



> Tariff regulation of district heating for small users

Management summary of report for the Dutch Ministry of Economic Affairs and Climate

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SiRM. Strategies
in Regulated
Markets

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SiRM – Strategies in Regulated Markets offers strategic advice on regulated markets such as health care, energy networks and culture based on sound economic analysis.

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Management summary

An established heat network has the characteristics of a natural monopoly. This makes abuse of market power by a heat supplier conceivable and motivates tariff regulation for (small) consumers. The current regulation stipulates a tariff at or below the cost for heating with gas; the gas reference. This gas reference will become less relevant in the long-term because there is a policy to use less natural gas and to levy higher taxes on natural gas. Therefore the Ministry of Economic Affairs and Climate has asked SiRM to investigate alternatives.

The regulation of tariffs for small users (households and small enterprises) of heat networks is very complex due to the heterogeneity of the sector. Municipalities play an important role in the establishment of a heat network. In some situations it is difficult to find sufficient heat production. Heat suppliers experience a degree of competition in some phases of construction and operation of the heat network, or such competition may occur in the future. Competition on the grid, as usual for electricity and gas grids, is virtually never possible with heat distribution grids for small consumers. The impact of any 'third party access' for small consumers is limited.

In this report, we compare three ways of regulation using an assessment framework. We conclude that there is not one way of regulation that scores best based on the assessment framework. Customization of regulation is desirable. Each way of regulating has its advantages and disadvantages and possibly hybrid forms are desired.

Collective heat supply via district heating is a possible alternative for individual heating with natural gas. Heat networks can be supplied with renewable or residual heat to achieve the climate targets. Heat networks are expected to provide an increasing share of domestic heating.

Rates for district heating are currently regulated with the gas reference; how much a household spends on heating via a heat network is capped at the average expenditure of a household heating with natural gas. In the future, this principle will become less relevant given the policy to use less natural gas in the domestic sector. In addition, the gas price increases partly due to higher taxes. The Ministry of Economic Affairs and Climate (EZK) asked SiRM to investigate alternatives for the current gas reference.

Large differences on a growing heat market with some characteristics of a monopoly

Substantial growth in the number of heat networks is foreseen. An existing heat supplier has some characteristics of a monopolist. There are (as of yet) few alternatives. Due to technical characteristics of heat grids, unbundling and 'open third-party access' (open-tpa) on the distribution network as is the case for gas and electricity networks is difficult for heat networks. Heat networks have major pre-investments and the risk of stranded assets. Technical and geographic differences, local political situations and commercial decisions lead to district heat networks with different scales and organisation.

Differences in heat networks, especially in heat production

The technical differences between heat networks are driven by heat production: residual heat, biomass, heat / cold storage (heat and cold storage), heat pumps or geothermal energy. The technology for heat production largely determines the environmental sustainability of the heat supplied. The lifetime of a heat network is generally longer than the lifetime of heat production facilities. A district heat supplier that has to purchase heat production again after a number of years can be confronted with market power from a heat producer, which may require additional supervision of heat producers.

Local differences determine the required investments and possibly the funding contribution

The municipality has a decisive role in the construction of a heat network (Figure 1). The party that is (re) developing an area (within the framework set by the municipality) negotiates with a heat supplier on the conditions for constructing or expanding a heat network. The heat supplier generates its revenue from (future) customers in the area. At the moment the rates do in general not cover the full costs. That is why a cost recovery contribution is often required to install the heat network. The cost recovery contribution is paid by the owner of the property or passed on by the developing party in the price of a building. This way the consumer pays for part of the heat network via the purchase or lease of the building and part via rates for heat.

