

# Response to the Commission's call for evidence on the Heating and Cooling Strategy

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## Introduction

Energy communities are legal entities that empower citizens to take ownership of their local transition projects, from solar panel and wind installations to Citizen-led Renovations, or shared renewable thermal energy, known as Community-led Heating and Cooling (CH&C). CH&C are not-for-profit-driven renewable thermal energy installations owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or stakeholders in line with the EU definition of energy communities. As CH&C initiatives are led by energy communities, the revenues of the projects are reinvested in the local area, for instance through educational campaigns, free RES energy for vulnerable households, or free renovation advice. Furthermore, as CH&C systems are renewable, they contribute to the EU's international climate obligations, while reducing our critical dependencies on energy from third actors.

Energy communities carry out these projects oftentimes thanks to volunteers, lacking financial resources and overall adequate conditions to do so. Yet energy communities and their citizens provide additional socio-economic benefits to Europe's energy transition, as they sponsor social projects, offer free renovation advice and joint purchases, trainings and skilling, and reinvest the revenues into expansions or new transition activities. The Heating and Cooling Strategy has the potential to be the spark that helps speed up the thermal energy community movement.

Before 2016, EU policy support for community-led projects was non-existent. Then in the Juncker Commission's first Communication on the Energy Union, for the first time the EU Commission acknowledged the need to put citizens at the centre:

*"Most importantly, our vision is of an Energy Union with citizens at its core, where citizens take ownership of the energy transition, benefit from new technologies to reduce their bills, participate actively in the market, and where vulnerable consumers are protected."*<sup>1</sup>

The need to put citizens in the driving seat of the transition is especially relevant for heating and cooling, considering the natural monopoly that is district heating. In order to ensure long-term affordability, transparent, bottom-up, and citizen-owned thermal energy installations are a key solution to ensure control and affordability of thermal energy across the EU.

Furthermore, given the long lifetimes of building components, buildings must be largely decarbonised by 2040<sup>2</sup> to meet the 2050 full decarbonisation goal. There still is a long

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<sup>1</sup> European Commission, 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', COM(2015) 80 final

<sup>2</sup> Cool Heating Coalition, 'Fahrenheit 2040: Heating and Cooling in the EU', <https://coolheatingcoalition.eu/wp-content/uploads/2024/05/Fahrenheit-2040-Final.pdf>

way to go: decarbonised renewables like heat pumps, geothermal, and solar thermal represent only around 6% of the EU's residential energy consumption for H&C. Provided that the 2030 target is achieved, an average annual increase of 3.4 percentage points (ppt) is needed as of 2030 to reach full decarbonisation of the sector by 2050<sup>2</sup>. Much of this slow rollout is due to changing, unstable policy conditions, including lack of consistent financial support.

To date however, energy communities remain an unrealised aspiration for many citizens across the EU, largely due to insufficient policy support or patchy, unclear frameworks that lead to corporate capture,<sup>3</sup> overly complicated processes, and additional barriers to the creation of energy community initiatives.

The Heating and Cooling Strategy has the potential to reinforce the EU's existing policies on supporting the buildout of an energy community movement. The Strategy should tackle how the EU, including the Commission, the European Investment Bank (EIB), and national implementers will work together with Member States to ensure that the EU's thermal energy future is affordable, democratic, and citizen-owned. To reach the required accelerated uptake, the EU should implement measures addressing obstacles for citizen ownership in regard to financing, implementation of existing legislation, and promotion of behavioural change through the support for energy communities.

## Recommendations:

Support for energy communities and their energy efficiency projects, such as CH&C and Citizen-led Renovations should be a key pillar of the Heating and Cooling Strategy. To help deliver the potential of energy communities, the Strategy should:

- 1. Establish a facilitating framework that supports Community-led Heating and Cooling.** This will provide a medium- to long-term guiding post that represents the EU's ambition for empowering energy communities in their heating and cooling transition. The objective of this supportive framework is to offer energy communities a fair chance at joining a local heat market, by removing barriers, supporting knowledge development, and organise funding. Such a framework should be underpinned by the existing obligation for Member States to carry out an assessment of potentials and barriers of energy communities.<sup>4</sup>

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<sup>3</sup> Friends of the Earth Europe (2025). [Report on the corporate capture of energy communities](#).

<sup>4</sup> Directive (EU) 2018/2001, Art.22(4)

2. **Introduce a not-for-profit model for collective thermal energy installations:** District heating and cooling are natural monopolies, and could therefore be susceptible to consumer abuse by actors seeking to maximise profit. Introducing a 'not-for-profit'/'necessary costs' principle in thermal energy would ensure long-term affordability and price stability for district heating consumers. The Danish Heat Supply Act of 1979<sup>5</sup> established this principle, where the price of heating and cooling must be based on 'necessary costs', meaning that the cost for consumers cannot be higher or lower than the production costs; This has allowed citizen-owned thermal energy to flourish in a short time, making up now a majority of the district heating installations in Denmark.
  
3. **Detail new requirements for co-ownership** of commercially developed renewables projects, effectively creating a right of local communities to choose whether to co-invest in new thermal energy installations. This could be achieved by requiring municipalities to include citizens and (where existing) energy communities in the development of the heating and cooling plans, set out in article 25.6 of the Energy Efficiency Directive. Some thermal energy communities choose to develop a heat network together with a municipality or network company. This is usually done through cooperation agreements and/or the purchase of services, but in some cases by purchasing shares in the energy community. Through such a public share, the citizen control over the thermal project is anchored, private financing is unlocked as equity can be invested, and social acceptance is ensured through the not-for-profit and one-person-one-vote principles. Indeed, facilitating citizen ownership over local renewable energy infrastructure can 'strengthen the acceptance and trust in district heating projects', as well as raise financing for them.<sup>6</sup>
  
4. **Establish an EU-wide 'Heat Development Fund' for Community-led Heating and Cooling:** The fund should be intended to help local citizen-led thermal energy projects through the risky development phase. Using a loan-to-grant based scheme, funds could then be paid back during the financial close phase, or become a grant if the project does not continue. Such development fund could draw inspiration from the Netherlands' 'Ontwikkelfonds Warmte', which has allowed Energie Samen, the national federation of energy cooperatives, to help over 20 Community-led Heating and Cooling projects move forward.

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<sup>5</sup> Lov om varmforsyning [The Heat Supply Act], Danish Government, Copenhagen, Denmark (1979)

<sup>6</sup> Agora Energiewende, Prognos, GEF (2024), 'Wärmenetze: klima-neutral, wirtschaftlich und bezahlbar', p.64

5. **Support for inclusion of energy communities in heating and cooling plans:** Produce distinct Commission guidance on energy communities that covers building out enabling frameworks (Article 22 paragraph 4 of the Renewable Energy Directive) that support CH&C and the integration of energy communities into heating and cooling planning, supporting community initiatives that work on energy poverty, and collaboration with municipalities.
6. **Provide incentives for waste heat supply with energy communities:** While many examples exist of industrial waste heat being used in energy community projects, (data centres, x-ray film production, incinerators...), certain industries are still reticent to provide waste heat at reasonable prices and timeframes, slowing down the development of local renewable heating, while locking-in energy waste. Producers of (unavoidable) waste heat should be incentivised to provide this waste heat to citizen-led initiatives. Furthermore, heating plans should integrate how waste heat
7. **Decouple gas as a reference point, in favour of renewable thermal energy**
8. **Take measures to enhance transparency on ongoing implementation issues** and the creation of a dedicated exchange platform around energy communities between the Commission, national governments and their respective energy community sectors. This will improve dialogue, understanding of issues, and collaboration and could be done through a platform similar to Tripartite Contracts proposed in other areas, the Concerted Action on the Renewable Energy Directive (CA-RES),<sup>7</sup> or as a subgroup within DG ENER.
9. **Support the financing of energy community projects through:**
  - **Committing the European Investment Bank to create a Guarantee Facility** and help unlock low interest loans by national promotional and commercial banks in every Member State (“an InvestEU for energy communities”);
  - **Supporting national community energy expert organisations (e.g. federations and coalitions)** to provide capacity building and technical assistance, including through One-Stop-Shops);
  - **Work with Member States to create Community Energy Financing Schemes (CEFS)** and provide equity funding for cost-intensive activities such as energy efficiency, renovation and heating and cooling initiatives; and
  - **Creation of a capacity building forum targeting banks** so they can learn more about how to finance energy community projects (e.g. through an Investors Dialogue format).

