

THE FINANCIAL NEEDS AND BENEFITS OF COOPERATIVE DISTRICT HEATING



Authors: Birgit Henrich, Nienke Maas

District heating cooperatives can help to overcome some of the financial and social challenges of the heat transition. However, Dutch small-scale cooperatives experience great difficulty with access to, and costs of, capital, because financiers often perceive cooperatively owned systems as an investment with high risk. To scale up investments in cooperative district heating, trust of financiers in cooperatives needs to increase, which can be achieved by providing financial support mechanisms, such as public credit guarantees, lowering capital investment costs, and developing a track record of successful cooperatives. To achieve this, there is a need for improved regulations on transparency of costs and revenues in the district heating sector and pilot projects that can demonstrate success.

THE FINANCIAL BURDENS OF THE HEAT TRANSITION

Currently, 95% of the Dutch residential heat supply is provided by natural gas [1] and the majority of this gas comes from the Dutch Groningen Gas field. In March 2018, the Dutch national government announced its decision to end natural gas extraction from the Groningen gas field by 2030. This goal aligns with the Paris climate agreement and the Dutch climate agreement. The latter sets an ambition to transition 1.5 million existing residential houses to sustainable heating by 2030 [2]. Transitioning to sustainable heating is also fuelled by European ambitions to reduce dependence on natural gas from other countries [3]. The heat transition for the residential sector, including finding sustainable heat sources and rolling out new infrastructure, poses significant financial challenges. Most residents do not have sufficient funds to cover the upfront costs of, or absorb the increased living expenses caused by, transitioning [4], [5]. Moreover, those residents that do have the financial means may not be willing to prioritise the costs of the transition over other spending or investments [5].

Dutch municipalities are collaborating with (local) stakeholders to find affordable, sustainable and reliable alternatives to natural gas for every neighbourhood [6]. Broadly, the choices for consumers can be divided into collective and individual heating options. District heating is one example of a collective option where end-users receive heat from one or multiple heat sources via a collective infrastructure. The governance of these collective systems has three basic forms: 1) The commercially exploited district heating system, where consumers pay for heat delivery and connection to the grid like the heat networks in Amsterdam, Rotterdam and Utrecht; 2) the municipally owned district heating system,

with residents as consumers and with not-for-profit structures like Stadsverwarming Purmerend (SVP); and 3) the district heating cooperative, where residents are both owners and consumers of the district heating system. The first and second forms are the most common structure of governance of district heating systems. In 2020, there is only one cooperatively owned district heating system in the Netherlands, Energiebedrijf Thermobello [7]. Nonetheless, due to the desire of residents to have autonomy over their own energy supply and to become more sustainable, citizens across the country are setting up initiatives for a cooperative heat supply [6]. Some examples of cooperative heat initiatives are Coöperatie Warmtenet Oost Wageningen, Ketelhuis-WG in Amsterdam and Buurtwarmte Paddepoel.

HOW CAN COOPERATIVE DISTRICT HEATING SYSTEMS DECREASE FINANCIAL BURDENS?

In the Dutch district heating market, there are little incentives to reduce costs and tariffs. There is hardly competition in the sector [8], driving costs and tariffs up. District heating cooperatives, however, have an intrinsic motivation to minimise costs. Cooperatives often have a long-term vision [9] and work in the interest of their members, i.e. the end-users of the district heating system. If a cooperative is making profit in one year, these profits can be paid out to the members of the cooperative. If costs have increased in one year, all members will have to cover these additional costs, and the board will have to transparently explain the reason behind this. This provides a clear incentive to reduce heating costs and keep them as low as possible. In Denmark, for example, the tariffs of cooperatives are lower than tariffs of other (commercial) suppliers¹. The cost reducing incentive of cooperatively owned district heating systems could therefore decrease financial burdens of the heat transition for residents, which in turn could increase the number of residents that are willing to participate in this transition. Cooperatives can also stimulate prioritisation of public interests, the use of sustainable heat sources, increase public support, increase public control, and increase participation [6], [9], [12]–[14]. Furthermore, their intrinsic motivation to minimise costs will stimulate innovation.

“DISTRICT HEATING COOPERATIVES HAVE AN INTRINSIC MOTIVATION TO MINIMISE COSTS.”

THE BARRIERS FOR OBTAINING FUNDING FOR COOPERATIVE DISTRICT HEATING SYSTEMS

Heat cooperatives are not common in the Netherlands, but in other sectors (agriculture, banking, car insurance), cooperatives are well known and have proven to be successful. Recently, TNO conducted 13 workshops on district heating cooperatives, with a consortium consisting of two Dutch banks, one investor, EnergieSamen², and four cooperative heat initiatives. These workshops showed two main barriers that currently exist that cause issues with the access to, and cost of, capital for district heating cooperatives. First, cooperatives have to use project financing, which is relatively expensive as they do not have a convincing enough balance sheet for venture financing³. Second, financiers perceive cooperatively owned district heating systems as an investment with high risk due to the lack of existing success stories. The latter poses a clear catch-22 situation, that without success stories financiers are hesitant to provide attractive loans, but without such funds success stories will never come into existence.

