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E2-CUTIES

Local Energy Communities in Denmark: inspiration & good practices

Energy Community Skårup

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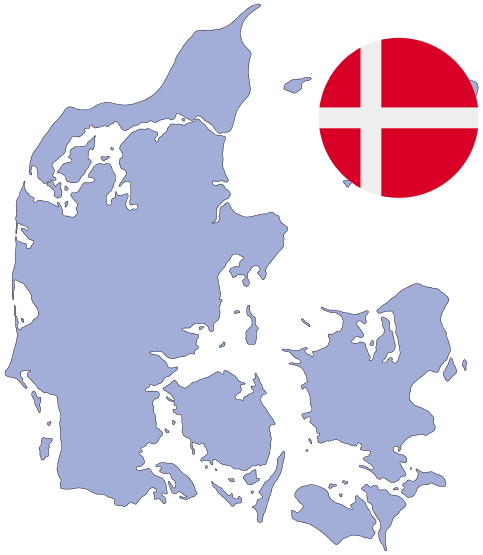
Denmark: What happens when a nation embraces collective energy systems?



In April 2026, partners of the European project E2-CUTIES gathered in Copenhagen to explore one simple but powerful question:
How are the pioneers of citizen-led energy doing? And what role do Danish municipalities typically play in these initiatives?

Over three days of site visits and exchanges, one thing became clear: the strength of Denmark's energy system is not a single technology. It is the way technologies and infrastructure are thought of as a common good.
Where energy is owned by people, private and public organisations sharing the same space. The result is not only a widespread backing of decentralised solar projects and a faster energy transition, but also an increased resilience and wellbeing of local communities.

What stood out most from talks with Danish energy communities was not the sophistication of the technologies used, but the mobilisation power of local champions. Their setup was often initiated by strong-willed individuals who bring citizens, municipalities, and other local stakeholders together.

This reflects a deeper Danish context, where democracy is deeply anchored in society, based on participation, equality of voices, and consensus-building. Denmark has a long tradition of active civil society engagement and grassroots movements, where citizens are used to being collectively organised and taking part in decision-making processes. At the same time, the country is characterised by very high levels of trust between citizens and public institutions, which facilitates cooperation and reduces barriers to collective action.

This democratic and trust-based culture is closely linked to Denmark's long history of cooperative solutions across sectors, including agriculture, housing, and energy. Community ownership has played a major role in the development of renewable energy, with a significant share of wind capacity historically owned by citizens and cooperatives. These traditions create a strong foundation for local energy communities, where inclusion of different stakeholders, including minorities, is seen as a strength, and where collaboration between public authorities and citizens is the norm rather than the exception.

This paper provides an overview of some Danish experiences: the energy communities of Skårup, Avedøre and Middelgrunden.

These initiatives can broaden the perspective of municipal teams who wish to explore other avenues for a collective approach to production and sharing of energy and heat.

Denmark: setting the scene

Energy production

Denmark, this small country in the North of Europe, home to over 6 million people, is frequently mentioned as one of the sustainability pioneers. The country has international recognition for its well-thought mobility concepts, innovative architecture and urban planning and is admired for its widespread cooperative energy model.

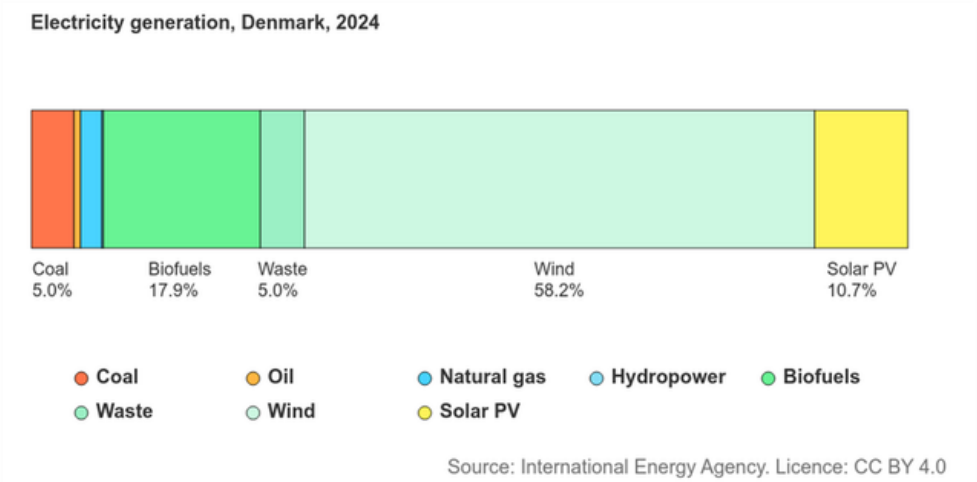
According to the Danish organisation Energifaellesskaber, energy communities in Denmark shared a total of 200 MWh of renewable electricity among their members during the year 2025. Three energy communities are the main contributors to this result: Avedøre, Skårup and Middelgrunden.