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<sup>7</sup> <https://www.ca-res.eu/>

- Leverage the **Social Climate Fund to promote community-led heating and cooling** projects that include vulnerable households and micro enterprises. Provide technical assistance to managing authorities to create the right calls, targeting community-led heating and cooling projects. REScoop.eu's Financing Tracker<sup>8</sup> gives a good overview of how EU funds are being used to support energy community initiatives.
10. **Take action to enhance the role of non-price criteria in auctions and tenders**, for instance through revisions to the Net Zero Industry Act, EU public procurement rules, and by providing guidance (i.e. Social Procurement Criteria) for local and regional authorities so they can better support energy communities through concessions.
  11. **Establish a dedicated work plan to collaborate with Member States in identifying and removing capacity and empowerment constraints for energy communities and vulnerable households alike**, including development of special support mechanisms to support inclusive business models, promoting collaboration between energy communities, local authorities, and organisations that provide social services, and addressing impacts of becoming active on eligibility to receive social benefits. Such work plan could stem from the **creation of a DG ENER-led 'Strategic Dialogue on the Future of Heating and Cooling'**, including local authorities, energy communities, NGOs, and EU-based heating and cooling manufacturers.

## Examples of democratic thermal energy: Community-led heating and cooling in the EU.

At the end of 2024, REScoop.eu, the European Federation of Energy Communities, finalised a data-gathering exercise on CH&C. The aim was to gauge the prevalence of citizen-led thermal energy projects in the European Union; To this end, a survey was sent to our members across seven Member States, asking them a range of questions about their thermal energy projects, from the governance, to the type of technologies used, or the financing requirements. Below is a summary of the results. The 'National CH&C Factsheets' are attached in Annex to this document.

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<sup>8</sup> <https://www.rescoop.eu/policy/financing-tracker>

Figure 1: Community-led Heating and Cooling in the EU

Data Point	Result
Member States covered by study	7 (Spain, France, Belgium, Netherlands, Germany, Denmark, Greece)
Number of CH&C projects (existing and in development)	+651
Members of energy communities working on H&C	136,000 citizens
Number of connections to a CH&C initiative	1,920,000 connections
Estimated cumulative output	38,700 GWh/year

Source: REScoop.eu research, 2024

In **Belgium**, there are 9 Community-led heating and cooling projects, with 4 of them in development. Their estimated energy production is of 420.000MWh/year, saving their members 6.6 tonnes of CO<sub>2</sub> annually. These democratic, citizen-led district heating initiatives are bringing renewable heating to 1.500 households, and a further 17 buildings including SMEs, hospitals, offices, and municipal buildings. The preferred technologies in Belgium for CH&C are waste and residual heat, heat pumps, aquathermal energy, and geothermal energy.

- In Ostende, the energy community **Beauvent** uses waste heat from an industrial site to deliver renewable thermal energy to over 1.100 households with their 19km district heating network. The citizen-led district heating initiative produces 28GWh/year.
- **ZuidtrAnt (BE)** is a cooperative society with a social purpose based in Antwerp, Belgium. With 1,300 members, a team of volunteers, and paid staff, they finance and manage initiatives such as [solar energy generation](#), [home renovations](#), and educational workshops on energy savings using citizen investments. Prioritising inclusivity, they actively collaborate with social welfare organisations, social housing providers, and non-profit organisations committed to a just, sustainable and climate-neutral society. Part of their annual profits from solar projects, green certificates and energy injections, for example, fund social or climate-impact projects, selected by the members at the General Assembly. In 2021, ZuidtrAnt allocated €2,500 to De

Woongenoten, a citizen-led initiative addressing the shortage of affordable rental housing for low-income individuals in the southern region of Antwerp. De Woongenoten raises capital to purchase and renovate homes, which are then rented out in collaboration with social welfare organisations to those struggling to find housing. ZuidtrAnt supports them with renovation advice, guidance, and funding for energy-saving measures to improve efficiency in these homes. In 2019, ZuidtrAnt launched [ZuidtrAnt-W](#) to expand its impact through district heating projects like Warmte Verzilverd, an initiative in collaboration with Ecopower and Kelvin Solutions. The district heating networks repurpose excess industrial heat to provide stable, affordable heating and hot water to buildings in the neighbourhood, including social housing initiatives.

In **Greece**, the **Karditsa Energy Community (ESEK)** in a collaborative effort with the municipality and a local school, launched a CH&C initiative with an action to address energy poverty. Under the slogan "Don't throw away your fuel", teachers and students from the school collected residual coffee, which was then transformed into pellets by ESEK and donated to the municipal service to support vulnerable families. They use the revenues to expand their heating and cooling initiative, and organise local awareness-raising activities such as the organisation of renewable energy festivals.

In **France**, there are over 86 CH&C initiatives, with 28 of them being in development. These systems bring renewable thermal energy to homes, hospitals, retirement homes, schools, kindergartens, and communal spaces with an average energy production of 32GWh/year. While biomass is the preferred energy source, several of these citizen-led projects are expanding into geothermal and solar thermal energy.

- In Voiron, in the Isère department, a group of co-owners have built a shared housing complex: the Préau des Colibris. Already constructed using eco-friendly materials, the project leaders wanted to take the building's ecological credentials even further by installing solar thermal panels. A 6 kW system was installed on the roof of the residence with financial support from **Buxia Énergies**, a local renewable energy cooperative. It is France's first community-owned solar thermal power plant. The energy is leased to residents at a fixed price for 10 years, after which, once the investment has been recouped, ownership of the installation will be transferred to them. Thanks to this project, tenants have halved their heating bills.

In the **Netherlands**, thanks to the 'Heat Development Fund', ten CH&C initiatives were initiated, transitioning the thermal energy of 13.000 buildings including homes,

municipal buildings, social housing units, SMEs, churches, and large companies. The case of the Netherlands is an interesting one, as these citizen-led systems have experienced an exponential growth. This rapid uptake is due in part to the collaboration between the government and the national federation of energy cooperatives, Energie Samen, and the fact that for existing neighbourhoods, municipalities have the right to establish connection obligations to a district heating network, as insofar as there are no other (and more sustainable) alternatives.

- An example of this is in Gooise Meren, where a collaboration between the local energy community **Wattnu** and the municipality led to their first citizen-owned thermal energy project to replace fossil fuels with a renewable energy source. The energy community uses aquathermal energy to transition their municipality. With over 100 volunteers and nearly 2,000 members, Wattnu also partners with housing corporations to explore collective solar projects for social housing complexes, aiming to reduce bills without raising service costs. Their integrated approach—combining technical fixes, personal trust-building, and local partnerships—makes Wattnu a strong example of how energy cooperatives can tackle energy poverty while promoting an inclusive energy transition.
- Residents of the Benedenwijk in Wageningen came up with the idea for a local district heating network during a neighbourhood climate event in 2016. This resulted in the establishment of **WOW Wageningen Cooperative and Warmtebedrijf Oost-Wageningen B.V. (WOW) (NL)**. The heating company is jointly owned by the WOW cooperative and the Municipality of Wageningen (two-thirds ownership), and energy provider Kelvin B.V. (one-third ownership). This set up allows heat supply (through Kelvin's supplier license) while ensuring local influence and resident participation, as every connected household (whether home-owner or tenant) will automatically become a cooperative member and will thus hold decision-making rights in the organisation. Others can also join the cooperative and actively participate in the decision-making by paying a €10 annual fee. From the outset, Woningstichting Wageningen, the local housing corporation, played a key role in supporting the project with financial and technical assistance. As a provider of affordable and sustainable housing for those facing financial or social challenges, it aims to transition its social housing units away from natural gas while keeping costs manageable for tenants. To encourage participation, Woningstichting Wageningen will cover connection fees, offer discounts on fixed heating costs, and will make necessary home modifications for electric cooking without increasing rent. With this approach they hope to create a net financial benefit. Tenants were personally visited to ensure they had all the necessary information before deciding, leading to a 79% approval rate among

social housing residents. The district heating network is still under development and will eventually supply 90% of all households in the neighbourhood, including 83% of private homeowners and all social housing units.

**Germany** counts with at least 222 CH&C installations, with 35 of them in development. These installations count with over 10.000 connections, and 250km of district heating and cooling pipes, including households, kindergartens, municipal sports centres, SMEs, churches and monasteries. While their preferred technology is biomass, there are increases in demand for solar thermal, biogas, waste heat, and geothermal energies couples with seasonal storage. These citizen-owned initiatives alone save Germany over 17.000 tonnes of CO<sub>2</sub> per year.

