

# Local Energy Communities in Denmark: inspiration & good practices

Energy  
Community  
Avedøre

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#E2CUTIES



# 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 [Energifællesskaber](#), 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.

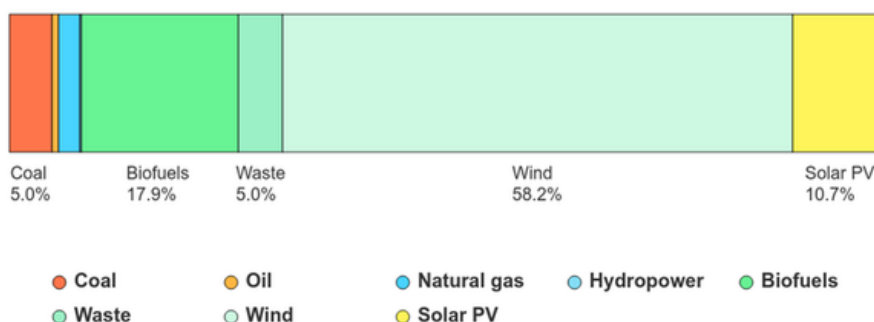
In 2026, almost 70% of all households are connected to the district heating grid (biomass, waste, solar, heat pumps, geothermal). Inspired by the example of the Middelgrunden offshore wind farm, other energy cooperatives soon sprang up in the country.

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.



Electricity generation, Denmark, 2024



Source: International Energy Agency. Licence: CC BY 4.0

# 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 Energifællesskaber (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.

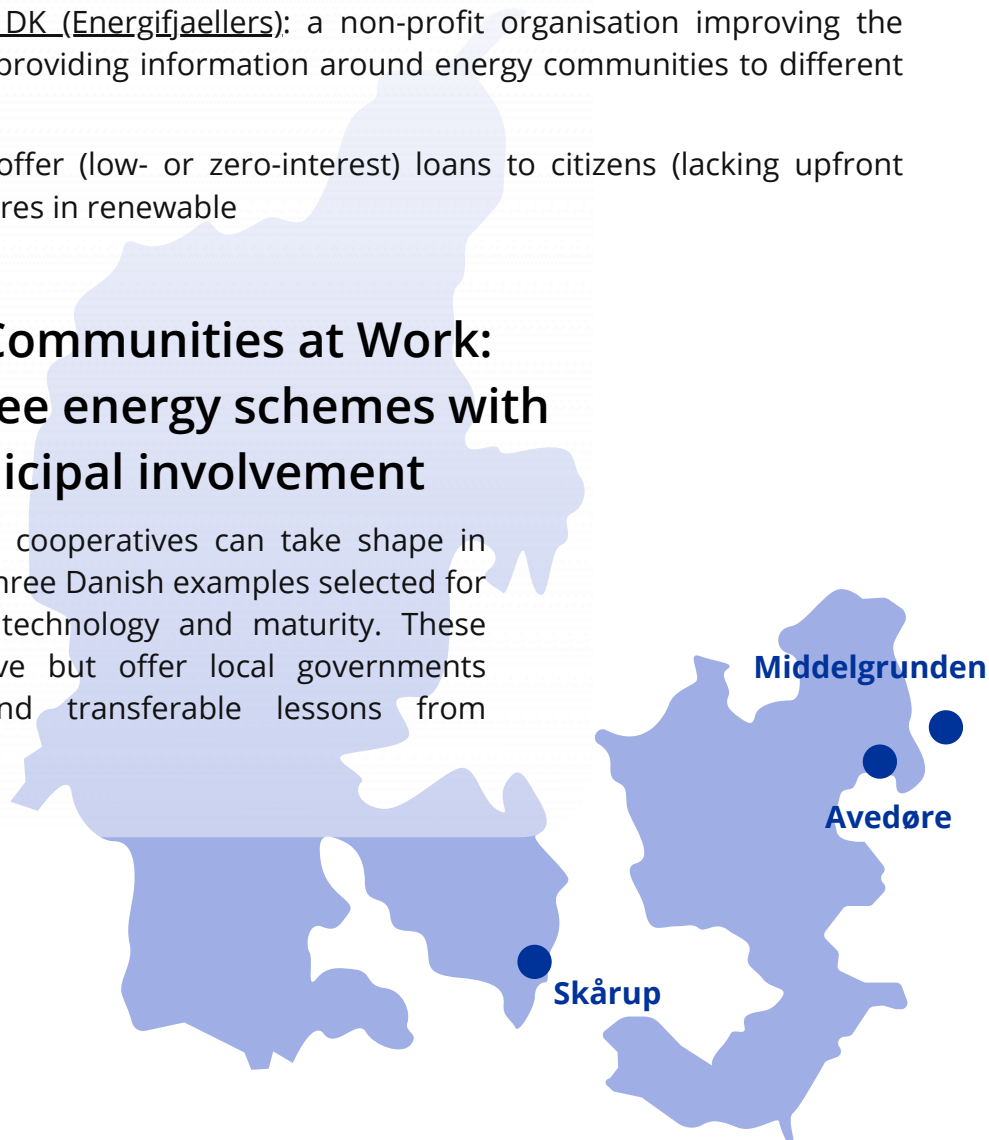
## Important intermediaries for energy communities