Collective ownership in the form of cooperatives is deeply rooted in Denmark. For several decades, many banks, dairies, housing and food shops have been run as cooperatives.

In 2026, almost 70% of all households are connected to the district heating grid (biomass, waste, solar, heat pumps, geothermal). Inspired by the example of the Middelgrunden offshore wind farm, other energy cooperatives soon sprang up in the country.

Denmark's renewable energy success has been strongly linked to citizen ownership, cooperative traditions, and mechanisms that give local communities a direct stake in projects, even though public acceptance challenges, especially around onshore wind, still remain.

Citizen participation is also encouraged as Denmark aims for exiting fossil fuels in the energy supply by 2050. The country has been one of the most proactive jurisdictions in preparing for the future of its gas network, guided by ambitions to phase out gas heating in households by 2035, and achieving a 100% green gas supply by 2030. With 58,2 % of wind and 10,7% of solar PV, Denmark produced most of its electricity by means of renewable energy sources in 2024.



Danish electricity system and ownership structure

- The transmission lines are owned by the Danish state (TSO)
- The distribution network is owned by 37 companies, of which 27 are cooperatives (consumer-owned) and 10 are municipally-owned (smaller entities, some of them are merging with cooperatives)
- Danish cooperatives are consumer-based, whereby consumers can join voluntarily
- Municipalities have significant authority over local energy planning, particularly about heating (district heating is mandatory in certain areas):
  - Mandatory local heating planning
  - Ban or restriction on gas use in certain areas
  - Significant municipal involvement in district heating

Legal framework

Main public bodies of Danish energy market

- Regulation and supervision: Danish energy agency (DEA) and the Danish Utility Regulator (DUR)
- Ministry in charge: Climate, Energy and Utilities

Main laws regulating energy communities

- Promotion of Renewable Energy Act
- Electricity supply Act
- Heat Supply Act

In 2021, the country gave additional institutional weight to energy communities by embedding renewable energy communities (REC) in its Act on promotion of renewables. Energy sharing is not specified and sharing rules are not fully clear yet. In the same year, the EU-based definitions of RECs and CECs (Citizen Energy Communities) were added to the Electricity Supply Act. In practice, Danish citizens and experts commonly do not make the distinction between those two energy community forms. They mostly refer to as Energifaelleskaber (energy communities).

Changes in European and national legislation have introduced a clearer framework for energy communities, which differ from traditional energy cooperatives primarily in the scope of activities they can undertake rather than in their legal form.

Traditional cooperatives, such as the Middelgrunden Wind Cooperative, typically produce electricity or heat and sell it to the wider energy market, often at national or regional level.

By contrast, energy communities can participate across multiple parts of the energy system, including the generation, consumption, sharing, storage, and sale of energy. A key innovation is their ability to facilitate the collective sharing of locally produced electricity among members through the distribution network, subject to applicable grid tariffs and taxes. While both cooperatives and energy communities can adopt similar governance and ownership structures, energy communities generally have greater flexibility to engage in a wider range of energy market activities. Where heat supply is involved, however, specific national regulations may apply, requiring heat-related activities to be managed separately and under different financial rules. For this reason and to complement its services, district heating companies tend to collaborate and make agreements with the local energy community.

