentralised District Heating: Application of a Theoretical Framework. *Journal of Settlements and Spatial Planning*, 5, 19–30. <https://doi.org/10.19188/03JSSPSI052016>
- Hoppe, T., & Warbroek, B. (2021). Agency of citizen collectives in sustainable transitions; the case of renewable energy cooperatives in Europe. In *Research Handbook of Sustainability Agency*. ElgarOnline. <https://doi.org/https://doi.org/10.4337/9781789906035.00018>
- Hoppe, T., Graf, A., Warbroek, B., Lammers, I., & Lepping, I. (2015). Local governments supporting local energy initiatives: Lessons from the best practices of Saerbeck (Germany) and Lochem (The Netherlands). *Sustainability (Switzerland)*, 7(2), 1900–1931. <https://doi.org/10.3390/su7021900>
- Hoppe, T., van der Vegt, A., & Stegmaier, P. (2016). Presenting a framework to analyze local climate policy and action in small and medium-sized cities. *Sustainability (Switzerland)*, 8(9). <https://doi.org/10.3390/su8090847>
- Huang, P., & Yu, Z. (2021). Aligning industry interests with urban priorities to foster energy transitions: Insights from two Chinese cities. *Cambridge Journal of Regions, Economy and Society*, 14(2), 341–359. <https://doi.org/10.1093/cjres/rsab003>
- Joshi, N., Agrawal, S., & Welegedara, N. P. Y. (2022). Something old, something new, something green: community leagues and neighbourhood energy transitions in Edmonton, Canada. *Energy Research and Social Science*, 88. <https://doi.org/10.1016/j.erss.2022.102524>

- Kata, R., & Pitera, R. (2023). Local Authority Investments in the Field of Energy Transition and Their Determinants (on the Example of South-Eastern Poland). *Energies*, 16(2). <https://doi.org/10.3390/en16020819>
- Katre, A., & Tozzi, A. (2019). Using hugs, carrots and sticks: How agents exercise power in the transition to community-owned energy systems in remote India. *Energy Research and Social Science*, 54, 129–139. <https://doi.org/10.1016/j.erss.2019.04.008>
- Kim, G., & Lee, T. (2023). Understanding social innovation activities for energy transition: Evidence from experiences of social innovation agents in South Korea. *Energy and Environment*, 34(8), 2976–2989. <https://doi.org/10.1177/0958305X221116180>
- Kim, H. (2017). A community energy transition model for urban areas: The energy self-reliant village program in Seoul, South Korea. *Sustainability (Switzerland)*, 9(7). <https://doi.org/10.3390/su9071260>
- Koehrsen, J. (2017). Boundary bridging arrangements: A boundary work approach to local energy transitions. *Sustainability (Switzerland)*, 9(3). <https://doi.org/10.3390/su9030424>
- Koirala, B. P., van Oost, E., & van der Windt, H. (2020). Innovation dynamics of socio-technical alignment in community energy storage: The cases of drten and ecovat. *Energies*, 13(11). <https://doi.org/10.3390/en13112955>
- Kola-Bezka, M. (2023). Think Global Act Local: In search for ways to increase the engagement of local communities in energy transition. *Energy Reports*, 9, 1668–1683. <https://doi.org/10.18150/IFUY>
- Kona, A., Bertoldi, P., & Kilkış, Ş. (2019). Covenant of mayors: Local energy generation, methodology, policies and good practice examples. *Energies*, 12(6). <https://doi.org/10.3390/en12060985>
- Kuzemko, C., & Britton, J. (2020). Policy, politics and materiality across scales: A framework for understanding local government sustainable energy capacity applied in England. *Energy Research and Social Science*, 62. <https://doi.org/10.1016/j.erss.2019.101367>
- Lee, Y., & Bae, S. (2018). Collaboration and Confucian reflexivity in local energy governance: The case of Seoul's one less nuclear power plant initiatives 1. *Journal of Contemporary Eastern Asia*, 18(1), 153–174. <https://doi.org/10.17477/jcea.2019.18.1.153>
