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Think global, act local

The regional integration and embeddedness of a southern energy company in the Northern Netherlands.

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Summary

While the world's energy system is still dominated by fossil fuels, renewable energy sources are becoming more popular. This transition towards an innovative energy system goes hand in hand with increased steering by regional governments and decentralized production of energy. For an energy supplier wanting to contribute to this development, regional integration in the network with other firms, institutions and the local population becomes more and more important. Much of the current research has focused on these processes of integration involved when firms move to other countries, but can similar processes be expected when firms move to other regions within the same country?

The liberalization of the Dutch energy market allowed for the mobility of energy firms across the Netherlands. Eneco, an energy company from Rotterdam, now seeks to exploit opportunities in the Northern Netherlands. The goal of this research is therefore to contribute to the existing literature on firm integration, by examining the integration of Eneco and its current position in the energy related network in Groningen, Friesland and Drenthe.

Three important dimensions in the network can be distinguished; the local population, other firms and institutions. Examining consumer patterns and brand awareness showed that while Eneco's reputation is increasing, Essent and Nuon are still the most popular energy suppliers amongst the local population. Additionally, surveys amongst employees from the firm and actors in the region were used to construct the current energy related network in the three Northern provinces, and Eneco's position in this network. Results show that while Eneco holds a central position in the network, improvements can be made in comparison to more embedded regional firms. Several potential key strategic partners for Eneco were distinguished, with whom establishing relationship can improve the regional position; large industry companies, the University of Groningen and most importantly local smaller enterprises and organisations in the three provinces. There are other general actions which the firm can undertake to further local embeddedness in the North; doing favours in order to create goodwill and built trusted relationships, pursue joint regional goals and projects, honouring commitments and showing that you 'love' the region.

The results of this research follow the literature on the integration of multinational firms in foreign countries and showed that similar processes regarding the formation of relationships in the regional network can be found. Accordingly, it is important for firms pursuing global goals in battling climate change for example, to focus on the local action and attention which is required to make projects in the region successful. One thing is therefore important to keep in mind for new firms in the region, like Eneco coming to the northern Netherlands; "Think global, act local".

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BGR	Bio Golden Raand (Biomass power station)
FDI	Foreign Direct Investment
MNE	Multinational Enterprise
NAM	'Nederlandse Aardolie Maatschappij' (Dutch petroleum company)
RDI	Regional Direct Investment
RUG	'Rijkuniversiteit Gronigen' (University of Groningen)
RWE	'Rheinisch-Westfälisches Elektrizitätswerk' (German energy company)
SME	Small-medium Enterprise
SodM	'Staatstoezicht op de Mijnen' (State supervision of the Dutch mines)

1. Introduction

"The world's energy system is at least a 1.5 trillion-dollar market dominated by fossil fuels" (Goldemberg, 2006, p. 2185). Unfortunately, these fossil fuels are the source of many problems across the globe. Not only do fossil fuels cause environmental degradation (Goldemberg, 2006), resources will also deplete within the coming century (Sims et al., 2007; Shafie & Topal, 2009; BP, 2016). In the meantime, the world's energy consumption is expected to increase with 48% between 2012 and 2040 (EIA, 2016).

On the upside, popularity regarding renewable energy sources is growing amongst policy makers across the globe (Wüstenhagen, Wolsink & Bürer, 2007), with the sector expected to rise with approximately more than 2.5% per year between 2012 and 2040 (EIA, 2016). The Netherlands is one of the 160 countries who has signed the Paris Agreement (UNFCCC, 2017), thereby committing to focus on adaptation of the consequences of climate change and mitigation of greenhouse gases (Rijksoverheid, n.d.). One of the policies is stimulating cooperation with international as well as national businesses and cities, local governments and non-governmental organisations to achieve these goals (Ministerie Infrastructuur en Milieu, 2013). This means that for the Dutch energy sector the approach to this transition depends on bottom-up processes and the enrolment of local businesses and other non-state actors (Kemp, 2010).

Not only the energy system is undergoing a transition, the Dutch energy market did as well. Before 2004 every region was bound to a specific energy supplier (Bakas & Gastel, 2002). However, the liberalization of the energy sector in 2004 made it possible for energy firms to operate nation-wide (Veraart, 2010). The goal of this liberalization was that energy companies can now operate and locate branches where they want, resulting in lower costs and improvement of their international competitive position. Simultaneously, consumers get a freedom of choice (Bakas & Gastel, 2002).

Unfortunately, the process of entering a new region is not as straight-forward as it may appear. Over the past decade, a growing body of research has focused on the processes involved when firms invest in other countries and their integration in the host region (Hess, 2004). There is consensus amongst researchers that branch plants are often weakly integrated in the (semi)peripheral host regions, due to missing linkages with other local firms, institutions and organizations. These missing links lead to branch plants failing to generate the localized, innovative clusters which are normally associated with regional success (Perkmann, 2006). Research on this topic is generally internationally orientated, due to the rise in importance of multinational enterprises (MNEs) and international trade in the global economy (Dunning & Lundan, 2008). Similarly, in the Netherlands, where much research focusses on the integration of foreign firms new to the locality (Kloosterman, Van der Leun & Rath, 1999; Wintjes, 2001; Wintjes, 2005).

While the topic of firm integration has been explored by scholars, current research needs to be enriched. For example, the spatial dimension involved in inter-firm cooperation has not been fully investigated (De Beer & Schutjens, 2017). Thereby, regions are becoming even more important, for example due to increased decentralization, as is the case in the Netherlands (Hofhuis, 2010). Furthermore, the liberalization in 2004 changed the Dutch energy market and posed opportunities for energy firms to operate in other regions in the Netherlands (Veraart, 2010). This creates an interesting opportunity for research. Can similar processes regarding local integration be expected when firms move to another region within the country, rather than moving to other countries? To get some insights in the processes involved when a firm taps into a new regional market, this study will therefore focus on the regional integration of firms in their home country.

To explore these effects, this study will concentrate on the energy-related sector in the Netherlands. Despite the liberalization of the market, loyalty among consumers remained high as they stuck to their regional energy suppliers. Approximately 75% of the consumers was not willing to switch between suppliers within the coming 2 years in 2011 (ACM, 2014). This stickiness can be partly explained by regional history. For example, for the northern part of the country, Essent used to be the regional utility company, whose history goes back to 1967 (De Groot & Van Houten, 1988; Hofman, 2008). Consequently, the company became more integrated in the Groningen region. Examples of this integration and connection with the region are the sponsoring of the football team FC Groningen (Essent, 2017), collaborations with the University of Groningen (RUG, 2005), the construction of an energy plant in the Eemshaven (RWE, n.d.) and a former office in the city Groningen (Noordhuis, 2014).
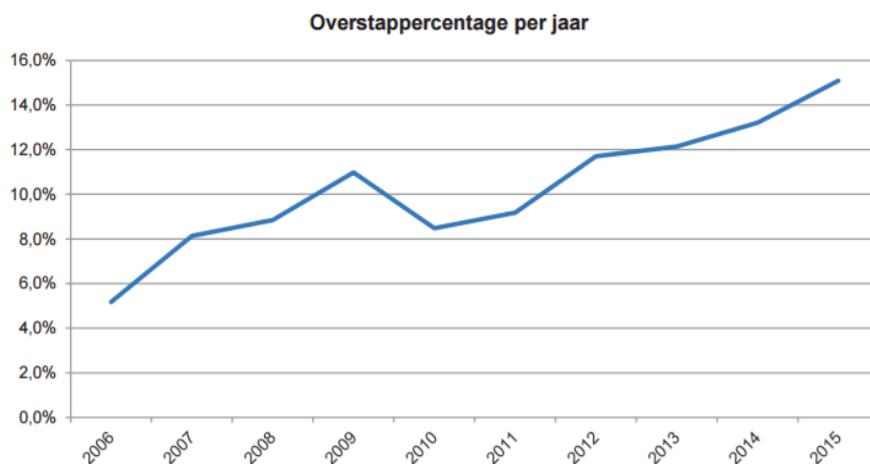
Figure 1: Percentage of switchers per year for electricity and natural gas
(Source: ACM, 2016).

Fortunately, as Figure 1 shows, the percentage of people actually switching has more than doubled between 2006 and 2015 nationally, rising from roughly 6% to more than 14% (ACM, 2016). This poses opportunities for energy companies from outside the region. One of these businesses is Eneco, an energy company from Rotterdam, now operating throughout the entire Netherlands (Eneco, 2017a) with both sustainable and social objectives (Eneco, 2017b). The company was able to build windmills (Eneco, 2014a) and a biomass power station in the province of Groningen (2014b), due to the liberalization of the energy sector.

The northern region is perceived to be the energy provider of the Netherlands (Energy Valley, n.d.), with a lot of opportunities regarding sustainable energy. It is therefore desirable for energy companies from outside the region, like Eneco, to get access to kind of innovative cluster. Pekmann (2006) confirms that it is of high importance within geographical innovation systems that the producers are integrated in the network of relationships. The regional innovation system comprises all the organizations and institutions present in the locality, which contribute to innovation processes (Perkmann, 2006).

However, with the energy transition going on, the situation can become different for new projects. Regional governments will be playing a substantive role in directing and steering transition investments by integration in regional and local planning schemes (Stroomversnelling, n.d.). As such, it becomes increasingly important for companies like Eneco to keep aligned with regional policy frameworks, which are the drivers for spatial planning, but also with local actors in the region. This research will therefore use the case of Eneco in the Northern Netherlands.

Goal and research questions

The goal of this research is to explore the process of regional integration of firms within one country, for example of a Dutch firm in another region in the Netherlands. The case of Eneco in the energy sector in the Northern Netherlands will be used to substantiate this. With the energy transition in mind, the increased popularity of sustainable energy and the increasing importance of regional and local policy programs, Eneco recognizes the importance of local integration and a regional approach. The company therefore wishes to improve their position and integration in the Northern Netherlands. Eneco wants to play an influential role, while at the same time pursuing their goals in the northern part of the country. As Perkmann (2006) stated in the previous section, relationships with firms and institutions in the local network are important for regional integration and access to innovation systems (Perkmann, 2006), as is the case in the north of the Netherlands. The main research question of this thesis will therefore be:

What does the network of Eneco in the energy sector look like in the northern region of the Netherlands and what is needed to establish a regional and integrated approach for economic activities regarding sustainable energy?

In order to answer this question, the following sub-questions will be answered:

1. What does Eneco's position in the current network with other actors in the energy-related sector look like in the Northern Netherlands?
2. What are the potential strategic partners in the region?
3. How can integrated relationships be established with these actors to enhance regional integration?
4. To what extend is the energy sector and regional integration herein influenced by policy and regulatory framework developments in the northern Netherlands?

Reading guide

This research focusses on the specific case of Eneco's position in the Northern Netherlands, of which the context will be discussed in chapter 2. Subsequently, chapter 3 presents existing literature and theory on the processes of integration and more specifically on firm embeddedness on a regional scale. This chapter concludes with a conceptual model on how a firm new in a region can establish an integrated position. Chapter 4 argues which research methods have been used and what analysis has been done in order to answer the research question. The results of this analysis are discussed in chapter 5. Concluding remarks answering the research questions are given in chapter 6. Chapter 7 finishes with implications for Eneco and a discussion of the research process.

2. Case study

2.1 Object of study

Eneco originated from a merger between the energy companies of The Hague, Dordrecht and Rotterdam. The name comes from a combination of the words 'Energy and Communications', as two of the partners were also invested in cable operations. At the time of the merger, Eneco became the biggest energy company in the Netherlands with 1 million customers. Later, in 2000, Eneco merged with six regional energy companies and became Eneco Energy, clearly indicating that the main focus of the company was on supplying energy and cable operations were no longer part of the activities (Eneco, 2017c).

Eneco remained a company mainly operating in the Randstad-area, but after 2004 opportunities opened up in the rest of the country. In 2008 the company launched a new sustainable strategy, accompanied by a new image through a different logo. The structure of the company also changed with the creation of two core companies, where the grid management was housed in Stedin and the infrastructure in Joulz in Rotterdam (Eneco, 2017c). Even though the Eneco Group entails a lot of independent companies within its brand (Eneco, 2017d), as can be seen in Figure 2, the company is still partly owned by the Dutch government. There are 53 municipalities currently owning stocks in the Eneco Group, with the biggest still being Rotterdam, The Hague and Dordrecht (Eneco, 2017e).

Figure 2: The Eneco Group (Eneco, 2017d).

From 2009 on, Eneco started looking beyond the Dutch and regional energy market by starting activities and ambitions on sustainable energy in Belgium, Germany, France and the United Kingdom (Eneco, 2017c). Some of the major projects of the company from the past years include the cooperation with Mitsubishi for a new wind park (Mitsubishi Motors, 2013; Eneco, 2017c) and a battery for energy storage (Duijnmayer, 2017), the opening of the bio-energy plant Bio Golden Raand in Delfzijl (Eneco, 2017c; RVO, n.d.), a new partnership with the Dutch Railways resulting in climate neutral electrical trains (Eneco, 2017c; Van Santen, 2017) and most recently, the provision of wind energy to the Google datacentre in the Eemshaven and the collaboration with Unilever (Eneco, 2017c). Despite being active across and beyond the country, the firms sees the northern region as an area where a lot of potential for future projects exists.

2.2 Project context

This research project focuses on the regional integration of Eneco in the northern region and it is therefore important to precisely frame what entails this 'northern region'.

First of all, Eneco is a member of Energy Valley and this constitutes collaborations between companies, knowledge institutes and governments to realize new opportunities in clean energy. Energy Valley has a clear boundary by concentrating only on Groningen, Friesland, Drenthe and Noord-Holland Noord, as this region is seen as the energy supplier of the country (Energy Valley, n.d.). However, this region is larger than the NUTS-1 classification by Eurostat, the statistics bureau of the European Union. This classification is used throughout the European Union in order to compare regions across countries and is also regularly used in the Netherlands. Following this classification, the Northern Netherlands is made up of the provinces Groningen, Friesland and Drenthe (Eurostat, n.d.) as visualised in Figure 3. Throughout the rest of this paper, these three provinces are referred to when the northern region of the Netherlands is mentioned.

Figure 3: NUTS-1 regions in the Netherlands (Source: Eurostat, n.d.).

3. Theoretical framework

In chapter 1 Perkmann (2006) pressed on the importance of the integration of producers in the network consisting of all organisations and institutions present in the regional innovation system (Perkmann, 2006). Social networks are getting more and more attention in the field of economic geography and help analysing the structure of inter-organizational interactions. Applying a network theory contributes to a better understanding of regional innovation systems and networks in clusters (Ter Wal & Boschma, 2009) and is therefore used in this research. Before forming an in-depth theory on the formation of networks, the actors involved and the role of geography, first needs to be defined what is meant with the term regional integration and why this is important for firms in general.

3.1 Defining integration

When new economic activities arise in certain areas, expectation holds that these result in local economic development. However, as Clark and Smith-Canham (1999) mention, this is only possible when these new branches connect with the host economy. This integration was traditionally seen as merely an economic issue, but new economic sociologists place the concept in a broader cultural context. In this view integration depends on the *embeddedness* of a sector in a region (Clark & Smith-Canhem, 1999).

Embeddedness was first introduced by Karl Polanyi in 1944 and expresses the view that 'the economy is not autonomous […], but subordinated to politics, religion and social relations' (Block, 2001, p. xxiii). In the broadest sense, embeddedness relates to the global context of investments and economic decisions and actions (Zukin & DiMaggio, 1990) and contains the political settings, actors, activities of firms and resources (Welch & Wilkinson, 2002). In the field of economic geography, firm-embeddedness thus focuses on the interplay with social networks and institutional settings on the local and regional geographical scale (Hess, 2004). Table 1 below gives an overview of the use of the concept of embeddedness in different research fields.

Table 1: Overview of who is embedded in what (Source: Hess, 2004, p. 173).

	Who?	In what?	Geographical scale
Polanyi's great transformation	'The economy', systems of exchange	'Society', social and cultural structures	No particular scale, but emphasis on the nation state
Business systems approach	Firms	Institutional and regulatory frameworks	Nation state, 'home territory'
New economic sociology	Economic behaviour, individuals and firms	Networks of ongoing social (interpersonal) relations	No particular scale
Organization and business studies	Firms, networks	Time, space, social structures, markets, technological systems, political systems…	No particular scale
Economic geography	Firms	Networks and institutional settings	Local/regional

In economic geography, firms thus seek embeddedness in networks and institutional settings on a local or regional scale. But why is it important to establish embeddedness? For instance, resource pooling and cooperation can enhance economic performance. When a firm lacks these networks, performance can decline as the firm is excluded from opportunities (Uzzi, 1996). It is therefore important to understand how these networks are formed.

3.2 Network formation

Embeddedness is the result of the formation of ties between actors and these relationships can consequently lead to different networks. Uzzi (1997) distinguished and classified ties on the basis of their strength; *arm's-length* and *embedded ties*. Arm's-length ties refer to market relationships, with a lack of reciprocity and social content between exchange partners, one-time interactions and "the one-shot deals" (p. 41). The close, embedded relationships are based on and formed through the main components; trust, fine-grained information transfer and joint problem-solving arrangements. First, trust is developed via favours, where there is no expectation of immediate returns, and is very important when assets are concerned that are hard to price. Secondly, information exchange in embedded ties is mostly characterized by more tacit and proprietary information. In comparison, actors connected by arm's-length ties trade mostly data concerning prices and quantities. Finally, joint problem-solving occurs when actors in embedded ties coordinate functions and work out problems flexibly. This is more the case than with arm's-length ties, as actors with embedded ties are more familiar with negotiations and mutual adjustment (Uzzi, 1997). The formation and establishment of embedded ties is thus a crucial requirement in the regional integration and embeddedness of actors, and more specifically firms.