Options amongst a wide set of legal entities

The Danish Commercial Companies Act provides for different forms of for-profit and non-profit legal entities. Cooperatives and associations are the most widely used form to involve partners at equal level playing field and acting in the economic interest of the members. They are in line with the EU Directives' regulation of openness and decision-making in the energy community. According to EBO Consult, associations in Denmark have a less institutional character than a cooperative company and can therefore be regarded as a more "layman's" model of organisation. Both legal forms are considered a commercial actor. Cooperatives are most common when it comes to collectively owned energy infrastructure. Associations may allow for a mix of collectively and individually owned assets.

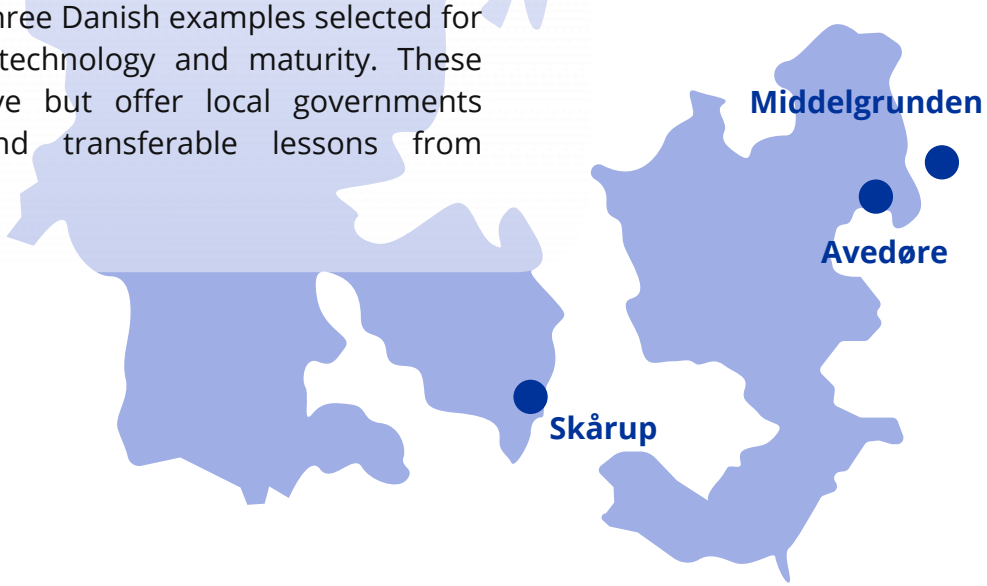
Important intermediaries for energy communities

Several entities play a significant role in rolling out energy communities in Denmark.

- EBO Consult: a company providing support in operation and management of DH and energy communities
- Energy Communities DK (Energifjaellers): a non-profit organisation improving the legal framework and providing information around energy communities to different stakeholders
- Some Danish banks offer (low- or zero-interest) loans to citizens (lacking upfront capital) for buying shares in renewable

Danish Energy Communities at Work: Spotlight on three energy schemes with citizen and municipal involvement

To illustrate how energy cooperatives can take shape in practice, we zoom in on three Danish examples selected for their diversity in scale, technology and maturity. These cases are not exhaustive but offer local governments concrete inspiration and transferable lessons from different contexts.



Energy Community Skårup

Overview

LOCATION

Skårup is a small rural community of about 1000 households in Svendborg Municipality (Southern Denmark). It has a strong tradition of collective governance and shared infrastructure, including a district heating cooperative and water and waste cooperative. This provides a supportive context for developing a local energy community.

TYPE OF INITIATIVE

A local energy community established as a cooperative (AMBA), enables citizens, the municipality, and local actors to jointly produce, share, and manage renewable electricity (solar and wind). The focus lies on local ownership, collective benefit, and reinvestment within the community.

Membership is limited to residents of Skårup.

Main Activities

The main activities of the Skårup energy community focus on the local production, consumption and sharing of renewable electricity. Members actively participate as energy users and, in some cases, producers. Different energy sources and actors will be gradually integrated.