- **Bürger-Energie-Genossenschaft Neuburg-Schrobenhausen-Aichach-Eichstätt eG (BEG)**, is an energy cooperative operating in Bavaria, counting more than 900 members. It was set up in 2013 to initiate, finance and operate new renewable energy installations, including energy generation, storage and distribution in the region. BEG's first cold heating and cooling project was initiated in 2022 in collaboration with the local council of Königsmoos, a town of 5,000 inhabitants. The municipality wanted to implement a sustainable energy supply for a new housing development without relying on fossil fuels, due to rising gas prices and the need to reduce greenhouse gas emissions. The new system now provides renewable heating and cooling for 40 homes and 160 residents. Since, the same system has been set up for 65 homes in the city of Schrobenhausen. The cold heating and cooling district heating system was chosen for its sustainability, its adaptation to new residential areas, and its affordability and scalability. To minimise the installation's environmental impact, the cooperative opted for an approach mixing different renewable technologies: shallow geothermal energy, decentralised heat pumps, and rooftop PV installations for self-consumption. In an underground grid, water circulates at a temperature of around 8-12 °C. Heat pumps powered by renewable energy heat water for the building, including for heating in the winter. In the summer, buildings are kept cool by taking advantage of the water's low temperature. In ideal conditions, rooftop PV panels generate enough energy to supply the heat pump. When electricity generation is insufficient, the heat pump is supplied with renewable energy produced by the cooperative.

There are approximately 370 district heating installations in **Denmark**; Out of these, 310 are citizen-owned through cooperative structures, while around 50 are municipally owned. There is only a handful of district heating systems in the hands of traditional market actors. In 2019 alone, district heating in Denmark created 7.500 places of

employment. This set up supporting citizen-led thermal installations was a result of the 1970's oil crisis, and has allowed Danish households to radically reduce cost for consumers, given the national not-for-profit principle of thermal energy, while ensuring that these systems are accountable to their local populations through cooperatives. District heating covers approximately 64% of all Danish households, bringing 38.000 GWh of energy production.

- In **Avedore**, the **energy community** distributes renewable heat to its 4.500 members through waste heat from a data centre. The owner of the data centre is also a member of the cooperative, exemplifying the collaboration that energy communities foster among citizens, their municipality, and SMEs.

- In **Spain**, the energy community **Energia Pomar Genera** is replacing the use of diesel oil in the municipal indoor swimming pools for an air-source heat pump system powered by solar energy, coupled to energy storage.
- **Osona Energia Cooperativa** has 200 members in Catalonia, and are active in PV-collective self-consumption, EV charging stations and car-sharing services, as well as in the development of CH&C. The energy community has an agreement with the local public entity to finance the initial capital contribution of vulnerable families, as well as to provide 10% of their power production for free to these households. For their district heating system, they plan to use a 5<sup>th</sup> generation geothermal installation connected to a 600kW PV field to feed the heat pumps. The project is in development, it is however estimated that it will save 125 tonnes of CO<sub>2</sub> a year.



## Community-led Heating and Cooling Factsheet

# Belgium

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



## Background information

### Number of members of energy communities working on H&C

- 82,300

### Social benefits

- Sponsoring social projects
- Renovation advice and guidance
- Information sessions for citizens on renewable energy
- Joint purchases to reduce price

### Number of employees

- 68

### Upskilling practices

- Training possibilities
- Learning through action

*Numbers in this factsheet have been collected from REScoop.eu's members in Belgium, and are based on the responses received. It is likely that the total numbers relating to CH&C initiatives in Belgium are higher.*



Alderman for sustainability of Gooise Meren places the first pipeline of the citizen-led project @ Wattnu energy community

## Heating and Cooling in figures

<b>Number of CH&amp;C projects</b>	9 (4 in development) Oostende, Varsenare, Pittem, Mortsel, Edegem, Heist-Op-Den-Berg, Rotselaar, Eeklo, Ronse.
<b>Energy production</b>	420.500 MWh/year
<b>CO2 savings</b>	6,696 tonnes of CO2/year
<b>Energy savings</b>	35.3 GWh/year
<b>Temperatures</b>	<ul style="list-style-type: none"> <li>• 55-90°C for heat supply</li> <li>• 17°C for cold supply</li> </ul>
<b>Digital systems used</b>	<ul style="list-style-type: none"> <li>• Heat meters connected to digital platform for customers.</li> <li>• Heat Pump production connected to Day-Ahead Reference Price</li> </ul>

	Data	Barrier	Proposed Policy
<b>Number of connections to CH&amp;C</b>	1,515 households 2 SMEs 17 other (hospital, offices, municipal building)	Slow uptake on connections to meet transition objectives.	Regulatory certainty and transparency for citizens.  Connection obligation to RES thermal system within locally-agreed timeline, and in line with EU targets.  Alternative: Increasing costs for staying connected to a fossil fuel system (gas boiler, fossil district heating) within a set timeline.
<b>Timeline of CH&amp;C projects</b>	3-4 years	Unwillingness from municipality or grid operator to allow installation of pipes.	Offer funding to federations of energy communities to develop information programmes for citizens and municipalities in order to accelerate the uptake of CH&C.
<b>Preferred RES technologies</b>	<ul style="list-style-type: none"> <li>• Waste/residual heat</li> <li>• Heat pumps</li> <li>• Geothermal</li> <li>• Aquathermal</li> <li>• Biomass (landscape management)</li> <li>• Cogeneration</li> <li>• Gas boiler backup</li> </ul>	Legislation is too focused on gas.	Decoupling of gas as reference point, in favour of RES thermal energy.  Advantageous tax shift from fossil fuels to RES.

# Governance of the energy community

	Data	Barrier	Proposed Policy
<b>Role of energy community in H&amp;C installation</b>	<ul style="list-style-type: none"> <li>• Full involvement (designer, owner, operator, maintenance, supplier)</li> <li>• Co-operator with technical partner</li> </ul>	Large initial costs (development study, business case)	<p>Flexibility in interpretation of EU law on subsidies, so that CH&amp;C is recognised as initiatives of public interest, given their community ownership.</p> <p>EU and national repository of templates for CH&amp;C, including business cases and financial plan.</p>
<b>Stakeholders involved in energy community</b>	<ul style="list-style-type: none"> <li>• Citizens, municipality, regional governments,</li> <li>• Engineering offices (technical study and development)</li> <li>• Housing developers (looking for collective RES thermal solution)</li> </ul>	There were difficulties in setting up a heat contract with local government due to public procurement rules	<p>Specific rules for citizen-led projects in public procurement.</p> <p>EU-wide development fund for citizen-owned H&amp;C projects to cover first costs, following "loan to grant" logic.</p>
<b>Policy towards vulnerable households</b>	Lower thermal energy tariff (decrease of €10/MWh)	Foreign investors	Danish not-for-profit model for thermal energy ensures stable bills, protects EU industry and consumers, and avoids price abuses and speculation.
<b>Did the municipality involve the energy community in H&amp;C planning?</b>	Yes		If not a member of the energy community, the municipality often helps with access to funding and permitting.

# Finance

	Data	Barrier	Policy proposal
<b>Average cost of a CH&amp;C installation</b>	€4.5-20 million	<p>Industry can be reticent to provide waste heat at reasonable prices and timeframes.</p> <p>Heat pumps and biomass are not yet cost-effective given high fossil fuel prices.</p>	Incentives for industries that provide cheap waste energy to citizen initiatives such as energy communities.
<b>Origin of funds</b>	<ul style="list-style-type: none"> <li>• Own funds from energy community</li> <li>• Citizen contribution</li> <li>• Bank loan</li> <li>• Subsidies (Flemish "Groene Warmte")</li> <li>• EU City Facility (for study)</li> <li>• Interreg</li> </ul>		
<b>How are revenues reinvested?</b>	<ul style="list-style-type: none"> <li>• Expansion of the heat network</li> <li>• Dividends to citizens</li> </ul>		
<b>H&amp;C fees for customers</b>	<ul style="list-style-type: none"> <li>• Mix of fixed and variable costs.</li> <li>• Follows "price parity" logic to ensure competitiveness with alternatives in the market.</li> <li>• €209-400/year (€50-60/MWh)</li> </ul>		
<b>Types of energy contracts</b>	<ul style="list-style-type: none"> <li>• Connection agreement</li> <li>• Thermal energy delivery agreement</li> </ul>		

Should you have any questions about energy communities and Community-led Heating and Cooling, please contact [felix.kriedemann@rescoop.eu](mailto:felix.kriedemann@rescoop.eu) or [info@rescoop.eu](mailto:info@rescoop.eu)



## Community-led Heating and Cooling Factsheet

# Denmark

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



## Background information

### Members of an energy community working on H&C

There are approximately 370 district heating systems in Denmark; out of these, around 310 are citizen-led through cooperative structures, while around 50 are municipally-led.