- Lelieveldt, H., & Schram, W. (2023). Where are the citizens? Unravelling the lopsided nature of stakeholder participation in the Dutch regional energy transition. *Energy Research and Social Science*, 96. <https://doi.org/10.1016/j.erss.2022.102925>
- Lennon, B., Dunphy, N. P., & Sanvicente, E. (2019). Community acceptability and the energy transition: a citizens' perspective. *Energy, Sustainability and Society*, 9(1). <https://doi.org/10.1186/s13705-019-0218-z>
- Lillo, P., Ferrer-Martí, L., & Juanpera, M. (2021). Strengthening the sustainability of rural electrification projects: Renewable energy, management models and energy transitions

- in Peru, Ecuador and Bolivia. *Energy Research and Social Science*, 80. <https://doi.org/10.1016/j.erss.2021.102222>
- Lode, M. L., Felice, A., Martinez Alonso, A., De Silva, J., Angulo, M. E., Lowitzsch, J., Coosemans, T., & Ramirez Camargo, L. (2023). Energy communities in rural areas: The participatory case study of Vega de Valcarce, Spain. *Renewable Energy*, 216. <https://doi.org/10.1016/j.renene.2023.119030>
- López Rodríguez, R., Durán Villa, F. R., José, M., & Mantiñán, P. (2021). The Lessons of Public-Private Collaboration for Energy Regeneration in a Spanish City. The Case of Txantrea Neighbourhood (Pamplona). *Sustainability (Switzerland)*, 13. <https://doi.org/10.3390/su>
- Lutz, L. M., Fischer, L. B., Newig, J., & Lang, D. J. (2017). Driving factors for the regional implementation of renewable energy - A multiple case study on the German energy transition. *Energy Policy*, 105, 136–147. <https://doi.org/10.1016/j.enpol.2017.02.019>
- Mah, D. N. yin. (2019). Community solar energy initiatives in urban energy transitions: A comparative study of Foshan, China and Seoul, South Korea. *Energy Research and Social Science*, 50, 129–142. <https://doi.org/10.1016/j.erss.2018.11.011>
- Mahzouni, A. (2019). The role of institutional entrepreneurship in emerging energy communities: The town of St. Peter in Germany. *Renewable and Sustainable Energy Reviews*, 107, 297–308. <https://doi.org/10.1016/j.rser.2019.03.011>
- Manktelow, C., Hoppe, T., Bickerstaff, K., Itten, A., Fremouw, M., & Naik, M. (2023). Can co-creation support local heat decarbonisation strategies? Insights from pilot projects in Bruges and Mechelen. *Energy Research and Social Science*, 99. <https://doi.org/10.1016/j.erss.2023.103061>
- Markantoni, M. (2016). Low Carbon Governance: Mobilizing Community Energy through Top-Down Support? *Environmental Policy and Governance*, 26(3), 155–169. <https://doi.org/10.1002/eet.1722>
- Martens, K. (2022). Investigating subnational success conditions to foster renewable energy community co-operatives. *Energy Policy*, 162. <https://doi.org/10.1016/j.enpol.2022.112796>
- Mattes, J., Huber, A., & Koehrsen, J. (2015). Energy transitions in small-scale regions - What we can learn from a regional innovation systems perspective. *Energy Policy*, 78, 255–264. <https://doi.org/10.1016/j.enpol.2014.12.011>
- Mattsson, M., Olofsson, T., Lundberg, L., Korda, O., & Nair, G. (2023). An Exploratory Study on Swedish Stakeholders' Experiences with Positive Energy Districts. *Energies*, 16(12). <https://doi.org/10.3390/en16124790>
- McCauley, S. M., & Stephens, J. C. (2012). Green energy clusters and socio-technical transitions: Analysis of a sustainable energy cluster for regional economic development in Central Massachusetts, USA. *Sustainability Science*, 7(2), 213–225. <https://doi.org/10.1007/s11625-012-0164-6>

- McMaster, R., Noble, B., Poelzer, G., & Menghwani, V. (2023). Local Capacity for Energy Transition in Northern and Indigenous Communities: Analysis of Gwich'in Communities in Northwest Territories, Canada. *Arctic*, 76(2), 143–159. <https://doi.org/10.14430/arctic77183>