The system brings together solar PV installed on the sports and cultural centre (through a rented rooftop installation), private households with their own solar panels, and two wind turbines owned by a local landowner who joined at a later stage.

Electricity produced within the community is shared internally among members wherever possible, increasing local self-consumption, while any surplus or deficit is managed through interaction with the external electricity market. This hybrid model allows the community to maximise the use of locally generated energy while maintaining flexibility and security of supply through the wider grid.

Timeline and key milestones

2022

Svendborg Municipality Climate Action Plan identifies energy communities as a key tool, and approaches Skårup's Local Council with the idea. Skårup is selected due to strong local engagement. A working group is established with the Municipality, the local council and the municipal utility company for water and Garbage.

2022/ 2024

The working group engages with local stakeholders to gain support for the energy community and work on the organisational aspects.

June 2024

The energy community is legally established as a cooperative (AMBA in Danish).

2024/ 2025

- Testing phase to develop governance, administration, and energy sharing model
- Establishment of a solar installation owned by the energy community on the rented roof of a private sports center

1 Dec 2025

Market goes live (members can buy/sell electricity)

2026

Reaching 50 members (households + municipality + institutions)

> "Experience from Skårup has shown us, that it requires a lot of resources in terms of economy and time to start an energy community, so we are awaiting more results before we initiate new ECs."
>
> **Charlotte Vesterlund -Svendborg Municipality**

Municipal Governance

The Role of the Municipality

Svendborg municipality plays a central and enabling role in the Skårup energy community. Its strong involvement from the outset is widely seen as a critical success factor.

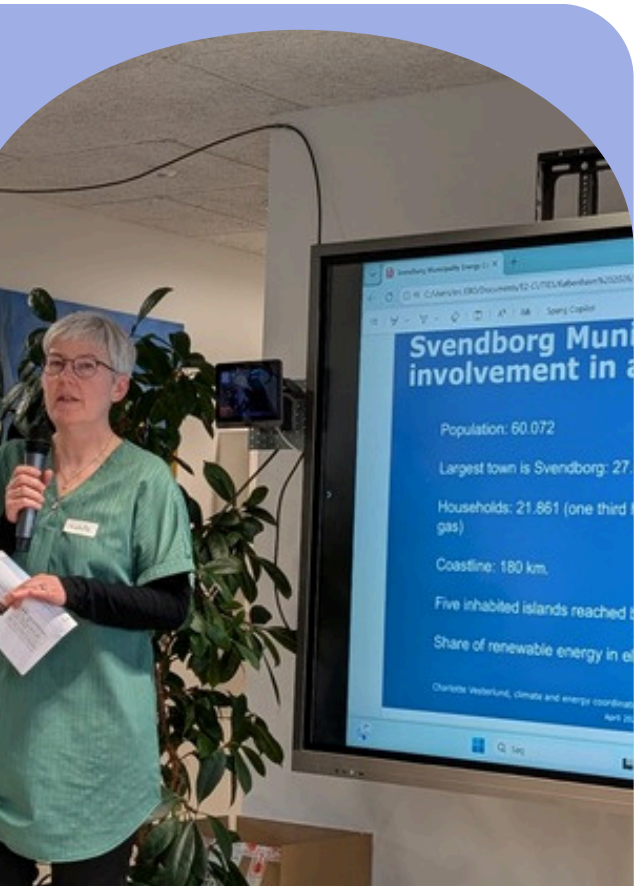
The municipality:

- was the initiator of the project, embedding the idea within its climate strategy and actively reaching out to Skårup as a pilot location.
- is a key member of the community, integrating public buildings such as the school and a care home into the system, thereby providing both demand and visibility.
- holds a fixed seat on the board, ensuring ongoing strategic alignment and support.

Beyond these formal roles, the municipality brings political backing, institutional credibility, and access to networks. It also provides access to key knowledge and skills across different municipal departments (e.g. energy, buildings, planning), which supports both the technical and organisational development of the initiative.

Importantly, the municipality also supports the model as a way to reduce resistance to large energy infrastructure projects by giving citizens ownership.