Forming ties should only be pursued up to a certain threshold. Uzzi (1997) affirms in his research that the most optimal network in the process of embeddedness should contain both arm's-length and embedded ties. This type of network is shown in the integrated network in Figure 4. Both forms of ties have distinctive functions; embedded ties enrich and strengthen the network, while having a number of arm's-length ties prevents reaching overembeddedness. Overembeddedness would create a lock-in situation, where new information won't reach the network (Uzzi, 1997). Figure 4 also shows the underembedded network with too many weak ties and the overembedded network with too few and too strong ties. A more or less equal combination would therefore generate the most advantageous network.
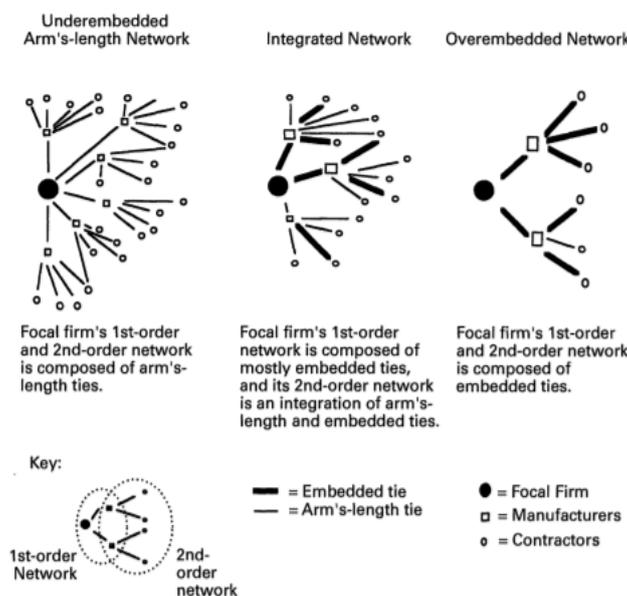

Figure 4: Network structure from a firm its perspective (Source: Uzzi, 1997, p. 60).

Uzzi (1997) discusses the strength of ties and Gratton (2005) builds on this research by explaining two different types of ties. The first are *bonding ties*, which are between people in the same group and are within, rather than across boundaries. The second form is *bridging ties*. These are relationships between two people belonging to different groups, for example from different firms. Crossing horizontal boundaries, for example between functions, firms and geographies, is one of the more important features in the topography of a firm and can act as a competitive advantage (Gratton, 2005). As follows, bridging ties are especially important requisites for new firms in the locality, as forming new ties with actors from other groups encourages embeddedness in the region.

3.3 Geographical clustering

Where the firm chooses to locate, holds a representational function and consequently becomes increasingly more important. The influence of location becomes evident from the example where local networks result in more embeddedness in comparison to international networks (Brouwer, 2005). These inter-firm networks play an influential role in the evolution of innovative regional clusters (Keeble et al., 1999). Clusters are formed when the networks and firms are spatially concentrated and this results in spatial heterogeneity, which is associated with industrial specialisation (Gordon & McCann, 2000).

Gordon and McCann (2000) identify three types of clusters; pure agglomeration, industrial complex and social network. The *pure agglomeration* is characterized by clustering because of perceived economies of agglomeration, which are proximity to the local labour pool, efficient knowledge-transfer via physical proximity and face-to-face contact. In the pure agglomeration there are no assumed or formal forms of co-operation between actors and interaction is mostly facilitated through "the law of large numbers" (p. 517) in the specific locality (Gordon & McCann, 2000). These relationships correspond to the arm's-length ties by Uzzi (1997) and an example of the pure agglomeration is the Silicon Valley (McCann, Arita & Gordon, 2002).

Secondly, the *industrial complex* is based on clearly identifiable and stable trading relationships amongst the participating firms, where involvement in sales and purchases is the main determinant for clustering (Gordon & McCann, 2000). In minimizing the transaction costs involved in trading, firms in the same input-output production and consumption chain locate together (McCann, 1995; Gordon & McCann, 2000). In contrast to the more dynamic 'pure agglomeration cluster', this model is static and predictable and actors can be pinpointed easily. Due to large investments as entree fees, the club is rather closed and the system gains a monopoly position. Examples are firms in oil refining, chemicals and the auto industry (Gordon & McCann, 2000).

The third and final form is the *social network*, which stems from the early work of Granovetter (1985) and is based on strong interpersonal trust relationships. These trust relations are made up of three features; firms within the network are willing to take risks, they recognise their relationships without fear of retribution and the firms involved are willing to act as a group for mutually beneficial goals. Embeddedness is important in these relationships and relates to the dependence on values, norms and shared institutions. Social networks are formed through cultural and personal links of key actors and participants of the firms. Historical links and interaction efforts influence access to the network, where co-location is a necessary condition for developing location-specific networks (Gordon & McCann, 2000). An example of the social network can be found in the wealthy Emilia-Romagna region in North-Italy (Gordon & McCann, 2000; McCann, Arita & Gordon, 2002). Locating in the region is especially important for a new firm seeking access to this network, as the relationships in this cluster are formed via personal contact.

Clusters thus hold a network component, which is seen as an essential factor in the embeddedness of local entrepreneurs and firms (Rocha & Sternberg, 2005). Table 2 below gives an overview of the three mentioned types of clustered networks.

Table 2: Industrial clusters and corresponding characteristics (Source: McCann & Mudambi, 2005, p. 1868).

Characteristics	Pure Agglomeration	Industrial complex	Social network
Firm-size	Atomistic	Some firms are large	Variable
Characteristics of relations	Non-identifiable Fragmented Unstable	Identifiable Stable trading	Trust Loyalty Joint lobbying Joint ventures Non-opportunistic
Membership	Open	Closed	Partially open
Dynamics	Stochastic	Strategic	Mixed
Access to cluster	Rental payments Location necessary	Internal investment Location necessary	History Experience Location necessary but not sufficient
Space outcomes	Rent appreciation	No effect on rents	Partial rental capitalisation
Notion of space	Urban	Local but not urban	Local but not urban
Example of cluster	Competitive urban economy	Steel or chemicals production complex	New industrial areas

The social network cluster mostly resembles the integrated network by Uzzi (1997) out of the three types mentioned by Gordon and McCann (2000). First, finding only arm's-length ties would result in a underembedded network with large numbers of weak ties (Uzzi, 1997). This corresponds to a pure agglomeration, where the large number of actors facilitates cooperation (Gordon & McCann, 2000). In contrast, in an industrial complex, there are clearly identifiable relationships and the network is closed to outsiders. Often there is a monopoly position in the market (Gordon & McCann, 2000). This relates most to Uzzi's (1997) overembedded network, with only a few very strong ties, as can be seen in Figure 4. Finally, in the social network cluster relationships are built on trust and historical links, but the network remains partially open (Gordon & McCann, 2000). This type of cluster adheres to the 'healthy' integrated network, where both arm's-length and embedded ties can be found (Uzzi, 1997). The social network cluster therefore holds the most optimal circumstances needed for embeddedness for existing as well as new firms.

3.4 The host region: dimensions in the network

Inter-firm relations and networks are thus important for embeddedness, and can occur in the form of a geographical cluster. Firms also operate in networks concerning economic and social organizations and institutions in the host region, not only in business networks (Gordon & McCann, 2000; Johannisson, Ramírez-Passilas & Karlsson, 2002). Hence, Figure 5 shows the three broadly defined dimensions, with whom a mixture of arm's-length and embedded bridging ties are most conveniently formed in a social network cluster.
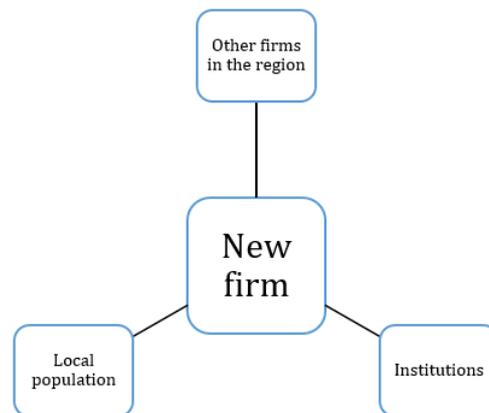
Figure 5: Visualisation of the different dimensions in the network in the host region.

3.4.1 Firms in the region

Gordon and McCann (2000) showed, inter-firm relations influence the formation of regional innovative clusters and bring several benefits. In geographical clusters, these positive externalities relate mostly to the law of large numbers and reduced transaction costs (Gordon & McCann, 2000). Inter-firm relations have also been researched in the context of Foreign Direct Investment (FDI), which concerns the processes involved when a firms makes investments in another country but stills holds control over the investment (Hymer, 1960). While in this research the geographical scope is limited to one country, similar processes regarding integration and embeddedness with FDI can be expected.

In general, FDI is associated with providing quality jobs, expert skills and technology and opportunities for local export (Dunning, 1993 in White, 2004). More specifically, the inter-firm linkages associated with FDI benefit both the local firms and the multinational enterprises (MNEs). Collaborative linkages give the local firms potential access to technological knowledge and extensive resources due to scale effects of the MNE, which in turn gains access to unique and tacit local knowledge and can thereby enhance its innovative capacity (White, 2004). Technology transfer is one of the intangible competences most often transferred through FDI, as it can trigger and speed up economic development (Buckley & Ruane, 2006) and innovation. Furthermore, integration in local production networks can bring advantages to firms in the host region, since MNEs are characterized by a high degree of managerial efficiency (Blomstörm et al., 1994 in Buckley & Ruane, 2006). As follows, forming bridging inter-firm linkages and relationships generates both advantages to the new firm in the locality, local firms and the region as a whole. However, the interplay with local firms alone is not sufficient for establishing regional embeddedness. Intra-corporate relations also play an important role, for example between regional managers and influential board members in the headquarters (White, 2004). Therefore, both inter- and intra-firm relations are important in establishing embeddedness, yet these need to coexist with embedded linkages with the local population and institutions.

3.4.2 The local population

The local population is the second dimension in the network and is important in the processes of establishing embeddedness. A firm new to the region can take this stakeholder group into account by taking regard of a regional and local image and identity. Image and identity are not the same, even though these words are regularly used as synonyms and are closely related. The identity of the firm is the perception the firm has of itself, where the image contains the impression on the public (Brouwer, 2005).

Fauconnier (1990) distinguishes three types of corporate identity; actual, internal and wished identity. *Actual identity* refers to what the firm is actually like and *internal identity* is how the firm is perceived by its managers. Finally, *wished identity* is how the managers would like that the firm is perceived by the public. The actual and internal identity can be summarized together as the corporate identity and is determined by the region, society, history, surroundings and the environment (Brouwer, 2005).

The wished identity corresponds to the corporate image and stems from interaction of people's beliefs, ideas, feelings and impressions (Brouwer, 2005). A distinction can be made between the active and passive image. The *active image* is provided by the firm (Van der Burg, 1997) and when managed correctly, can result in a corporate reputation which attracts stakeholders and actors (Balmer & Wilson, 1998; Brouwer, 2005). The *passive image* is where the public receives information through other ways than the firm itself (Brouwer, 2005). The image of the firm consequently influences local consumers and suppliers and the popularity of the firm amongst them. For example, relating the corporate image and identity to a specific location can create a certain sense-of-place. When this becomes an identifying element, the firm becomes more locally embedded and relocating would harm the image (Brouwer, 2005). A sense-of-place refers to the connections and the attachment individuals have to certain places and the local distinctiveness, which becomes increasingly important (Holloway & Hubbard, 2001). Taking the local population and features of a place into account in the new firm's image and identity is important in the process of embeddedness, which in turn can also influence the linkages with other firms and institutions in the region.

3.4.3 Institutional thickness

Institutions form the third category and are seen as the man-made constraints, which shape human interaction (North, 1990) and are formed through discourse (Philips, Lawrence & Hardy, 2004). Institutions can be formal, where they refer to rules and laws for example, and informal, such as conventions and codes of behaviour (North, 1990).

In this research, the term institution relates to the more organisational structured institutions, for example governments, development agencies and universities (Keeble et al., 1999). For instance, universities have an important position in a locality (Miller, 2003; White, 2004), as they can deepen firm embeddedness through cooperation with, and support for locally based branches (White, 2004). The institutional environment present in the region or cluster can also play a distinct role in boosting and shaping the development of inter-firm networks (Keeble et al., 1999). Accordingly, institutions present in the region play an important part in the regional network and can lead to an *institutional thickness* that is thought to be crucial in order to successfully function in this globalizing, worldly economy (Hess, 2004).

Amin and Thrift (1995) conceptualize institutional thickness to consist of the following five factors, where the first is a local basis consisting of a number and diverse amount of institutions. Second, a high level of active engagement of actors and interaction between participants is required in the area.

The third feature of importance is the development of a defined structure or coalition, which will result in a collective representation and a socialisation of costs and checks and controls on rogue behaviour. Fourth, the participants and actors should have a mutual awareness that they are involved in a loosely held common enterprise. Finally, the shared norms and values in the local network should serve as a 'social atmosphere', with both formal and informal institutions. This institutional thickness should enable the forming of legitimacy and trust amongst participants and stimulate entrepreneurship, together with reinforcing local embeddedness of firms (Amin & Thrift, 1995; Coulson & Ferrario, 2007).

That institutions and institutional thickness can play a distinct role in shaping regional clusters and guide embeddedness processes, can be learned from the example of Ireland's FDI policy. The Irish government's actions resemble the research findings by Martin (2000) that local institutions must actively support the expansion of activities of firms in order to embed them more deeply. Therefore, from the 1970s onwards, their policy towards FDI became more selective towards modern, high-tech goods. The institutions actively selected investors and all investments were evaluated based on the entire project. Buckely and Ruane (2006) call this a "Hymer-type enterprise approach to FDI on the part of policy makers" (p. 1614), based on Hymer's (1960) notion that FDI involves more than just investing capital, in that it also brings more resources as technology, management, skills and entrepreneurship. The government influenced the MNEs and their FDI via four stages; first niche markets were found with international growth potential, second, potentially interested enterprises were identified, whereafter these firms were persuaded to invest in the Irish market and finally, an agreement was made on the incentive package that would secure both the investment and the maximum benefit to Ireland as the host country. This project-based, instead of sectoral approach regarding FDI (Buckley & Ruane, 2006), acted as a catalyst in reversing Ireland's position in the world economy (White, 2004).

The example of Ireland shows that host countries and regions can never stop being pro-active in order to keep attracting MNEs and their accompanying positive externalities, and should adopt an enterprise-centred approach (Buckley & Ruane, 2006), based on Hymer's (1960) notion of FDI as a package of resources. In trying to implement such a policy, strong governance is required and sometimes incentives are needed in attracting MNEs (Buckley & Ruane, 2006). This is especially the case when negative externalities are associated with certain places, as local conditionalities of places influence firm embeddedness. For example, due to Dublin's rapid growth, problems with congestion and the availability of sufficient housing arose. These and other kinds of negative externalities threat a place its attractiveness to foreign investors (White, 2004).

The institutional policy regarding FDI in Ireland shows the importance of institutional thickness, active governance and local conditionalities. These concepts and ideas can be translated to regional investments within one country, making that FDI becomes 'Regional Direct Investment' (RDI), where similar though possibly slightly reduced effects can be expected. This means that for example universities play an important role in the integration process. Furthermore, regions and regional institutions should implement policies where they actively seek and reward large firms and innovative investments in order to enhance economic performance and regional and local firm embeddedness. Understanding these processes is essential for firms coming to the region and for establishing a regional approach.

3.5 Degrees of embeddedness

The previous sections showed that the concept and process of embeddedness encompasses many factors and characteristics. In the most utopian way, every condition is met when a firm seeks access to a network. All these various aspects make achieving embeddedness quite a challenge and make measurement rather difficult. Therefore, various degrees of integration and embeddedness are distinguished in a network.

Uzzi (1996) made a first attempt in defining degrees of embeddedness. In his view low embeddedness is characterized by networks composed of arm's-length ties and high embedded networks are the result of embedded ties (Uzzi, 1996). At the same time, the most optimal network should contain both types of ties, where it could be classified with 'medium embeddedness'. Johannisson et al. (2002) used a different method of categorizing, which is shown in Table 3, as the term medium embeddedness remains quite vague.

Table 3: Degrees of embeddedness (Source: Johannisson et al., 2002).

First order embeddedness	Firm-to-firm relations
Second order embeddedness	Firm relations to social and economic institutions
Third order embeddedness	Firms are indirectly related through social and economic institutions

The difference between second and third order embeddedness is that in the second order network relations flow from one actor, for example firms, to institutions. The linkages are unidirectional (Johannisson et al., 2002) and are represented by tie 1 in Figure 6. In a third order, holistic network, firms who are not directly related can still be connected indirectly by being in the same social association (tie 2 in Figure 6). This means that third order embeddedness occurs in an institutional network, because without the presence of the essential institutions, a number of businesses or organisations would remain disconnected when they are not directly related. This is the process of institutional bridging (Johannisson et al., 2002), and is related to the concept of institutional thickness. A visualisation of third order embeddedness between two firms can be seen in Figure 6.
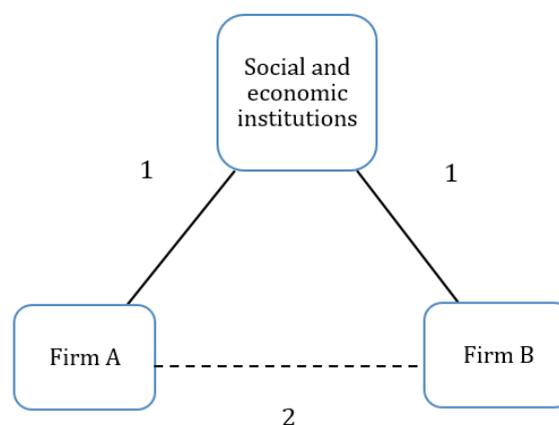
Figure 6: Third order embeddedness (Source: Johannisson et al., 2002).

