

# Good Governance and the Regulation of the District Heating Market



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**Abstract** This chapter discusses how the fundamental values of energy democracy and energy justice and the principles of good governance can play a role in developing a more consistent approach towards the regulation of the energy sector and, more in particular, in dealing with the challenges of regulating the heat transition in the Netherlands in a just way. Energy justice and energy democracy are energy specific concepts that are gaining influence when interpreting and applying the principles of good governance in the energy sector. Both concepts are based on the awareness that the energy transition is a matter for all citizens of the European Union and should not be ignored by policymakers and independent regulators. The heat transition in the Netherlands significantly impacts the position of consumers, prosumers and vulnerable customers, as an ever-larger group of consumers will be disconnected from the gas grid and will be connected to heat networks. Energy democracy and energy justice and the principles of good governance are important values that should guide policy-makers in making choices that affect consumer participation and the protection of vulnerable customers in the heat transition. It is elaborated how energy democracy and energy justice and the principles of good governance indeed can provide a useful framework within which advantages and disadvantages can be weighed of regulatory choices to be made when modernising the regulation of the heat market in a just way. In particular, there remains a lot to gain in terms of flexible regulation and supervision as well as the facilitation of consumer/prosumer participation in the Netherlands. Because it is likely that most heat consumers will remain locked in for a relatively long time in natural monopolies facilitated by older generation heat networks and the lack of alternative heating, substantive consumer-participation could yield positive results regarding community engagement in heat network management and heat supply.

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## Introduction

The importance of heat networks in the Netherlands is growing under the influence of the energy transition, set in motion by the Paris Agreement of 2015 (United Nations, 2015). The energy transition embodies the move away from a fossil-fuel based economy in favour of a low carbon economy. The energy transition plays a pivotal role in policy decisions preventing or mitigating climate change (Lavrijssen, 2018). New forms of energy generated with sustainable sources and new ways of storing energy are being stimulated<sup>1</sup> (CBS, 2019). The combat against climate change also fuels the transition of the (Dutch) energy sector into a smart energy system. This transition towards a smart energy system is characterised by several elements (Boersma, 2015; ECORYS, ECN, 2014; Frontier Economics, 2015; Overlegtafel Energievoorziening, 2015). It entails a shift from centrally generated energy from fossil fuels to energy generated from more local, renewable sources, that are often volatile, like wind energy and solar energy. Energy consumers increasingly become prosumers: they not only withdraw energy from the distribution network, but also produce energy themselves and feed it into the network. On 28 June 2019, the Dutch government presented a national Climate Agreement that shows the way to reducing greenhouse gases by 49% in 2030 in the Netherlands, compared to the levels in 1990 (Klimaatakkoord, 2019). One of the identified solutions to reduce CO<sub>2</sub>—emissions is the expansion of the heat market: the provision of heat via heat networks.

To replace fossil fuels for the heating of residential areas by heat delivered via heat networks (Klimaatakkoord, 2019), regional and local public authorities have been tasked with developing schemes to disconnect local areas (households) from the gas grid which will have a huge financial and spatial impact on the heat consumers. And while heat networks are gaining more importance in the Netherlands, so is the discussion regarding the appropriate market organisation and adequate regulation of the heat market (ACM, 2018; ECORYS, 2016; Schepers, 2009). For the purposes of this article, a heat consumer is defined as a household—*i.e.*, a small consumer, connected to a heat network with a connection of a maximum of 100 KW.

In spite of the on-going changes in the energy sector, the legislative framework and legal safeguards currently in place are still (largely) based on the traditional market model, in which centrally managed, large-scale production units supply energy to meet user demand. From this perspective, users are viewed as passive actors rather than active players wanting to act as prosumers (Parag & Sovacool, 2016). A discrepancy between technological and legal developments in the energy sector and the assumptions of the existing regulatory framework can be identified, which can be seen as an example of regulatory disconnection that needs to be restored (Bukento, 2016; Lavrijssen, 2018). This discrepancy is also identifiable in the Dutch heat market, where old-fashioned assumptions underlie the existing regulatory design.

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<sup>1</sup>In 2017, only 6.6% of energy generated in the Netherlands came from sustainable sources such as wind turbinised and solar panels. In 2020, that percentage should be 14, in accordance with the Renewable Energy Directive 2009/28/EC.

For instance, the maximum price for heat is based on the price of gas (no-more-than-otherwise principle; *niet meer dan anders principe*). This principle entails that the maximum price that consumers will pay for heat is based on the price of natural gas. As the supply of natural gas is being phased out in the Netherlands, it is no longer sustainable to maintain its supply price as reference point. To spur the energy transition in the Member States, the European Union has adopted the Clean Energy Package (European Commission, 2016) to facilitate the integration of renewable energy in the electricity system and to enhance the protection and empowerment of electricity consumers and prosumers. The integration of renewable energy requires a more holistic and systematic approach towards the regulation of the energy sector, including the heat market. However, regulation of the heat market is a challenge, as it is not harmonised by EU law. Its regulation differs substantially from the regulation of the electricity and the gas sectors.

A fundamental question is whether a more coherent and transparent approach is possible and which values and principles could play a role in developing a more consistent approach towards the regulation of the energy sector and, more in particular, in dealing with the challenges of the regulation of the heat market in a just way. A just energy transition refers to the fundamental values of energy justice and energy democracy, and the importance of these two core values is increasingly being recognised for the regulation and market organisation of the energy sector (Jenkins, 2019; Lavrijssen & Vitez, 2020). This chapter discusses energy justice aims at a fair distribution of energy, starting by questioning “the ways in which benefits and ills are distributed, remediated and victims are recognized” (Heffron et al., 2016). Energy democracy, on the other hand, is aimed at the involvement of citizens in the energy sector as ‘energy citizens’ (Van Veelen et al., 2018).

In addition to these core values, also the principles of good market supervision and regulation are considered relevant for the regulation of the energy sector. The principles of good market supervision and regulation (good governance), help ensuring and fostering economic development (OECD, 2014). By providing a sound normative framework within which governance and regulation take their shape, the principles of good governance may also help attain a high-quality regulatory environment for the heat market. While good governance is subjective and depends on various elements (Andrews, 2008), the principles of good governance create boundaries within which good governance exists. In that way, these principles may also play a harmonising function by providing common principles on which regulation may be based, whilst leaving room for specific regulatory arrangements depending on the economic and technological characteristics of a certain market.

The above-mentioned considerations lead to the following question: *If and how can the core values of energy democracy and energy justice and the principles of good market regulation and supervision play a role in regulating the energy transition, in particular by dealing with the challenges of regulating the Dutch heat market in a just way?*

In order to answer this question, it might be worth taking note of a more established heat market. In 2017, 63% of Danish households were connected to a heat network (Danish Energy Agency, 2017). District heating plays a significant role in

Denmark's heat supply history since the late 1970s. In 1979, Denmark passed its first Heat Supply Act. Since then, Denmark has actively shaped its heat networks sector (Danish Energy Agency, 2017). A salient characteristic of the Danish heat market is the pervasive presence of citizen involvement. Denmark's long-standing practice provides an excellent opportunity to analyse how consumer participation shapes the heat market and how this relates to choices in governance and regulation.

The research principally relies on legal analysis of the current and upcoming European and national rules that are relevant for the economic governance and regulation of the Dutch heat market and networks. This is supplemented by the analysis of accompanying documents, reports, etc. to the applicable rules, such as explanatory statements from the Dutch legislator. Additionally, the legal analysis of the applicable rules draws on legal and economic theory on governance and regulation, in order to understand the legal requirements and institutional models for the regulation of the heat networks and the impact of good governance on the working of markets. The research also comprises a review of literature and case law on the concepts of energy democracy and energy justice, the principles of good governance and on heat markets. Part of the research is comparative as a comparison will be drawn between the Dutch heat market and the regulation of the Dutch electricity market, and consumer participation in Denmark will be explored. Regulation of the electricity market and consumer participation in Denmark have been chosen because of their characteristics: the electricity market has been subject to European regulation since the 1990s. Since that time, not only regulatory changes but also substantive changes in the sector have taken place—notably the transition from fossil fuels to renewable energy sources that is well under way. Denmark on the other hand, is noteworthy as it is progressive in organising its heat market in a way to stimulate consumer participation.

This chapter will firstly introduce the concepts of energy justice and energy democracy and the link with the principles of good governance and elaborate on their relevance for the heat market. Subsequently, the characteristics of the Dutch heat market will be described, and the Dutch Heat Act will be introduced. Following this comparison, the main developments to take place in the Dutch heat market will be considered and a comparison on points will be drawn between the rules applicable to the Dutch heat market and the electricity market. This will allow to identify the main economic and legal challenges, that will be assessed in the sixth section. The Danish heat market will briefly be discussed to see whether inspiration can be drawn for the regulation of the Dutch heat market regarding citizen participation. Lastly, the research question will be answered by a conclusion on how the values of energy democracy and energy justice and the principles of good governance can play a role in decision-making regarding the design of market organisation, regulation and supervision in a way that restores the regulatory disconnect in the heat market and provides for a more coherent and just approach towards energy regulation.

## Role and Function of the Principles of Good Governance

### *The Concepts of Energy Democracy and Energy Justice*

The core values of energy democracy and energy justice embrace the affordability of energy, its security of supply and the overall sustainability of the energy sector which are key values of EU energy policy (Edens, 2017). Energy justice and energy democracy can be seen as sector specific interpretations of the democracy principle and the rule of law (Lavrijssen & Vitez, 2020). The aforementioned concepts embody significant substantive values and as such, offer leads to policy makers (and independent regulators) on how to pursue the goals—or public values (Bruijn & Dicke, 2006)—of the Energy Union. By implementing these values in regulation, energy justice and energy democracy have a direct effect on regulation and its application. This is for instance foreseeable with regard to the principle of consumer participation, where they provide for more substantive interpretation of consumer participation also including financial participation and local ownership. Whereas the concepts of energy justice and democracy are relatively newer interpretations of the rule of law and the democracy principle, they are still in development (Pellegrini et al., 2020).

Energy democracy focuses on collective participation of citizens in energy projects (Van Veelen et al., 2018; Morris & Arne, 2016). Energy democracy is thus aimed at reforming the current organisation and decision-making process in the energy sector by advocating reform. Instead of a top-down approach, energy policies should be as much bottom-up as possible. The often necessarily decentralised nature of many renewable energy sources fits in well with the aims of the energy democracy concept. Smaller scale projects leave more room for citizen initiatives, citizen participation and citizen ownership and encourage community engagement (Alarcón & Chartier, 2018).