1 The cooperative district heating from Assens Fjernvarme for example has a tariff of 1391 euro/year in 2020 [10], while the average district heating price was 1728 euro/year in 2019 [11]. Both were calculated for a standard Danish household of 130 m² that uses 18.1 MWh.

2 Energie Samen is a Dutch interest group for energy cooperatives, energy associations and other energy communities of citizens, farmers and / or local companies.

3 With project financing a medium- to long-term debt (a loan) is provided based on the cash flow generated by the project by itself, while venture financing is based on the balance sheet of the company and/or its sponsors.

In contrast to the Dutch situation, Danish financiers view district heating cooperatives as a low-risk investment. Denmark started developing district heating cooperatives in the seventies, intending to become less dependent on imported fossil fuels. Now, Denmark has 340 cooperatively owned district heating systems [12], and 49% of the heat produced by district heating systems in 2016 was provided by renewable sources [15]. In the seventies, the Danish cooperatively owned district heating systems were financed by banks, with the help of municipal guarantees, i.e. the municipality was responsible for the loan that the financing party provided to the cooperative. Since the start of this set-up, not one cooperative has had to use this guarantee and no cooperative has been declared bankrupt [12]. Currently in Denmark, loans without a municipal guarantee match the interest rates of those with a guarantee, and banks are competing with each other to provide cooperative district heating funding. This example shows that with the trust of financiers and proper (legal) support, cooperative district heating systems can be successful.

“FINANCIERS PERCEIVE COOPERATIVE DISTRICT HEATING SYSTEMS AS HIGH RISK DUE TO THE LACK OF EXISTING SUCCESS STORIES.”

HOW TO CONVINCE FINANCIERS TO INVEST IN COOPERATIVE DISTRICT HEATING SYSTEMS?

Financiers will invest in cooperatives when they trust them. Lack of experience with cooperatively owned heat systems currently makes financiers reticent to invest. Therefore, it is important that more cooperatives enter the market. However, there are various barriers to entry.

To overcome these barriers, there needs to be more transparency in the Dutch district heating sector, so that key data can be used in developing district heating system business cases. There is currently little transparency into the costs and profit structures of district heating systems [8], [16], which makes it difficult to develop realistic business cases for district heating cooperatives. Transparency alone does not increase the attractiveness of the business case, but it will increase the trust of financiers that this business case is realistic, which might affect the requirements a financier uses to judge an application (such as the Debt Service Capital Ratio, needed due diligence processes and the required percentages of equity capital). The Danish have addressed the issue of transparency by using calculation rules, key-figures and benchmarks developed by the Danish Energy Agency for all district heating cooperative business cases [12], and by benchmarking cooperative systems regularly. Offering transparency and benchmarks provides an incentive for actors within this industry to be cost-efficient, which in turn could lead to lower investment costs and more attractive cooperative business cases. Next to transparency, there is also a need for support services. For example, organisations that can advise financiers on the quality of district heating business cases will have to be developed to decrease the (perceived) risks for both financiers and cooperatives, which could help to reduce lending rate, and thus financing costs. Both financiers and cooperatives currently often have to spend valuable resources and time conducting extensive research. Further, new parties (for example consultants and engineers) are needed to deliver all kinds of services to cooperatives. In Denmark, this is a thriving business. Supporting parties can develop standards for cooperatives, such as standard business cases, standard calculation methods and standard agreements. Standardisation in turn can drive down costs.

“TRANSPARENCY IN THE DUTCH HEAT MARKET ENABLES THE FINANCING OF HEAT COOPERATIVES.”

New and improved legislation might also be needed to make cooperatively owned district heating systems more attractive. Current and proposed legislation regarding the Dutch heat supply (Dutch Heat Supply Bill/Warmtewet) leaves only limited options for ownership by cooperatives. Potential recommendations to solve this issue are already discussed in consultations and manifests [17], [18]. Huygen, Lavrijssen, and Akerboom [17] for example, recommend defining 'energy communities' in the heat supply act to facilitate bottom-up initiatives and to stimulate such initiatives with financial opportunities, to oblige municipalities to investigate local initiatives before assigning a project to a commercial heat company and to oblige the ACM⁴ to set up detailed rules to ensure transparent national and international benchmarks for heat tariffs. Furthermore, the Heat Supply Bill targets at large, independent energy systems and impedes or even forbids the establishment of smaller energy systems, which could grow in steps or can be mutually connected. Such a stepwise growth is characteristic of cooperatives [19].

Finally, it is of the utmost importance to launch pilot projects that can lead to success stories, mitigate perceived risks, and ultimately reduce development costs. Without success stories, financiers will remain hesitant to provide loans with attractive financial conditions, and without such loans, cooperatives cannot develop district heating systems. Such pilot projects can, for example, be supported with subsidies or backed by municipal guarantees, and offer the opportunity to prove the potential of cooperatives to overcome the current (financial) challenges of the heat transition.

⁴ ACM: The Netherlands Authority for Consumers and Markets (ACM) ensures that companies compete fairly and protects consumer interests.

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