3.6 Conceptual model

After different aspects of embeddedness have been discussed, and following the economic geographical approach, the new firm seeks embeddedness in the network and institutional setting in a new locality. First, intra-firm relations must be well-attuned when realising RDI in a new region. In this new locality three important types of external stakeholders can be distinguished; other firms in the region, the local population and institutions present. For the so-called RDI to succeed, most ideally both bridging arm's-length and embedded ties are formed with these actor-groups, forming the network.

Inter-firm, bridging linkages need to be formed with the other firms in the region in order to cooperate and make use of local assets. Furthermore, the firms image and identity play an influential role in shaping personal relationships with the local population and interactions with social institutions. By creating and sustaining a locally fitting image, the new firm takes into account the regional population and its characteristics, and enhances local embeddedness. Finally, embedded relationships need to be formed with local institutions. To embed these firms, institutions should execute an active and enterprise-based policy by making selective investments. This creates an institutional thickness, which boosts inter-firm networks and thereby, regional economic performance.

When and if all these actors are locally clusters in space, this network coincides with the theorized social network cluster. For new firms it thus become crucial to have access to this cluster, as close and embedded relationships based on trust and information transfer via face-to-face contact are more easily facilitated and formed. When this results in an embedded and integrated network, the outcome can be one of three varying degrees of embeddedness. This theory on how and under what circumstances a new firm in the region can achieve embeddedness has been summarized in the conceptual model shown in Figure 7.
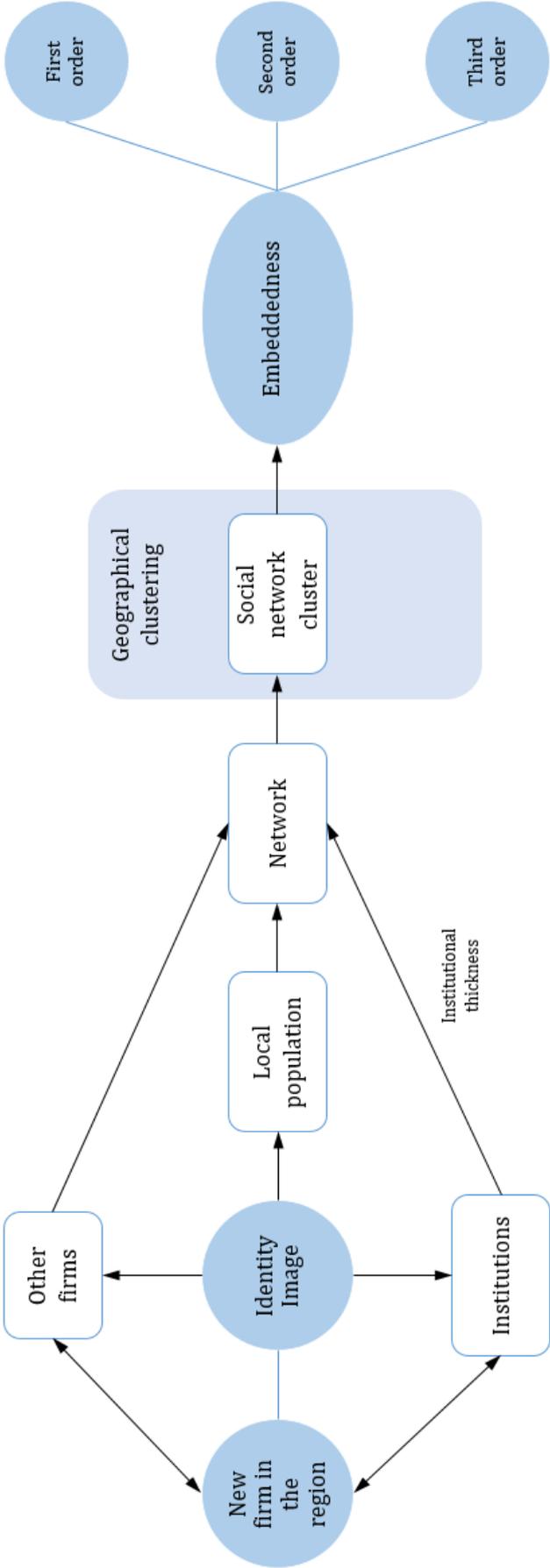
Figure 7: Conceptual model.

4. Methodology

To answer the research question, the relationships between Eneco and other stakeholders in the energy-related network in the northern region of the Netherlands need to be defined. Focusing on a case-study is a proven method in the social sciences (Yin, 2012), and a corporate case-study is an effective research method in the field of economic geography (Schoenberger, 1991). This chapter will therefore discuss which data is necessary for this corporate case-study and what research methods have been used.

4.1 Data

As discussed in section 3.4, there are three dimensions in the network; the local population, other firms in the region and institutions. Each of these dimensions needs to be taken into account when dealing with the sub-questions in order to answer the research question. It is therefore important to distinguish which data is needed and available, regarding each type of stakeholder.

First, the relationship between Eneco and the local population. Ideally, a popularity study is carried out amongst inhabitants of the three northern provinces. By including both consumers of Eneco and other competitors, the passive image of the firm can be determined. However, currently there are more than 1,5 million people living in the Northern Netherlands (CBS, 2017). With a population of this considerable size, the sample size would likewise have to be substantial. This kind of research is not possible, due to the limited time and resources available. It is possible to determine the popularity and position of Eneco by analysing company data concerning consumer numbers and brand awareness in the northern provinces. Consumer numbers over a certain time frame indicate the popularity of the company as an energy producer. Furthermore, brand awareness expresses how the firm is perceived by the local population, showing the passive image (Brouwer, 2005).

Additionally, the relationships between Eneco and other firms and institutions in the region need to be identified. In staying as objective as possible, assessment of both the views of Eneco regarding its stakeholders and how the stakeholders asses their relationship with Eneco are required. Optimally, all the stakeholders in the energy related network are approached. Both parties then need to evaluate their relationship, to assess what kind of ties exist in the network; arm's-length or embedded ties. Along with this, it is important that the external stakeholders also rate their relationships with the other actors in the network. This information yields the possibility of establishing the type of network as defined by Uzzi (1997) and Gordon and McCann (2000) in chapter 3. Missing links can also be pinpointed, together with potential opportunities for new relationships. The type of information required refers to *relational* data, which entails the ties, contacts and connections that relate agents to one another. These relations express the linkages between agents and can describe the structure and development of the network (Scott, 2017). Together with data on the current position of Eneco amongst the local population, the present network can then be described.

Besides relational data, there is also *attribute* data in the social sciences. Attribute data refers to attitudes, opinions and behaviour of agents and can be regarded as properties belonging to individuals or groups (Scott, 2017). To answer the research and related sub-questions, attribute data is needed as well. How agents in the North perceive the image and identity of the company is important, regarding the embeddedness of the firm in the region (Brouwer, 2005), and this can be retrieved by asking about their opinions regarding Eneco. Furthermore, by asking the agents what Eneco's biggest competitors are, and what the firm can do to strengthen relationships and promote integration, information is gathered on how the firm can enhance an integrated position in the social and corporate social network in the northern region.

4.2 Methods

In composing the current status of the network and Eneco's position in this network, company data was used to compile the point of view of the local population. Using documentary research is one of the ways of collecting data in social research (Scott, 2017). Additionally, relational data about external companies and institutions was used to construct the present network. In retrieving this relational data, survey research was performed. The term survey research holds both methods of conducting surveys and interviews (Scott, 2017), both of which are most often used to collect qualitative and qualitative network data (Scott & Carrington, 2011; Scott, 2017). This can be done by asking respondents with whom they share relationships what these relationships look like (Scott & Carrington, 2011). Of both methods, conducting, transcribing and analysing interviews is rather time consuming. Furthermore, using questionnaire surveys holds the advantage of contacting respondents who are geographically scattered and both open and fixed questions can be asked (McLafferty, 2010). Online questionnaires form a suitable research method, as the Northern Netherlands holds firms, organisations and institutions scattered across more than 11.000 km².

Using surveys are therefore an appropriate and widely used research method for gathering relational and network data (McCallister & Fischer, 1978; Carrington, Scott & Wasserman, 2005; Scott, 2017) in the Northern Netherlands. Moreover, it gives the opportunity to combine fixed questions with open questions. For example, asking about potential strategic partners becomes a possibility, or asking about the requirements for establishing regional embedded relationships and the influence of the policy and regulatory framework in the region.

Two surveys were used in this research; one designed for employees from Eneco regarding relationships with firms and institutions in the North, and one for agents in the region regarding their views on the relationship with Eneco and the other actors. Using this data, a social network analysis was performed following the research of Johannisson et al. (2002) and Harris et al. (2008). Social network analysis aims at describing and exploring the structural properties of relationships that individuals and groups form with each other, by using mathematical and visual techniques (Scott, 2017).

In the rest of this chapter, first in section 4.3, the analysis of the local population is discussed following company data. The online survey amongst employees is discussed in section 4.4 and the external online survey amongst agents in the region in section 4.5.1the content of the both surveys is rather similar, the combined analysis is discussed in section 4.6. In conclusion, paragraph 4.7 argues some ethical considerations concerning the surveys.

4.3 Quantitative company data

Two datasets were collected from internal company sources to analyse the passive image of the firm, as received by the local population. First, the number of electoral and natural gas consumers per postal area over the years 2010-2016 were retrieved (Eneco, 2017, personal communication, 18 December). This geographical dataset can be analysed using Geographical Information Systems and was therefore explored in ArcMap and QGIS. For analysis purposes, the data was categorized according to 'Jenks natural breaks', as this division shows best where relatively large differences in the data occur (Brewer & Pickle, 2002). By comparison, using equal intervals for categorisation would give less information, as areas with 20 consumers and 1900 consumers would get equal weight. Also, an estimation of the standard deviation is then not possible, as the data is not normally distributed with a mean of 395 consumers (Eneco, 2017, personal communication, 18 December). Therefore, Jenks natural breaks are the best option for managing the data.

The amount of consumers in 2010 and 2016 in Figure 9Figure 12 shows a possible change in consumer patterns, but these are only absolute numbers and generate little information besides the popularity of Eneco as an energy supplier. Therefore, a second dataset was analysed. Approximately 75 consumers weekly evaluated their awareness with the Eneco brand and image and with other energy companies. This resulted in a large database, which includes not only information about Eneco but also on other energy companies from the past six years (Eneco, 2017, personal communication, 18 December). It should be noted that this information comes from a small amount of consumers every week. While these numbers show the weighted percentages and the response rates are recalculated to the entire region, the actual perceived and passive image can vary from this data as the sample size is rather small. It is therefore only to be regarded as an indication of what the image of Eneco looks like amongst the local population in Groningen, Friesland and Drenthe. The results of both datasets can be found in section 5.1.

4.4 Online survey amongst employees

In addition to the qualitative company data, an online survey was carried out amongst employees of Eneco regarding the other two types of actors; other firms and institutions.

4.4.1 Respondents

The first online questionnaire was carried out amongst employees of Eneco, which deal with agents and projects in the three Northern provinces. This group's selection was based on the organisation structure of the company and used this selection instead of sampling all employees, as it was expected that they hold most information regarding the relationships in the relevant region. The respondents were chosen on the basis of a reputational approach, which means that nominees were produced by a knowledgeable informant (Scott, 2017). The members of the target population were provided by the Regional Manager Northern Netherlands (J. De Boer, 2017, personal communication, 10 November). This informant was perceived to have a good knowledge of the target population, as head of the regional team and overseeing projects in the three northern provinces.

The sample population consisted of 49 employees who received the online survey. With 29 responses, this resulted in a 59% response rate. This is an acceptable response percentage, but the absolute number of cases does lead to a 11.75% margin of error. This is somewhat higher than the generally acceptable 5% (Barlett, Kotrlik & Higgins, 2001). Furthermore, while the absolute number of cases is moderately low, 25 cases are usually the minimum required amount for statistical analysis (McLafferty, 2010). Due to the quantitative nature of the questionnaire, 29 cases will therefore suffice for analysis.

Distribution respondents Eneco

- Generation and Storage
- Eneco Energy Trade
- Corporate Affairs
- Eneco Smart Energy
- Agro Energy
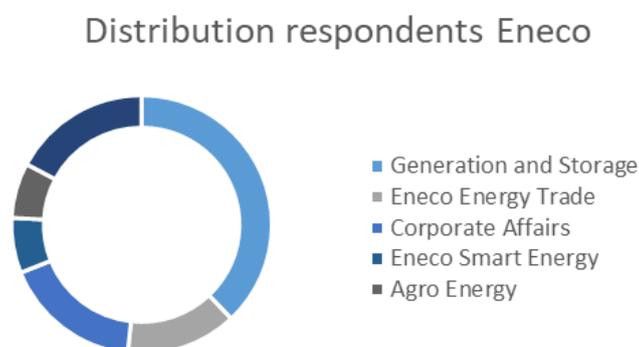
Figure 8: Distribution of respondents from Eneco according to company branches.

Figure 8 shows the distribution of respondents per branch of company. By looking at this assortment, it is clear that a large number of the employees from the sample work in the department 'Generation and Storage'. This might seem biased at first sight, which would mean that the sample statistics deviate from the true value (Rice, 2010). However, the department of Generation and Storage is made up of different sub-departments; solar, wind, hydro and biomass energy and natural gas. Accordingly, the sample population included an equal distribution of employees from each sub-department, in order to avoid biases.

4.4.2 Content

The content of the online survey can be divided into two parts, where the first gathers relational data and the second part gathers more attribute data (see Attachment I). The first part was based on research by both Johannisson et al. (2002) and Harris et al. (2008). In both researches respondents were asked to indicate relationships with other actors based on an attribute scale. Table 4 and 5 below show the attributes Johannisson et al. (2002) and Harris et al. (2008) respectively used in their research to evaluate the relationships amongst respondents.

Table 4: Attributes of relationships following Johannisson et al. (2002).

Tie	Characteristic
Awareness	Organisation/actor and its operations are known
Acquaintance	Someone in management is personally known
Talk	Substantive face-to-face or telephone meetings were held over the last 30 days
Commercial	Some business (goods/services) has been transacted over the last 9 months
Professional	Staff of organisation is approached when a problem turns up
Joint development project	Over last 3 years there has been a partnership aiming at joint development
Provided business contacts	The organisation has been recommended to own business contacts
Received business contacts	The organisation has mediated new business contacts
Children's schoolmates	Management's children are in the same class at school

Table 5: Attributes of relationships following Harris et al. (2008).

Tie	Characteristic
Not linked or integrated at all	Do not work together at all and have separate program goals
Communication	Share information only when it is advantageous to either or both programs
Cooperation	Share information and work together when any opportunities arise
Coordination	Work side-by-side as separate organisations to achieve common program goals
Collaboration	Work side-by-side and actively pursue opportunities to work together as an informal team
Partnership	Work together as a formal team with specified responsibilities to achieve common program goals
Fully linked or integrated	Mutually plan, share staff and/or funding resources and evaluate activities to accomplish our common goal

Both attribute tables seem appropriate, as they reflect the essential characteristics name by Uzzi (1997); trust, fine-grained information transfer and joint problem solving. However, in the scale developed by Johannisson et al. (2002), the features can overlap and one tie does not rule out the other. The attributes of Harris et al. (2008), by contrast, possess a more ordinal scale, where the last features are larger (Perkins, 2010), or in this case 'more embedded' than the first. Therefore,

while using the research design of both, only the attributes of Harris et al. (2008) were used in the online questionnaire.

The respondents were provided a list of actors present in the region and were asked to indicate the relationship based on the scale in Table 5. The list of actors and stakeholders in the three northern provinces included other firms, organisations and institutions. Again, the list was constructed using the reputational approach, where nominees were provided by a knowledgeable informant (Scott, 2017). The informant, J. De Boer (2017, personal communication, 10 November), appointed all current partnerships with firms, organisations and institutions in the three Northern provinces and these actors formed the basis of the list. Based on the literature by Miller (2003), universities and educational organizations were added to the list as institutions.

This method, related to roster questions, has the disadvantage that the list may be incomplete. However, asking the respondents via nomination questions which actors are involved in the network and what the mutual relationships look like, has the problem of deciding on limiting the number of nominations or not and what is called the issue of recall. This means that respondents can forget important actors in the moment of filling out the survey (Scott, 2017). Therefore, both types of questioning were used in dealing with this boundary issue; first respondents were presented with the above mentioned composed list and thereafter were asked which important actors were missing from the list.

The second part of the questionnaire contained more open, in-depth questions regarding the Eneco its position and image in the region. By asking the respondents about future possible links, how the position of Eneco has changed in the past years and what can be done to improve embeddedness in het the Northern provinces for example, more information is gathered about the network. It then becomes possible to find solutions on how to stimulate and achieve more embeddedness in the region. The full content of the survey amongst the employees of Eneco can be found in Attachment I.