Aimed at tackling disparities in our energy system, energy justice is the counterpart of energy democracy and refers to the decision-making process for energy projects (Bickerstaff et al., 2013; LaBelle, 2017; Sovacool et al., 2017). As such, the concept of energy justice “*Seeks to apply justice principles to energy policy, energy production and systems, energy consumption, energy activism, energy security and climate change* (Heffron & McCauley, 2017; Heffron et al., 2016; Jenkins et al., 2016).” Energy justice thus also questions the existing state of affairs in the energy sector, and plays a role in formulating what should happen, from a perspective of what would be ‘just’ (Jenkins, 2019). This reveals that equality—and the strive for equality which is a fundamental part of the rule of law—is at the root of energy justice (Pellegrini et al., 2020). When taking equality as the starting point of energy justice, no definition has emerged as authoritative: energy justice is multi-faceted (Pellegrini et al., 2020). The versatility of energy justice means that studies on energy justice are typically concerned with three fundamental forms of justice: distributive justice—*who gets what*, procedural justice—*who is involved in decision making*, and justice as recognition—*who is ignored or misrepresented in the energy system* (McCauley et al., 2013; Sovacool & Dworkin, 2015; Sovacool et al., 2015).

That the values of energy democracy and energy justice are increasingly finding their way into the governance of the energy sector is partially illustrated by the increasing attention to citizen participation in European regulation by referring to the role of the citizen energy community and the concept of active consumer. The recast Energy Directives refer to the benefits of citizens' participation, thereby starting to embrace the concept of energy democracy and energy justice. In doing so, the concepts of energy democracy and energy justice are being fleshed out from a legal viewpoint.

The significance of energy democracy and energy justice for the purposes of both regulation and for the principles of good governance in the energy sector cannot be underestimated. Moreover, while it is too early to draw any conclusions, the question might be raised whether the increasing importance of energy justice and energy democracy will lead to the development of separate principles of good energy governance.

### *The Principles of Good Regulation*

The principles of good regulation first took the main stage in the World Bank's policy statements. In 1992, the World Bank issued a booklet '*Governance and Development*' that recognised the importance of good governance for economic development (The World Bank, 1992). In its foreword, Lewis T. Preston—the then-president of the World Bank—stated that “*efficient and accountable management by the public sector and a predictable and transparent policy framework are critical to the efficiency of markets and governments, and hence to economic development*”. It is safe to say that today, accountability and transparency are still the basis for good governance. In addition, other principles are recognised for their role in shaping good governance. These principles concern independence, participation, effectiveness and efficiency.

Since the 1990s, the principles of good governance have become well-established principles in law and economics. Regardless of the fact that the exact delineation of which principles comprise ‘the’ principles of good governance is not set in stone, the common ground of the principles identified by various international organisations provide a good proxy for the most relevant principles<sup>2</sup> (Council of Europe, 2008; European Commission, 2001; OECD, 2014; Ottow, 2015).

Some of the principles of good governance have even explicitly been acknowledged in European case law, and currently play a large role on both European and national level (European Commission, 2001). Since their emergence, their use and interpretation have been adapted. The legal nature of the principles is different

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<sup>2</sup>The Council of Europe for example, has identified no less than 12 principles of good governance and even awards local authorities achieving a high level of good governance. The European Commission identifies five principles in its White Paper that underpin good governance. The OECD details fundamental principles for the governance of regulators “to develop a framework for achieving good governance”. These five principles are openness, participation, accountability, effectiveness and coherence.

according to their development over time. In the European Union, the principles of good governance provide a basis for legislation and regulation in the energy sector and other network sectors (Hancher et al., 2004). This basis consists of norms which, although differently coloured according to the relevant situation, provide a core of “*normative, universal values*” (Lavrijssen, 2006) which are generally reflected in legislation and practice as norms that are guaranteed. As such, several principles of good governance are embedded in European energy policies. Unlike the gas and electricity markets, the heat market is, as yet, largely unregulated by the European Union.

As explained above energy democracy and energy justice are values that colour the principles of good governance in the energy sector and are influencing regulation of the energy sector (Gonzalez et al., 2018). These sector-specific interpretations of the rule of law and the democracy principle are directing the further development and interpretation of the principles of good governance in the energy sector. In the absence of European regulation, an assessment of the regulation of the Dutch heat market is all the more relevant. This will provide an opportunity to assess where and how the principles of good governance can play a role in restoring the growing regulatory disconnect between theory and practice in the Dutch heat market. Such a ‘fitness-check’ can help identify ways to bring the current regulation up to speed to meet the (imminent) demands of the energy transition. Whereas many of the principles of good governance are multifaceted, having (slightly) different meanings according to the exact use, it should be pointed out that the principles are solely discussed with an eye on the requirements for the organisation of economic regulation of the heat market. Therefore, certain meanings and sub-principles are omitted<sup>3</sup> (Lavrijssen & Vitez, 2020; Lavrijssen & Vitez, 2015) (Fig. 1).

## *Independence*

In early case law, the Court of Justice of the European Union stated that the national regulatory authority in charge of the application of economic regulation needs to be independent from market parties (EUR-Lex, 1991a, 1991b, 1993; Lavrijssen & Ottow, 2011). To fully prevent regulatory capture, one must go a step further (after all, not only market parties but also stakeholders (may) have their own agendas) (Ottow, 2015), and independence from all market parties—public and private—is required (Ottow, 2015). In light of Article 4(3) TEU, which contains the principle of sincere cooperation, independence from all market parties needs to be achieved to ensure an effective application of EU (competition) law (De Visser, 2009; Lavrijssen & Ottow, 2011). In order to guarantee fair competition, the principle entails that a regulatory authority should be independent from all market parties (Larouche, 2014). This can partially be guaranteed by the law itself if it provides conditions

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<sup>3</sup>To make up for this absence of a full explanation of each principle, the references in this paper may be consulted for more information on the discussed principles.

**Fig. 1** Energy justice and democracy (Lavrijssen & Vitez, 2020)



and restrictions for its application by the responsible regulatory authority. However, laws cannot regulate and predict every economic aspect of a market. Therefore, laws have to be sufficiently flexible to adjust to changing economic, environmental and social circumstances. This can be ensured by attributing a regulatory authority with a sufficient degree of discretion to act within the regulatory framework (Hancher et al., 2004).

A second aspect of independence—political independence—is not (yet) as firmly established (Hancher et al., 2004). Political independence refers to “*the degree to which [an] agency takes day-to-day decisions without the interference of politicians in terms of the offering of inducement or threats and/or the consideration of political preferences*” (Koop et al., 2018). The OECD has found that there is a need for regulators to be politically independent as this supports public confidence in the objectivity and impartiality of their decisions and effective operation thereby increasing the trust-levels in the market (OECD, 2016, 2017).

But it still remains controversial to demand from Member States to separate their regulatory authorities entirely (or even partially) from political influence (Lavrijssen & Ottow, 2011). An OECD report on the governance of regulators, recognises this (OECD, 2014). The stance of the OECD elucidates that choices that are predominantly of a political nature should be left to a Ministry. Applied to the heat market, political policy choices made by the government include decisions concerning the affordability of heat. Conversely, in order to realise such policy objectives, an independent regulatory authority must take (day-to-day) regulatory decisions independently and use different instruments autonomously, including the establishment of the methods of tariff regulation (Larouche et al., 2012).

## ***Accountability***

While independence is indispensable to guarantee objective and consistent decision-making, there is a danger that independence will lead to a regulatory authority acting beyond its mandate (Lavrijssen & Ottow, 2012). In order to curb this risk, a well-functioning accountability mechanism is required. Accountability and independence are therefore two sides of the same coin—demonstrating a constant tension between them (Lavrijssen & Ottow, 2012).

Bovens defines accountability as “*a relationship between an actor and a forum, in which the actor has an obligation to explain and to justify his or her conduct, the forum can pose questions and pass judgment, and the actor may face consequences.*” (Bovens, 2006) This practical definition focuses on the process of giving account. In the organisation of economic regulation of the heat market, accountability should in the first place be directed towards the government (Larouche, 2014). This is referred to as political accountability and entails that an economic regulator renders account to a representative body (Aelen, 2014).

Political accountability expresses a possibility for democratic control, as in the end, voters give feedback on the results of the pursued policies (Aelen, 2014). This is desirable as it allows the Minister, the Parliament and, at the end of the accountability chain, the electorate (Bovens, 2006), to establish whether public interests are duly protected by a regulatory authority. This guarantees the proper functioning of an independent regulator and strengthens its independence<sup>4</sup> (Larouche, 2014).

Secondly, a regulatory authority also needs to give account to its stakeholders, including heat consumers, in a more direct way. This is referred to as social accountability (Larouche, 2014). Social accountability is likely to increase support for the activities of the regulatory authority. In that regard, stakeholders might discover incidents in which their interests have insufficiently been taken into account by the regulator, or the regulator has followed the wrong procedure according to a stakeholder, etc. (Lavrijssen, 2006). As a consequence, social accountability coupled with legal standing rights, gives stakeholders the chance to refer matters to the judiciary as an extra control-mechanism (Lavrijssen, 2006).

## ***Transparency***

The principle of transparency flows from the principle of democracy<sup>5</sup> (Aelen, 2014; Prechal & De Leeuw, 2008) whereby it pursues two different aims in the context of economic regulation. Firstly, it provides for legitimacy of a regulatory authority's

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<sup>4</sup>It should be noted that also in the absence of an independent regulator, accountability of the regulator is equally important; see for the relationship between independence and accountability Lavrijssen & Ottow 2011 and Lavrijssen & Ottow 2012.

<sup>5</sup>Prechal and De Leeuw (2008) relate the principle of transparency not only to the principle of democracy, but also to the right to be heard and the rights of defence.

independence<sup>6</sup> (Aelen, 2014) and secondly, the principle of transparency contributes to the effectiveness<sup>7</sup> (Aelen, 2014) of economic regulation. In European (case) law, several aspects of the principle of transparency have been recognised, such as the right of access to documents<sup>8</sup>—also enshrined in the Public Access Regulation (EUR-Lex. Regulation (EC) No 1049/2001).

The definition given by Hancher, Larouche and Lavrijssen thoroughly denotes the requirements imposed by this principle upon economic regulators: a regulatory authority needs to be open with stakeholders about its objectives, processes, record and decisions. Moreover, authorities should explain to the citizens and the regulated firms the rationales of their decisions. Given that authorities are liable to be ‘captured’ (at least as far as their attention and their information is concerned) by regulated firms, the principle of transparency could even go as far as to require authorities to actively seek the involvement of other interests, in particular customers and citizens, in their activities (Hancher et al., 2004).