### Number of employees

In 2019 alone, Danish district heating created 7,500 jobs (1).

### Social benefits

- Reduced cost for consumers given the not-for-profit principle of thermal energy
- Democratic control over the local heating and cooling installation

(1) ["Something is sustainable in the state of Denmark: A review of the Danish district heating sector"](#)  
Johansen, Werner. 2022



Alderman for sustainability of Gooise Meren places the first pipeline of the citizen-led project @ Wattnu energy community

The Danish Heat Supply Act of 1979 establishes that the price of H&C must be based on “necessary costs”, meaning that the cost for consumers cannot be higher or lower than the production costs. This is a similar logic followed by CH&C initiatives, as energy communities are not profit-driven.

The DEA provides guidelines and methodologies to municipalities regarding socio-economic assumptions and technology data for the development of H&C.

<b>Number of CH&amp;C projects</b>	District heating covers approximately 64% of all Danish households
<b>Number of connections to CH&amp;C</b>	1.9 million homes are connected to district heating. However, only a fraction of these connections are supplied by traditional market actors, as the rest is supplied by citizen or municipal-led networks. This was possible since until 2019 municipalities made the connection to a district heating system an obligation.
<b>Energy production</b>	38,000 GWh/year (approximately 140PJ)
<b>Energy savings</b>	30%
<b>Temperatures</b>	40-70°C

	Data	Policy recommendation
<b>Preferred RES technologies</b>	<ul style="list-style-type: none"> <li>• 76.9% of district heating in Denmark is based on RES, with an objective of reaching 100% RES by 2030.</li> <li>• Waste heat (waste incineration)</li> <li>• Heat pumps backed up by PV and wind energy.</li> <li>• Thermal storage.</li> <li>• Combined heat and power</li> <li>• Geothermal</li> <li>• Biomass</li> <li>• Biogas</li> <li>• Natural gas for back-up.</li> </ul>	Incentivise investment in RES technology combinations for CH&C initiatives, with inflexible production and flexible consumption. This allows the price to remain stable, and reinforces the supply against disruptions.
<b>Digital systems used</b>	<ul style="list-style-type: none"> <li>• Smart metering</li> <li>• Leakage surveillance system</li> </ul>	
<b>Role of energy community in H&amp;C installation</b>	<ul style="list-style-type: none"> <li>• Owner</li> <li>• Operator</li> <li>• Installer</li> </ul>	
<b>Did the municipality involve the energy community in H&amp;C Planning?</b>	Yes	

# Finance

	Data	Policy recommendations
Origin of funds	<ul style="list-style-type: none"> <li>• Own resources</li> <li>• Member contributions</li> <li>• Municipal Fund (<i>Kommunekredit</i>)</li> <li>• Bank loans</li> </ul>	<p>Public loans with municipal guarantees through the <i>Kommunekredit</i>, where the municipalities share the risks of the guarantees.</p> <p>Energy communities can access these loans, which eases the development and business case of the initiative.</p> <p>Banks in Denmark offer longterm loans of 30 to 45 years for district heating projects. This reinforces the business case of CH&amp;C initiatives.</p>
H&C fees for customers	<p>Between 2021 and 2022 the price of heating increased by 5.9%. However, the price for electricity and gas increased by 46.8%</p> <p>Cost of 0.028-0.16€/kWh (average of 0.078€/kWh) (2)</p>	<p>The Danish heat supply act of 1979 established that local authorities must make sure that the H&amp;C project with the highest socio-economic benefits is chosen; This opened the door to community-led initiatives.</p>

Should you have any questions about energy communities and Community-led Heating and Cooling, please contact [felix.kriedemann@rescoop.eu](mailto:felix.kriedemann@rescoop.eu) or [info@rescoop.eu](mailto:info@rescoop.eu)

(2) "The price elasticity of residential district heating demand: New evidence from a dynamic panel approach", Trotta, Hansen, Sommer, 2022



## Community-led Heating and Cooling Factsheet

# Germany

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



## Background information

### Number of members of energy communities working on H&C

- 42,433 members

**✗ Barrier:** There is a decreased interest in climate protection, and skepticism towards RES technologies.

**✓ Proposed solution:** Connection obligation to RES heating and cooling within an agreed timeline.

### Number of employees

- 722 employees
- 273 volunteers

**✗ Barrier:** Reliance on volunteer work

**✓ Proposed solution:** Core funding for the establishment of the energy community.

*Numbers in this factsheet have been collected from REScoop.eu's members in Germany, and are based on the responses received. It is likely that the total numbers relating to CH&C initiatives in Germany are higher.*

### Social benefits

- Offers guidance on energy transition
- Sponsoring youth associations and local networking
- Reductions in electricity prices.

### Upskilling practices

- Trainings.

## Heating and Cooling information

### Number of CH&C projects

222 (35 in development)

Preetz, Bayern, Brandenburg, Ammerbruch-Breitenholz; Bergheim; Gussenstadt; Königsmoos, Schrobenhausen, Beilngries; Niederschach; Sankt Peter; Steyerberg; Erfurtshausen; Südschwarzwald; St. Peter im Schwarzwald; Brandenburg; Baden-Württemberg; Hessen; Bayern; Niedersachsen; Nordrhein-Westfalen; Schleswig-Holstein.

### Number of connections to CH&C

10.055 connections. 247 km of district heating and cooling. This number includes:

- Households
- Public buildings (Schools, sport centres, swimming pools, kindergartens, community centers)
- SMEs
- Churches and Monasteries

### Timeline of CH&C projects

- 9 months – 10 years (average of 2-3 years/project)

**✗ Barrier:** The authorisation process is too time-intensive (e.g. 6 months for a planning permit).

**✓ Proposed solution:** Increase municipal funding for planning and RES staff.

## Preferred renewable technologies:

- Biomass
- Solar thermal
- Biogas
- Waste heat
- Heat pumps
- Seasonal storage
- Geothermal
- Electric heating (photovoltaic)
- Combined heat and power

**✗ Barrier:** Many citizens don't take fossil fuel infrastructure maintenance into account in their bills, which leads to the belief that they are cheaper than RES.

### ✓ Proposed solution:

- Public information campaigns on the cost of RES in comparison with fossil fuels, including hidden costs on healthcare and nature restoration.
- Subsidy shift from fossil fuels to RES.

## Energy production

- 249,411 MWh/year

## CO<sub>2</sub> savings

- 17,350 tonnes CO<sub>2</sub>/year

## Energy savings

- 20-30%

**✗ Barrier:** Issues regarding the insurance and guarantee of the pipes to access loans.

**✓ Proposed solution:** Banks should accept infrastructure as guarantee.

## Temperatures

- 70-105°C for heating
- 3-19°C for cooling

## Digital systems used

- Digital system monitoring and control.
- Fiber optic installation in parallel with district heating.

# Governance of the energy community

## Role of the energy community in H&C installation

- Owner
- Supplier

**✗ Barrier:** In certain Bundesländer it is not allowed to develop a heating and cooling network without the municipality.

**✓ Proposed solution:** Municipal obligation to join or develop a heating and cooling network, with incentives for initiatives that include citizens.

## Stakeholders involved in the energy community

- Municipality (member, customer, supporter)
- Financial institutions (investment and savings bank, cooperative bank)
- Maintenance and engineering companies
- Wood chip suppliers
- Insurance company
- Farmers (biomass providers)

**✗ Barrier:** Poor municipal data regarding existing public works

**✓ Proposed solution:**

- Better municipal coordination on public works and data gathering and sharing.
- The municipality has been very helpful on the access to funds, manpower, and regulatory advice.
- Including municipalities in local energy communities should be encouraged.

## Policy towards vulnerable households

- Reduced tariff

## Did the municipality involve the energy community in H&C Planning?

- Yes, though some municipalities have still not developed these plans.