- Meiklejohn, D., Bekessy, S., & Moloney, S. (2018). Shifting practices: How the rise of rooftop solar PV has changed local government community engagement. *Cogent Environmental Science*, 4(1). <https://doi.org/10.1080/23311843.2018.1481584>
- Meister, T., Schmid, B., Seidl, I., & Klagge, B. (2020). How municipalities support energy cooperatives: Survey results from Germany and Switzerland. *Energy, Sustainability and Society*, 10(1). <https://doi.org/10.1186/s13705-020-00248-3>
- Meitern, M. (2022). Does Access to Regulative Exemption Reduce Barriers for Energy Communities? A Dutch Case Study. *Sustainability (Switzerland)*, 14(9). <https://doi.org/10.3390/su14095608>
- Miller, C. A., Rivera-Matos, Y., Barreto, A. L. E., & Dirks, G. (2022). Intentional and Responsible Energy Transitions: Integrating Design Choices in the Pursuit of Carbon-Neutral Futures. In *Routledge Handbook of Energy Transitions* (pp. 353–370). Taylor and Francis. <https://doi.org/10.4324/9781003183020-25>
- Minas, A. M., Mander, S., & McLachlan, C. (2020). How can we engage farmers in bioenergy development? Building a social innovation strategy for rice straw bioenergy in the Philippines and Vietnam. *Energy Research and Social Science*, 70. <https://doi.org/10.1016/j.erss.2020.101717>
- Musolino, M., Maggio, G., D'Aleo, E., & Nicita, A. (2023). Three case studies to explore relevant features of emerging renewable energy communities in Italy. *Renewable Energy*, 210, 540–555. <https://doi.org/10.1016/j.renene.2023.04.094>
- Niang, A., Torre, A., & Bourdin, S. (2022). How do local actors coordinate to implement a successful biogas project? *Environmental Science and Policy*, 136, 337–347. <https://doi.org/10.1016/j.envsci.2022.06.019>
- Ninomiya, S. M., & Burch, S. (2018). Beyond “The business case”: The emerging role of entrepreneurs in the multilevel governance of urban decarbonization in Canada. In *Urban Book Series* (pp. 325–342). Springer. [https://doi.org/10.1007/978-3-319-65003-6\\_16](https://doi.org/10.1007/978-3-319-65003-6_16)
- Nochta, T. (2021). *Network governance and energy transitions in European cities*. Routledge.
- Otamendi-Irizar, I., Grijalba, O., Arias, A., Pennese, C., & Hernández, R. (2022). How can local energy communities promote sustainable development in European cities? *Energy Research and Social Science*, 84. <https://doi.org/10.1016/j.erss.2021.102363>
- Ouariachi, T. (2021). Facilitating multi-stakeholder dialogue and collaboration in the energy transition of municipalities through serious gaming. *Energies*, 14(12). <https://doi.org/10.3390/en14123374>



- Pacheco, A., Monteiro, J., Santos, J., Sequeira, C., & Nunes, J. (2022). Energy transition process and community engagement on geographic islands: The case of Culatra Island (Ria Formosa, Portugal). *Renewable Energy*, 184, 700–711. <https://doi.org/10.1016/j.renene.2021.11.115>
- Papazu, I. (2021). Entrepreneurial resource construction through collective bricolage on Denmark's renewable energy Island: an ethnographic study. *Entrepreneurship and Regional Development*, 33(9–10), 837–862. <https://doi.org/10.1080/08985626.2021.1964613>
- Pechancová, V., Pavelková, D., & Saha, P. (2022). Community Renewable Energy in the Czech Republic: Value Proposition Perspective. *Frontiers in Energy Research*, 10. <https://doi.org/10.3389/fenrg.2022.821706>
- Perrin, J. A., & Bouisset, C. (2022). Emerging local public action in renewable energy production. Discussion of the territorial dimension of the energy transition based on the cases of four intermunicipal cooperation entities in France. *Energy Policy*, 168. <https://doi.org/10.1016/j.enpol.2022.113143>