## *Participation*

From the definition of the principle of transparency, a transition to the principle of participation is easily made (Lavrijssen, 2006; Addink, 2005; Mendes, 2011; Alemanno, 2013). Participation of all stakeholders is essential to benefit economic regulation. Stakeholders include heat consumers, consumer organisations, lobby groups, NGOs, etc. (Lavrijssen, 2006). This principle has been acknowledged implicitly by the Court of Justice of the European Union. In *Council v Access Info Europe* for instance, the Court notes in respect of the right of access to documents, that access to documents “enables citizens to participate more closely in the decision-making process” (EUR-Lex, 2013). Participation is also referred to in Article 11 TEU.

According to the European Commission, “improved participation is likely to create more confidence in the end result” (European Commission, 2001). Creating more confidence in the end result thus entails participation in the process leading to that result. Nevertheless, it should be noted that the predominantly soft law nature of the principle of participation has as a consequence that interested parties have limited possibilities to enforce participatory rights. In that way participation may have less impact on increasing the acceptance of the outcome of a decision making process (Alemanno, 2013). In this regard, enforceable rights of participation are better placed to increase the legitimacy of regulatory outcomes.

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<sup>6</sup>According to, Aelen (2014) legitimacy is understood in the sense that the regulator may be independent, but only if it is guaranteed that the regulator will provide insight in its actions. In that way, being transparent legitimises the independence of the regulator.

<sup>7</sup>According to, Aelen (2014) transparency contributes to effective regulation in different ways. For example, publication of monitoring information by the regulator contributes to transferring the applicable norms to regulated parties—thereby possibly achieving a higher rate of compliance.

<sup>8</sup>Articles 41 and 42 of the EU Charter of Fundamental Rights.

Furthermore, a distinction could be made by type of participation: procedural participation versus substantive participation (Lavrijssen & Vitez, 2020). Procedural participation is best described as the right of stakeholders to be consulted at set points—like a (public) consultation on a draft regulation, or—for a more specific example—the ENTSO-E consultation process applicable to, *i.a.*, network codes; etc. Substantive participation on the other hand, refers to an on-going process of participation by stakeholders—as a constant and direct influence on the governance of energy projects. Here the idea is that participation of citizens (and other stakeholders) goes beyond a formal tick-the-box exercise and could also include financial participation and local ownership in energy projects. Furthermore, participation should be inclusive, meaning also vulnerable customers should be able to participate in the energy transition<sup>9</sup> (EUR-Lex, 2019).

This trend is also reflected in the rise of the significance of energy democracy and energy justice in the European Union (see below). For an example of substantive participation, the Renewable Energy Directive (EUR-Lex, 2009, 2018) comes to mind. The Renewable Energy Directive notes that the participation of local citizens and local authorities in renewable energy projects through renewable energy communities has resulted in substantial added value in terms of local acceptance of renewable energy and access to additional private capital. This results in local investment, more choice for consumers and greater participation by citizens in the energy transition<sup>10</sup> (EUR-Lex, 2018). Likewise, Article 16 of the recast Electricity Directive addresses citizen energy communities, of which voluntary participation is an important aspect<sup>11</sup> (EUR-Lex, 2019). Both directives require Member States to provide for an enabling regulatory framework facilitating and stimulating that citizens can participate in local renewable energy projects. Member States shall ensure that energy communities are able to access all electricity markets in a non-discriminatory manner.

## *Effectiveness*

This principle of good regulation needs to be distinguished from another principle of effectiveness, often referred to by the Court of Justice of the European Union in its

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<sup>9</sup>Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU, considerations 125–199. According to Article 28 each Member State shall define the concept of vulnerable customers which may refer to energy poverty and, inter alia, to the prohibition of disconnection of electricity to such customers in critical times. The concept of vulnerable customers may include income levels, the share of energy expenditure of disposable income, the energy efficiency of homes, critical dependence on electrical equipment for health reasons, age or other criteria.

<sup>10</sup>Directive (EU) 2018/2001, consideration no. 70.

<sup>11</sup>Directive (EU) 2019/944, considerations 125–199.

case law concerning the application of European law in national legal orders<sup>12</sup> (Aelen, 2014; EUR-Lex, 2010). The Commission states that the principle of effectiveness as a principle of good regulation entails that “[p]olicies must be effective and timely, delivering what is needed on the basis of clear objectives, an evaluation of future impact and, where available, of past experiences. Effectiveness also depends on implementing EU policies in a proportionate manner and on taking decisions at the most appropriate level.”<sup>13</sup> (European Commission, 2001) This definition shows that the principle of effectiveness is non-binding, yet subject to the binding nature of the elements relating to the principles of subsidiarity and proportionality that applies to all EU action.<sup>14</sup> Effectiveness should act as an obligation resting upon both legislator and regulator when drafting legislation, policies and taking decisions—taking into account the principles of subsidiarity and proportionality (Aelen, 2014; OECD, 2012). The national dimension of the principle of effectiveness as a principle of good regulation, is not shaped from an ‘obligation imposing’ viewpoint. Rather, it starts from the viewpoint that the government serves the public interests (Aelen, 2014). This starting point leads to the interpretation of the principle of effectiveness as a requirement that public intervention must be efficient and effective (Aelen, 2014).

## Efficiency

Effectiveness implies a need for efficiency, bringing us to the principle of efficiency. Whereas efficiency can be defined in multiple ways, this principle is multifaceted. A regulator that acts cost-effectively by carrying out its mandate in a way that requires the least possible input, or brings about the least possible costs, is no doubt efficient. However, verifying whether this type of efficiency has been achieved, is nigh-impossible: at the time of decision-making, most regulators will not have all relevant information to reach the most efficient outcome (Baldwin et al., 2012). Therefore, the principle of efficiency does not require absolute results, but necessitates that a regulatory authority is mindful of efficiency considerations.

For the governance of the heat market, the principle of efficiency bears most relevance as it concerns looking at a market as a whole. In order to guarantee a market that operates efficiently, intervention should only take place when a market does not operate efficiently. Only a market failure—*i.e.*, monopoly, information asymmetry, etc.—justifies intervention, and only in so far as it remedies the perceived market failure (Den Hertog, 2010). Viewed in this way, the principle of efficiency is strongly linked to the principle of subsidiarity as found in Article 5 TEU (Portuese, 2011).

<sup>12</sup>See ECJ C-246/09 par. 25, and Aelen (2014), p. 153. In that context, the principles of effectiveness implies that national procedural laws may not render the exercise of rights flowing from EU law “practically impossible or excessively difficult”.

<sup>13</sup>European Commission (2001), European governance—a white paper, COM(2001) 428 final p. 7.

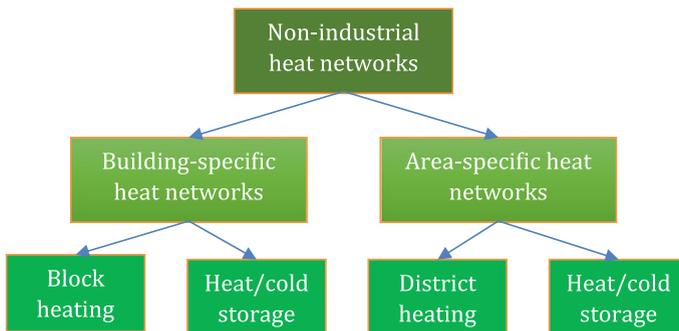
<sup>14</sup>See Article 5 TEU. The principles of subsidiarity and proportionality apply to (the use of) all EU competences.

Subsidiarity in the European Union means that powers shared between the European Union and Member States are executed at the lowest appropriate level of governance. A similar rationale may apply to efficient market organisation: efficiency means that governance is limited to facilitating necessary interventions by the best-placed actors in order to attain a well-functioning market. In addition to these economic grounds, a market failure in the energy sector may come in the form of public values that will not be adhered to when left to the ‘free market’. The definition of an efficient European energy sector includes certain values that society wants to safeguard. These values (such as affordability, security of supply and sustainability) are equally relevant in deciding whether intervention is necessary (Prosser, 2006).

## Characteristics of the Dutch Heat Market

### Heat Networks

In the Netherlands, heat networks come in many forms and types. There are approximately 18 large district heating networks and approximately 100 smaller heat networks. The combined heat delivered by these heat networks (to households, buildings and greenhouses) is 22 petajoules (PJ) per year. Approximately 400,000 households are connected to district heating (Huygen et al., 2019). Smaller types of heat networks include block heating (*blokverwarming*), where one heat source supplies heat to an apartment complex or to a block of houses. District heating (*stadsverwarming*) is slightly larger in scale and usually involves the use of residual heat that stems from companies or that is released during the generation of electricity by power plants (Rijksoverheid, 2021) Heat/cold storage on the other hand, is used to store heat or cold in the ground. The following main distinctions can be made (ECORYS, 2016)<sup>15</sup>:



<sup>15</sup>Table made based on data from, ECORYS (2016) p. 28, 29, 30.

Not only the form and type of heat networks differ significantly from each other. The same applies to ownership and size. Most heat networks are privately owned by companies in the Netherlands and heat is supplied by a vertically integrated heat supplier. In 2015, 40% of all heat consumers were connected to a heat network from one of only five players<sup>16</sup> (CBS, 2017; ECORYS, 2016). These five players are responsible for one third of all heat supplied to heat consumers and provide heat to entire cities or regions in the Netherlands. In addition, housing corporations and homeowners' associations each account for a quarter of the heat supply to heat consumers. The latter two typically supply heat via block heating and are relatively small-scale (ECORYS, 2016).

Heat networks may also be classified in 'generations' (see table below). It may be no surprise that newer heat networks are technologically more advanced than older networks. First generation heat networks for example, are steam based.<sup>17</sup> Newer generations of heat networks support increasingly lower water temperatures, still allowing for the release of heat (Buffa et al., 2019). Instead of steam, second generation heat networks supply pressurised hot water, at temperatures above 100 °C. These heat networks were built between 1930 and 1970 (Lund et al., 2014). Most heat networks in use today are third generation heat networks that distribute heat via water at temperatures below 100 °C. Due to the lower water temperature, third generation heat networks can be fuelled by a greater variety of heat sources (not limited to fossil fuels) compared to the first two generations, thereby ensuring a more efficient heat use. This opened the way to the use of biomass and waste as heat sources, sometimes even supplemented by solar and geothermal heat (Lund et al., 2014).

Technological developments and the possibility to integrate renewable heat sources, such as geothermal heat, into the heat grid, open the way to the use of smart energy systems with integrated systems for electricity, heating and cooling (Huygen et al., 2020; Lund et al., 2018). The development of 4th and 5th generation district heating includes the supply of increasingly more energy efficient buildings with space heating and warm water, while reducing losses in heat grids (Lund et al., 2018). To enable the use of these new heat networks, many buildings and production processes must be made suitable for this type of heat supply—a costly process (Lund et al., 2018; Hoogervorst, 2017; Huygen et al., 2020). Fourth generation heat networks go a step further than third generation networks and are well-equipped to supply heat to modern, energy-efficient, buildings with lower heat demands (due to better insulation, etc.) (Huygen et al., 2020; Lund et al., 2018). The lower water temperature (around 65 °C) means that transport losses are significantly reduced. Fifth generation heat networks distribute water at a close to ambient ground temperature. Transport losses are significantly limited and installation costs are lowered. Since the water temperature is relatively low, it may also become easier to add parties to the network (Buffa et al., 2019; Lavrijssen & Vitez, 2020). In the case of fifth generation networks, it would even be possible to add to the network small consumers acting as prosumers

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<sup>16</sup>These players are Eneco, Nuon, Ennatuurlijk, Stadsverwarming Purmerend, and HVC.