# Financial information

## Average cost of a CH&C installation

- €1.6-31M (average of €5 million)

**✗ Barrier:** The lack of access to guarantees to unlock funding.

**✓ Proposed solution:**

- Establish inter-municipal guarantee funds available to energy communities, such as Denmark's KommuneKredit, which can be used by municipalities and citizen-led initiatives.
- Introduction of a nationwide guarantee programme to improve investment security for community-led heating network operators and easier access for these players to funding mechanisms at national and European level

**✗ Barrier:** State Aid law in its current state is a barrier to citizen-led systems.

**✓ Proposed solution:** Clarification in State Aid framework so that collaborations between municipalities and citizens through energy communities are encouraged.

**✗ Barrier:** Energy communities need core funding at their start, for the establishment, planning, awareness raising, and attracting citizens (some feasibility studies cost €200,000)

**✓ Proposed solution:** Offer upfront core funding for starter energy communities through revolving funds and loan to grant schemes.

## Origin of funds

- Own resources
- Federal Office for Economic Affairs (BAFA)
- National heating funding programmes (BEW Förderung; KWKG Förderung)
- Regional and local government
- Bank loan
- EU funds such as ERDF. Their use however is very limited.

**✗ Barrier:** Access to EU funds was too complex.

**✓ Proposed solution:** Simplification of EU funding for social economy actors.

**✗ Barrier:** Funds were not delivered after they were agreed.

**✓ Proposed solution:** Economic participation obligation in a CH&C project once it has been agreed and signed.

**✗ Barrier:** The application process for public funding is too complex for small undertakings like energy communities.

**✓ Proposed solution:** Simplification of reporting for social economy actors such as energy communities.

## How are revenues reinvested?

- Paying off loans
- Maintaining and expanding network
- Decreasing customer's bills
- Dividends when available
- Car-sharing services
- Construction of e-charging stations
- Sponsor local social and cultural projects

**✗ Barrier:** The expansion of district heating is sometimes slowed down, or made more expensive, because of private property laws.

**✓ Proposed solution:** Encourage the construction of CH&C pipes through private property to accelerate local connections and decrease development costs.

## H&C fees for customers

- Connection cost ranges between €2,500-8,900.
- However, it can also be free and recovered through bills.
- Service price ranges between €60-476.
- The price per Kilowatt ranges between 0.1-17.3cts/kWh.

## Types of energy contracts

- Heat contract of different durations, ranging between one and ten years.

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## Community-led Heating and Cooling Factsheet

# Greece

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



## Background information

### Number of members of energy communities working on H&C

- 1,753 members

**✗ Barrier:** Hesitance from community regarding CH&C projects

#### ✓ Proposed solution:

- Public awareness campaigns showcasing the social, economic, and environmental benefits of community energy.
- Incentivise active involvement of citizens and local stakeholders in the municipal planning and decision-making processes.

### Number of employees

- 25

**✗ Barrier:** Limited availability of local technical expertise for system design, installation, and maintenance.

#### ✓ Proposed solution:

- Launch training programmes and workshops to build expertise on RES H&C projects and technologies.
- Collaborations with universities and technical education institutions to create a skilled workforce across the EU.

*Numbers in this factsheet have been collected from REScoop.eu's members in Greece, and are based on the responses received. It is likely that the total numbers relating to CH&C initiatives in Greece are higher.*

### Social benefits

- Providing free and discounted energy to vulnerable households (reducing energy poverty)
- Provide relief to victims of natural disasters (i.e. earthquakes)
- Promoting renewable energy and energy solidarity among local population.
- Organising local workshops on RES and energy efficiency.

### ✓ Proposed policy:

- Incentivise partnerships between energy communities and local groups such as contractors, NGOs, agricultural cooperatives, and education institutions.
- Provide incentives (administrative and/or financial) to energy communities that mobilise and educate citizens about renewable energy.

### Upskilling practices

- Training programmes and workshops (RES technologies, project management, certifications)
- Knowledge sharing practices.
- Encouraging participation in national and international energy events (to stay up to date with latest policy, funding, and technical trends).

## Heating and Cooling information

### Number of CH&C projects

- 2

### Number of connections to CH&C

212 connections, including:

- Households
- SMEs
- Municipal facilities (swimming pool, primary school, indoor basketball court).

### Timeline of CH&C projects

- 15 years

## Preferred renewable technologies

- Biomass (woodchips, agricultural residue, pellets, coffee-pellets)
- Heat pumps with PV.
- Solar thermal
- Biogas
- Oil burner as backup (phasing out)

**X Barrier:** The implementation of district heating systems represents a large-scale infrastructure project with a long life cycle, requiring a substantial initial investment. Given the enduring nature of these systems and their long-term benefits in terms of energy solidarity, security, climate goals, and efficiency, it is critical to offer financial support, including subsidies and incentives, to encourage the development of new CH&C systems. Without this support, communities may be limited to individual heating solutions, which could slow down the transition, and put undue pressure on the grid.

### ✓ Proposed solution:

- Adoption of subsidised programs of continuous duration for the integration of small and medium-scale community-led district heating network development projects. A similar fund exists in the Netherlands, where funding is offered throughout the different stages of development of a CH&C project.
- An infrastructure with a long life cycle and the utilisation of multiple and alternative heat sources, even future ones that are not currently utilised. Through district heating network, an entire city can carry out a complete energy transition. They however need support at the start of the project.

### Energy production

- 1880MWh/year (upgrade to 4.200MWh in near future)
- 1.200 tonnes of biomass/year.
- 42MWh for PV production.

### CO<sub>2</sub> savings

- 194.225 kg CO<sub>2</sub>/kWh

### Energy savings

- 180.000 MWh

### Temperatures

- 80°C

### Digital systems used

- Smart meters and central telemetry station
- Mobile application with personalised insights.
- Electrovalve
- Temperature sensors

# Governance of the energy community

## Role of the energy community in H&C installation

- Ownership
- Production
- Distribution
- Management

**✗ Barrier:** Complexity and at times contradictory elements in Greek legislation regarding renewable energy, particularly biomass and district heating.

**✓ Proposed solution:** Provide a clear, comprehensive, and stable regulatory structure regarding energy communities and heating and cooling projects, to streamline licensing and development.

**✗ Barrier:** In Greece, there is currently only one classification category for the licensing of district heating systems, irrespective of the system's capacity, heat source, fuel, or fuel supply chain. This classification places small-scale projects, such as a 2MW biomass system, under the same regulations as large-scale, high-emission projects like lignite units. This results in unnecessary administrative hurdles and misaligned processes for environmentally-friendly biomass systems.

**✓ Proposed solution:**

- Community ownership allows the energy community to control pricing, accessibility, and environmental impact.
- EU and national frameworks should address land use, environmental impact measures, safety standards, and permitting processes. At present, the lack of a definitive regulatory roadmap is a significant barrier to the development of CH&C initiatives.

## Stakeholders involved in the energy community

- Citizens
- Municipalities
- SMEs
- Farmers
- Hellenic mediterranean university
- National technical university of Athens
- Local boiler manufacturer

**✓ Proposed policy:**

- Encourage collaborations with municipalities to identify people in need and streamline support processes.
- Encourage collaborations between local consumers and producers of H&C.

## Policy towards vulnerable households

- Providing free and discounted energy.
- Facilitating energy efficiency upgrades.
- Promote inclusive participation in renewable energy projects.
- Providing them with 24 interest-free installments without a need for a down-payment.

## Did the municipality involve the energy community in H&C Planning?

Yes; ESEK and Minoan actively contribute to providing expertise, data, and advice on energy communities, heating and cooling, and how to integrate them in the municipal plan.

**✗ Barrier:** Complex and time-consuming permitting processes for RES H&C projects.

### ✓ Proposed solution:

- Simplification of permitting procedures for community-led heating and cooling projects.
- Dedicated support from authorities to expedite approvals.

**✗ Barrier:** The Greek Ministry for Energy only assesses district heating projects larger than 25MWth.

**✓ Proposed solution:** Incentivise the development of smaller community-led district heating systems. Introduce a specialised definition of "small district heating systems with renewable energy sources" with a capacity of less than 5MWth. These can then be developed in more sensitive areas, within the boundaries of settlements and with simpler procedures but strict specifications on pollutants and nuisance.

## Financial information

### Average cost of a CH&C installation

- €500,000 – 1.2M

**✗ Barrier:** Securing initial funding for technical analysis, infrastructure, and operational costs.

**✓ Proposed solution:** Offer up-front low-interest loans and guarantees for energy communities; Examples include loan-to-grant schemes, and revolving funds.