- Petrovics, D., Giezen, M., & Huitema, D. (2022). Towards a deeper understanding of up-scaling in socio-technical transitions: The case of energy communities. *Energy Research and Social Science*, 94. <https://doi.org/10.1016/j.erss.2022.102860>
- Picchi, P., Oudes, D., & Stremke, S. (2023). Regional Strategy, Municipality Plans and Site Designs for Energy Transition in Amsterdam, The Netherlands: How Sustainable Are Implementation Processes on Different Spatial Levels? *Sustainability (Switzerland)*, 15(7). <https://doi.org/10.3390/su15075876>
- Pinker, A., Argüelles, L., Fischer, A., & Becker, S. (2020). Between straitjacket and possibility: Energy initiatives and the politics of regulation. *Geoforum*, 113, 14–25. <https://doi.org/10.1016/j.geoforum.2020.04.016>
- Pulselli, R. M., Broersma, S., Martin, C. L., Keeffe, G., Bastianoni, S., & van den Dobbelsteen, A. (2021). Future city visions. The energy transition towards carbon-neutrality: lessons learned from the case of Roeselare, Belgium. *Renewable and Sustainable Energy Reviews*, 137. <https://doi.org/10.1016/j.rser.2020.110612>
- Putnam, T., & Brown, D. (2021). Grassroots retrofit: Community governance and residential energy transitions in the United Kingdom. *Energy Research and Social Science*, 78. <https://doi.org/10.1016/j.erss.2021.102102>
- Roesler, T. (2019). Community resources for energy transition: Implementing bioenergy villages in Germany. *Area*, 51(2), 268–276. <https://doi.org/10.1111/area.12444>
- Roesler, T., & Hassler, M. (2019). Creating niches – The role of policy for the implementation of bioenergy village cooperatives in Germany. *Energy Policy*, 124, 95–101. <https://doi.org/10.1016/j.enpol.2018.07.012>

- Ryszawska, B., Rozwadowska, M., Ulatowska, R., Pierzchała, M., & Szymański, P. (2021). The power of co-creation in the energy transition—dart model in citizen energy communities projects. *Energies*, *14*(17). <https://doi.org/10.3390/en14175266>
- Saintier, S. (2017). Community energy companies in the UK: A potential model for sustainable development in “local” energy? *Sustainability (Switzerland)*, *9*(8). <https://doi.org/10.3390/su9081325>
- Sanders, M. P. T., Heldeweg, M. A., Straatman, E. G. P., & Wempe, J. F. D. B. (2014). Energy policy by beauty contests: The legitimacy of interactive sustainability policies at regional levels of the regulatory state. *Energy, Sustainability and Society*, *4*(1), 1–13. <https://doi.org/10.1186/2192-0567-4-4>
- Schilstra, N., Willems, E., & Heller, R. (2021). Collaboration in the local DHC-chain: A bottom-up integrated framework fostering broad-based solutions. *Energy Reports*, *7*, 37–46. <https://doi.org/10.1016/j.egy.2021.09.042>
- Schmid, B., Meister, T., Klagge, B., & Seidl, I. (2020). Energy Cooperatives and Municipalities in Local Energy Governance Arrangements in Switzerland and Germany. *Journal of Environment and Development*, *29*(1), 123–146. <https://doi.org/10.1177/1070496519886013>
- Scotti, I., & Minervini, D. (2017). Performative connections: translating sustainable energy transition by local communities†. *Innovation: The European Journal of Social Science Research*, *30*(3), 350–364. <https://doi.org/10.1080/13511610.2016.1237282>
- Sebi, C., & Vernay, A. L. (2020). Community renewable energy in France: The state of development and the way forward. *Energy Policy*, *147*. <https://doi.org/10.1016/j.enpol.2020.111874>
- Sedlacek, S., Tötzer, T., & Lund-Durlacher, D. (2020). Collaborative governance in energy regions – Experiences from an Austrian region. *Journal of Cleaner Production*, *256*. <https://doi.org/10.1016/j.jclepro.2020.120256>
- Seyfang, G., & Haxeltine, A. (2012). Growing grassroots innovations: Exploring the role of community-based initiatives in governing sustainable energy transitions. *Environment and Planning C: Government and Policy*, *30*(3), 381–400. <https://doi.org/10.1068/c10222>