<sup>17</sup>Fueled by coal or excess steam from industry.

by supplying excess heat to the heat grid (Buffa et al., 2019; Lavrijssen & Vitez, 2020). Fourth, and especially fifth, generation heat networks are not yet prevailing in the Netherlands (Natuur en Milieu, 2018).

Characteristic	Heat network		
	3rd generation	4th generation	5th generation
Introduction	Appr. 1970s	Appr. 2010s	Appr. 2020
Water temperature	Below 100 °C	Around 65 °C	Between 8 and 25 °C
Heat source	Oil, biomass, waste incineration, solar thermal, geothermal, excess heat from industry	Higher share of renewable sources possible	All-renewable heat sources possible
Heat storage	Yes	Yes	Yes, also cold storage possible
Energy meters	Metering and monitoring	Smart	Smart
Cooling	No	Possible	Yes—and building can feed excess heat into network (heat-sharing)
Ideal for	District heating	Well-insulated, energy-efficient buildings	Well-insulated, energy-efficient buildings with heating and cooling needs

### *Features of the Market*

Taking into account current technical limitations, older generation heat networks are plagued by considerable transport losses. To mitigate this, heat networks in the Netherlands tend to be local and decentralised. Another feature shaping the market is that the location of a heat source cannot in all instances be chosen freely. Combined with the fact that most current heat networks in use in the Netherlands are prone to transport losses, significant limits are posed upon the location of heat networks (Tieben & Van Benthem, 2018).

Furthermore, in case the production of heat is linked to other processes (for example in the case of the use of residual heat), the predictability and reliability of heat production are not straightforward. After all, the production of heat is then dependent upon another process. In these cases, investing in heat production proves to be more complicated compared to investing in single production processes (Tieben & Van Benthem, 2018). In addition, heat networks are closed systems, meaning that the water in the network is pumped around and does not leave the networks—only the heat is delivered to consumers. This makes it generally more challenging to add parties to the loop as this may make the system more vulnerable to loss of heat, quality, etc. Lastly, because heat-demand fluctuates, is seasonal and difficult to store,

auxiliary heat sources have to be ready to deliver heat to the grid if demand outgrows supply (Tieben & Van Benthem, 2018).

As a result of these features, the heat market is comprised of local, natural monopolies. Most heat consumers have no alternative heat sources due to a lack of alternative connections. This situation is likely to remain, because as of the 1st of July 2018, no gas grid connection is supposed to be provided for newly built houses in the Netherlands.<sup>18</sup> Instead, new dwellings should be connected to a heat network or provided with a heat pump or other means of heating. Hence, heat consumers are locked into long-term heat solutions whilst having no viable alternative heat source to switch to. This raises the question whether and to what extent heat consumers should be protected, and if so, what this protection should entail (Lavrijssen et al., 2013). In some cases, heat consumers wishing to terminate their heat supply contract, are prevented by law from doing so.<sup>19</sup> This is the case when a heat supplier can prove that it is technically impossible to stop the supply of heat to that consumer or that termination would lead to a significant disadvantage to another heat consumer.

### *Applicable Laws and Regulations*

Dutch heat market legislation stems from before the energy transition. Consequently, changes instigated by the energy transition are generally not reflected in the applicable laws and regulations. This means that the envisioned role of heat networks in the energy transition and the legal implications this brings, are potentially not supported by the regulatory system (Zilman et al., 2018). Currently the Minister of Economic Affairs is preparing a new Heat Act (Act on Collective Heat Systems) stimulating the roll out of sustainable collective heat systems in the Netherlands (Akerboom & Huygen, 2021).

The heat market comprises the production, transport/distribution and delivery of heat (ACM, 2018; Tieben & Van Benthem, 2018). Currently, players on the heat market are not subject to (legal) unbundling requirements. This means that both vertically integrated firms and non-integrated firms may be active. Nor is there any requirement in the Netherlands that heat networks should be owned by public authorities, unlike for electricity and gas networks. Heat consumers are typically dependent upon vertically integrated suppliers, who are in charge of network management, transport/distribution and delivery.

The majority of the applicable rules are included in the Dutch Heat Act. The Dutch Heat Regulation and the Dutch Heat Decision—both based on the Dutch Heat Act—provide further specifications. On the 1st of July 2019 a revised version of the Dutch Heat Act has entered into force.<sup>20</sup>

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<sup>18</sup>Article 10(7)(a) and (b) Dutch Gas Act.

<sup>19</sup>Article 3c Dutch Heat Act.

<sup>20</sup>Dutch Ministry of Economic Affairs and Climate Policy, Staatsblad (2018), 311.

The revised Dutch Heat Act bridges the period until the Act on Collective Heat systems will be implemented. The Act on Collective Heat Systems is currently under consultation and builds on the legislative process started in February 2019 that will lead to the adoption of an entirely new heat act, envisaged to be in force as of 1 January 2022 (Ministerie van Economische Zaken en Klimaat, 2020). The legislative process will focus on three main themes: market organisation, tariff regulation and sustainability (Ministerie van Economische Zaken en Klimaat, 2019). Hence, this is an appropriate moment to assess the current regulation of the Dutch heat market and examine opportunities to restore any regulatory disconnects between regulation and practice and to see whether there are sufficient guarantees for a just energy transition in the Dutch heat market.

The Dutch Heat Act first entered into force on the 1st of January 2014 and was preceded by a legislative process spanning approximately ten years (Eerste Kamer der Staten-Generaal, 2003). Until then and compared to the rules in place to protect other energy consumers, heat consumers were left in the cold. The introduction of the Dutch Heat Act was aimed at protecting heat consumers, who were left at the whims of monopolist heat suppliers.<sup>21</sup> Regulation was desired in order to balance the situation in which electricity and gas users could both benefit from a liberalised market and enjoy (some) legal protection whereas heat consumers could and did not (McGowan, 2001). It was feared that heat consumers could be charged exceedingly high prices or had to settle for unsatisfactory service from heat suppliers—without any specific remedies at hand (Dutch Parliamentary Papers, 2002).

The current Dutch Heat Act prohibits the supply of heat to consumers without a license. This prohibition does not apply to suppliers (i) serving at most ten heat consumers concurrently; (ii) who do not exceed a supply of 10,000 gigajoules per year; or (iii) who are lessor or owner of the building for which the heat is supplied.<sup>22</sup> Non-licensees do not have to adhere to section 2.2. of the Dutch Heat Act. This section contains rules regarding the grant and withdrawal of a licence, services offered by the licensee, and accounting requirements. The scope of the applicability of the Dutch Heat Act thus depends on whether a supplier is required to be licensed to supply heat.<sup>23</sup> This partially explains the lack of precise information on the number of heat consumers connected to heat networks.

The revised Dutch Heat Act further limits the scope of the act by way of a new Article 1a. This Article stipulates that the Dutch Heat Act does not apply to heat suppliers that—in short—are also a lessor or homeowner's association and supply heat to their lessees or members.<sup>24</sup> Reason for this change is that the previous provisions imposed an administrative burden on, in particular, block heating provided by

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<sup>21</sup>Of course, competition law has a role to fulfil here too. However, protecting heat consumers via competition law has certain setbacks like the fact that it is carried out ex post and whereas a breach of competition rules can be fined, this does not indemnify heat consumers who suffered from the breach.

<sup>22</sup>Article 9 Dutch Heat Act.

<sup>23</sup>It follows from Article 9(2) Dutch Heat Act that generally blocks heating as well as very small players are exempted from adhering to section 2.2. of the Dutch Heat Act.

<sup>24</sup>Article 1a Dutch Heat Act. With the exception of parts of Articles 8 and 8a.

homeowner's associations who qualified as large-scale suppliers under the previous Dutch Heat Act (Dutch Parliamentary Papers, 2016). Several additional concerns are also addressed now. For example, the Dutch Heat Act offered (and still offers) protection by way of a price-cap to heat consumers with a connection of a maximum of 100 KW. Homeowners' associations and housing corporations buying heat and then reselling it to their members or lessees were previously not protected by this price-cap because their own connections exceed 100 KW. Despite that homeowner's associations and housing corporations did not benefit from the price-cap, in their capacity as 'large-scale supplier', they were obliged to offer this protection to their members and lessees. This could result in a discrepancy between the (uncapped) purchasing and (capped) reselling price. By excluding homeowner's associations and housing corporations from the scope of the revised Dutch Heat Act, these problems do no longer exist. Heat consumers purchasing heat from their landlord, are no longer protected by the Dutch Heat Act, but instead by tenancy law. Also, the new Act on Collective Heat Systems, which is currently under consultation, exempts homeowners' associations and lessors from certain requirements and subjects them to a lighter regulatory regime.

The Dutch Heat Act requires 'large-scale' heat suppliers to be licensed. The Minister of Economic Affairs and Climate Policy (the "**Minister**") grants a licence to any (aspiring) heat supplier that can satisfactorily prove that (i) he has the required organisational, financial and technical qualities for the proper performance of his duties and (ii) he may reasonably be deemed capable of fulfilling the obligations contained in Chap. 2 of the Dutch Heat Act.<sup>25</sup> There are provisions protecting vulnerable customers to be disconnected from the heat grid, for instance in the event of payment problems.<sup>26</sup> In the Act under consultation local communities will be attributed the power to designate local heat companies, giving the communities the ability to direct the heat transition in their regions in an efficient and sustainable way.

Pursuant to the operative Article 5 of the Dutch Heat Act, tariffs for the supply of heat are capped. The Authority for Consumers and Markets ("**ACM**") is charged with setting a maximum tariff. ACM determines the maximum tariff annually, basing its calculation on the no-more-than-otherwise principle by using the method of calculations as set out in the Heat Decision. This price-cap only applies to the supply of heat to heat consumers (who have a connection not exceeding 100 kilowatts). The price-cap imposed by ACM has been maintained in the revised version, despite criticism on the proper functioning of the price cap (ECORYS, 2016; Lavrijssen et al., 2013). The main concerns relate to the fact that the no-more-than-otherwise principle prevents cost-based pricing in the heat market, as well as the awareness that using this principle is unlikely to be future-proof in light of the increase in alternative ways of heating (ECORYS, 2016).