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 (Energifjællers): 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

## Avedøre

### Overview

The local area of Avedøre in Hvidovre Municipality, South of Copenhagen, covers approximately 2 km<sup>2</sup> counting around 6,000 citizens as well as several institutions and companies.

### Type of initiative

The energy community was funded as a non-profit cooperative society.

- Its members are: Hvidovre Municipality, Filmbyen film production, Hvidovre Gymnasium, Avedøre Village Guild, District Heating (DH) cooperative Avedøre Fjernvarme a.m.b.a.
- It is part of the "Avedøre Green City" development plan that gathers local stakeholders focusing on the UN's 17 Sustainable Development Goals.



### Main Activities

#### Production and storage of solar energy and heat

- Citizen-owned solar PV and thermal energy on (public and private) roofs, façades and land (noise protection wall) owned by the DH Cooperative Avedøre Fjernvarme
- EV charging
- 1MW battery to optimise grid usage
- Local solar electricity production for renewable heating supply through district heating

### Business model

Electricity is being sold at cost price to community members, the municipality and the local non-profit district heating cooperative owned by 4500 consumers. The DH cooperative buys local PV electricity that powers the central heat pump driving the heating system through a PPA with an energy cooperative.

In case of surplus, cooperative profit are reinvested in common goods such as EV charging stations.



“ The energy community is a pragmatic way of handling one of the most burning issues that we are facing in society today. ”

Stephan C. Krabsen, director, EBO Consult

## Timeline and key milestones

2007-09

Solhus project Avedøre DH cooperative and the tenants in a residential area install 60 solar panels on the roof of a large building block with 454 flats (Solhuset) with an area of about 750m<sup>2</sup> and 160 solar thermal panels on the South façade of the houses (350 MWh/year)

Aug. 2020

Creation of Energy Community Avedøre (a.m.b.a.)

Sept. 2021

A new charging station (4 cars) was inaugurated under a solar-covered parking lot belonging to the municipal highschool

2025

Winner of the Green Power Denmark Award

May 2025

Technical solution found for the electricity available (e.g. to be used for the DH heat pump)

2026

A novel district heating network in a separate area of Avedøre: the participation process started in 2019. Now in 2026, the GO-button on the community website is operational to accept customers/members.

Planned

the excess heat generated in Filmbyen (the Film City) could be delivered to the local heating plant for further redistribution to heat local households.

“

Take your time to do it right: It is never allowed to do a lousy job because you don't have the time. It will take more time to fix bad work.

”

Johnni Andersen, member of the citizen group  
(member of Avedøre Energy Community)



## Municipal Governance

### The Role of the Municipality

When the network Avedøre Green City asked the Hvidovre Municipality to join the energy community in November, the City Council happily accepted. Citizen-led energy production fitted perfectly into the municipality's SECAP (2020), which included CO<sub>2</sub> reduction goals through energy savings in social housing, low-temperature district heating and increased engagement of citizens to trigger behaviour change.