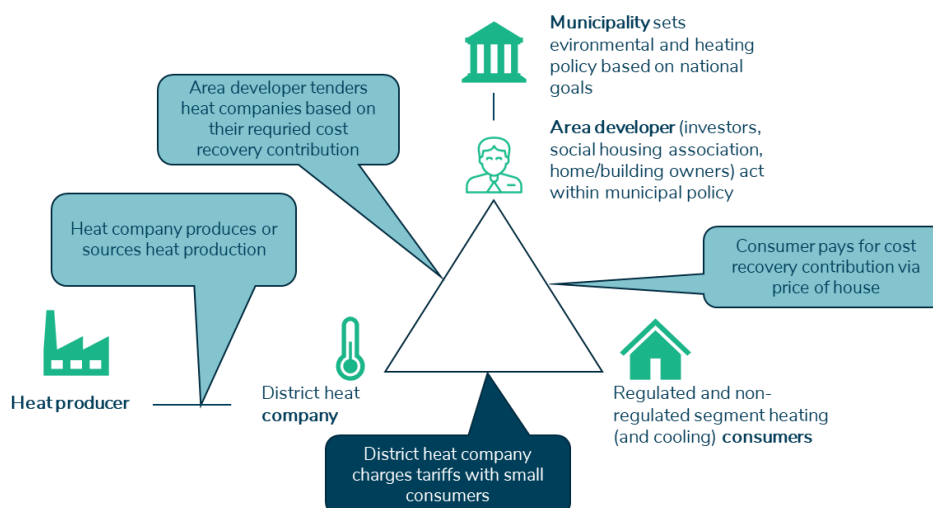


Figure 1 This report focuses on the regulation of tariffs for small consumers. For an efficient cost base for a heat supplier, other markets are also important: purchasing heat, tender for heat treatment and the housing market.

There are three stages where competition occurs in the development process of a heat network:

- 1 the decision to provide heat collectively or per property,
- 2 the decision on the technology for heat generation, and
- 3 the decision regarding the heat supplier that is allowed to operate the heat network.

Ideally, heat suppliers will compete on the cost recovery contribution they need for their business case for the new heat network. Neighbouring district heat networks or concession holders may have a competitive advantage. The party that develops the area has an interest in a low recovery contribution. However, there may not always be sufficient competition at this stage. Supervision by the competition authority on this market can be reinforced with mandatory reporting and the disclosure of confidential contracts. The “building environment table”¹ is working on a guideline for municipalities to weigh alternatives for heat supply.

Tariff income can roughly be regulated in three ways

An existing heat network has characteristics of a monopoly. There is no competition on the market, which leads to a call for extra supervision and regulation on heat suppliers. Our assessment framework examines whether regulation protects consumers against excessive tariffs and encourages heat suppliers towards efficient operations, investment and service levels. In addition, good regulation takes the local situation into account, contributes to the investment climate and enables sustainability objectives. Preconditions for regulation are limiting supervisory and administrative costs to what is truly required, acceptable costs for the introduction of the regulatory regime, and support among (small) consumers.

¹ Stakeholders involved with climate change preparing a national ‘climate deal’. The discussion is structured in ‘tables’ where various topics are discussed.

We see roughly three methods of tariff regulations;

- 1 tariffs set by the heat supplier combined with transparency rules,
- 2 national reference rates set by the regulator, possibly by technology,
- 3 rates set by a regulator per heat supplier or heat network.

The regulation must take into account the difference between existing networks and networks to be constructed. A shared understanding of excess profit is needed for all methods of regulation. In all methods of regulation there is a role for the regulator (ACM) ensuring consumer protection. The regulator needs information to be able to carry out its work properly.

We now expand on these three methods.

Method 1 - transparent rates determined by heat suppliers

Heat suppliers set their own rates subject to conditions regarding transparency of tariffs and costs. This gives more degrees of freedom for the business case of new networks and enables adjusting rates to the local situation. Transparency of the heat suppliers is expected. The ACM monitors profit levels.

Freedom to set their own rates may reduce investments risks for the heat suppliers. For consumers the price risk may differ per heat plant or network. In most European countries with large heat networks, heat suppliers determine the tariffs themselves, subject to conditions.

Requirements regarding non-discrimination and transparency of costs make abuse of market power of heat suppliers more difficult. This can be supplemented with 'price dialogues' in which a heat supplier discusses tariff developments with customers. Agreements can also be made about efficiency targets to be achieved. In addition, a periodic profit monitor can provide insight into any surplus yields. The ACM can detect excessive prices and correct these ex-post, taking into account the local situation.