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<sup>25</sup> Article 10 Dutch Heat Act.

<sup>26</sup> According to the Dutch Heat Act a vulnerable consumer is a consumer for whom the termination of the supply of heat would result in very serious health risks or for the consumer's household members.

The price ceiling was, and still is, based on what a heat consumer would have paid for the same amount of heat if he had used gas as energy source. On the basis of this no-more-than-otherwise principle, the maximum price is composed of two parts: (i) a usage-dependent part, expressed in euros per gigajoule and (ii) a usage-independent part, expressed in euros.<sup>27</sup> Every year, ACM recalculates the maximum tariff and publishes it in a decision. The published maximum tariff then applies until the 1st of January of the next year. Should ACM miss out on a year, the last applicable maximum tariff will continue to apply until the 1st of January of the year after the year in which ACM has again published a maximum tariff.<sup>28</sup> Once every two years, ACM collects, analyses and processes information concerning the development of returns made by heat suppliers. This is aimed at preventing excess profits made at the expense of heat consumers. ACM reports these findings to the Minister. The price of being connected to an existing heat network is also linked to the price of a connection to the gas grid. This is capped at the cost of being connected to the gas grid.<sup>29</sup>

With the energy transition leading to less use of gas and alternative heat sources on the rise, it will soon become untenable to apply the no-more-than-otherwise principle and to use gas prices as a standard. In order to promote competition between different heating technologies with an aim at reversing or stalling climate change, the idea of gas price as ‘a standard price’ has to be abandoned (Huygen et al., 2011). With different heating technologies becoming more prevalent and as the process of the phasing out of gas is on-going, gas will lose its dominant position as a heat source. A successful energy transition resulting in a sustainable energy system, benefits from rapid developments in heating technologies. From a perspective of fostering fair competition—on the merits of each heating technology—it will become untenable to consider the gas price as leading for heating. This is all the more so considering that the gas price has little to do with the costs of heat supplied via heat networks (Dutch Parliamentary Papers, 2016). In the draft Act on Collective Heat Systems the no-more-than-otherwise principle will gradually be phased out. The no-more-than-otherwise principle will be replaced by a regulatory methodology based on the calculation of the efficient costs of collective heat systems.

## **Recent Developments—Main Economic and Legal Challenges in the Dutch Heat Market**

Regulation of the Dutch heat market, and in particular the Dutch Heat Act, is thus still largely based on old-fashioned assumptions that heat is provided by a central unit and that gas heating is the standard in the Netherlands. Developments in the Dutch heat market, however, are on the rise and show the need for a change in the organisation and regulation of the Dutch heat market as acknowledged by the

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<sup>27</sup> Article 5(2) Dutch Heat Act. The Heat Decision provides a precise method of calculation.

<sup>28</sup> Article 5(3) Dutch Heat Act.

<sup>29</sup> Article 6 Dutch Heat Act.

Minister of Economic Affairs in the draft Act on Collective Heat Systems (Akerboom & Huygen, 2021). Several of these developments are discussed below.

### *Move Away from Gas*

Save for exceptional circumstances, newly built houses are no longer connected to a gas grid since the 1st of July 2018.<sup>30</sup> The Dutch government further aims to have the use of natural gas (both for heating and cooking) phased out by 2050 (Ministerie van Economische Zaken en Klimaat, 2016). Contributing to the realisation of this development is the recent amendment to the Dutch Crisis and Recovery Act.<sup>31</sup> This amendment gives municipalities the possibility to cut-off existing households from the gas grid, as an experiment in anticipation of the revised Dutch Environment and Planning Act, that will enter into force in 2021 (Omgevingswet, 2019). As a consequence, district heating will cater for more households and play an important part of the Netherlands' plan to reduce carbon emissions (NRC Handelsblad, 2019).

The move away from gas exposes certain challenges that the current organisation of the heat market insufficiently addresses. For example, by capping the maximum price for heat consumers to the price of natural gas, the price for heat will depend on the price of heat paid by an ever-smaller group, that derives its heating from a non-preferred energy carrier. The heat transition also raises the important question of how vulnerable customers are protected in the heat transition and how this transition can be kept affordable for lower income groups.

Furthermore, whereas gas and electricity consumers are free to switch suppliers, similar possibilities do not yet exist for heat consumers due to technical and regulatory barriers. Hence, heat consumers are typically locked into long-term contracts whilst having no alternative heat source to switch to (Lavrijssen et al., 2013). In light of the foregoing, the move away from the use of gas also accentuates the importance of the question whether third-party access to heat networks should be implemented. For one, non-discriminatory network access may improve (the prospect of) competition on the heat market. This could attenuate the locked-in position that heat consumers find themselves in. Competition on a heat network could lead to lower prices or to the possibility of switching of supplier. In addition, the question is whether unbundling could play an efficient role in removing the incentive for vertically integrated firms to discriminate against (potential) competitors seeking network access.

Hence, the move away from gas stimulates changes and confronts the current regulatory set-up of the heat market with challenges that are presently unaccounted for. In the draft Act the minister does not envision separate social policy to protect vulnerable groups for possible negative consequences of the heat transition. For instance, it is not regulated how it can be prevented that the costs of disconnection from the gas grid will be passed on to an ever-smaller group of customers that stay

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<sup>30</sup>Article 10(7)(a) and (b) Dutch Gas Act.

<sup>31</sup>Dutch Ministry of Economic Affairs and Climate Policy, Staatsblad (2019), 216.

connected to the gas grid. Furthermore, in the draft Act the Minister does not yet envisage an independent role for network companies, the introduction of unbundling requirements and regulated third party access, though these choices are still under debate. In order to reach optimal regulatory outcomes, advantages and disadvantages will have to be weighed and justifiable decisions have to be taken. The values of energy democracy and energy justice and the principles of good governance could prove helpful by providing a framework in which this decision-making can take place.

### *Climate Neutrality of Heat Networks*

The increased reliance on heat as well as the transition to a low carbon economy push the need for new heat networks (Hoogervorst, 2017). In 2017, the PBL Netherlands Environmental Assessment Agency (“PBL”)<sup>32</sup> took the view that the most economical way of supplying around 60–70% of the national demand for low temperature heat—would be through heat networks (Hoogervorst, 2017).

Existing heat networks are often fed from one large (fossil-fired) heat source or a limited number of heat sources from one owner (Hoogervorst, 2017). A low carbon economy requires, *i.a.*, heat networks that are fed from less-polluting or renewable sources. The generally smaller size of these heat sources will mean that heat networks may have to be fed from different heat sources, from different owners. This means that rules have to be in place for third-party access, to facilitate the use of heat from different sources and owners. In addition, a comprehensive set of rules also has to be in place in order to facilitate the integration and use of alternative heat sources for heating, like geothermal heat (Geothermie et al., 2018).

The PBL identified that currently, investment risks are high and financial returns low because the room for price increase is limited and there is an interdependence in actors required for success. Risks involved with investing in new heat networks need to be mitigated by reliable regulation. Furthermore, climate neutrality and energy efficiency are also linked to the use of the best placed heating solution given the circumstances. With regard to the choices that have to be made in order to stimulate a sustainable heat market, the values of energy democracy and energy justice and the principles of good governance can contribute by providing a framework within which the costs and benefits of different regulatory options can be weighed.

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<sup>32</sup>PBL is the national institute for strategic policy analysis in the fields of the environment, nature and spatial planning in the Netherlands. PBL is part of the Ministry of Infrastructure, Public Works and Water Management.

## *Prosumers*

With the number of prosumers in the energy sector increasing, it is clear by now that prosumers, also referred to as self-consumers or active consumers in EU regulation, are here to stay (Lavrijssen & Carrillo, 2017; Parag & Sovacool, 2016). The term prosumer generally refers to a consumer who generates (renewable) electricity for its own consumption, and who may store or sell self-generated electricity. The generation and/or storage of electricity is not the prosumer's primary commercial or professional activity (EUR-Lex 2018, 2019).<sup>33</sup>

Prosumers may also play a part in increasing the climate neutrality of the heat market (Brange et al., 2016). They typically generate energy from renewable sources. With an eye on the decarbonisation of the Dutch economy, this should only be encouraged and supported by regulation. The often-local character of a heat network may prove to be exceptionally compatible with small-scale prosumerism. In addition, prosumerism may respond to concerns expressed by way of the upcoming energy democracy and energy justice concepts in that it gives citizens a possibility to actively participate in the energy sector.

At the moment, unlike EU energy regulation, the Dutch regulation of the heat market and the new proposals of the Minister of Economic Affairs give little support to prosumers. Non-discriminatory network access, tailored to the needs of prosumers, may be needed. Prosumers may also experience hindrance from (vertically integrated) suppliers that are not interested in dealing with small-scale additions to their grid. Both unbundling and adequate supervision may under certain circumstances prove to be beneficial. Additionally, regulation and supervision of the heat market may also develop the rights and obligations of prosumers vis-à-vis customers and producers. Whether this is the case, will have to be analysed in light of the characteristics of different heat sources and networks. The principles of good governance are pertinent to carrying out the balancing exercise required to weigh the advantages and disadvantages associated with integrating prosumers into the heat market.

## *Digitalisation*

Digitalisation of the energy sector involves the application of digital technology to the production, transport, distribution and supply of energy. Smart energy meters for example, enable consumers to monitor and manage their energy use and smart grids allow changes in supply and demand to be managed real-time by energy suppliers. The electricity sector is already benefiting from digitalisation, by providing consumers and suppliers alike with valuable insights upon which they can act (IEA, 2017).

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<sup>33</sup>Article 2(14) Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) and Article 2(8) Directive (EU) 2019/944.

Digitalisation efforts are also relevant for the heat market, especially in light of 4th and 5th generation heat networks (Lund et al., 2014). Increased digitalisation may lead to many possibilities, each with their own challenges. The use of smart meters for example, triggers questions on ownership, data-sharing and privacy. In addition, digitalisation necessarily requires investments in digital technologies, which lay bare the need for a stable investment environment. An environment that also provides rules applicable to the use of digital technology. Whereas digital technologies may provide more insights into demand and supply, there must be options to act upon these better insights—for example by switching to other energy sources or carriers (grid connection) and by regulating network access. Furthermore, the use and sharing of personal data should be regulated in line with the requirements of data protection and privacy regulation (EUR-Lex, 2016). Dutch regulation, however, does not address digitalisation of the Dutch heat market as yet. In order not to hamper (progress of the) digitalisation process, regulation has to facilitate the use of digital technologies in the heat network by protecting the rights of consumers and by empowering them to act on the possibilities available to them. The values of energy justice and energy democracy and the principles of good governance can provide guidance on how to identify the necessary regulatory changes and take the corresponding decisions.