- Seyfang, G., Hielscher, S., Hargreaves, T., Martiskainen, M., & Smith, A. (2014). A grassroots sustainable energy niche? Reflections on community energy in the UK. *Environmental Innovation and Societal Transitions*, *13*, 21–44. <https://doi.org/10.1016/j.eist.2014.04.004>
- Soares da Silva, D., & Horlings, L. G. (2020). The role of local energy initiatives in co-producing sustainable places. *Sustainability Science*, *15*(2), 363–377. <https://doi.org/10.1007/s11625-019-00762-0>
- Sovacool, B. K., Brugger, H., Brunzema, I., Dańkowska, A., Wemyss, D., Vernay, A. L., Betz, R., Avelino, F., de Geus, T., Dembek, A., Duetschke, E., Hielscher, S., Iskandarova, M., Müller,

- L., Musiolik, J., Ranville, A., Schleich, J., Stasik, A., Strumińska-Kutra, M., ... Rogge, K. S. (2023). Social innovation supports inclusive and accelerated energy transitions with appropriate governance. *Communications Earth and Environment*, 4(1). <https://doi.org/10.1038/s43247-023-00952-w>
- Steenhuisen, B., & de Bruijne, M. (2015). Reflections on the role of energy network companies in the energy transition. *Energy, Sustainability and Society*, 5(1). <https://doi.org/10.1186/s13705-015-0050-z>
- Stober, D., Suškevičs, M., Eiter, S., Müller, S., Martinát, S., & Buchecker, M. (2021). What is the quality of participatory renewable energy planning in Europe? A comparative analysis of innovative practices in 25 projects. *Energy Research and Social Science*, 71. <https://doi.org/10.1016/j.erss.2020.101804>
- Strumińska-Kutra, M., Dembek, A., Hielscher, S., & Stadler, M. (2023). Innovating Urban Governance for Sustainable Energy Transitions: Between Institutional Design and Institutional Adaptation. *Environmental Innovation and Societal Transitions*, 48. <https://doi.org/10.1016/j.eist.2023.100751>
- Taliep, N. (2022). A Community Engagement Model for an Inclusive Just Energy Transition in the South. *Social and Health Sciences*, 20(1–2). <https://doi.org/10.25159/2957-3645/11411>
- Tsagkari, M. (2020). Local energy projects on islands: Assessing the creation and upscaling of social niches. *Sustainability (Switzerland)*, 12(24), 1–18. <https://doi.org/10.3390/su122410431>
- Tsagkari, M., Roca, J., & Kallis, G. (2021). “From local island energy to degrowth? Exploring democracy, self-sufficiency, and renewable energy production in Greece and Spain.” *Energy Research and Social Science*, 81. <https://doi.org/10.1016/j.erss.2021.102288>
- Urrutia-Azcona, K., Molina-Costa, P., Muñoz, I., Maya-Drysdale, D., Garcia-Madruga, C., & Flores-Abascal, I. (2021). Towards an integrated approach to urban decarbonisation in practice: the case of vitoria-gasteiz. *Sustainability (Switzerland)*, 13(16). <https://doi.org/10.3390/su13168836>
- Urrutia-Azcona, K., Tatar, M., Molina-Costa, P., & Flores-Abascal, I. (2020). Cities4ZERO: Overcoming carbon lock-in in municipalities through smart urban transformation processes. *Sustainability (Switzerland)*, 12(9). <https://doi.org/10.3390/SU12093590>
- van Aalderen, N., & Horlings, L. G. (2020). Accommodative public leadership in wind energy development: Enabling citizens initiatives in the Netherlands. *Energy Policy*, 138. <https://doi.org/10.1016/j.enpol.2020.111249>
- van Dam, K. I. M., & van der Windt, H. J. (2022). Islands as Playing and Breeding Grounds for Incumbents, Entrepreneurial Technologists, Policymakers, and Engaged Citizens: The Case of Energy Transition on Ameland. *Sustainability (Switzerland)*, 14(13). <https://doi.org/10.3390/su14137839>



- Van Den Dobbelsteen, A., Martin, C. L., Keeffe, G., Pulselli, R. M., & Vandevyvere, H. (2018). From problems to potentials-the urban energy transition of Gruž, Dubrovnik. *Energies*, 11(4). <https://doi.org/10.3390/en11040922>