At that time, the municipality was legally not allowed to produce its own electricity and to invest money in a profit activity. Instead, the municipality decided to fund the first energy community projects. This capital will hopefully be used by Avedøre Energy Community to install and operate solar PV on municipal roofs, but the internal coordination and internal regulations of municipalities are making the project very hard to realise.

Solar panels and charging stations in the parking lot in front of Enghøj Highschool were the first concrete and visible results of the high school's participation in the Energy Community Avedøre and for the energy community as such.



1 PV covered charging point, © EBO Consult

“

In Avedøre, we have a strong tradition of finding solutions to problems: not always the most spectacular ones, but solutions that work.

”

Anders Wolf  
Andresen, Mayor,  
Hvidovre  
municipality

At that time, one civil servant in the Hvidovre Municipality was the main contact for the energy community. At the beginning 30-40% of her time was dedicated to dealing with requests, governance and planning. She was vital in helping with communication and coordination, but the interaction has decreased during the past year.

However, in 2026 she is still regularly being approached by the energy community members and participates in the Board meeting (3 times per year) and the annual general assembly.

For the near future, Hvidovre Municipality wishes to extend the number of energy communities in the area as more prosumers will help prevent grid congestion. It plans to encourage their setup with advice and technical guidance.

## Municipal departments coordination

Intermunicipal coordination is time-consuming and happens on an ad-hoc basis as the municipality still operates in a very siloed way with energy, housing, social affairs and other departments being little connected with each other.

## Public-civic partnership

### Decision-making structure

The very first impulse came from the Avedøre District Heating Cooperative: it created the network Avedøre Green City.

Later, the idea of the energy community emerged from collaboration between the stakeholders of Avedøre Green City - amongst others: the municipality of Hvidovre, Zentropa, the Avedøre Village. Note that Zentropa is a film production company based in the local film production area called Filmbyen, aiming to make its business more sustainable. In order to anchor the project locally, they collaborated very early on with Hvidovre Municipality and the local heating cooperative Avedøre District Heating A.M.B.A., in whose area the company was based.

EBO Consult acted as an independent intermediary and guided the initiators in the setup with legal and technical advice.

The Energy Community's board is composed of 7 members from different stakeholder groups. It meets three to four times a year. People from different parts of the neighbourhood are represented on the board. The board of the energy community decides which projects it wants to engage in and develop. The board is elected by the members.

“

We were approached by Avedøre Green City informing us that the EU had made it possible for private owners, the municipality and companies to set up an energy community. Avedøre was the first one that succeeded formally.

”

Anders Kjærhauge,  
Zentropa (SME –  
initiator of Energy  
Community Avedøre)



## Managing Community Involvement

For the creation of future renewables projects with citizen involvement, Hvidovre Municipality follows a “listen and decide” and “community up” approach: city-wide public information and awareness events like the Climate Week in March 2026 allow the team to identify interested residents and, consequently, to select future development neighbourhoods depending on where commitment is highest.

The municipality hired engagement professionals for outreach activities targeting mainly already existing communities like social housing communities, homeowners' associations, the school.

The community reinforces its identity through visible touchpoints, such as branded charging stations stating: “Charge your e-car here and support local green energy.” This serves as a constant reminder of the community's activities, making the benefits of local energy ownership more visible and encouraging broader participation.

## Inclusion

### Barriers to participation

The film producers who were part of the initiators of Avedøre Energy Community stated from the very beginning: “We wanted to distinguish ourselves from an upper-class community.” This is why they reached out to citizens in the area and collaborated with the municipality. According to the Mayor of Hvidovre, Avedøre is an area with a strong local identity and diversity.

### Strategies to reach under-represented groups

Low-income: the social housing association is part of the energy community.

Youth: a workshop was organised with two classes at the local high school, during which they worked together to create metaphors for energy consumption taken from the students' everyday life

## Integrated energy systems

After taking the decision to install solar PV on public roofs, the energy community faced three main barriers:

- The need for an analysis of roof structural stability
- Rules and pricing to rent the public roof
- Insurance policies imposed on the municipality in regard to fire security measures

### Main takeaway

Avedøre energy community was the first of its kind in Denmark, initiated by very motivated local stakeholders who didn't know anything about renewable energy: their success lies in their collaboration with the municipality and the guidance they received from the energy community experts of EBO Consult.



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