## ***Conclusion***

It follows from the above that the (upcoming) developments in the Dutch heat market are interrelated, and together will lead to substantial reforms on the heat market. These developments, however, are not currently facilitated by a receptive regulatory environment. On the contrary, legislation of the Dutch heat market lags behind and is inhibiting these developments from taking full effect. Out-dated regulations governing the Dutch heat market in transition may stifle innovation and lead to a less-than-optimal regulatory environment (OECD, 1996). As the special position of vulnerable customers in the heat transition is not considered in the recent proposals for a new act, there is a risk that vulnerable customers are not sufficiently protected.

To let the heat market progress and contribute to a low-carbon economy, important decisions have to be made regarding the design of market regulation and supervision of the Dutch heat market. These decisions encompass, *i.a.*, (i) unbundling, (ii) third-party access, (iii) regulation and supervision—(iv) taking into account the rights and obligations of prosumers, consumers and vulnerable customers. To encourage adequate decision-making and soundly motivated decisions on these matters, energy democracy and energy justice and the principles of good governance ought to play a role in the weighing of the available options and their advantages and disadvantages. This may be done by way of the framework that the principles of good governance offer: a framework that promotes independence, accountability mechanisms, transparency requirements, possibilities for participation, effectiveness and efficiency.

Unbundling, third-party network access, adequate supervision and consumer/prosumer participation can significantly foster the development of the Dutch heat market. Taken together, addressing these challenges in a framework of good governance allows the Dutch heat market to develop and to contribute to a just energy transition. The following chapter will look into how these challenges have been overcome in the electricity sector. Citizen participation in the Danish heat market will be studied to draw inspiration regarding the way consumer participation can be enhanced.

## **The Dutch Electricity Market—Main Differences with Regulation of the Heat Market**

The electricity market is subject to European legislation since the late 1990s. As of then, European regulation was enacted to remove national market structures in favour of internal electricity markets. EU regulation aimed to achieve a shift from national monopolies to fully integrated internal electricity markets. As a result, EU law requires the abolition of technical and regulatory barriers preventing the free flow of electricity across the EU (European Commission, 2015). Currently, a new shift is leading the EU from a fossil-fuelled electricity sector to one that is fuelled by renewable sources. In this shift, the opening up of the market to the possibility for new players to enter the market, has been of importance (Lindt, 2013). The use of renewable resources in the European electricity sector is given further shape via the ‘Clean Energy Package’. This Clean Energy for all Europeans package comprises of several legislative initiatives aimed at the transition to a carbon-neutral economy (European Commission, 2019).<sup>34</sup> The last measures have been adopted in May 2019 and include new rules on the electricity market that, *i.a.*, will make it easier for renewable energy to be integrated into the electricity grid. The clean energy Package also promotes the empowerment of prosumers to let them benefit from the energy transition.

### ***Unbundling***

Requirements imposed by the first, second, and third Electricity Directive<sup>35</sup> (EUR-Lex, 1996, 2003, 2009) have led to effective unbundling in the electricity market in the Netherlands. The third Electricity Directive further strengthens the example set

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<sup>34</sup>Relating to the energy performance in buildings, renewable energy, energy efficiency, governance regulation, electricity market design.

<sup>35</sup>The Third Electricity Directive (Directive 2009/72/EC) will be repealed with effect from 1 January 2021, by Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast).

by the first and second Electricity Directives by imposing more stringent unbundling requirements on all players in the electricity market. Effective unbundling was aimed at and encompasses the separation of networks from activities of generation and supply of electricity<sup>36</sup> (EUR-Lex, 2009).

The third Electricity Directive offers three unbundling options regarding transmission systems: (i) ownership unbundling, where the undertaking that owns the transmission system acts as the transmission system operator<sup>37</sup> (EUR-Lex, 2009), (ii) an independent system operator, in case the transmission system belongs to a vertically integrated electricity company, a Member State may appoint an independent system operator that does not own a transmission system<sup>38</sup> (EUR-Lex, 2009), and (iii) an independent transmission operator, where the transmission system operator owning the transmission system is part of a vertically integrated electricity undertaking and has to adhere to the rules in chapter 5 of the Third Electricity Directive—to guarantee the independence of the transmission operator<sup>39</sup> (EUR-Lex, 2009). Distribution system operators that are part of vertically integrated firms are at least in terms of their legal form, organisation and decision making independent from other activities not relating to distribution<sup>40</sup> (EUR-Lex, 2009). Electricity undertakings continue to have to keep separate accounts for each of their transmission and distribution activities as they would be required to do if the activities in question were carried out by separate undertakings<sup>41</sup> (EUR-Lex, 2009).

The Netherlands took the unbundling requirements one step further by requiring that, ultimately, the shares in the distribution system operators in the electricity sector and gas sector have to be held by the local and regional public authorities. The system operators cannot belong to a group of undertakings active in the production, trade and supply of energy (ownership unbundling).<sup>42</sup> Hence, far-reaching unbundling requirements are imposed upon players in the Dutch electricity market. However, similar requirements are not enacted for the Dutch heat market. When it comes to ownership, a telling difference is that heat networks may be owned by private firms, whereas energy networks may not.<sup>43</sup>

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<sup>36</sup>Recital 9 Third Electricity Directive.

<sup>37</sup>Article 9(1)(a) Third Electricity Directive.

<sup>38</sup>Article 9(8)(a) and Article 13 Third Electricity Directive.

<sup>39</sup>Article 9(8)(b) and Article 13 Third Electricity Directive.

<sup>40</sup>Article 26 Third Electricity Directive.

<sup>41</sup>Article 31 Third Electricity Directive.

<sup>42</sup>Article 98 Dutch Electricity Act 1998. See also HR 26 June 2015, ECLI:NL:HR:2015:1727 (Dutch State v. Essent). The Dutch Supreme Court thereby complied with the preliminary ruling of the Court of Justice of 22 October 2013, case C-105/12 – C-107/12, ECLI:EU:C:2013:677.

<sup>43</sup>Article 93a Dutch Electricity Act 1998.

### *Third-Party Network Access—Electricity*

Third-party network access in the electricity market is guaranteed by the third Electricity Directive and by the recast Electricity Directive, stipulating that Member States need to implement a system of third-party access to the transmission and distribution systems based on published tariffs, applicable to all eligible customers. The system for network access has to be applied objectively and without discrimination between system users. The (calculation of the) access tariffs is subject to prior approval, promoting the possibility for effective access<sup>44</sup> (EUR-Lex, 2009, 2019).

Third-party access systems are established both in the Dutch electricity market and Dutch gas market but currently not in the Dutch heat market. In the explanatory memorandum to the revised Dutch Heat Act, the Dutch legislator indicated that it will not impose measures of regulated third-party network access. This choice is influenced by the physical characteristics of the ‘heat product’, the large differences between heat networks and the current state of market development (Dutch Parliamentary Papers, 2016). Instead, the Dutch Heat Act foresees in a negotiated access requirement.<sup>45</sup> This provision applies to the network operator and the supplier(s) using the network.

### *Supervision*

The third Electricity Directive stipulates that each Member State has a designated national regulatory authority in charge of supervising the electricity market<sup>46</sup> (EUR-Lex, 2009, 2019). This national regulatory authority is legally and functionally independent from other entities. Its staff acts independently from market interests and cannot take direct instructions from any government or entity. Decision-making is autonomous and the national regulatory authority has a separate allocated budget. In addition, its board or top management is appointed for a fixed term.

In the Netherlands, ACM has been entrusted with supervising the electricity market. ACM is independent to the extent that it complies with the relevant European requirements that impose a level of independence and has a certain degree of flexibility in how to use its powers to adopt decisions. However, it should be noted that there may be a tension between the independence and the flexible powers that ACM has vis-à-vis the requirement that it has to be held accountable for its actions (Lavrijssen & Ottow, 2012; Lavrijssen, 2019). Such tensions are tangible and need constant and careful consideration to guarantee a well-functioning independent supervisory authority in the electricity sector.

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<sup>44</sup>Article 32 Third Electricity Directive. Article 6, Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (Text with EEA relevance.), OJ L 158, 14.6.2019, p. 125–199.

<sup>45</sup>Article 21 Dutch Heat Act.

<sup>46</sup>Article 35 Third Electricity Directive and Article 57 of Directive 2019/944.

## Assessment

Whereas the electricity market is liberalised by way of unbundling, third-party network access and supervision that are regulated on an EU level, the same does not apply to all parts of the energy sector. The opening up of the electricity market has paved the way for the energy transition to take effect in the electricity sector by allowing renewable sources and alternative ways of generating electricity to prosper. Most notably, the Clean Energy Package has taken up the role of leading the electricity market into a low-carbon future and consumer/prosumer empowerment. Hence, unbundling, third-party network access and supervision are not the only factors encouraging the energy transition in the electricity sector, but they certainly are the first steps in the right direction. In this light, an assessment of whether the Dutch heat market is ready for the changes brought on by the energy transition is called for.

The most relevant principles of good governance, the sector-specific concepts of energy justice and energy democracy, as well as the main recent developments have been set out above. The assessment in this chapter, will evaluate the four main challenges—unbundling, third-party access, supervision and consumer/prosumer participation—in light of the framework provided by the principles of good governance and the concepts of energy democracy and energy justice. Considering the different stages of technological developments and the different characteristics of the networks, different solutions may be appropriate. For a well-functioning heat market, it is essential that appropriate regulation is in place. The principles of good governance can play a role in reaching balanced decisions.

## *Unbundling*

The following levels in the district heating chain can be distinguished: (i) production, (ii) transport/distribution and (iii) delivery of heat to heat consumers. This chain is commonly organised in the Netherlands by way of an integrated model; meaning that the production of heat, the ownership of the heat network and the supply of heat are all combined in one company (ECORYS, 2016).

Keeping in mind the current characteristics of the heat market as set out above, several studies have found that unbundling is not yet feasible for the existing heat networks (ECORYS, 2016; SiRM, 2019; Tieben & Van Menno, 2018). Recommendations against unbundling are mainly based on research into 3rd generation heat networks—the most common type in the Netherlands. The recommendation against unbundling holds true for all its forms: accounting, organisational, legal, and in terms of ownership (Tieben & Van Benthem, 2018). In particular, technical limitations of most functional heat networks prevent unbundling from remedying the existence of natural monopolies. Hence, at the current stage of economic and technological development, unbundling would lead to disproportionate costs. These costs relate to

the separation of the different levels of the chain from production to delivery to heat consumers—without (as yet) adding any value to heat consumers (ECORYS, 2016).