- van der Schoor, T., & van der Windt, H. J. (2023). Negotiating Dutch citizen-led district heating projects: Managing internal, external, and material networks to achieve successful implementation. *Energy Research and Social Science*, 102. <https://doi.org/10.1016/j.erss.2023.103166>
- Van Der Schoor, T., Van Lente, H., Scholtens, B., & Peine, A. (2016). Challenging obduracy: How local communities transform the energy system. *Energy Research and Social Science*, 13, 94–105. <https://doi.org/10.1016/j.erss.2015.12.009>
- van der Waal, E. C., Das, A. M., & van der Schoor, T. (2020). Participatory experimentation with energy law: Digging in a ‘regulatory sandbox’ for local energy initiatives in the Netherlands. *Energies*, 13(2). <https://doi.org/10.3390/en13020458>
- Verkade, N., & Höffken, J. (2019). Collective energy practices: A practice-based approach to civic energy communities and the energy system. *Sustainability (Switzerland)*, 11(11). <https://doi.org/10.3390/su11113230>
- Vernay, A. L., & Sebi, C. (2020). Energy communities and their ecosystems: A comparison of France and the Netherlands. *Technological Forecasting and Social Change*, 158. <https://doi.org/10.1016/j.techfore.2020.120123>
- Vernay, A. L., Sebi, C., & Arroyo, F. (2023). Energy community business models and their impact on the energy transition: Lessons learnt from France. *Energy Policy*, 175. <https://doi.org/10.1016/j.enpol.2023.113473>
- Visser, V., van Popering-Verkerk, J., Minkman, E., & van Buuren, A. (2023). Unleashing or domesticating the vitality of citizens’ initiatives? The paradoxical relationship between governments and citizens’ initiatives in the energy transition. *Cities*, 137. <https://doi.org/10.1016/j.cities.2023.104300>
- Wagemans, D., Scholl, C., & Vasseur, V. (2019). Facilitating the energy transition-the governance role of local renewable energy cooperatives. *Energies*, 12(21). <https://doi.org/10.3390/en12214171>
- Warbroek, B., & Hoppe, T. (2017). Modes of governing and policy of local and regional governments supporting local low-carbon energy initiatives; exploring the cases of the dutch regions of Overijssel and Fryslân. *Sustainability (Switzerland)*, 9(1). <https://doi.org/10.3390/su9010075>
- Warlenius, R. H., & Nettelbladt, S. (2023). Scaling up community wind energy: the relevance of autonomy and community. *Energy, Sustainability and Society*, 13(1). <https://doi.org/10.1186/s13705-023-00411-6>
- Wu, J., Zuidema, C., & de Roo, G. (2022). Collaborative efforts on energy transition in urban China: Institutional enabling and constraining conditions. *Renewable and Sustainable Energy Reviews*, 168. <https://doi.org/10.1016/j.rser.2022.112873>

- Young, J., & Brans, M. (2020). Fostering a local energy transition in a post-socialist policy setting. *Environmental Innovation and Societal Transitions*, 36, 221–235. <https://doi.org/10.1016/j.eist.2020.05.003>
- Young, J., & Macura, A. (2023). Forging Local Energy Transition in the Most Carbon-Intensive European Region of the Western Balkans. *Energies*, 16(4). <https://doi.org/10.3390/en16042077>
- Ziozas, N., & Tsoutsos, T. (2022). Clean Energy Transition in Southeast Europe: The Paradigm of Greece from a Fossil Fuel Mediator to a Community Energy Hub. In *Renewable Energy Communities and the Low Carbon Energy Transition in Europe* (pp. 75–95). Springer International Publishing. [https://doi.org/10.1007/978-3-030-84440-0\\_4](https://doi.org/10.1007/978-3-030-84440-0_4)
- Zohar, T., Parag, Y., & Ayalon, O. (2022). Weaving an innovation network from the middle-out: the case of the renewable energy ecosystem. *Energy, Sustainability and Society*, 12(1). <https://doi.org/10.1186/s13705-022-00364-2>