4.5 Online survey amongst stakeholders and agents in the region

4.5.1 Respondents

A second online survey was carried out amongst the regional actors in the list from the first survey, to compute the network and its corresponding ties as objective as possible. All firms, organisations and institutions named via the reputational approach by the informant (J. De Boer, 2017, personal communication, 10 November) included in the first internal questionnaire were naturally included in the second, external survey. A second technique was used to find external respondents in the region. In the first survey the employees were asked which important actors in the network were missing from the list. Using this snowballing technique, informants, or in this case respondents, nominate others for study (Longhurst, 2010; Scott, 2017). The results of this question indicate important actors from the network and therefore, these were also taken into account in the survey.

The sample population consisted of 30 firms, organisations and institutions who received the online survey. With 19 responses, this resulted in a response rate of 63% and a margin of error of 13.85%. This is somewhat higher than desired and the absolute number of responses is somewhat low.

4.5.2 Content

The set-up of the survey amongst external actors in the region used the same set-up as the first questionnaire amongst the employees of Eneco. In the first part the respondents were again presented with a list of firms, organisations and institutions in the region and were asked to indicate the relationships based on the attributes by Harris et al. (2008). Naturally, Eneco was added to the list, together with some perceived competitor energy companies. For example, due to the long history of Essent in the region (De Groot & Van Houten, 1988) and several collaborations (RUG, 2005; Essent, 2017; RWE, n.d.), it can be expected that the company fits within the social network cluster in Groningen and is embedded in the northern region. Also, due to the outcomes of the analysis of company data, where Nuon proved to be of importance in Friesland, and the precedent of Friesland owning shares in the company, Nuon was also added. By letting the respondents make a comparison between the corporations, valuable insights are gained in what ties the established firms have and where Eneco can improve embedded relations. The order of the list was slightly adjusted, resulting in three categories in order to improve the convenience for completing the questionnaire. The survey can be found in Attachment II.

The second part of this survey also contained open, in-depth questions regarding the current network in the Northern Netherlands and Eneco its image in the research area. In addition, by asking in which way Eneco could improve the relationship with the respondent's organisation, insights were gained in how to approach missing links in the network. The full content of the survey amongst the firms, organisations and institutions in the Northern Netherlands can be found in Attachment II.

4.6 Analysis of both online surveys

The analysis of this research follows the methodology from Johannisson et al. (2002) and Harris et al. (2008) and is combined due to the similar content of both the survey amongst employees of Eneco and amongst external actors in the region.

4.6.1 First part of both surveys: assessing relationships with actors in the network

The results of the first part of the online questionnaires were anonymously transformed into a relational matrix in Excel, including all respondents, actors in the region and the ties. The data was transformed in order to study the results, as the attributes by Harris et al. (2008) are based on an ordinal scale. With ordinal data it is implied that one feature is larger or smaller than the other, but not how much larger of smaller (Perkins, 2010). This makes giving numbers to the features rather difficult, but to analyse the survey results, numbers were given to the different attributes. This means that 'Not linked or integrated at all' was given the value zero and 'Fully linked or integrated' was given the value six. The option 'I don't know' was also added as a possible answer and is regarded as missing data. This option has the risk of respondents filling in 'I don't know' too quickly, but it avoids the problem of forcing answers and prevents biased results.

Ordinal scales generally do not allow to calculate means. However, in the debate amongst scholars, there are 'liberals' who feel that using interval calculations with ordinal data can give fruitful results (Stevens, 1946; Knapp, 1990). Therefore, also following the example by Harris et al. (2008), in the case of multiple participants from the same organisation, the mean was taken for analysis purposes and for computing the matrix. Additionally, including the non-responsive actors was needed for completing the matrix. Reconstructing ties, which means using a single response to describe the link, is an accepted method of data management in networks in cases where the amount of missing data is less than 30% (Huisman, 2007). In this research on approximately 43% of all linkages, partial or no data was obtained.

These links were therefore, together with the 'I don't know' responses, assigned a zero value. The result is a directed 35x35 matrix with all firms, organisations and institutions included in the questionnaires in a single representation.

In order to perform more complex data analyses, the matrix was dichotomised (Harris et al., 2008; Scott, 2017). Value three holds that the organisations work side-by-side as separate entities, but pursue a common goal. Due to the high incidence of low values in the matrix and few larger values, the cut off was therefore at value three; coordination. This means that values zero up to and including two were assigned a zero value, being not linked, and values three and up were given the value one and were seen as linked or integrated. The dichotomised matrix can be found in Appendix V.

The dichotomised matrix was then entered in UCINET (Borgatti, Everett & Freeman, 2002), a social network analysis program. UCINET was chosen over NodeXL, because it works with both one- and two-mode matrices and is recognized as the most important and widely used program by Scott (2017). Furthermore, UCINET has the built-in extension Netdraw (Borgatti et al., 2002), which was used in this research to present visualisations of the network. Using UCINET, several network features can be measured and calculated working with the dichotomized matrix and the results will be presented in the following chapter. Table 4 below shows which network measures were calculated in this research and their definitions.

Table 4: Definitions of the calculated network measures (Source: Harris et al., 2008; Corteville & Sun, 2009; Scott, 2017).

Network measure	Definition
Density	The proportion of connections in the network of all possible ties, ranging from 0 to 1.
Distance	The average amount of steps it takes to reach all network participants.
Degree Centrality	The number of ties an actor has, representing its connectedness.
Outdegree Centrality	The number of ties an actor has going out to the other actors; the actor seeks connections. Measured as a percentage of the maximum number of ties, between 0 and 100 percent.
Indegree Centrality	The number of ties an actor is receiving from the other actors; partners seek a connection with the actor. Measured as a percentage of the maximum number of ties, between 0 and 100 percent.
Betweenness Centrality	The frequency with which a node lies on the shortest path connecting other nodes, indicating the intermediary role of an actor. Would the actor be removed from the network; it hinders communication amongst the other actors. Measured as a percentage of maximum betweenness, between 0 and 100 percent.

4.6.2 Second part of both surveys: in-depth questions regarding regional integration

The results of the second part of both surveys were answers to open-ended questions. Due to the qualitative nature of both the questions and answers, interpretation is difficult as performing statistical analysis is not possible. The answers were therefore focused by question, in order to identify consistencies or differences and then categorized per theme relating to the sub-questions (Taylor-Powell & Renner, 2003). This resulted in anonymized quotes, of which the results can be found in the following chapter.

4.7 Ethics

In selecting respondents, collecting data and analysing results, it is important that the researcher remains reflexive. This refers to the concept of positionality, where the researcher is aware of his or her social position (Longhurst, 2010). In the explanatory text accompanying both surveys, it was clearly stated that the researcher is currently following an education at the University of Groningen and that this research takes place in the context of a master thesis. The rest of the text differed slightly between the internal and external survey. For the survey amongst employees it was made clear that the research is commissioned by Eneco, indicating the necessity of completing the survey as the results are useful to the firm. With the external survey amongst firms, organisations and institutions in the region, the emphasis was more on the scientific nature of the research. By leaving out the significance for Eneco in the accompanying text, it was expected that the respondents would assess and evaluate the relationship with Eneco more honestly. It should be noted that since most external respondents were found via the personal network of one of the employees of Eneco, it is possible that the relationship between Eneco and the organisation of the respondent in question could have been evaluated more positively.

5. Results

In this chapter the results of the analysis of secondary company data and of the online surveys are shown and discussed. First, the consumer numbers and brand awareness results are visualized in order to determine the passive image of Eneco amongst the local population. Afterwards, the kind of ties present in the region are established, based on the results of both surveys. Together with calculated network measures, the current energy-related network is investigated. Based on the type of network, key strategic partners are pinpointed. Lastly, how firms new to the region can establish and form relationships with Northern actors and thereby enhance their local embeddedness, is discussed.

5.1 Eneco and the local population

5.1.1 Consumer numbers in 2010 and 2016

By looking at the difference in the spread and numbers of consumer per postal area, the popularity and part of the current position of the energy company can be analysed. These numbers reflect the passive image of the firm, namely how people perceive the company as an energy supplier. Comparing consumer numbers of 2010 with 2016 shows whether the increased activities of Eneco are mirrored by an increase in consumers, as can be seen in Figures 9 and 10 (larger representations can be found in Attachments III and IV).
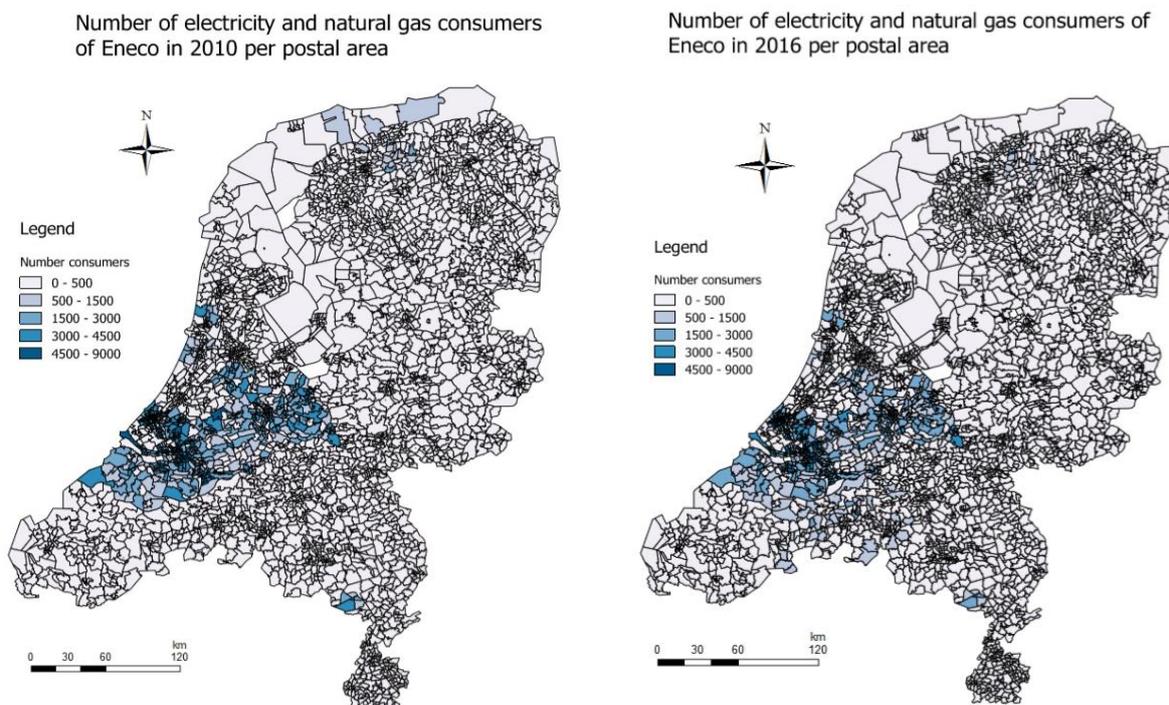
Figure 9: Number of consumers of Eneco in 2010 (Source: Eneco, 2017, personal communication, 18 December).

Figure 10: Number of consumers of Eneco in 2016 (Source: Eneco, 2017, personal communication, 18 December).

Between 2010 and 2016 the spread of consumers has remained almost similar. The concentration is the greatest around The Hague, Dordrecht and Rotterdam. This is a consequence from the establishment of the company out of a merger between the three municipal energy companies (Eneco, 2017d). The absolute numbers even show a decrease from approximately 1.6 million consumer households to 1.4 million between 2010 and 2016 (Eneco, 2017, personal communication, 18 December). Figure 11 Figure 12 do show that in the research area the popularity has overall slightly improved. Section 5.1.2 will further discuss the popularity of energy companies in the region, to further explore the image of the firm in the region.

Number of electricity and natural gas consumers of Eneco in 2010
per postal area
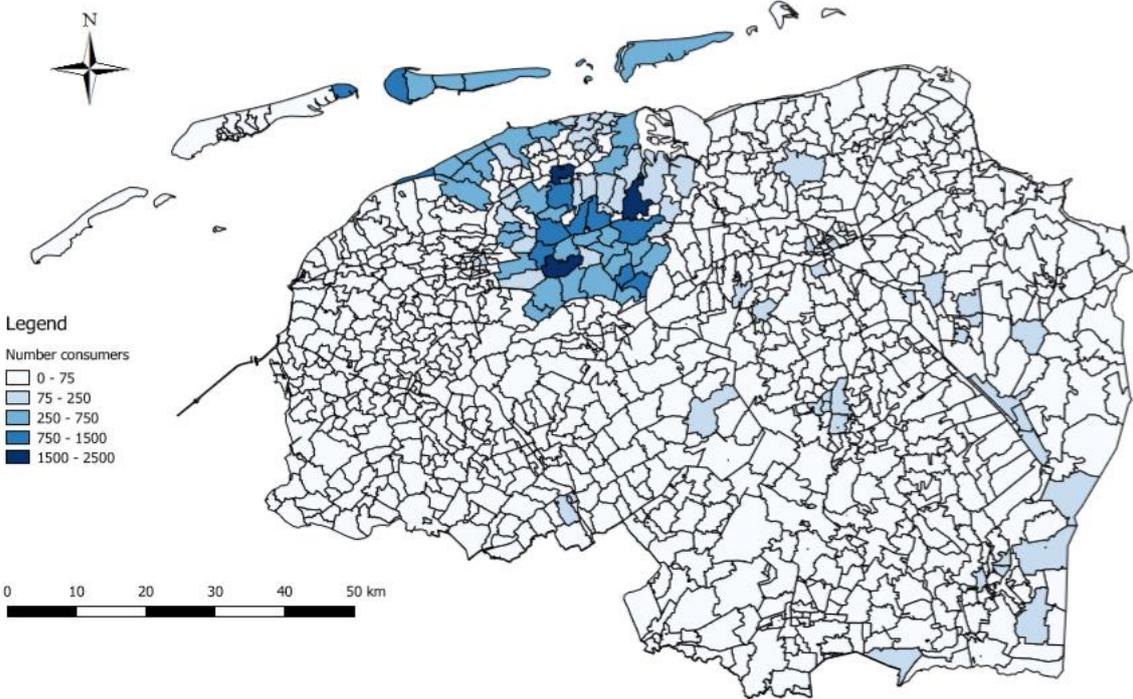
Figure 11: Number of consumers of Eneco in 2010 in the Northern region (Source: Eneco, 2017, personal communication, 18 December).

Number of electricity and natural gas consumers of Eneco in 2016 per
postal area
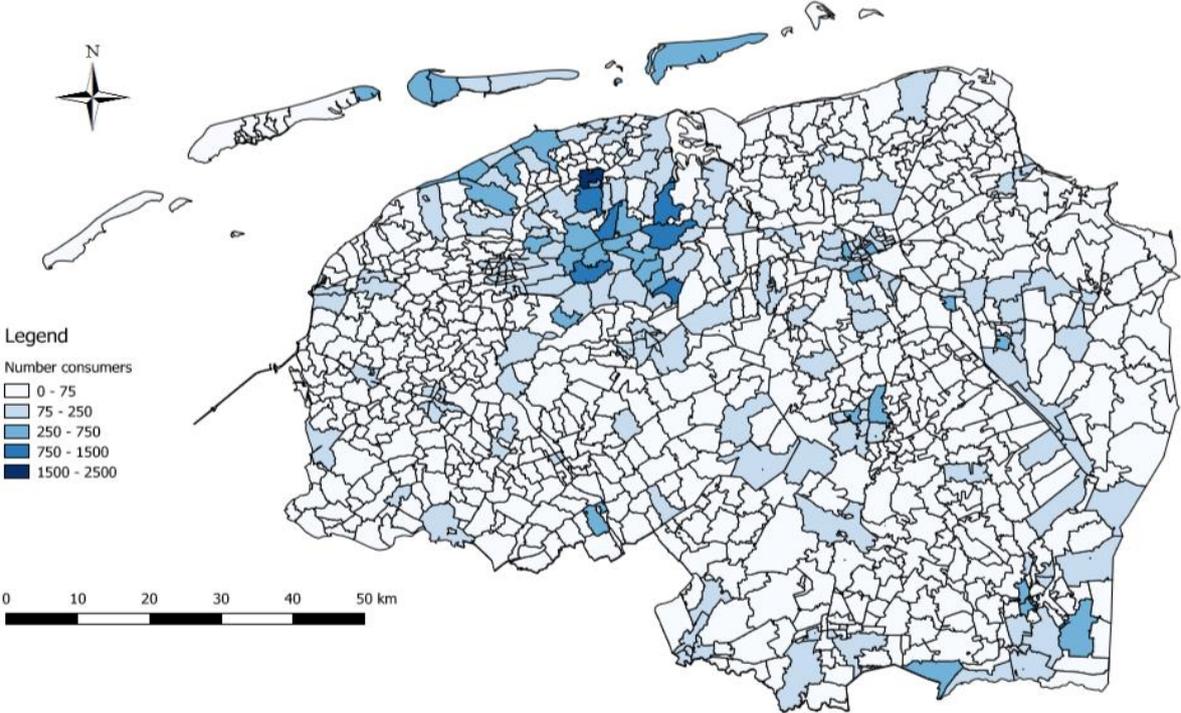
Figure 12: Number of consumers of Eneco in 2016 in the Northern region (Source: Eneco, 2017, personal communication, 18 December).