## Origin of funds

- Member's fees
- LEADER Funding
- EU projects (H2020)
- Cooperative bank loan

**✗ Barrier:** There are numerous governmental support schemes primarily designed for individual households, however there are too few initiatives specifically tailored to support community-scale energy projects

**✓ Proposed solution:** Earmark EU, national, regional, and municipal funding for citizen-led initiatives such as those by energy communities.

## How are revenues reinvested?

- Expanding network
- Combatting energy poverty.
- Hiring new people.
- Integration of additional heat sources.

## H&C fees for customers

- Installation cost of €1,500
- Bill based on consumption (50% lower than fossil fuel alternative).

## Types of energy contracts

- Heat supply contract.

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# Spain

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



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## Osona Energia Cooperativa (Balenyà, Catalunya)

- This energy community has 200 members, and employs 10 people.
- They are active in PV collective self-consumption services, EV charging station management and EV car-sharing services, as well as in the development stage of Community-led Heating and Cooling services through district heating.
- OECoop has an agreement with the local public entity to finance the initial capital contribution of vulnerable families, as well as to provide 10% of power production to vulnerable households for free.
- For the district heating system, they will use a 5th generation geothermal installation, and a 600 kWp PV field to feed the heat pumps. The first iteration will connect 40 households with an output of 416.7MWh/year. This will save 125 tonnes of CO<sub>2</sub>/year, and 463MWh of fossil fuels energy.
- Their budget is €1.2 million.

**✗ Barrier:** Users are reluctant to invest in long-term projects, especially vulnerable households, due to their limited financial resources and the oftentimes costly upfront connection costs or the changing of the radiators (approx. €5,000).

**✓ Proposed solution:** Incentivise banks to offer long-term loans (30 years) for energy communities to decrease the price for consumers.

## Asociación Begonte Genera (Lugo, Galicia)

An association of 18 users was created.

Bidirectional smart microgrid with a mix of technologies, including:

- Photovoltaic
- Wind
- Hydro turbine generators
- Electric biogas plant with storage.
- Installation of 200 kW of air-source heat pump in public buildings.
- Investment of €5,284,700, subsidy of €2,443,214.

**✗ Barrier:** Public reluctance to RES vis-à-vis fossil fuels due to novelty and cost.

**✓ Proposed solution:**

- CH&C projects should be supported through follow-ups and process simplification in order to showcase to citizens their potential for sustainability and cost reduction.
- Re-balancing the subsidies and tax advantages from fossil fuels to RES would incentivise reticent citizens to join RES projects.

## Comunidade Enerxética Coles (Oursense, Galicia)

- Energy community in which 10 municipalities belonging to the Association for the Development of the Region of Ourense (ADERCOU) have joined forces to promote various actions such as:
- The installation of 1.13 MWp of solar energy
- The conversion of oil boilers into air-source heat pump systems.

## CMVMC de Tameiga (Pontevedra, Galicia)

- Energy community that gathers more than 400 families and owns 90 hectares of forest.
- They have several lines of action such as forest, water and energy management. They supply the energy needs of the population from the biomass that they manage directly from these forests.
- Thanks to this action, the partners have witnessed a trend towards the substitution of oil and gas boilers with renewable biomass.

## COOPIE SCCL, Illa Eficient

- The COOPIE energy community includes the regional government (Generalitat de Catalunya), the local government (Barcelona City Council), and Habitat Futura.
- They have a renovation project which is expected to reduce energy consumption by at least 30%.
- Among the different measures are the renovation of equipment, the installation of community heat pumps, and the adaptation of boilers.
- This initiative will impact 22 buildings, 390 apartments and more than 700 neighbours.
- Its total budget is estimated at €3.8 million.

## Energia Pomar Genera (Burgos, Castilla y León)

- The energy community is promoted by the Administration of Medina de Pomar.
- One of its main actions is to replace the use of diesel oil in the municipal indoor swimming pools with an air-source heat pump system powered by solar energy, with energy storage. The energy generated will be redirected to other public buildings and to the citizens.
- The project has a budget of €7,239,800, of which €3,707,400 have been obtained from the national programme for energy communities: CE Implementa (1).

### ✓ Proposed policies:

- The promotion of the energy community by the municipality has helped its local uptake.
- Cooperation between citizens and the municipality should be incentivised for H&C projects through additional funding and support measures.

## Comunidad Energética Albarracín (Teruel, Aragón)

- The energy community, registered as a legal cooperative, with 73 founding members (City Council, SMEs and 69 individuals).
- The energy community has promoted the installation of biomass boilers in public buildings in 23 municipalities.
- Savings of 40% and the creation of 10 local jobs are estimated.
- The project has a budget of €9.7 million.

✗ **Barrier:** High costs throughout the development of the project, from the technical analysis, to the installation of the CH&C system.

### ✓ Proposed solution:

- Public funding and tax schemes have alleviated some of this burden. In Spain, the ministry (IDAE) offers subsidies of 60% of investment costs.
- Complementary loans such as the one from the Catalan Institute of Financing (ICF) have helped to bridge the gap.

(1) This programme was possible thanks to Next Generation EU funds. CE IMPLEMENTA will allocate €30 million to projects involving both electrical and thermal renewable energies, as well as energy efficiency and sustainable mobility. Electrical renewable energy projects are required to include an energy storage system.

## Ispaster (Vizcaya, Pais Basco)

- The cooperative is supported by both public and private funds. Its district heating is 60-70% subsidised.
- They have a heating and sanitary hot water distribution network (ACS) that works with forest biomass waste and supplies different consumption points of the village. The cooperative also provides components for electric (PV) panels and heat production (Biomass boilers + solar thermal), the storage equipment and the various monitoring tools employed.
- The facility consists of a biomass boiler that will burn splinters (the boiler has 90 kilowatts) and a network of pipes.

### ✗ Barriers:

- Mistrust and negative perception of the environmental impact of biomass.
- Another barrier deals with a top-down project development instead of following a bottom-up approach.
- Another barrier is weather-related, as to improve the combustion efficiency, the humidity levels need to be around 12-15%. Currently, it is very difficult in Bizkaia/Gipuzkoa (high humidity areas) to reduce the percentage of humidity from 30% in a natural way.
- The other identified barriers are of economic character, in Bizkaia and Gipuzkoa's forest management is mostly privatised.

### ✓ Proposed solution:

- Consider the whole life cycle of biomass in its impact assessments and compare it to fossil fuel burning in order to increase awareness around the advantages of local, short-supply-chain biomass management.
- Bottom-up approaches to energy communities should be incentivised, especially for costly projects such as CH&C, in order to improve social acceptance and financial participation.

## Okina and Sabando (Alava, Pais Basco)

- The administrative board is composed of all the residents in the village.
- To utilise the disposal of the wood generated from the cleaning of the forests of the municipality, it was decided to build a biomass plant that would provide heating and hot water to the 20 buildings of the town. About 22-24 people are currently connected to the heat network. Furthermore, the management of the forest has led to better pastures, decreased risks of fire, and GHG savings.
- There are two boilers of 200 kW with an outlet temperature of 80°C.
- The energy community reactivated the rural environment, created lasting local employment through infrastructure maintenance, public works, and biomass management. It has helped the local households save 50% on their energy bills.

**✗ Barrier:**

- The main barrier deals with processing of documents to carry out the work.
- Another barrier is the uncertainty about whether the new systems will work well or not in regards to the guarantee of supply.

**✓ Proposed solution:**

- Reduce bureaucratic burden for projects by energy communities.
- Incentivise conservation and improvement of forest heritage, since the management of the forest for its use as a raw material will allow the forests to be kept clean, avoiding fire hazards.
- Separate the heat commercialisation activities from the rest of the general services offered by the local council (water, electricity, telephone) under a different IAE (Economic Activities Tax) heading in order to manage the VAT independently, with associated benefits involving renewable activities.

## Sestao (Vizcaya, Pais Basco)

- The town hall owns 50% and the Basque Government the other 50%. The cooperative was initially conceived based on the idea to renew the city block, refurbish buildings, and install individual biomass heaters in the process. However, it was more effective to create a district heating network instead.
- The system has 2 biomass boilers (500 kW and 250 kW) and a 650 kW auxiliary gas boiler as backup.
- The main drivers are the cost savings, and greater environmental awareness. Another driver is the economic advantage, as community-led district heating is cheaper than an individual gas solution.

**✗ Barrier:** One of the main barriers deals with the number of residences that the CH&C network can connect to, due to the existing ground infrastructure.