### Unbundling Assessed

In spite of the fact that unbundling currently is recommended against, unbundling can bring significant benefits under the right circumstances. For example, unbundling takes away the incentive for vertically integrated firms to favour their own (up- and downstream) activities and decreases the risk of overcharging consumers or providing suboptimal service. Hence, it takes away the incentive for dominant firms to abuse their position, ranging from margin squeeze to overcharging or providing suboptimal service to locked-in heat consumers. To some extent, unbundling may also take away cross-subsidisation and prevent unfair competitive advantages to inefficient (parts of) undertakings (Steyn, 2014). Moreover, the development of technologically advanced heat networks is on the way and the importance of heat markets is on the rise. This combination of factors calls for a future-proof organisation of the Dutch heat market.

What is important to keep in mind, is that the Dutch heat market consists of a large variety of heat networks. As has been laid out in chapter three, differences in heat networks range from type, size, ownership structure and heat source to the age of heat networks. In light of the many differences it may be advisable to have unbundling requirements in place for newer generation, larger scale (fourth of fifth generation) heat networks where the advantages of unbundling could outweigh the implementing costs. This would provide for the opportunity to prevent abuse of dominance issues by way of imposing unbundling requirements that pre-empt possible abusive behaviours facilitated by vertical integration. This is a strong indication that customised regulatory solutions are called for as a one-size-fits-all approach would not be in line with the structure of the heat market.

Independence between the unbundled firms—especially when it concerns legal or ownership unbundling—can also bring benefits in the field of transparency. Cost-transparency may be increased by making it mandatory for firms to split activities and isolate costs to keep them where they are incurred. This means that cross-subsidising risks diminish, or at the very least, become visible. That may bring on an additional incentive for cost reduction and the promotion of efficiency, especially in the case of ownership unbundling where all firms active on the heat market must survive on their own merits.

Customised regulatory solutions regarding unbundling—*i.e.*, having different degrees of unbundling requirements in place according to the type of heat network—also relate to the principle of effectiveness and provide for a proportionate course of action. The imposition of unbundling requirements to older heat networks would not be efficient, as has been concluded before (ECORYS, 2016; Tieben & Van Benthem, 2018). However, not to impose unbundling requirements at all—as is currently the case—is likewise not effective, as some heat networks benefit from unbundling. This means that there is a very strong case to make for customised solutions within the framework of the organisation of the Dutch heat market. It is noteworthy that such

a solution may also be favourable from the viewpoint of efficiency. Unbundling can spur the efficiency of firms. In order to reach the most efficient situation for each heat network, unbundling requirements could range from accounting, organisational, legal, and ownership unbundling. The principles of effectiveness, efficiency and transparency can guide the choices to be made when the costs and benefits of different options are assessed.

### **Unbundling Conclusion**

The prevalence of vertically integrated companies in the heat market added to the fact that the heat market is comprised of (necessarily local and natural) monopolies, leaves heat consumers in a vulnerable position. Depending on the economic and technological circumstances of the heat network at stake, heat consumers could benefit from the advantages that unbundling typically brings. While currently the absence of unbundling requirements is explicable in light of the technical limitations of the majority of heat networks in use in the Netherlands, the introduction of technological advancements could mean that—in the absence of unbundling requirements—regulation of the heat market has to catch-up with the market and new possibilities for adding more (lower temperature) heat sources to the heat network. In light of the fact that the diversification in heat networks will increase as new heat networks are being built, one-size-fits-all solutions cannot lead to satisfactory results. Regulation should not limit technological choices; it should provide for requirements based on objective criteria according to the type of heat network (third, fourth or fifth generation networks). This ensures proportionate regulation that provides for the possibility of imposing varying degrees of unbundling requirements and does not hinder technological developments that can engage energy consumers/prosumers more actively in the heat market (ECORYS, SEO, 2020).

### ***Third-Party Access***

The revised Dutch Heat Act, that has entered into force on the 1st of July 2019, provides for a light version of negotiated access and not for a regime of regulated third party access like in the Electricity Act 1998. The act's new Chap. 6 obliges network operators (and heat suppliers active on the network) to respond to requests from heat producers and consult with them on access to the network for the purpose of transporting heat. Both the network operator and the heat supplier have to disclose information to the requesting heat producer regarding, *i.a.*, the available transmission capacity, heat demand and production capacity.<sup>47</sup>

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<sup>47</sup> Article 21 Dutch Heat Act.

Considering the technological limitations of most of the heat networks in the Dutch heat market, third-party access is still—but conceivably not for too long—something for the future. This is mainly due to the fact that heat networks are closed loops. Older generations of heat networks distribute hot water of around 90–95 °C or steam and are therefore highly sensitive to change. Change in the form of adding extra parties to the loop may alter the temperature of the water. As a consequence, third-party access may not be a proportionate and efficient solution because the costs of implementing and enforcing it would outweigh its benefits.

### **Third-Party Access Assessed**

Technology is advancing and 4th and 5th generation district heating (and cooling) networks will be up and coming (Buffa et al., 2019). 5th generation heat networks (sometimes also referred to as heat sharing networks) distribute water at a close to ambient ground temperature. Thereby both heating and cooling is facilitated: by means of a heat pump heat is either delivered to a household, or excess heat is fed into the network. This means that transport losses are significantly limited and installing costs are lowered. Because the water temperature is relatively low, it may also become easier to add parties onto the network.

With the perspective of the principle of independence in mind, the Dutch Heat Act's provision on negotiated network access—with no dispute resolution mechanism in place—might better be replaced by non-discriminatory access rights in the case of technologically more advanced heat networks. Enforceable access rights, aimed at network access on fair terms, protect parties seeking access to the network as it makes it difficult for the network owner, to refuse to grant access on invalid grounds. At the same time, in case third-party access is refused on allegedly invalid grounds, the party seeking access is in a better position to enforce its rights, compared to when only an obligation to negotiate would exist. Independence also means that the owner of the heat network is either independent from all the parties on the network (which would be the case for heat networks where ownership unbundling is required) or the owner is prevented from treating certain parties on the network more favourably than others.

In order to curb the dominant position of the network owner, who is in charge of granting third-parties access to the network, a fair access mechanism should be in place. It is likely that regulated third-party access increases transparency to the benefit of heat consumers and other stakeholders. Parties seeking network access, will have to be given insight into the access costs and could compare access prices from different heat networks that qualify for third-party access regulation. While it is essential to keep in mind that the many differences between types of heat networks mean that direct comparisons between access prices may not be drawn, a cost breakdown could still be helpful in assessing whether a fair price is imposed. Independent regulation could indicate the composition of access prices by cost breakdown elements. This may also increase cost-efficiencies.

Heat consumers having the means to generate their own heat (prosumers) should have the possibility—like in the electricity sector—to be active on the wholesale heat markets via heat networks that can technically (and economically) support this<sup>48</sup> (EUR-Lex, 2019). This will mostly apply to future 4th and 5th generation heat networks. Third-party access rights specifically aimed at prosumers can facilitate this. Such rights are valuable from the perspective of energy justice and energy democracy, as they provide heat consumers with a chance to be actively involved in and shape the heat market.

### **Third-Party Access Conclusion**

In light of the possibilities offered by 5th generation heat networks, as well as technological advancement in general, third-party access may thus prove to be beneficial to foster competition on the heat market and consumer choice. However, as not all heat networks are technologically similar, customised solutions could be called for. For example, different categories of heat networks could be identified. Whether third-party access rights can then be given to parties, would depend on the type of heat network and the heat sources available. For this assessment, the values of energy justice and energy democracy and the principles of good governance can provide a framework that safeguards justified decision-making. In providing this type of ‘flexibility’, a consistent application of the principles of good governance is needed to safeguard that regulation—and regulatory choices—do not become inconsistent. This requires the regulatory authority to have discretionary powers, so that it can assess which heat network should be subject to what kind of regulation. However, more discretionary powers for a regulatory authority increase the tension with accountability requirements. Hence, accountability mechanisms become more important and should carefully be monitored. The following section will look into the current supervisory set-up of the Dutch heat market.

### ***Supervision and Participation***

ACM is the designated regulatory authority in charge of implementing and enforcing the Dutch Heat Act.<sup>49</sup> This means that ACM is in charge of setting the maximum heat price.<sup>50</sup> As explained, the maximum heat price is linked to the price of natural gas currently, but this system will be replaced by a cost based method for the calculation

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<sup>48</sup>See Article 15 of Directive (EU) 2019/944 that stipulates that “*Member States shall ensure that final customers are entitled to act as active customers without being subject to disproportionate or discriminatory technical requirements, administrative requirements, procedures and charges, and to network charges that are not cost-reflective.*”.

<sup>49</sup>Article 14 Dutch Heat Act.

<sup>50</sup>Article 5 Dutch Heat Act.

of the heat tariffs. Once every two years, ACM also monitors the development of the return rates in the heat supply market.<sup>51</sup> In addition, ACM is authorised to carry out measurements (or let them be taken) at heat producers, heat suppliers, and heat consumers.<sup>52</sup> Should ACM find that the Dutch Heat Act is not complied with, it may impose binding codes of conduct, periodic penalty payments and administrative fines.<sup>53</sup>

### Supervision Assessed

If the organisation of the Dutch heat market is overhauled to support a more holistic energy sector, the current regulatory framework and supervisory set-up will no longer do. Supervision arrangements should carefully be coordinated to match the future of the heat market.

Customised solutions regarding unbundling and third-party access—as well as the modernisation of the heat market—require supervision that does not hinder, but rather stimulate the development of the heat market without ‘prescribing’ or favouring certain technological outcomes. This implies that ACM ought to be independent from market parties—as regulatory capture may result in favouring a certain technology over another—but also, to some extent, from political influence. This is already partially guaranteed because ACM employs specialists that are expected to have the best interests of the heat market at heart, rather than short-term political gains. To maintain this, it is preferable that ACM stay away from politics on a daily basis. Politicians should decide on the long-term goals, to which ACM in its capacity as the regulatory authority of the heat market should tend by decision-making on a day-to-day basis.

When it comes to discretionary powers, ACM is not currently adequately equipped to impose and enforce different regulatory requirements for different heat networks as the Dutch Heat Act does not provide a basis for a customised regulatory regime. Nevertheless, as a consequence of the great variety between the characteristics of established and future heat networks, it is important that the regulatory framework of the heat sector supports proportionate regulation and tailor-made solutions. Effective regulatory oversight requires ACM to have adequate powers to facilitate the integration of competitive clean heat carriers in the energy system. Having the possibility to impose and specify unbundling and third-party access requirements in the heat sector—and to finetune them depending on the type of network—is a step in the right direction. Such levels of discretionary powers provide for flexibility in the actions of ACM. Increased flexibility though, raises questions on whether the current accountability mechanism will be sufficient to address any concerns stemming from an increase in flexibility on the side of ACM.

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<sup>51</sup> Article 7 Dutch Heat Act.

<sup>52</sup> Article 16 Dutch Heat Act.

<sup>53</sup> Article 17 and 18 Dutch Heat Act.