Figure 11 and 12 show that in 2010 the postal areas surrounding Leeuwarden accommodated the most consumers of Eneco, together with the islands Ameland and Schiermonnikoog. Six years later, the absolute numbers in these areas have slightly declined. A spreading out effect across the region can be seen, as the consumer numbers have somewhat increased in the rest of the research area. Despite this effect, there are no considerable changes between the patterns of 2010 and 2016, indicating no increase in the popularity of Eneco as an energy supplier in the North. Unfortunately, there is no precise data from before 2010, making it difficult to make statements about the passive image of Eneco in the North before and after the liberalization. Pricewise did evaluate the market shares of energy suppliers in 2004 and 2014. In both years, Eneco did not make it to the top five in the three northern provinces (Leek, 2014). This means that, where Figure 9Figure 12 are complemented by the data from Pricewise (Leek, 2014), despite the liberalization the market shares of Eneco in the North have not greatly improved.

5.1.2 Consumer brand awareness and company image

Figure 13 shows the brand awareness in the three northern provinces in the period from 2012 to 2017 in weighted percentages and Figure 14 the image of the energy suppliers in the North.
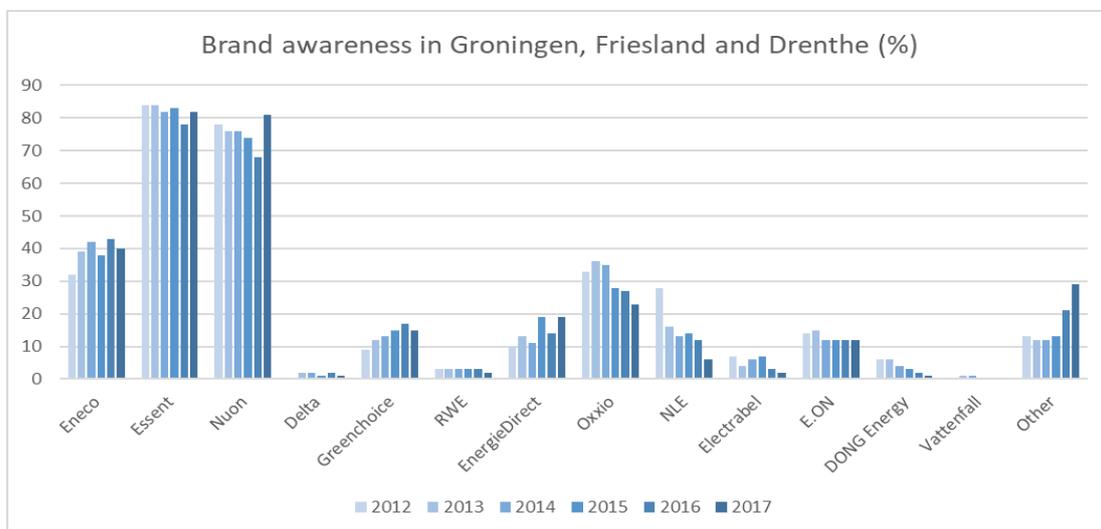
Figure 13: Brand awareness in Groningen, Friesland and Drenthe (Source: Eneco, 2017, personal communication, 19 December).
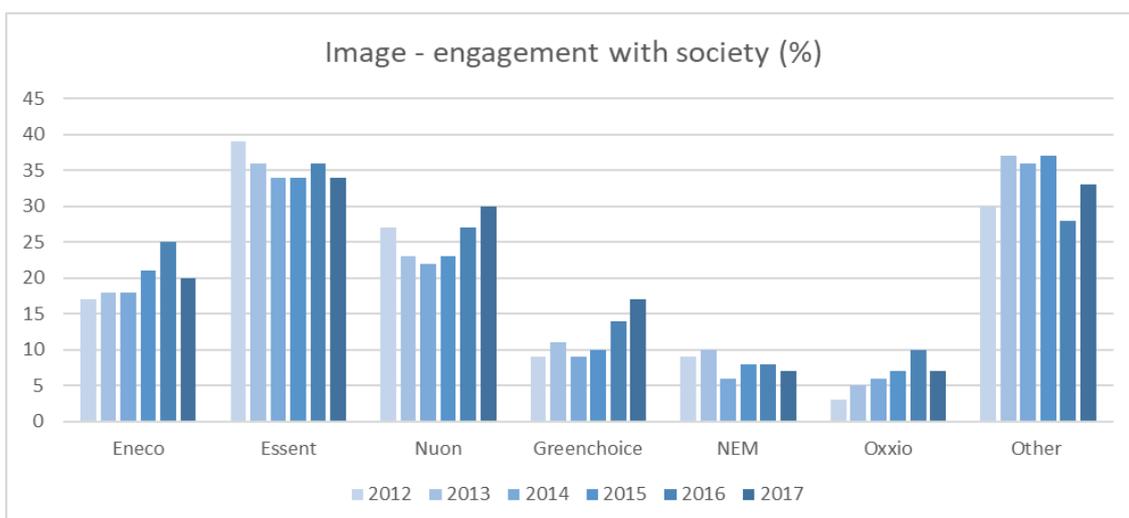
Figure 14: Image reflecting the engagement with society in Groningen, Friesland and Drenthe (Source: Eneco, 2017, personal communication, 19 December).

The data displays that the brand awareness of Eneco amongst consumers has risen from 32% to 40% in Figure 13 during these five years. The brand awareness is increasing, even though it is still low in comparison to the 80% of Essent and Nuon. This is also mirrored by the generally improving image of the firm regarding the engagement with society, as can be seen in Figure 14. Interestingly, the image of Essent is actually decreasing, while Nuon and Greenchoice are perceived to increasingly engage with society. Finally, Oxxio is also developing their image in this region. Oxxio is part of the Eneco Group (Eneco, 2017d), which means that the consortium is performing better in the northern provinces. The image of each company reflecting the engagement with society can be regarded as the passive image consumers have of these firms. Engagement with society is thus the integration and embeddedness of firms as perceived by the local population, one of the three types of actors.

The representation varies, when looking at the provinces separately. Therefore, the following graphs will zoom in on the individual provinces and their performances in 2017, as this portrays the most recent status.
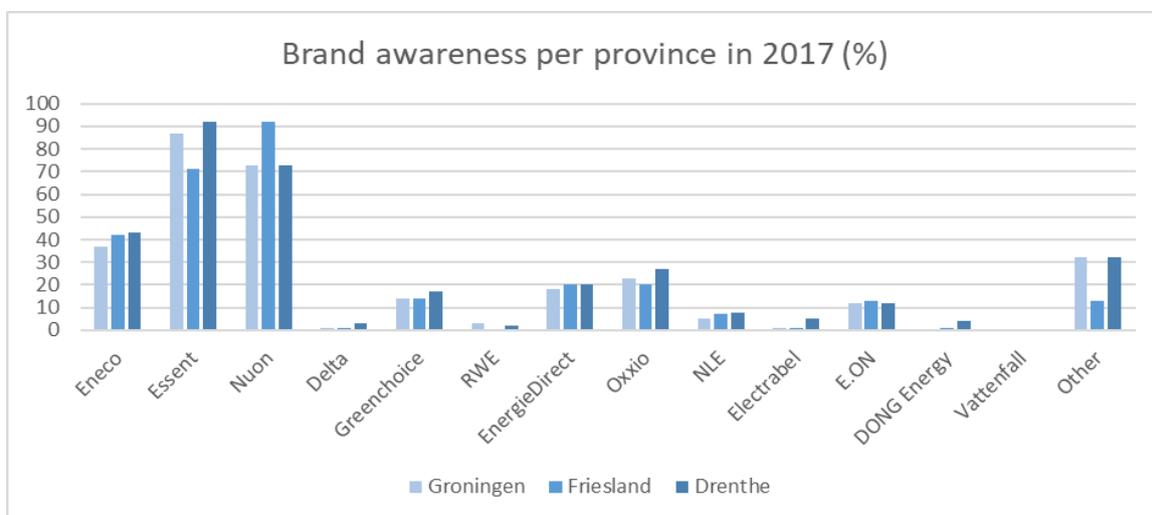
Figure 16: Brand awareness per province in 2017 (Source: Eneco, 2017, personal communication, 19 December).
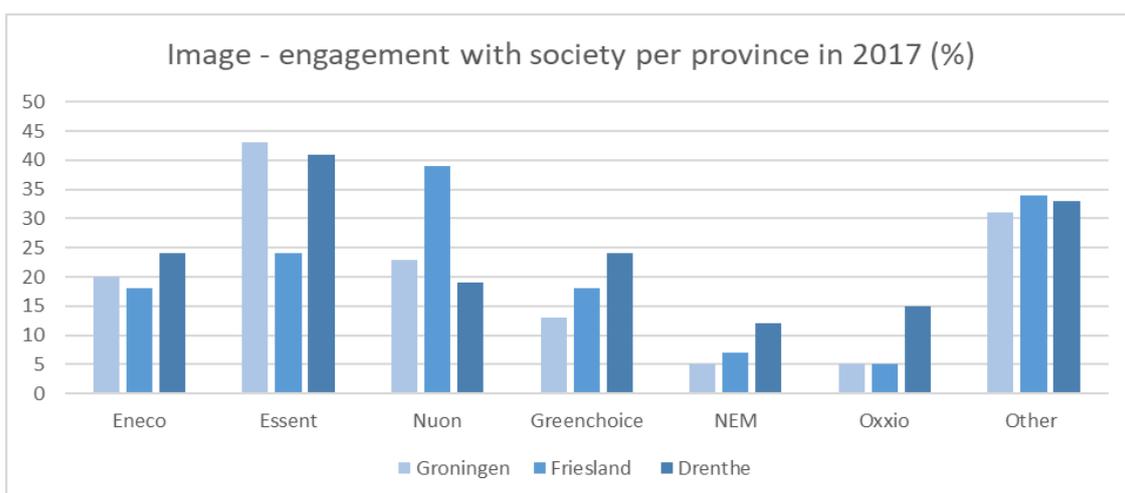
Figure 15: Image reflecting the engagement with society per province in 2017 (Source: Eneco, 2017, personal communication, 19 December).

Figure 16 clearly shows that while the brand awareness for Eneco is relatively equal in the three different provinces, Essent and Nuon show different trends. In Groningen and Drenthe Essent is more popular, but contrastingly Nuon is distinctively more well-known in Friesland. This is a logical consequence from the fact that Friesland used to own a large share of Nuon (Provincie Fryslân, n.d.). Furthermore, Figure 15 shows the image of each of the energy companies regarding their engagement with society per province in 2017. The history of Friesland with Nuon is also reflected in the perceived, passive image. For example, Essent is not particularly popular in Friesland, but Nuon is. In comparison, Essent is very popular in Groningen and Drenthe and Nuon is not.

The representations of brand awareness and image show that while Eneco is making progress in the region, there is still a large gap with Essent and Nuon and improvements can be made. Furthermore, the increasing passive image is not mirrored by increasing consumer numbers. ACM (2016) confirms that while more people are switching between energy suppliers, the largest group of non-switchers remains not willing to make the switch as the threshold is perceived to be too high.

5.2 The energy-related network in the Northern Netherlands
This paragraphs first shows visualisations of the energy-related corporate and institutional network, with Eneco its position in it. As the visualisations demonstrate that Eneco appears to have a central position, subsequently several network measures have been calculated to confirm this. The second part of this paragraph, discusses the results of the in-depth survey questions, where respondents appoint potential key strategic partners and elaborate on how embedded relationships can be formed in the region.

5.2.1 Visualisation of the network
Relational data was gathered amongst firms and institutions in order to compose the network. Figure 17 first shows all 469 recognized ties with the value one or higher, meaning that there is at least occasional communication between the actors. Node sizes represent the degree centrality; larger nodes are more central as they have more connections and the arrows show the direction of the tie. This figure seems impressive, but it gives little information about the actors in the network and the network features, as it includes both arm's-length and embedded ties.
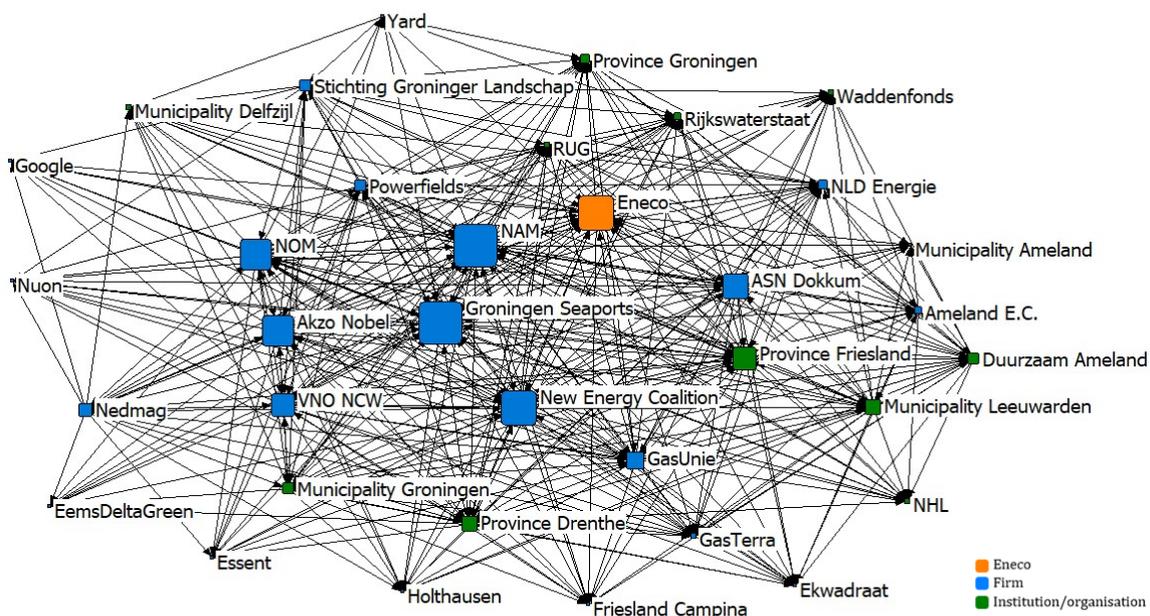
Figure 17: Visualisation of all ties valued one or higher in the network.

Values three and higher consider actors to be linked and an overview of all the individual, integrated ties between the actors can be found in Attachment V. Figure 18 shows all 222 ties in the network, which are considered linked and embedded in this research. Node size again represents degree centrality, where Eneco is relatively smaller in the visualisation. Figure 18 and Attachment V both show; almost every firm has an integrated relationship to at least one institution, displaying that there is at least second order embeddedness in the network.
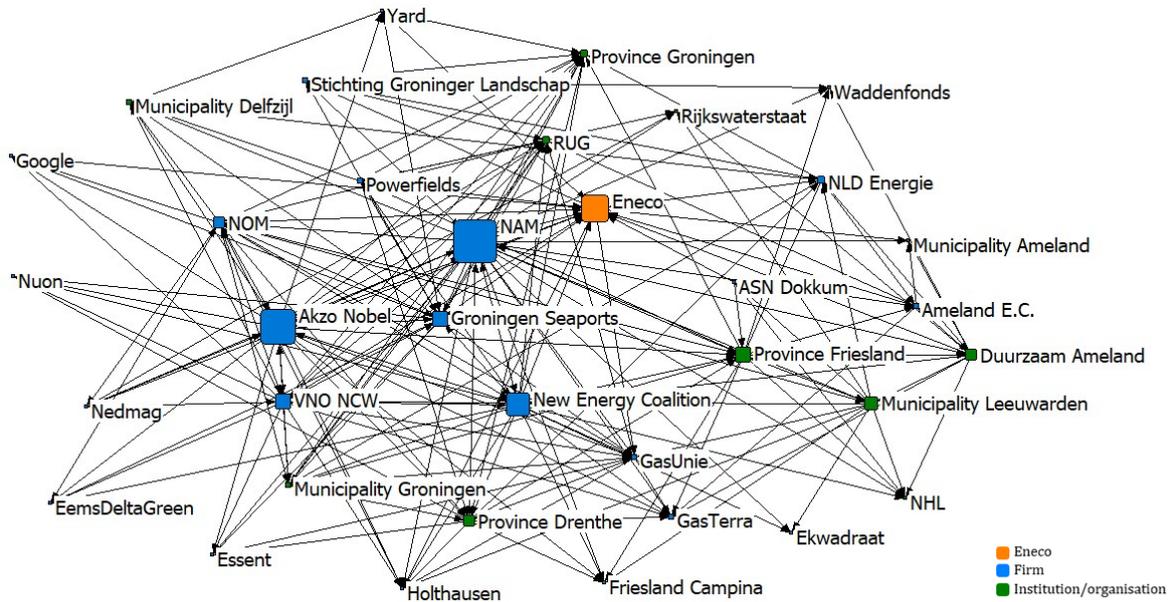
Figure 18: Visualisation of all ties valued three or higher in the network.