**✓ Proposed solution:** Encourage better inter and intra-municipal coordination regarding public works, and align these with citizen-led initiatives to increase the efficiency of public spending.

## Txantrea (Pamplona, Navarra)

- The cooperatives emerged from an EU funded initiative. It is a district heating service composed of several cooperatives, local administration and a social housing company.
- The objective was to supply all the nearby communities with heat from a plant whose primary energy source was biomass - woodchips. The process included finding the land, reaching agreements with municipalities, balancing the economic part, the management (concession), tendering, etc.
- These cooperatives have also collaborated with companies that helped them put together the legal aspects of the tender and concession. On the techno-economic side, they worked with companies that developed the feasibility study.
- The CH&C installation is composed of an underground network from the power plant to households. It supplies 8 public buildings and 2,000 homes. In phase II, it will be able to reach up to 4,000 homes.
- They have seen savings of 7,600 tonnes of CO<sub>2</sub>.

### ✗ **Barrier:**

- An initial barrier is finding a driving force that is capable of launching CH&C projects.
- It takes time and many aspects need to be considered for the project to be carried out efficiently.

✓ **Proposed solution:** Offering core funding through grants and loans to starting energy communities allows them to professionalise their services, and set up the necessary administrative procedures to carry out RES activities.

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## Community-led Heating and Cooling Factsheet

# France

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



## Background information

**Number of members of energy communities working on H&C: 7,405**

**✗ Barrier:** Motivating residents and elected representatives to carry out a CH&C projects takes a lot of time and effort at the beginning.

**✓ Proposed solution:** Increase capacity and resources to develop activities, raise awareness and communicate with citizens and elected representatives. Rural areas need special attention as they heat with either wood logs, fuel oil, or propane gas, and are often too far from urban centres to have access to common thermal energy solutions such as district H&C.

**Number of employees: 133**

**✗ Barrier:** The first stages of an energy community are not remunerated, which negatively affects the initial business case.

**✓ Proposed solution:** Offer core funding during the different stages of development of an energy community.

*Numbers in this factsheet have been collected from REScoop.eu's members in France, and are based on the responses received. It is likely that the total numbers relating to CH&C initiatives in France are higher.*

### Social benefits

- Organisation of public meetings to improve understanding of the transition.
- Create social links between local consumers and producers of H&C.
- Local development.
- Advice on energy performance improvement.

### Upskilling practices

- Trainings to improve competences.

## Heating and Cooling in figures

**Number of CH&C projects:** 86 (28 in development)

#### Operational :

Saint Amant Roche Savine, Saint Germain l'Herm, Fournols, Courpiere, Le Vernet la Varenne, Anzat, Le Luguët, Les Martres-de-Veyre, La Chaise-Dieu, Rocamadour, Bretenoux, Martel, Bagnac-sur-Cele, Montfaucon, Luzech, Gramat, Latronquiere, Die, Grâne, Sainte-Croix-en-Diois, Solaure-en-Diois, Marignac, Châtillon-en-Diois, Astugue, Capvern, Saint Gaudens, Magnoac, Masseube, Montléon Magnoac, Ordan Larroque, Loures Barousse, Odos, Sarrancolin, Lucinges, Habere Poche, Chatillon sur Cluses, Cranves-Sales, Quaix en Chartreuse, Varcès, Gieres, Domene, Sassenage I, Sassenage II, La Mure, Notre Dame de l'Osier, Saint Bonnet de Chavagne, Estrablin, Charneclès, La Murette, Membrey, Chapelle des Bois, Notre Dame de Laus, azet-saint-Voy, Monastier-sur-Gazeille, Saint-Romain-Lachalm, Saint-Bonnet-le-Froid, Tence, Chadron, Retournac, Lantriac, Yssingeaux, Le Chambon-sur-Lignon, Riotord, Monistrol-sur-Loire.

#### In development :

Saint Amant Tallende, La Tour d'Auvergne, Ambert, Gramat II, Montfaucon II, Moutiers en Cinglais, Echaffour, Occagnes, Bretoncelles, Drôme, Signy-L'Abbaye, Tarascon/Ariege, Beaumarches, Lourdes, Brives-Charensac, Saint-Agrève, Beauzac, Savoie, Isere.

**✗ Barrier:** Bringing RES H&C to small rural areas entails higher costs for processes, which is especially burdensome for small/starting energy communities.

**✓ Proposed solution:** Incentivise the development of shared tools and services among energy communities at the national level, like in the Netherlands, in order to decrease the operational cost for starting energy communities.

## Number of connections to CH&C

414 connections, including:

- Homes
- Hospitals
- 4 Retirement homes
- Public schools
- Kindergartens
- Communal spaces (salle des fêtes)

## Preferred renewable technologies

- Biomass (woodchips, pellets if woodchips not possible)
- Solar Thermal
- Geothermal
- Fossil fuel backup (between 0.5-5%)

**✗ Barrier:** Installation of individual biomass boilers in rural areas (without a district heating network) is too costly without subsidies.

**✓ Proposed solution:** Incentivise public funding for CH&C, with a focus on individual RES solutions in rural areas, and common RES solutions for urban centres.

**✗ Barrier:** The burden of certain assessments (e.g. technical assessment for geothermal development) are too expensive for small citizen-led initiatives.

**✓ Proposed solution:** Loan to grant schemes for the development of the first technical analysis.

## Timeline of CH&C projects

- 1-3 years

## Energy production (MWh/year)

- 32GWh/year

## CO<sub>2</sub> savings

- 1,500

## Energy savings

- 80-85%

## Temperatures

- 80-85°C

## Digital systems used

- Smart meters

# Governance of the energy community

## Role of the energy community in H&C installation

- Owner
- Operator
- Consumer
- Supplier

## Stakeholders involved in the energy community

- Citizens
- Municipalities
- SMEs
- National federation of energy communities
- Local climate and energy agency
- Financial partners
- Technical partners
- Agricultural Cooperatives
- Local NGOs

**✗ Barrier:** Lack of bank guarantees for small regional initiatives and investment projects, despite the solvency of CH&C customers (i.e. citizens, municipalities, SMEs).

**✓ Proposed solution:** Guarantee funds adapted to the needs of energy communities, with special attention to cost-intensive initiatives.

**✗ Barrier:** Cooperative governance is time-consuming.

**✓ Proposed solution:** When an energy community starts seeing revenues, a part is often reinvested in the governance model (i.e. general assemblies, board meetings, citizen engagement).

## Policy towards vulnerable households

- Provide RES to inhabitants of rural areas with low revenues.
- Energy community revenues reinvested in the insulation of electric water heaters for vulnerable households.

## Did the municipality involve the energy community in H&C Planning?

- In Grenoble yes.
- However, many CH&C initiatives by energy communities in France are mostly located in small rural areas.

**✗ Barrier:** Long decision-making time at local level.

**✓ Proposed solution:** EU and national programmes to increase local knowledge of RES project development.

**✗ Barrier:** Certain ratios used to examine subsidy applications are not adapted to small projects in rural areas (e.g. installed power thresholds too high; expected network density too high).

**✓ Proposed solution:** Adapt subsidy applications to fit the means of small and local initiatives, such as those by energy communities.

## Financial information

### Average cost of a CH&C installation

- 30,000- 6.3M (average price for small biomass installation: € 100,000 – 600,000).

**✗ Barrier:** Lack of appropriate financial arrangements for citizen-led structures, especially to support projects with high costs such as CH&C and Citizen-led Renovations.

**✓ Proposed solution:** Earmarked EU, national, and regional upfront funding for the development of citizen-led initiatives, and social economy actors such as energy communities.

**✗ Barrier:** Unstable funding and regulation (economic and technical conditionality is ever-changing).

**✓ Proposed solution:** Provide regulatory certainty at EU, national, regional, and local level regarding energy community projects to unlock and stabilise loans, subsidies, and private investments.

## Origin of funds

- Own resources
- National Fund (Fond Chaleur)
- Regional Fund
- Département Fund
- Bank loans
- White certificates (Certificat d'Economie d'Energie)
- Crowdfunding through national federation of energy communities (Energie Partagée).

**✗ Barrier:** EU funds are seldom used, as they are seen as too complex and slow.

**✓ Proposed solution:** Simplification in application procedures for social economy actors such as energy communities.

**✗ Barrier:** Bank loans (10-12 years) are not adapted to the contractual options offered to customers (15-20).

**✓ Proposed solution:** Incentivise financial institutions to offer long-term loans. An example is Denmark, where bank offer loans of 30-45 years for CH&C projects.