> “The municipality and utility company added a lot of legitimacy and credibility to the idea. It also gave us access to an extensive network of knowledge and visibility, and it provided us with an easy access to political support. It was very important for us to work with the municipality as of the beginning.”
>
> **Stine Skott Thomsen, head of the energy community**



Coordination Between Municipal Departments

The municipal representative who sits on the board acts as an intermediary with the rest of the municipal departments. That person can liaise with the people who are best suited to provide key information to the community.

Public-civic partnership

Decision-making structure

The decision-making structure of the Skårup energy community is based on a strong multi-actor cooperative model with a clear emphasis on shared responsibility with a board (see box).

Governance is further supported by two working groups:

- a technical group focused on defining and managing the energy system,
- and an engagement group responsible for communication and community involvement.

In addition, an executive committee prepares board meetings and handles day-to-day operational issues. All board roles are voluntary, requiring a high level of commitment from members.

While a chairperson is formally in place and can step in if needed, in practice decision-making is based on consensus. Board members work towards shared agreement rather than relying on majority voting. Only in cases where a common position cannot be reached does the chairperson intervene. This consensus-driven approach helps ensure that different perspectives are integrated and that decisions are broadly supported, which is particularly important in maintaining trust, legitimacy, and long-term engagement across such a diverse group of actors.

The Board
The board consists of six members, each with equal voting rights, representing key local stakeholders, including the municipality (fixed seat), the village council (fixed seat), two household representatives, and the wind turbine owner, all elected through the General Assembly. This reflects a deliberately inclusive governance model bringing together the public authority, citizens, local institutions, and private energy producers.

Managing Community Involvement

Community involvement in Skårup is managed through open participation, simple structures, and continuous local engagement.

Since December 2025, the energy community operates with an open membership model, allowing citizens to actively participate by both buying electricity from the community and selling surplus electricity if they produce their own. Entry is deliberately accessible, ensuring that financial barriers remain minimal.

> “The board members are mostly semi-retired or are independent workers and this was a good thing as it was possible to meet during flexible times and as the head of the energy community, I have been spending an extra half or full day of my time on setting up the community.”
>
> **Stine Skott Thomsen, head of the energy community**

This creates a direct and tangible link between members and the energy system, reinforced by a clear and attractive price structure (fixed price 0,625 DKK/kWh = 0,084 EUR/kWh), with a relatively stable and lower internal electricity price compared to the spot market. This pricing model plays a key role in engagement, as it makes the benefits immediately visible and relevant in everyday life.

> If I see the wind turbine turning or the sun shining, I know I'll get a cheap price.
>
> **Stine Skott Thomsen, head of the energy community**

Formal involvement is ensured through the cooperative governance structure, with representation from the municipality, the village council, and citizens on the board, while informal engagement relies heavily on word of mouth, local networks, and ongoing dialogue rather than digital or social media channels. The initiative also explores reaching people in everyday settings, such as the local supermarket and during local events, to broaden participation.

Barriers to participation

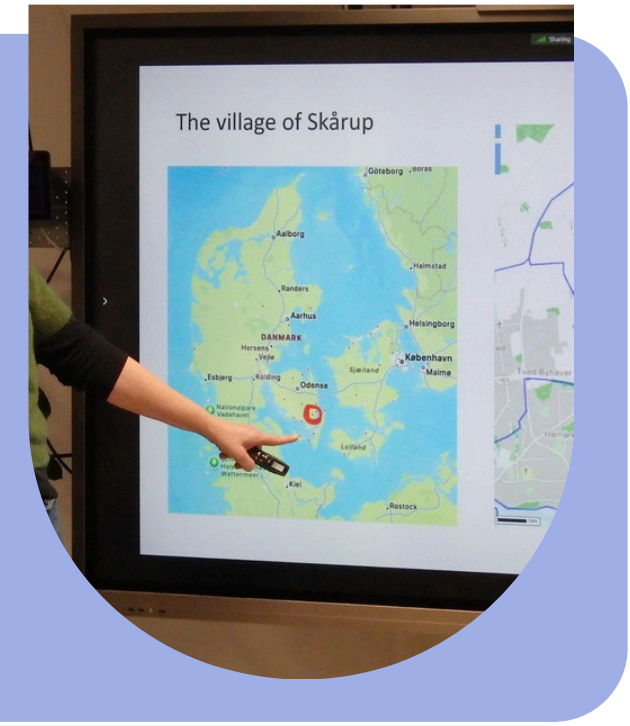
In the Skårup energy community, participation is still largely driven by those already organised and closely connected to local governance structures. This includes people involved in the local village council, decision-makers and employees in the municipality, the utility company, and in key local institutions such as the sports and cultural centre, schools, and housing representatives. These people are easier to mobilise because they already have a stake in local development, access to information, and the capacity to engage in a relatively new and still evolving initiative. Their involvement remains essential for maintaining momentum, managing governance structures, and anchoring the project in concrete actions, such as the use of municipal buildings and shared infrastructure.