Method 2 - National reference rates set by the regulator

Regulation with national reference rates is most similar to the current gas reference. A heat supplier cannot set rates above the reference. This gives confidence to the small consumer and leads to fewer assumptions to calculate the cost recovery contribution required to make the investment profitable.

Incorrectly established national reference rates can lead to excess profits or losses. That risk is greatest for existing networks because these may have been constructed with different expectations. National reference rates encourage efficiency because they are not based on the individual costs of a network.

The reference can be determined on the basis of a tax-adjusted gas reference or on the basis of productivity index, possibly per heating technology. Changes in efficiency and technology in the sector can be used to adjust rates in the future. In the future, all-electric heating can also form a reference.

On an individual basis a higher than expected return may be a reward for entrepreneurial risk and efficiency. Windfall profits or losses for existing grids can be prevented by differentiating between existing and new networks, and by differentiating reference tariffs into technology,.

Method 3 - Tariffs set by the regulator per heat supplier or heat network

The ACM could set rates based on the costs of a heat supplier. These cost-based rates may differ from network to network, or supplier to supplier. The rates can be determined on the basis of a cost benchmark. One may also opt for temporarily fixed rates by which heat suppliers receive an incentive for efficiency.

This method of regulation is often accompanied by a fairly high administrative burden for both the regulator and heat suppliers. In view of the heterogeneity of the heat sector, it will be relatively difficult to establish rates. Allowed revenue should be based on useful and necessary investments and operating costs.

European heat networks regulated with free rates subject to conditions

Especially in Scandinavia, heat networks provide a large part of the heating requirement. In most of the relevant European countries the heat suppliers have commercial freedom to set the tariff, supplemented with supervision by the competition authority and local agreements.

Clarity on the principles of regulation and / or supervision required

Whether the method of regulation is transparent tariffs, reference tariffs or regulated tariffs, the assumptions required for assessing the profits of heat suppliers should be made clear. Relevant questions include:

- What level of profit is acceptable?
- Does the regulation apply per heat network or per heat supplier?
- Is the ratio between fixed and variable rates linked to the fixed and variable costs ratio or not?

The ACM needs information to do its job. This requires Regulatory Accounting Rules (RAR) that are in line with the purpose of regulation and supervision. The capital costs are an important part of the costs of a heat supplier. Agreement is needed on determining the regulated asset base (RAB) and the pace and method of depreciation. A value for the weighted average cost of capital (WACC) is necessary for assessing whether excessive profits are being made, or for setting tariffs. Because of the heterogeneity and differences in asset lifecycles and maintenance, this is difficult for heat suppliers.

'The' way of regulation does not exist, customization seems desirable

There are many differences between heat suppliers; *'the'* way of regulating does not exist. It is difficult to assign definitive scores to various methods of regulation. There are multiple possibilities to define future regulation, each with a different emphasis. Moreover, the Ministry of Economic Affairs and Climate still has to indicate a weighing to the assessment criteria.

No method of regulation scores highest on all three goals of network regulation (avoiding excess profits, efficient operations and useful and necessary investments), nor on the targets for district heat networks (taking into account local situation, sustainability and climate for investments).

Regulating with transparent tariffs gives the most flexibility to monitor excess profits per heat network or heat supplier and to adjust the tariff structure to the local situation, and small-scale initiatives. Reference rates most closely resemble the current system and protect the small-scale consumer from excessive tariffs. In that case, supervision of excess profit is still required, which is inherently part of the regulation of cost-based regulated tariffs. They can reflect the local situation. Given the heterogeneity in the heating sector, regulated tariffs will be difficult to establish and will be accompanied by administrative burdens.

In all cases, it is desirable to establish RAR. The level of detail differs per method of regulation and may depend on the type and size of the heat network. In order to provide insight into how returns are assessed, the ACM should give clarity on the methods to be employed for setting the RAB and WACC. In the case of tariffs set by a regulator on the basis of costs, these values must actually be set for the regulated heat suppliers.