## How are revenues reinvested?

- Maintenance
- Network expansion
- Citizen engagement
- Local working groups bringing together suppliers, processors, transporters and consumers of heat.
- Develop an energy management workstream for public buildings.

## Types of energy contracts

- Heat supply contract, ranging between 15-20 years.
- Public concessions for 20 years.
- Contracts with municipal body for 20 years.

Should you have any questions about energy communities and Community-led Heating and Cooling, please contact [felix.kriedemann@rescoop.eu](mailto:felix.kriedemann@rescoop.eu) or [info@rescoop.eu](mailto:info@rescoop.eu)



## Community-led Heating and Cooling Factsheet

# The Netherlands

Community-led Heating and Cooling initiatives (CH&C) are not-for-profit-driven renewable thermal energy installations (TEIs) owned by citizens, oftentimes in collaboration with municipalities, SMEs, and/or other stakeholders in line with the EU definition of energy communities.



## Background information

### Number of members of energy communities working on H&C

- 3,322 members

### Number of employees

- 34 (6 freelancers)

*Numbers in this factsheet have been collected from REScoop.eu's members in The Netherlands, and are based on the responses received. It is likely that the total numbers relating to CH&C initiatives in The Netherlands are higher.*

### Upskilling practices

- Energy coaching trainings
- Increase skills of local community members.
- Reskilling organised in cooperation with national federation of energy communities (Energie Samen).

✗ **Barrier:** Skilling can be a time-consuming process.

✓ **Proposed solution:** Incentivise info-sharing among energy communities, and standardise reskilling courses through the national associations of energy communities.

### Social benefits

- Organise community meetings
- Helping citizens in their contact with the municipality.
- Free advice on energy saving measures.
- Assisting households in energy poverty.
- Supporting renovations.
- Establish "energy buddies".
- Spin-off projects (EV car-sharing, citizen-led renovations)
- Bring people together and as a result, improve social cohesion, quality of life, a feeling of wellbeing and safety. Energy communities oftentimes become a source of inspiration for community members to come up with new ideas for future local collaboration.

## Heating and Cooling information

### Number of CH&C projects

- 10 (9 in development)
- Culemborg, Balk, Everdingen, Heeg, The Hague, Muideberg, Krijgsman, Keverdijk, Bussum Zuidoost, Wageningen

✓ **Proposed policy:** For existing neighbourhoods, municipalities have the right to establish connection obligations, as long as there is not a more sustainable alternative. This has accelerated the uptake of H&C decarbonisation. This also facilitates bringing people on board, given the monopoly position of district heating installations.

## Number of connections to CH&C

- 13,046 connections once the projects are finalised. Including:
- Homes
- Municipal buildings (school, sports centre)
- 167 social housing units
- 9 SMEs
- 7 large companies
- Church

**✗ Barrier:** Difficulties in getting approval from owners of certain nature areas to install pipes (nature foundation).

**✓ Proposed solution:**

- Facilitate the installation of underground district heating and cooling pipes through private property.
- Extend the community-ownership aim of electricity production to heating and cooling installations (In the Netherlands, every municipality needs to aim towards 50% of community ownership for electricity production).

## Timeline of CH&C projects

- 6-10 years

**✗ Barrier:** The development timeline is too long due to lengthy permit and decision-making.

**✓ Proposed solution:**

- Reduce administrative burdens, accelerate permitting, and earmark funds for CH&C projects by energy communities.
- Earmark funds for federations of energy communities to provide info-sharing to energy communities and municipalities. In the Netherlands, Energie Samen received subsidies to help create 35 CH&C pilots.

## Preferred renewable technologies:

- Aquathermal from wastewater, river, and lake.
- Waste heat
- Heat Pump
- Heat exchanger
- Underground thermal storage
- Natural gas as backup (6-20%).

**✗ Barrier:** The costs of individual alternatives for heating are much higher than those of heat networks.

**✓ Proposed solution:** Incentivise price parity between individual and shared H&C solutions to accelerate its roll-out.

### Energy production

- 28.4GWh (upon finalisation of projects)

### Energy savings

- Approximately 13%-20% in energy demand reductions.

### CO2 savings

- 74% reduction in CO2 (with 100% planned)

### Temperatures

- 40-70°C for heating
- 15°C for cooling (feasibility study)

### Digital systems used

- Smart meters

## Governance of the energy community

### Role of the energy community in H&C installation

- Owner
- Developer
- Operator

✗ **Barrier:** Lack of awareness about CH&C examples.

✓ **Proposed solution:** Support CH&C innovators and campaign their success.

### Stakeholders involved in the energy community

- Citizens
- Municipality and local Council (supply bank guarantee)
- Housing association (owner of 600 homes, contributes to the rent of the information centre)
- Waterschap Rivierenland (owner of the sewage treatment plant)
- Private undertakings
- Local business association
- Public banks
- Regional grid operator
- Provincial government.
- Nature foundation.

✗ **Barrier:** Difficulty in involving the tenants of housing organisations.

✓ **Proposed solution:** Difficulty in deciding over the ownership of the infrastructure when citizens and the municipality are members of the energy community.

**✗ Barrier:** Difficulty in deciding over the ownership of the infrastructure when citizens and the municipality are members of the energy community.

**✓ Proposed solution:** Clarify the ownership structure for CH&C infrastructure by energy communities.

**✗ Barrier:** Difficulty in making the energy community members agree.

**✓ Proposed solution:** Prioritise the discussion on shared goals to avoid getting bogged down on the details of the project.

## Policy towards vulnerable households

- If a neighbourhood already has an energy community, the chances of a CH&C project are higher as there is already a community inclination. This is a great tool to fight energy poverty.

## Did the municipality involve the energy community in H&C Planning?

- The municipality is helping the energy community with funding/subsidies, coordinated communication, and staff support.

**✗ Barrier:** Limited support from some local authorities regarding risk mitigation.

**✓ Proposed solution:**

- Incentivise municipalities to join or collaborate with energy communities through national targets.
- Include CH&C initiatives as "preferred suppliers" (Warmtekavel in Dutch) in order to democratise H&C supply and keep prices stable across time.

**✗ Barrier:** Limited knowledge about CH&C by energy communities among national, regional, and local governments.

**✓ Proposed solution:** Information campaign aimed at governments about energy communities, their projects, costs, and benefits.

## Financial information

### Average cost of a CH&C installation

- €10-61M

**✗ Barrier:** The construction of a district heating network in a rural area is more expensive than in urban environments.

**✓ Proposed solution:** Earmark national funds for the development of CH&C, particularly for rural areas in order to ensure a geographically-balanced roll-out. For instance, The Hague gives 150.000EUR for the initial phase of CH&C initiatives. While the national federation of energy cooperatives (Energie Samen) offers loans provided by the Ministry of Climate and Green Growth for the development phase of CH&C initiatives.

### Origin of funds

- Member contributions.
- Community fund from wind energy community.
- Municipal subsidy.
- National loan (loan to grant scheme; Ontwikkelfonds Warmte)
- Contribution from housing association.W
- IS Subsidy (infrastructure investment)
- ISDE Subsidy
- SDE++ Subsidy (heat source exploitation)
- European Local Energy Assistance Facility.

**✗ Barrier:** EU funds are seen as too lengthy and complex for small undertakings such as starter energy communities.

**✓ Proposed solution:** Simplify EU fund application processes for CH&C and Citizen-led Renovation projects by energy communities.

**✗ Barrier:** Equity financing is nigh to impossible without public support.

**✓ Proposed solution:** Establish a national and/or inter-municipal guarantee fund for the development and equity of community-led renewable energy projects.

**✗ Barrier:** Being an early adaptor leads to extra costs. These should be subsidised, otherwise inhabitants have to carry them via heat tariffs.

**✓ Proposed solution:** Loan to grant schemes have accelerated the roll-out of CH&C, as it removes some of the financial pressure during the development of the project.

## How are revenues reinvested?

- Maintenance, optimisation, and expansion of the network.
- Ensure a reserve.
- Reducing energy fees.

## H&C fees for customers

- €60/month
- 90% pricing on heat contract compared to previous fossil fuel alternative.

## Types of energy contracts

- Heat contract of different durations, ranging between one and ten years.



Alderman for sustainability of Gooise Meren places the first pipeline of the citizen-led project © Wattnu energy community

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