At the same time, engaging individual households, particularly those less involved in community life or without a direct interest in energy issues, remains challenging. The concept of an energy community is still not widely understood, and participation often depends on trust, personal connections, and visible benefits over time.

Some local actors remain sceptical: for example, the local water cooperative initially showed interest but later disengaged, suggesting that not all stakeholders see the immediate value of the model.

Overall, Skårup illustrates that while low barriers and a cooperative structure help, broad and diverse participation does not happen automatically and continues to require ongoing effort, communication, and trust-building.

Strategies to reach underrepresented groups



In Skårup, strategies to reach underrepresented groups are not based on targeted outreach, but rather on reducing barriers to participation for everyone. The cooperative model is deliberately simple and affordable, with a low entry fee (around €15, refundable upon exit) and no requirement to invest in energy assets such as solar panels. This allows residents to join and benefit from locally produced renewable energy even if they do not own property or have the financial means to invest. The inclusion of municipal buildings, such as schools, care homes, and sports facilities, also ensures that benefits are indirectly shared with a broader segment of the population, including groups in more vulnerable situations. In addition, the strong involvement of Svendborg Municipality from the outset has helped build trust and legitimacy, which is particularly important for engaging citizens who might otherwise be hesitant or less informed.

Communication and outreach are intentionally low-tech and locally grounded. Much of the engagement happens through word of mouth and existing community networks, rather than through social media campaigns. The initiative relies on traditional channels and personal connections, which can be more effective in a village context where trust and familiarity play a key role. There are also plans to go even further in this direction, for example by engaging people in everyday spaces such as the local supermarket, where informal conversations can help reach residents who might not attend meetings or actively seek out information.

At the same time, Skårup uses a clear and accessible narrative focused on collective benefit and local value creation, avoiding technical complexity. Communication emphasises that profits remain within the community and that members can directly relate to local energy production.

Integrated energy systems

Technology choices and grid flexibility challenges

Technology choices in Skårup are driven by a pragmatic, opportunity-based approach, building on existing local assets and actors rather than a predefined technical plan. The community initially developed rooftop solar PV on municipal buildings, taking advantage of available infrastructure. It then expanded by integrating private solar producers and, crucially, a private landowner operating wind turbines. This provides a significant and more stable source of generation. The combination of solar and wind improves the overall production profile and reduces reliance on external markets. Instead of deploying complex flexibility technologies, Skårup manages challenges such as variability and potential grid constraints through internal balancing, matching local production with local consumption, and a clear price signal that encourages members to use electricity when it is locally available. The share of self-consumed energy within the community is growing (i.e. for the first half year): 75% of the energy is used by the energy community, 25% comes from the spot market.

Overall, the model highlights how engaging key local asset owners alongside municipal and citizen actors can be more impactful than starting with advanced technical solutions, allowing flexibility and optimisation to develop over time.

Main takeaway

A strong local network backed by the municipality and a simple cooperative model can enable rapid development of a local energy community. Moreover, engaging key local asset owners alongside municipal and citizen actors can be more impactful than starting with advanced technical solutions, allowing flexibility and optimisation to develop over time.

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