Figure 19 below shows all 80 ties valued five or higher, meaning there is at least a partnership or a fully integrated tie. In this representation of the network, all actors are still connected to a least one other actor.
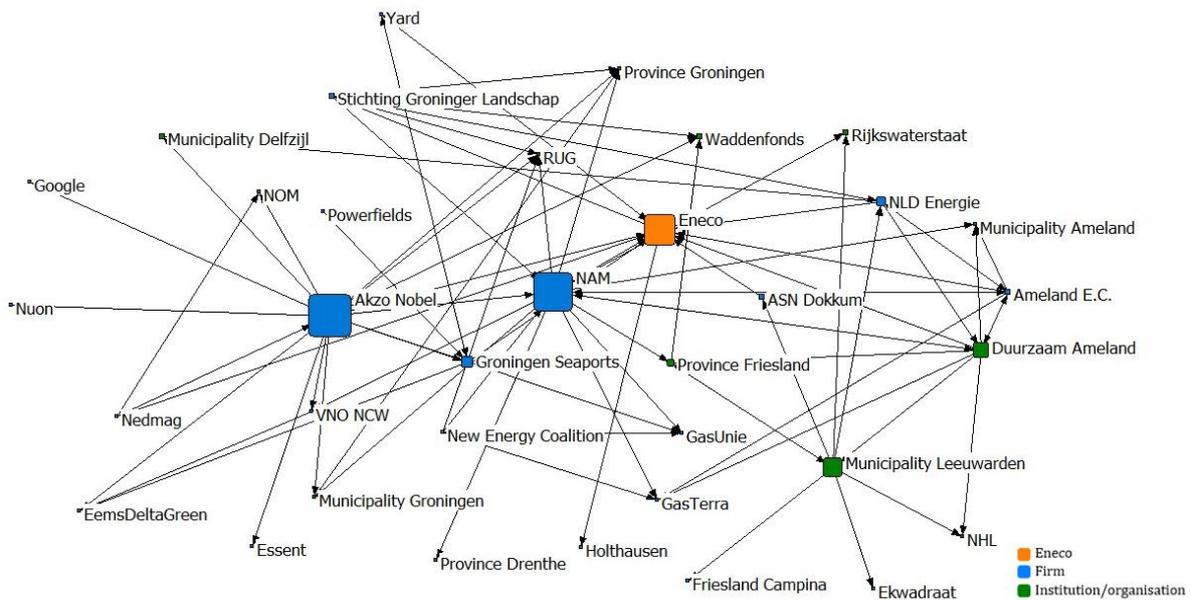
Figure 19: Visualisation of all ties valued five or higher in the network.

Finally, Figure 20 represents the 27 fully linked or integrated ties.
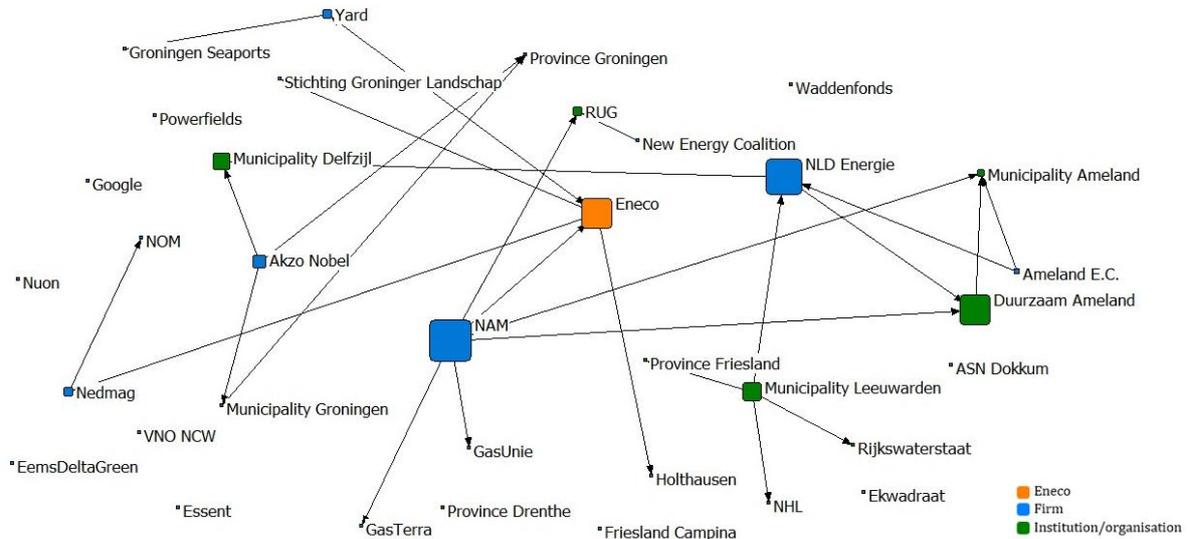
Figure 20: Visualisation of all ties valued six in the network.

These visualisations first show in Figures 17 and 18 that approximately an equal amount of arm's-length and embedded ties were found. This means that the energy related network in the Northern Netherlands resembles the integrated network by Uzzi (1997), where both types of ties can be found. Eneco appears to have a central position in the network, especially in Figures 19 and 20, where the firm has several strong ties. However, this research was done from Eneco's perspective, which must be kept in mind when observing these visualisations. The firms the 'Nederlandse Aardolie Maatschappij' (NAM) and NLD Energie also have a central position with various connected ties, together with 'Duurzaam Ameland'.

In Figure 20 some nodes are disconnected. While this may be true for some actors, others are disconnected as not a response was obtained from every actor. This missing data can cause a misrepresentation from reality, whereby possibly Eneco's position appears to be more central. The following section will present more precisely calculated network characteristics to determine the centrality of the actors, as the figures only show first impressions.

5.2.2 Network characteristics

To further investigate the network, several network characteristics were measured. First, calculations from UCINET (Borgatti et al., 2002) resulted in a density of 0.187 of the network. With 18.7% density the network appears to be only somewhat interconnected. However, as Uzzi (1997) stated in chapter 3, too many embedded ties create overembeddedness. A too dense network would therefore create a lock-in situation. Figure 4 also shows that in the most optimal integrated network there are some embedded ties and many arm's-length ties, which would adhere to a network with a moderate or low density. This means that with 18.7% density the energy-related network in the Northern Netherlands is not too interconnected and that there is room for flexibility. This integrated network is mirrored by the visualisations in the previous section, which show that how further integrated or linked the relationship the less ties remain. The network is also not too disconnected and quite cohesive, as calculations show that it takes on average 1.8 steps to reach all actors in the network. Both measurements indicate that the researched network resembles the integrated network by Uzzi (1997).

Secondly, the centrality of each actor was measured, using the dichotomized data where only the ties valued three or higher are considered being linked. While the Figures 17 till 19 showed the actors with the node size according to degree centrality, these sizes differed per visualisation. Therefore, more specifically, the outdegree and indegree centrality were measured and the percentage results can be found in Table 5.

Table 5: Outdegree and indegree Centrality of the actors in the network.

Actor	Outdegree (%)	Indegree (%)	Actor	Outdegree (%)	Indegree (%)
Akzo Nobel	23.000	7.000	NAM	25.000	7.000
Ameland Energy Cooperation	7.000	5.000	Nedmag	5.000	3.000
ASN Dokkum	3.000	1.000	New Energy Coalition	20.000	6.000
Duurzaam Ameland	12.000	4.000	NHL	Missing	6.000
Eems Delta Green	Missing	5.000	NLD Energie	7.000	6.000
Ekwadraat	Missing	3.000	NOM	17.000	10.000
Eneco	12.000	13.000	Nuon	Missing	5.000
Essent	Missing	6.000	Powerfields	8.000	1.000
Friesland Campina	Missing	6.000	Province Drenthe	11.000	7.000
GasTerra	Missing	9.000	Province Friesland	9.000	10.000
GasUnie	5.000	10.000	Province Groningen	Missing	13.000
Google	Missing	5.000	Stichting Groninger Landschap	5.000	3.000
Groningen Seaports	16.000	8.000	Rijkswaterstaat	Missing	5.000
Holthausen	Missing	9.000	RUG	Missing	12.000
Municipality Ameland	Missing	4.000	VNO NCW	17.000	7.000
Municipality Delfzijl	Missing	8.000	Waddenfonds	Missing	4.000
Municipality Groningen	5.000	7.000	Yard	4.000	3.000
Municipality Leeuwarden	11.000	4.000			

The results clearly show that the NAM, chemical factory Akzo Nobel and the New Energy Coalition have the most integrated ties going out, which means that they seek a lot of connections and collaborations. With 12% outgoing linked connections, Eneco scores a lot less although it is still in the middle. This indicates that Eneco is relatively less actively seeking out partners, in comparison with other actors. This contradicts the expression of the firm where they seek to extend projects and partnerships in the northern region. These results would mean that while Eneco communicates wanting to expand in the North, they are not too actively seeking out partnerships.

Interestingly, the companies with a lot of outgoing ties do not necessarily also have a lot of ingoing ties. Especially Eneco, the Province of Groningen and the University of Groningen (RUG) relatively have the highest percentage incoming linked ties, meaning that they are sought after by actors in the region for partnerships and collaborations.

In addition, Table 5 shows that the percentage of indegree centrality is much lower for the energy companies Essent, NLD Energie and Nuon. This is especially noteworthy since the actors in the region mentioned Nuon, Essent and NLD Energie as the most important competitors of Eneco, together with RWE and Engie. These answers align with the company data stating the popularity of Essent and Nuon amongst the local population. Yet the indegree centrality would argue that Eneco should experience much less competition from these companies in the network with organisations and institutions, than stated by the external respondents. However, more information was obtained about the centrality of Eneco than of the other competitors. This results in a bias towards Eneco regarding the indegree centrality in comparison.

To further investigate the centrality of actors in the network, the Freeman (1979) betweenness was measured. The results in Table 6 show the percentage of betweenness of each actor, where high percentages indicate important intermediary roles (Scott, 2017).

Table 6: Betweenness of the actors in the network.

Actor	Betweenness (%)	Actor	Betweenness (%)
Eneco	86.368	Yard	0.533
NAM	79.192	Powerfields	0.500
Akzo Nobel	68.004	Province Groningen	Missing
NOM	57.162	Ekwadraat	Missing
Province Friesland	47.230	Rijkswaterstaat	Missing
New Energy Coalition	40.280	Municipality Delfzijl	Missing
Groningen Seaports	39.200	RUG	Missing
Municipality Leeuwarden	28.375	Waddenfonds	Missing
Province Drenthe	26.058	Friesland Campina	Missing
Duurzaam Ameland	22.178	EemsDeltaGreen	Missing
VNO NCW	18.295	Nuon	Missing
NLD Energie	14.422	Municipality Ameland	Missing
GasUnie	11.214	Google	Missing
Ameland E.C.	9.328	Holthausen	Missing
Municipality Groningen	4.610	GasTerra	Missing
Stichting Groninger Landschap	4.372	NHL	Missing
Nedmag	1.063	Essent	Missing
ASN Dokkum	0.615		

The results show that Eneco has the highest percentage of betweenness and thus acts as intermediary and is very central to the network. High betweenness also reflects the extent to which an actor in the network can play as a 'broker' or 'gatekeeper', meaning that the actor can potentially exert control over others (Scott, 2017).

This would make Eneco an important and central actor in the network in the Northern Netherlands, with certain influence. However, again more information was gathered about Eneco and its perspective was taken in this research and in finding respondents. Therefore, a bias exists towards Eneco explaining the high percentage. Accordingly, it is more interesting to look at the other prominent actors. The NAM and Akzo Nobel are again characterized by high betweenness, indicating their importance in the region. Furthermore, there are some institutions with relatively high betweenness. This means they have an intermediary and facilitating role, indicating that there is third order embeddedness in this network in the northern region.

5.3 Stimulating regional embeddedness

5.3.1 Potential key strategic partners

The second part of both surveys contained more in-depth questions regarding new potential strategic partners, presence in the region and the regional image amongst firms, organisations and institutions. Respondents from outside the company and in the region were first asked to identify which actors were missing from the presented lists, in order to identify potential strategic partners in the energy-related network. Entering into new relationships with these potential partners may be valuable for improving embeddedness by expanding the company network. Figure 21 shows the results from the survey, indicating which key actors in the network are appointed. Darker colours, together with larger sizes, represent potential partners which were named more frequently by the respondents.
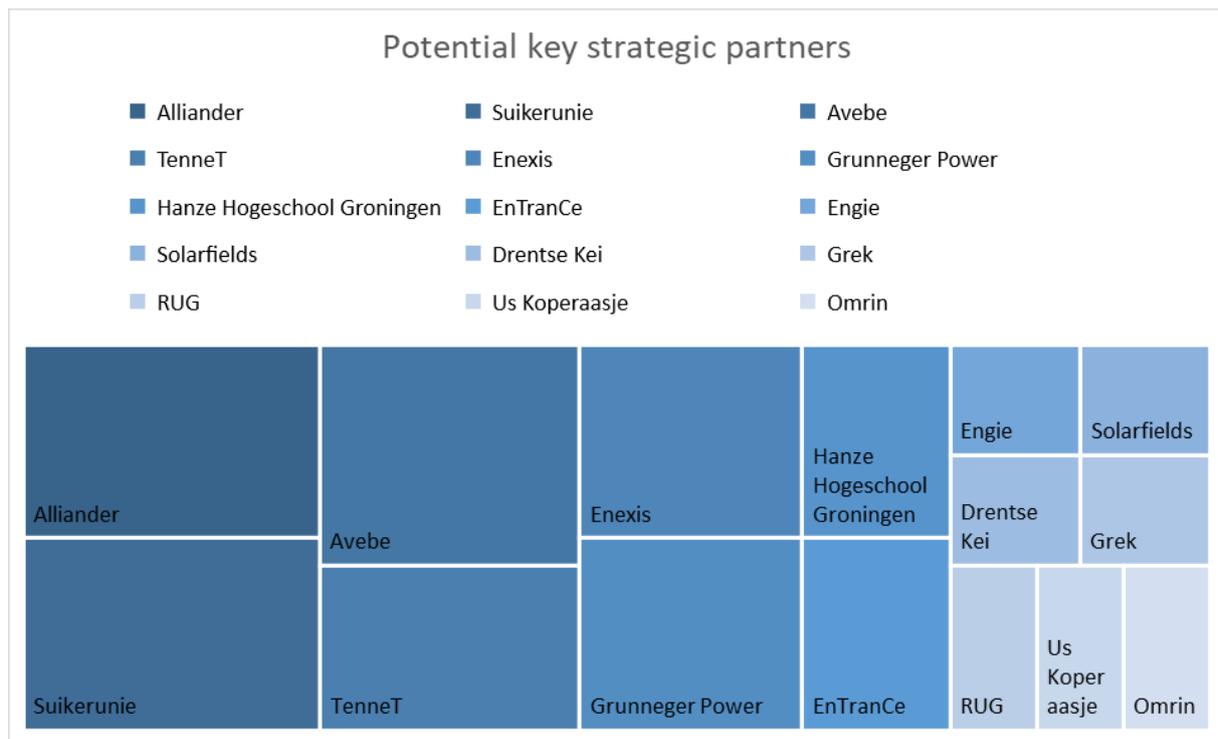
Figure 21: Potential key strategic partners.

Aside from energy-related organisations, industry companies as the Suikerunie and Avebe are also mentioned due to their large power usage and influence in the region. Furthermore, the RUG and Hanze Hogeschool Groningen are seen as strategic educational institutions, mirroring the relatively high percentage of incoming ties and popularity of the RUG as partner from Table 5. Finally, the academic relevance is also reflected by the reference of EnTranCe, a field lab where researchers, students, businesses and policy makers join forces regarding the energy transition (EnTranCe, n.d.). For Eneco, these potential partners could help expand the network in the North.

5.3.2 Establishing embeddedness

Following the research questions, the online questionnaires not only resulted in potential new partners with whom establishing relationships helps to get access to the regional energy network. New collaborations can further integration and therefore, the results of the surveys also showed insights in how these relationships and regional embeddedness can be established and enhanced. Firstly, in total approximately 80% of the respondents indicated that physical presence in the region is essential for regional integration and embeddedness. These results thus send a clear message; being physically present is important. While it can be expected that actors in the region press on the importance of physical presence, it is noteworthy that also 79% of the employees from Eneco emphasis this notion and two respondents even suggested opening a branch of the company in the region.

The reasons why employees vouch for a change in the current position of Eneco in the Northern Netherlands and for regional presence do vary widely. For example, some respondents recognize the increased activity in the North as an energy region and its rich history as an energy supplier. Even though, some believe that a regional approach should be the norm for the whole of the Netherlands. In contrast, the region is also seen as a niche market as one employee mentions that "the gas production in Groningen is decreasing and an alternative has to be found" (Employee 21, 2017, personal communication, 7 December) and where "the region quickly shifts and the industry a large consumer is" (Employee 14, 2017, personal communication, 6 December). Indeed, as the previous section showed, the NAM is an important and central actor in the region, with several embedded ties with other actors. Due to the increased problems regarding earth quakes in the province of Groningen, the government agency 'Staatstoezicht op de Mijnen' (SodM) pressed on the importance of lowering the gas production (SodM, 2018a). This would mean reduced importance of the NAM, as the supply of gas to households will decrease (SodM, 2018b). Accordingly, as recognized by Employee 21, this creates an opportunity and possible niche market for Eneco as other renewable energy sources are needed to provide in the energy consumption.

Additionally, a respondent recognizes that there is potential for Eneco increasing its market share on small-medium enterprises (SME). This is especially interesting since the external respondents from firms and institutions in the region also mentioned several SMEs, which could be potential key strategic partners. For example, Grunneger Power, Drentse Kei and Ûs Koperaasje. This would mean that entering into partnerships with local SMEs can enhance the regional position and embeddedness.

How are these partnerships established? To answer this question, the regional actors were asked what is important for integration and bonding with the region. The most notable outcome was; joint interest and goals, focused on the region. Furthermore, several respondents voiced the importance of a so-called 'no nonsense culture', meaning honouring commitments and concretely showing and doing things. Finally, one respondent mentioned the relevance of having confidence in and trusting one another. The results named by the external respondents in the region strongly reflect the concept of embedded ties by Uzzi (1997). This shows that his suggestions on the main components important in forming relations can be applied by Eneco; trust, fine-grained information transfer and joint problem-solving arrangements (Uzzi, 1997).