ACM is part of the ministry of Economic Affairs and Climate Policy, and as such, ‘inevitably’ renders account to the Minister. In its turn, the Minister renders account to the Dutch government. Separately, ACM also publishes an annual report in which it reports the work it has performed the previous year. Whereas stakeholders have few possibilities to hold ACM accountable on the basis of the annual report, it does serve a valuable function in terms of transparency. While ACM already acts in a transparent way to a great extent—for example, by publishing its decisions and issuing guidelines—this needs to be maintained, and possibly even upped. A duty of transparency contributes to fairness in decision-making and provides stakeholders with the possibility to keep ACM in check. This is an important element of accountability.

### **Consumer/Prosumer Participation**

The accountability element can also be linked with the importance of stakeholder participation. With the transition towards a low carbon economy on the way, a broad support base is needed to reach decarbonisation goals. Energy justice and energy democracy require strong participation possibilities that can shape the support given to the energy sector in transition. Heat consumers participation in the heat market can provide such support. As it is likely that most heat consumer will remain locked in for a relatively long time in natural monopolies facilitated by older generation heat networks (and the lack of alternative heating), heat consumers could get involved with heat producers, suppliers and/or network owners (depending on whether or not they are vertically integrated). This involvement would be a form of substantive participation and can take various forms. For example, heat consumers could become ‘shareholders’ in already existing arrangements, or set up a new communal heat network in which they are directly involved regarding ownership, decision-making etc. This way, heat consumers have direct influence on their heat supply arrangement by way of profit sharing and decision-making—thereby potentially increasing the chances that older generation heat networks are being made more sustainable. Consumer engagement may spur environmentally friendly solutions by way of pressure and direct involvement. Benefits of consumer involvement may especially apply to newer generation heat networks, where sustainability can play a larger role right from the start by facilitating acting together, the connection of different grids in the energy sector, prosumerism, renewable energy sources, and the interlinking of various local energy-efficient ideas (Mendonça et al., 2009; Ropenus & Henrik, 2015). Despite its promising benefits, consumer participation, as well as the role of prosumers, receives little attention in the Dutch heat market and in the draft Act on Collective Heat Systems. This is different in Denmark, where consumer participation is part and parcel of the heat market. Because the Netherlands may benefit from consumer participation in the heat market, Danish experiences with consumer participation will be explored further below for inspiration.

## Supervision and Participation Conclusion

Whereas the current form of supervision in the heat market caters to the principles of independence, accountability and transparency, there is little room left for supervision to adjust to (economic and technological) developments. The developments described in paragraph four are testament to the fact that a more flexible regulatory approach is necessary to lead the heat market into the future and to facilitate the developments related to fifth generation heat networks and prosumerism. There is a need for differentiating between types of networks and heat sources to offer tailor made solutions. And for tailor made solutions to be effective, it has to be made sure that costs and benefits can be weighed in line with energy justice and energy democracy and the principles of good governance. The economic and technological developments taking place throughout the energy sector in transition, also require a more holistic supervisory model. Different parts of the energy market—gas, electricity, heat, etc.—will have to become more of a whole in order to reach optimal and just results in light of the energy transition. This means that there is a need for a flexible regulatory model that can adjust to technical and economic developments. The regulatory model should also provide for consumer/prosumer participation possibilities to create support and involvement and to ensure that the energy transition can take place in a just way. The below paragraph will briefly explore how participation plays a role in Denmark's heat market.

### *Consumer Participation: Denmark*

In terms of citizen participation, Denmark's heat market is one that can serve as an example. Not only has the extensive use of heat networks in Denmark a long history, Denmark also leads the way when it comes to citizen-involvement in the heat market (Huygen et al., 2019).

The heat market in Denmark can be laid out in a succinct manner as follows. The Danish Utility Regulator<sup>54</sup> is the independent regulatory authority<sup>55</sup> overseeing the Danish heat market and is in charge of applying the Danish Heat Supply Act (Danish Energy Agency, 2017). The Danish Heat Supply Act promotes the most economic and environmentally friendly use of energy for heat in order to reduce Denmark's dependence on fossil fuels.<sup>56</sup> This Act stipulates that municipalities are in charge of providing for collective heat supply, whereby stakeholders are involved in the preparation of municipal heat supply plans.<sup>57</sup> Once heat supply is up and running, the Danish Utility Regulator is tasked with, *i.a.*, monitoring and supervising the

<sup>54</sup>Until 1 July 2018 the Danish Energy Regulatory Authority (DERA).

<sup>55</sup>See chapter 2 of the Act establishing the Danish Regulatory Authority. <https://www.retsinformation.dk/eli/ft/201712L00164>.

<sup>56</sup>Chapter 1 §1 of the Danish Heat Supply Act.

<sup>57</sup>Chapter 2 §3 of the Danish Heat Supply Act.

prices charged by the heat supplier. Consumer prices are cost-based, and the Danish Heat Act specifies which costs and expenses may be included in the heat price.<sup>58</sup> To allow the Danish Utility Regulator to monitor the prices, suppliers have to notify the prices and conditions they apply.<sup>59</sup> In addition to prescribing a cost-based pricing approach, the Danish Heat Act allows for the imposition of maximum prices for heat generated by waste incineration.<sup>60</sup> The rationale for this option is to safeguard that heat consumers only pay for the costs attributable to the production of heat.

With regard to consumer participation, it should be noted that the Danish Heat Supply Act grants significant consumer rights. Communal ownership—or, in the absence thereof, substantive heat consumer-participation, is preferred. For example, before a heat supply plant is sold to a buyer other than a municipality, the consumers who are purchasing heat from that plant, must be offered the possibility to jointly acquire the plant at market price.<sup>61</sup> All plants that are not owned by municipalities and/or the plants' heat consumers have to be managed by an independent company.<sup>62</sup> Furthermore, when consumers do own a heat supply plant, the majority of the company's members of the board of directors must be elected by the consumers whose properties are connected to the company's plant or by one or more municipal boards in the company's supply area.<sup>63</sup> In the absence hereof, the Danish Heat Supply Act foresees in the establishment of a mandatory consumer representative board consisting of 11 members. These members must be elected by the consumers whose properties are connected to the heat supply plant. The consumer representative board on its turn, elects the majority of the board members of the heat supplying company.<sup>64</sup>

In Denmark, consumers thus directly participate at company level—either directly via ownership or indirectly via representation (Chittum & Østergaard, 2014). This has led to a cost-effective heat market with locally empowered heat consumers. As Danish heat consumers are “*confident that their needs are being adequately and accurately represented to company decision-makers*”, increased consumer participation may also be beneficial to Dutch heat consumers (Chittum & Østergaard, 2014).

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<sup>58</sup>Chapter 4 of the Danish Heat Supply Act.

<sup>59</sup>Chapter 4 §23b of the Danish Heat Supply Act.

<sup>60</sup>The Danish Utility Regulator publishes its decision on the maximum price for heat generated by waste incineration online.

<sup>61</sup>Chapter 4 §23f of the Danish Heat Supply Act.

<sup>62</sup>Chapter 4 §23g of the Danish Heat Supply Act.

<sup>63</sup>Chapter 4 §23h of the Danish Heat Supply Act.

<sup>64</sup>Chapter 4 §23i of the Danish Heat Supply Act.

## Conclusion

This article observed the trend that the values of energy justice and energy democracy are increasingly colouring the principles of good market regulation and supervision and deserve more attention in the regulation of the Dutch heat transition. The heat transition in the Netherlands significantly impacts the position of consumers, prosumers and vulnerable customers, as an ever-larger group of consumers will be disconnected from the gas grid and will be connected to heat networks. Energy democracy and energy justice are important values that should guide policy-makers in making choices that affect consumer participation and the protection of vulnerable customers. In this regard more (flexible) regulations are needed to ensure that consumer and prosumer participation is promoted and safeguards are put in place to protect vulnerable customers.

Increased consumer participation is important in light of achieving energy justice and energy democracy—energy specific concepts that are gaining influence when interpreting and applying the principles of good governance. Both are based on the awareness that the energy transition is a matter for all citizens of the European Union (and world-wide). Denmark has extensive experience with substantive consumer participation—providing for consumer ownership and significant opportunities for consumer representation in the boardroom of local heat companies—and could thus serve as an example for the Netherlands to take inspiration from. Because it is likely that most heat consumers will remain locked in for a relatively long time in natural monopolies facilitated by older generation heat networks and given the lack of alternative heating options, substantive consumer-participation could yield positive results regarding community engagement in heat network management and heat supply.

Considering that the Dutch heat market has still a lot to gain in terms of flexible regulation and supervision as well as participation, the principles of good market regulation and supervision have a significant role to play in modernising the regulation of the Dutch heat market. Against the background of the values of energy democracy and energy justice, the principles of good regulation can provide a framework within which advantages and disadvantages can be weighed of regulatory choices to be made by the Minister of Economic Affairs and the public authorities that will be involved in applying the regulatory framework (local authorities and the ACM). The values of energy democracy and energy justice and the principles of good regulation can also be embedded in the law by the legislator to ensure the accountability of the relevant public authorities and the independent regulatory authority vis-à-vis the consumers/prosumers when regulating the heat market.

The Minister of Economic Affairs has opened a public consultation on the draft Act on Collective Heat Systems. Though this draft act is still under debate, initially it provided little flexibility for finetuning regulatory requirements to the specific technological and economic characteristics of different types of heat systems. Local authorities will be responsible for designating integrated heat companies based on the integrated market model, with no independent network operator and no open network

access regime. There will be a special regime for large scale regional networks, that will have to be unbundled from the production and the supply of heat and that are governed by regulated third party access. The lack of flexibility could play up at not providing unbundling and third-party access when 4th and 5th generation heat networks become in use, as these types of networks could technologically be ready for competition on the heat market and could facilitate the integration of prosumers. As the electricity market provides clear evidence that unbundling, third-party access and prosumerism have many advantages, it would be constructive to benefit from similar advantages in the heat market. A larger need for flexibility is then justified because of the differences between types of heat networks. It would allow the local authorities together with ACM to assess on a case-by-case basis whether unbundling and/or third-party access would be beneficial for consumers and prosumers and preferable for specific heat networks and enabling them to specify regulatory requirements.

Regulation will have to be up to date with the energy transition that relies on and stimulates new forms of energy generated with sustainable sources and new ways of storing energy. This means that a more holistic regulatory approach is needed connecting different energy networks and different energy carriers. The development of a new Act on Collective Heat Systems provides for the perfect opportunity to let flexibility and consumer participation enter the Dutch regulatory set-up of the heat market to ensure it is well-equipped for the future. This way regulation can facilitate a just heat transition in which consumer access to affordable, sustainable and secure heat supply is safeguarded and where there are opportunities for all consumers to participate in the heat market in a meaningful way. This opportunity should not be missed.

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