5.3.3 Regional image and identity

The theory on regional embeddedness indicated the importance of image and identity, as discussed in chapter 3. Therefore, not only the local population was taken into account, but both the employees and the regional actors were asked about Eneco's image in the northern Netherlands. Figure 22 shows the distribution of answers by actors in the region, regarding Eneco's image. Its shows that overall Eneco has a positive image. There is room for improvement as 28% of the actors in the region answered neutrally and 5% even disagreed.
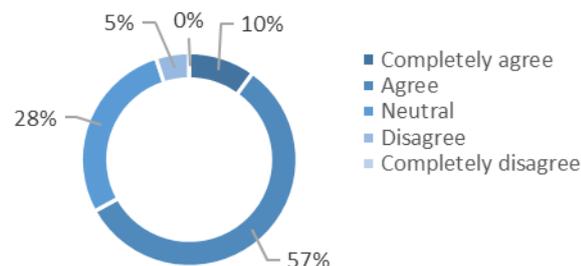
Figure 22: Image of Eneco in the region.

Additionally, 76% of the actors in the region agreed with the statement that Eneco's image is positive due to the sustainable strategy of the company. Although this can certainly be considered as positive, in seeking embeddedness and integration, a more regionally characterized image would also be favourable. Therefore, both the employees and external respondents in the region were asked how Eneco's image and regional integration and bonding could be improved.

First, 97% of the employees agreed with the statement that more projects and partners in the Northern region would enhance the regional integration and 90% agreed that more projects and partners would improve Eneco's image. The employees were thereafter asked how this image could be positively enhanced. However, this proved to be rather difficult to answer. One respondent suggested "using acquisition and promotional means via local channels, such as local symposia, the media, etc." (Employee 11, 2017, personal communication, 5 December). This would adhere to the favours, which Uzzi (1997) mentions as a requirement for embedded relations. Furthermore, more attention to and establishing relations with regional SMEs was mentioned by several respondents. This would possibly be fruitful, as there are various potential key SME partners present in the region, not limited to Figure 21. Finally, one respondent vouched strongly for "storytelling; clear stories about our activities, also with regard to joint projects with the NAM and about the BGR, for example" (Employee 29, 2018, personal communication, 8 January).

The external actors in the region were also asked how the relationship between them and Eneco could be improved, in order to potentially improve regional identity and embeddedness. Beside suggesting Eneco should subsidise ecological restoration and preservation in the region, one respondent gave some other extensive advice:

> "To profile yourself even more actively and show with word and deed that you 'love' the region and see it as a front runner. This includes projects regarding social return and community engagement, as 'reimbursement' of all the projects that Eneco develops here" (Respondent 2, 2017, personal communication, 13 December).

This especially relates to the local population and, again, SMEs. These results indicate the importance of establishing partnerships with smaller local firms and of 'giving back' to the region, as this creates goodwill amongst local actors. Giving back to the region and creating goodwill, can again be done using favours. Following the theory from Uzzi (1997) in chapter 3, this will eventually create trust amongst actors and result in embedded relationships.

5.3.4 Reciprocal collaboration in the provinces

In the introductory chapter the significance of keeping aligned with regulatory policy frameworks was pointed out, as regional governments influence and steer the energy transition. In the theory this was reflected by the concept of institutional thickness and active institutional policy. Therefore, the external actors in the region were asked how the collaborations at the regional level have changed in the past years, in order to put this research in the right context.

Most external respondents agree that over the past years the regional cooperation and collaboration has intensified and has become stronger. This is a logical consequence from increased decentralization by the national government, meaning that the central government releases more responsibilities and decision-making to regional authorities (Hofhuis, 2017). Some respondents do feel that the government is more involved. For example, respondent 10 mentions that "The government interferes more intensively with the preconditions of projects due to support for discussions" (2017, personal communication, 14 December). On the contrary, others mention that the government is too absent and respondent 2 states that:

> "Governments are too far removed from the market and are hindering more than they are facilitating. Furthermore, the tasks are on paper, but they have no idea what is needed to achieve the goals. Sustainability and becoming energy neutral is way more than just a windmill or a few solar panels on a house" (2017, personal communication, 13 December).

This statement would mean that there is little to no active policy regarding new investments, and certainly no project-based approach by local institutions. Additionally, the problems with earth quakes make that another respondent feels that the regional cooperation has deteriorated. These results mean that the earth quakes and corresponding problems form negative externalities for the region, which could threat the attractiveness to new investors.

Most respondents throughout the region do feel that regional reciprocal collaboration has improved, despite some concerns. A new impulse is given to regional cooperation via the bundling of the Energy Academy, Energy Valley and Energy Delta in the New Energy Coalition. The realization that one needs another has led to "comakership" (Respondent 15, 2017, personal communication, 19 December) and intensive cooperation contracts.

6. Conclusion

This research attempted to get a better understanding of the processes involved when a company from outside the region seeks integration in another region in the country, via the so-called 'Regional Direct Investment' (RDI). While much research focused on the integration of FDI in other countries, little was known about these processes concerning firms and branches within the same country. The situation in the Netherlands proved an interesting case, as decentralization results in increased importance of the regions and the liberalization that opened up the Dutch energy sector. To contribute to the current body of research, this research focused on the case of Eneco; an energy company from Rotterdam seeking to improve their position and integration in Groningen, Friesland and Drenthe. For integration in the kind of innovative system present in the northern region, relationships with other firms and institutions are important (Perkmann, 2006). Accordingly, a network approach was taken with the main question; '*What does the network of Eneco in the energy sector look like in the northern region of the Netherlands and what is needed to establish a regional and integrated approach for economic activities regarding sustainable energy?*'

Following the theory in chapter 3 and the conceptual network in Figure 7, three dimensions in the network were taken into account; the local population, other firms and institutions present in the region. First, the analysis of company data showed the passive image of Eneco amongst the local population. In the past six years, the spread of consumers across the Netherlands has remained fairly stable, with a large concentration surrounding The Hague, Dordrecht and Rotterdam and few consumers in the North. No large changes regarding the passive image of the company as an energy supplier were found. At the same time, consumer brand awareness and appreciation of the company image have improved for Eneco in the region. The consumer numbers of Eneco do have increased slightly, as can be expected with an improving image. However, there is still a large threshold for most consumers to actually switch. As Eneco still lacks behind the strong local image of Essent and Nuon, improvements herein would consequently also lead to more consumers. This mutually reinforcing process would eventually lead to a stronger relationship with the local population and more integration in the region.

The other two dimensions were approached via a social network analysis, showing the current status of the network in the northern region. The visualisations showed that the entire network is made up of both approximately equal amounts of arm's-length and embedded ties, indicating that an integrated network as Uzzi (1997) defined it is in place. Almost every firm had at least one integrated relationship with an institution in the region and these institutions perform intermediary and facilitating roles; third order embeddedness was thus found in the network. Network measures confirmed that the integrated network is in place and also adheres to the social network cluster by McCann and Mudambi (2005), as clearly identifiable relationships between the industry, other firms and institutions exist in a geographical concentrated space. It can be concluded from these findings that a healthy and flexible network is in place in the North, where generally access can be gained by trust, fine-grained information transfer and joint problem-solving arrangements by Uzzi (1997) and McCann and Mudambi (2005). Understanding the type of network and cluster in place, therefore gives insights in how relationships can be formed and access can be gained.

While less integrated ties form the norm, several fully integrated ties exist. Most of which are with the Eneco, the municipality of Leeuwarden and NLD Energie. Furthermore, calculations measured the centrality of actors. It showed that while the NAM and the New Energy Coalition for example seek the most collaborations in the network, Eneco is amongst the organisations which are the most sought after for relationships. Eneco relatively seeks out fewer partnerships, which contradicts with the expressions by the firm stating that they seek to expand activities in the

North. From this finding can be concluded that what the firm expresses is not in keeping with measured activities and actions.

Keeping in mind that this research takes on Eneco's perspective, the firm appears to have a central position in the network with other firms and institutions. However, this is not directly reflected by the relationship with the local population, where Essent and Nuon form a firm competition. This means that the performance of the firm in the business market has little impact on the consumers' view and perception of the firm. From this can be concluded that while all three dimensions are important in regional integration for firms, different regional approaches are required. This means that not only the passive image is important. The active image is also needed and appropriate and targeted marketing could potentially help translating business successes to the local population.

The results showed a central position of Eneco, but improvements can be made when looking at other integrated actors. Forming relationships with key potential strategic partners in the region could improve embeddedness, as these were pinpointed as important actors in the energy sector in the Northern Netherlands. Following the active example of the NAM, forming relationships with the potential actors increases the number arm's-length and embedded relationships and thereby the influence and position in the network. These partners can be categorized into organisations in the energy sector, large industry companies and educational institutions, where especially the University of Groningen comes forth.

In establishing embeddedness and relations with these potential partners, physical presence in the region is important. Furthermore, actors in the region press on the importance of trust and a 'no nonsense culture' in pursuing joint, regional interests and goals. These results adhere to the characteristics of relations in a social network cluster (McCann & Mudambi, 2005) and embedded ties (Uzzi, 1997), and how these can be formed. The corporate image can influence this process, and while most actors perceive Eneco its image as positive in the region, much of this is due to their sustainable strategy and not their regional actions. Using promotional means via local channels is one way this image could be improved and goodwill could be created, together with favours, storytelling and establishing relations with SMEs. Finally, actively profiling and showing 'love' for the region goes hand in hand with social return and community engagement, as reimbursements for current projects where the region experiences hinder, can improve the image and thereby regional embeddedness. These results thus confirm the found theories on establishing relationships in order to improve integration, indicating that the similar processes are involved with RDI as were found with regard to FDI.

Over the past years the regional reciprocal collaborations have improved, due to necessary cooperation of smaller authorities because of decentralization of the central government. Though there are some actors in the Northern Netherlands who feel that the local government is still too far removed from the market and is hindering development, as there is little understanding for what the energy transition actually needs. This means that there is little to no active policy regarding attracting energy innovative RDI by local institutions. However, the New Energy Coalition is seen as new impulse to regional cooperation and actors realize that one needs another to realise progress.

This research has contributed to the current body of research in economic geography concerning the local integration of firms. From analysis of the network in the Northern Netherlands can be concluded that similar process regarding the formation of relationships and integration of RDI occur as with FDI in foreign countries.

The energy sector in the North is made up of a combination of both arm's-length and embedded relationships between firms and institutions. Important actors in the region are the NAM, Akzo Nobel, the New Energy Coalition and the University of Groningen. Eneco too holds a central position, but improvements can be made. In conclusion, there are generally several actions which Eneco can undertake to improve their local embeddedness and to establish a regional and integrated approach:

- Forming collaborations with local SMEs and the university
- Doing favours in order to create goodwill and built trusted relationships
- Pursue joint regional goals and projects
- Actually doing what you say and showing that you 'love' the region.

Thinking about global ideals and goals in wanting to change to energy system and further the transition is important. The Northerners are open to collaborations and are making progress as an energy region, but they need locally based projects and local action.

7. Discussion

This chapter first discusses the implication of the research for Eneco and its regional approach and concludes with the limitations and recommendations for further research.

7.1 Implications for Eneco and it regional approach

This sub-paragraph will discuss the implications of the results of this research for Eneco and its regional strategy. First of all, the results of the internal survey amongst employees showed that there are large discrepancies in the answers per actor, meaning discrepancies in how employees perceive the relationships between Eneco and other firms and institutions in the Northern Netherlands. These answers from employees in the internal online survey can be found in Attachment VI and indicate the large differences in given values. Taking the relationship with Google for example; large numbers of employees gave the value 'Not linked or integrated at all' or 'Cooperation', both of which were considered falling under the category not linked in this research. However, in 2016 Eneco started a ten 10-year project with Google for the deliverance of wind energy for the datacentre in the Eemshaven (Eneco, 2017c). Another example concerns the diverse and low valued answers regarding the linkage between Eneco and Duurzaam Ameland, while both organisations worked together on the development of a solar field on the island (Duurzaam Ameland, n.d., Eneco, n.d.) and sit together in a covenant since 2007 which focuses on the energy self-sufficiency of Ameland in 2020 (De Amelander, 2016). The respondents were chosen via the reputational approach and were presumed to have knowledge about the region, as they deal with agents and projects in the Northern Netherlands. Different possible explanations can be devised for the various answers. First, the respondents did not have accurate knowledge about the actors and activities in het Northern Netherlands. Secondly, the questions in the online survey were still too open to interpretation, in result of which the respondents could have filled in the questions differently. Finally, the diverse answers by employees acting in the North regarding the relationships with actors could also imply that, there is no clear and shared knowledge about the regional approach and activities within the company, or at least amongst the relevant employees. White (2004) found that intra-firm relations are also a very important key factor in the process of embeddedness. This means that improvements and bonding relationships within the firm need to be made so that employees are on the same line regarding linkages and relationships in the Northern Netherlands and the regional approach.

Secondly, the analysis showed that Eneco has a central position in the network, but improvements can be made. For example, the regional image amongst the local population is still lagging behind Essent and Nuon, and there are firms with higher centrality measures. Actors in the region were therefore asked whether linking with key strategic partners by establishing bridging and embedded ties with these firms and institutions could potentially enhance Eneco 's position and embeddedness in the region. Most often the large industry companies were named, like Avebe and the Suikerunie, due to their high power usage. More interestingly, local and smaller regional players were also named regularly, for example Grek, Ûs Koperaasje and Drentse Kei.

The university (RUG) was also mentioned several times as a key institution, which adheres to the literature on the importance of universities in the process of firm embeddedness (Miller, 2003; White, 2004). The results of the surveys clearly stress the importance of investing in linkages with local SMEs and the university. Finally, as one respondent indicated together with the SodM (2018a; 2018b), with the reduced production of gas and corresponding problems of the NAM, a potential niche market arises. By grasping this opportunity and offering a renewable alternative, market shares can be increased. Furthermore, as the NAM possibly becomes less important in the network, this opens up potential influence. Making use of this development could improve the position of Eneco in the North, while at the same time being able to exert influence on regional processes regarding the energy transition.

Finally, the results not only revealed with whom establishing relationships could enhance Eneco its regional embeddedness, the external actors also elaborated on how these ties can be formed with specific suggestions. For example, as Uzzi (1997) mentioned, via favours and positive storytelling about successful projects, which could create goodwill. In addition, giving back to the region was named explicitly, by community engagement and nature restoration projects for instance. And at last, the regional actors asked for a no nonsense culture, which could establish trust and in the end embedded relationships between a potential partner and Eneco. In conclusion, the phrase 'Think global, act local' is important for the regional approach of Eneco towards the Northern Netherlands. While thinking about global goals in wanting to battle climate change for example is important, in order to make projects in the region successful, local action and attention is required.

7.2 Limitations and recommendations for further research

In this research the case of Eneco and its position in the Northern Netherlands was investigated and several actors in the region were approached and asked to participate in the external survey. The first limitation in the used method concerns the boundary issue (Laumann et al., 1983; Scott, 2017). Scott (2017) states that an attempt to deal with the boundedness of social relations is to identify the boundaries as perceived by the participants. Therefore, in this research, the reputational and snowballing approach were chosen and used for finding and appointing actors in the energy related network in the Northern Netherlands. It is possible that not all important actors in the network were identified, as Eneco's perspective was taken in this approach. Furthermore, as Scott (2017) shows, criteria made by the researcher can have different meanings to different respondents, meaning that relationships or the inclusion of actors can be perceived varyingly. Finally, when respondents are asked to name actors in the network, at that moment of time the respondent can momentarily forget an important actor. This would make the resulted network incomplete (Scott, 2017). In order to visualise and compose the entire energy related network in the Northern Netherlands and measure its features, the set-up of this research should be extend and repeated.

Table 7: Gathered linkage information in the 35-actor network with 15 non-respondents.

	Respondents and respondents (20x19)	Respondents and non-respondents (20x15)	Non- and non-respondents (15x14)	In the network (35x35)
Descriptions measured	380	300	0	1190
Descriptions missing	0	300	210	0
Type of information	Complete/ Reciprocal	Partial/One-sided	None	Complete/ Reciprocal
Number of relationships	190	300	105	595
Percentage of measured relationships in the total network	32%	50%	18%	100%

In addition to the boundary problem, non-response also leads to a high percentage of missing data, which caused that the visualised and measured network can differ from reality and is therefore not entirely representative. Following the reasoning of Stork and Richards (1992) Table 7 shows that, with the results from the employees from Eneco averaged, 20 out of the 35 actors filled in the online questionnaire. With these results, only complete data was gathered for 32% of the linkages in the network. There was no data for 18% and only partial data for half of the relationships in the network. This together makes that for approximately 43% (300+210/1190) of the relationships in the network data was missing, making the network and its measures incomplete.

In this research, it was chosen not to reconstruct the partial and missing ties, as not only Huisman (2007) suggested that reconstruction is only possible with less than 30% missing data, but also since the researcher has to be confident about the reliability of the answers from the respondents (Stork & Richards, 1992). The reliability of the data is not very high as in most cases only one answer was received per actor. Another criterion for reconstruction is that respondents should not systematically differ from non-respondents and this can be measured by comparing individual-level variables and data about communication patterns (Stork & Richards, 1992). This was not possible within the time frame of this research. Therefore, in order to get a more accurate representation of the energy related network in the Northern Netherlands, the inclusion of actors in the research could be extended or more information and research regarding the missing links could make reconstruction possible.

A possible bias in the research concerns the positionality of the researcher, especially regarding the external actors in the region. While the respondents were approached independently, they were found via the personal contacts of an employee of Eneco. This brings the possibility that the external respondents evaluated the relationship with Eneco somewhat more positively than otherwise would have been the case. Furthermore, since the research takes on Eneco its perspective regarding the network in the Northern Netherlands, it was difficult to approach well established competitors of the company in the region. This lack of information makes comparison with the embedded and integrated local competition challenging. As a result, Eneco's position may have come forward more positive in this study. A more independent researcher could therefore find different outcomes, although further research is recommended to confirm this claim.

Lastly, this is an exploratory research where an attempt has been made to get a first idea about the position of Eneco in the network in the Northern region and what this network looks like. The view of the local population was taken into account only by using secondary data and the online questionnaires gave little room for extensive in-depth questions regarding regional specifics influencing the processes of embeddedness and integration. For instance, it was established that there is at least second order embeddedness in het network. There was also some evidence for possibly third order embeddedness, but this was not extensively examined.

Moreover, with the ongoing energy transition and possibly increased steering and guidance by regional governments, the situation may very well be different in a few years and suggestions made here may no longer apply. Finally, the findings can differ for firms entering in the region in a different sector for example and additional research is therefore required to further explore firm embeddedness in the northern Netherlands. For the energy sector in the North, this research has shown that there is a social network cluster present in the region, where the formation of personal relationships based on trust is most important in gaining access.

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Attachments

Attachment I: survey amongst employees 'Enquête integratie Eneco in het Noorden'

Bij welke afdeling bent u werkzaam?

……………………………………………………

1. Beoordeel de relaties van Eneco met onderstaande overheden en organisaties.

Beoordeel de relatie met onderstaande stakeholders op een schaal van

1 = Geen contact

2 = Sporadisch contact

3 = Werken samen wanneer kans zich voordoet

4 = Werken samen als aparte organisaties met gezamenlijk doel

5 = Werken samen als informeel team met gezamenlijk doel

6 = Werken samen als formeel team met gezamenlijk doel

7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel

8 = Weet ik niet

	1	2	3	4	5	6	7	8
Duurzaam Ameland								
Gemeente Ameland								
Gemeente Delfzijl								
Hogeschool Leeuwarden (NHL)								
Provincie Groningen								
Provincie Friesland								
Provincie Drenthe								
Rijkswaterstaat								
Universiteit Groningen								
Waddenfonds								

2. Beoordeel de relaties van Eneco met onderstaande bedrijven.

Beoordeel de relatie met onderstaande stakeholders op een schaal van

1 = Geen contact

2 = Sporadisch contact

3 = Werken samen wanneer kans zich voordoet

4 = Werken samen als aparte organisaties met gezamenlijk doel

5 = Werken samen als informeel team met gezamenlijk doel

6 = Werken samen als formeel team met gezamenlijk doel

7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel

8 = Weet ik niet

	1	2	3	4	5	6	7	8
Akzo Nobel								
Ameland Energie Coöperatie								
Eems Delta Green								

Ekwadraat							
GasTerra							
GasUnie/GasUnie New Energy							
Google							
Groningen Seaports							
NAM							
New Energy Coalition							
VNO NCW							

3. Welke huidige partners in het Noorden ontbreken op deze lijsten? Benoem hierbij ook de relatie aan de hand van de schaal

1 = Geen contact
2 = Sporadisch contact
3 = Werken samen wanneer kans zich voordoet
4 = Werken samen als aparte organisaties met gezamenlijk doel
5 = Werken samen als informeel team met gezamenlijk doel
6 = Werken samen als formeel team met gezamenlijk doel
7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel
8 = Weet ik niet
……………………………………………………

4. Wat zijn potentiële strategische partners in het Noorden met wie Eneco nu nog geen partnerschap heeft?
……………………………………………………

5. Is het belangrijk dat de positie van Eneco in het Noorden verandert in de komende jaren?
0 Ja
0 Nee

6. In navolging op vraag 5: waarom?
……………………………………………………

7. Hoe is de positie van Eneco in het Noorden in de afgelopen jaren veranderd?
……………………………………………………

8. Beantwoord de volgende stellingen over de positie van Eneco in het Noorden.

	Geheel mee eens	Oneens	Neutraal	Eens	Geheel mee eens
Fysieke aanwezigheid in de regio Noord Nederland is belangrijk.					
Het is belangrijk voor Eneco om zich te vestigen in het Noorden vanwege het energie gerelateerde karakter van de regio.					
Meer projecten en partners in het Noorden zorgen voor meer binding met de regio.					

Meer projecten en partners in het Noorden zorgen voor een positief imago in de regio.					

9. Ook imago is van invloed op de positie van Eneco in de regio. Op welke manier zou het imago in het Noorden verbeterd kunnen worden?

……………………………………………………………

Attachment II: survey amongst agents in the Northern region 'Enquête energie-netwerk Noord-Nederland'

Bij welke organisatie bent u werkzaam?

……………………………………………………………

1. Beoordeel de relaties van Eneco met onderstaande overheden en organisaties.

Beoordeel de relatie met onderstaande stakeholders op een schaal van

1 = Geen contact

2 = Sporadisch contact

3 = Werken samen wanneer kans zich voordoet

4 = Werken samen als aparte organisaties met gezamenlijk doel

5 = Werken samen als informeel team met gezamenlijk doel

6 = Werken samen als formeel team met gezamenlijk doel

7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel

8 = Weet ik niet

	1	2	3	4	5	6	7	8
Duurzaam Ameland								
Gemeente Ameland								
Gemeente Delfzijl								
Gemeente Groningen								
Gemeente Leeuwarden								
Hogeschool Leeuwarden (NHL)								
Provincie Groningen								
Provincie Friesland								
Provincie Drenthe								
Rijkswaterstaat								
Stichting Groninger Landschap								
Universiteit Groningen								
Waddenfonds								

2. Beoordeel de relaties van Eneco met onderstaande energiebedrijven.

Beoordeel de relatie met onderstaande stakeholders op een schaal van

1 = Geen contact

2 = Sporadisch contact

3 = Werken samen wanneer kans zich voordoet

4 = Werken samen als aparte organisaties met gezamenlijk doel

5 = Werken samen als informeel team met gezamenlijk doel

6 = Werken samen als formeel team met gezamenlijk doel

7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel

8 = Weet ik niet

	1	2	3	4	5	6	7	8
Eneco								
Essent								
GasTerra								
GasUnie/GasUnie New Energy								
NAM								
NLD Energie								

Nuon							
Yard Energy							

3. Beoordeel de relaties van Eneco met onderstaande overige bedrijven.

Beoordeel de relatie met onderstaande stakeholders op een schaal van

1 = Geen contact

2 = Sporadisch contact

3 = Werken samen wanneer kans zich voordoet

4 = Werken samen als aparte organisaties met gezamenlijk doel

5 = Werken samen als informeel team met gezamenlijk doel

6 = Werken samen als formeel team met gezamenlijk doel

7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel

8 = Weet ik niet

	1	2	3	4	5	6	7	8
Akzo Nobel								
Ameland Energie Coöperatie								
ASN Dokkum								
Eems Delta Green								
Ekwadraat								
Friesland Campina								
Google								
Groningen Seaports								
Holthausen								
NedMag								
New Energy Coalition								
NOM								
VNO NCW								
Powerfields								

4. Welke belangrijke strategische partners in het energie-netwerk in het Noorden ontbreken op deze lijsten? Beoordeel de relatie ook volgens onderstaande schaal.

1 = Geen contact

2 = Sporadisch contact

3 = Werken samen wanneer kans zich voordoet

4 = Werken samen als aparte organisaties met gezamenlijk doel

5 = Werken samen als informeel team met gezamenlijk doel

6 = Werken samen als formeel team met gezamenlijk doel

7 = Gezamenlijke plannen, gedeelde werknemers en evaluatie activiteiten voor gezamenlijk doel

8 = Weet ik niet

……………………………………………………………

5. Wat is belangrijk voor binding met de Noordelijke regio?

……………………………………………………………

6. Is fysieke aanwezigheid noodzakelijk om binding met de regio te versterken?

0 Ja

0 Nee

7. Hoe is de onderlinge samenwerking op regionaal niveau in de afgelopen jaren veranderd?

……………………………………………………………

8. De volgende stellingen gaan over het imago van Eneco in de Noordelijke regio volgens uw organisatie.

	Geheel mee eens	Oneens	Neutraal	Eens	Geheel mee eens
Eneco heeft een positief imago in de Noordelijke regio.					
Het imago van Eneco is positief vanwege de duurzame strategie van het bedrijf.					
Meer projecten van Eneco in het Noorden zouden gunstig zijn voor de regio.					
Eneco haar aanwezigheid is belangrijk voor de regio, vanwege het energie gerelateerde karakter van de regio.					

9. Welke bedrijven zijn concurrenten van Eneco in het Noorden?
……………………………………………………………

10. Wat zou Eneco kunnen doen om de relatie en binding met uw organisatie te verbeteren?
……………………………………………………………

Number of electricity and natural gas consumers
of Eneco in 2010 per postal area

Source: Eneco (2017, personal communication, 18 December).

Attachment IV: Number of electricity and natural gas consumers of Eneco in 2016 per postal area

Number of electricity and natural gas consumers of Eneco in 2016 per postal area

Legend

Number consumers

☐ 0 - 500
☐ 500 - 1500
☐ 1500 - 3000
☐ 3000 - 4500
☐ 4500 - 9000
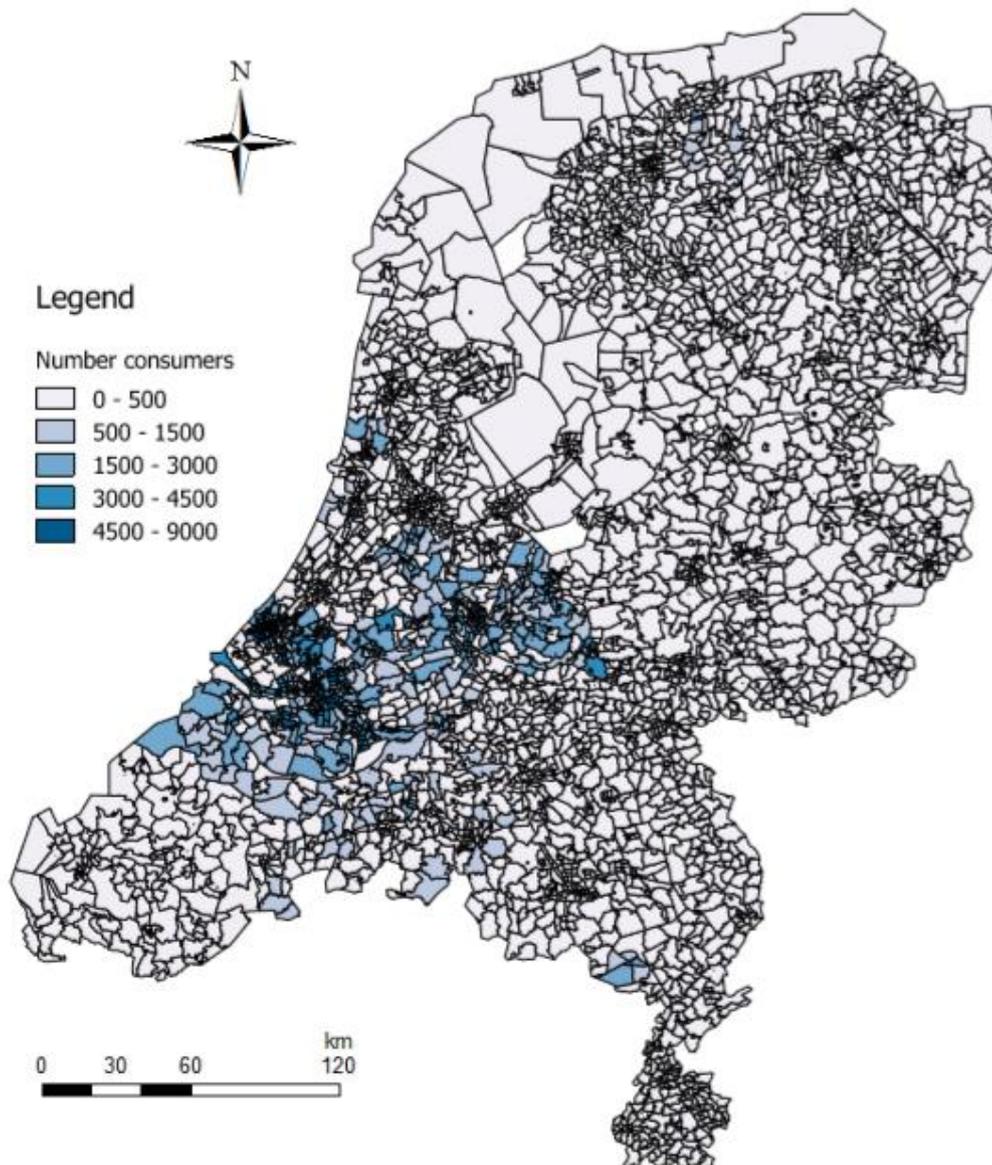
Source: Eneco (2017, personal communication, 18 December).

Attachment V: Directed matrix with all integrated ties in the network

Table 8 on the following pages shows the 35x35 matrix, where all values zero up to and including two were given the value one and were considered as not linked. All values three and higher, were considered as the actors begin linked and were given the value 1 and highlighted blue. This matrix formed the basis for the analysis in UCINET (Borgatti et al., 2002).

Table 8: Directed matrix with all found integrated ties, which were given the value 1.

	Akzo Nobel	Ameland E.C.	ASN Dokkum	Duurzaam Ameland	EemsDeltaGreen	Ekwadraat	Eneco	Essent	Friesland Campina	GasTerra	GasUnie	Google
Akzo Nobel				0	1	1	1	1	1	1	1	1
Ameland E.C.	0		0	1	0	0	1	0	1	1	1	0
ASN Dokkum	0	0		0	0	0	1	0	0	0	0	0
Duurzaam Ameland	0	1		1	0	0	1	0	0	1	1	0
EemsDeltaGreen	0	0	0	0		0	0	0	0	0	0	0
Ekwadraat	0	0	0	0	0	0	0	0	0	0	0	0
Eneco	1	1	0	0	0	0		0	0	0	1	1
Essent	0	0	0	0	0	0	0		0	0	0	0
Friesland Campina	0	0	0	0	0	0	0	0		0	0	0
GasTerra	0	0	0	0	0	0	0	0	0		0	0
GasUnie	1	0	0	0	0	0	0	1	0	1		0
Google	0	0	0	0	0	0	0	0	0	0	0	
Groningen Seaports	1	0	0	0	1	1	1	1	0	0	1	1
Holthausen	0	0	0	0	0	0	0	0	0	0	0	0
Municipality Ameland	0	0	0	0	0	0	0	0	0	0	0	0
Municipality Delfzijl	0	0	0	0	0	0	0	0	0	0	0	0
Municipality Groningen	0	0	0	0	0	0	0	0	0	1	1	0
Municipality Leeuwarden	0	0	1	0	0	1	0	0	1	0	1	0
NAM	0	1	0	1	0	1	1	1	1	1	1	1
Nedmag	1	0	0	0	0	0	1	0	0	0	0	0
New Energy Coalition	1	0	0	0	1	1	1	0	1	1	1	0
NHL	0	0	0	0	0	0	0	0	0	0	0	0
NLD Energie	0	1	0	1	0	0	1	0	0	1	0	0
NOM	1	0	0	0	1	1	1	1	1	0	1	1
Nuon	0	0	0	0	0	0	0	0	0	0	0	0
Powerfields	0	0	0	0	0	0	1	0	0	0	0	0
Province Drenthe	0	0	0	0	0	0	0	1	1	1	1	0
Province Friesland	0	1	0	1	1	0	0	0	1	0	0	0
Province Groningen	0	0	0	0	0	0	0	0	0	0	0	0
Rijkswaterstaat	0	0	0	0	0	0	0	0	0	0	0	0
RUG	0	0	0	0	0	0	0	0	0	0	0	0
Stichting Groninger Landschap	0	0	0	0	0	0	0	0	0	0	0	0
VNO NCW	1	0	0	0	1	1	1	1	0	1	1	1
Waddenfonds	0	0	0	0	0	0	0	0	0	0	0	0
Yard	0	0	0	0	0	0	1	0	0	0	0	0

Table 10: Directed matrix with all found integrated ties, which were given the value 1.

	Groningen Seaports	Holthausen	Municipality Ameland	Municipality Delfzijl	Municipality Groningen	Municipality Leeuwarden	NAM	Nedmag	New Energy Coalition	NHL	NLD Energie	NOM	Nuon
Akzo Nobel	1	1	0	1	1	1	0	0	0	1	0	1	1
Ameland E.C.	0	0	1	0	0	0	1	1	0	0	0	0	0
ASN Dokkum	0	0	0	0	0	0	0	0	0	1	0	0	0
Duurzaam Ameland	0	0	1	0	0	1	1	0	1	1	1	1	0
EemsDeltaGreen	0	0	0	0	0	0	0	0	0	0	0	0	0
Ekwadraat	0	0	0	0	0	0	0	0	0	0	0	0	0
Eneco	1	1	1	0	0	0	0	1	1	0	1	1	0
Essent	0	0	0	0	0	0	0	0	0	0	0	0	1
Friesland Campina	0	0	0	0	0	0	0	0	0	0	0	0	0
GasTerra	0	0	0	0	0	0	0	0	0	0	0	0	0
GasUnie	0	1	1	0	0	0	0	0	0	0	0	0	0
Google	0	0	0	0	0	0	0	0	0	0	0	0	0
Groningen Seaports		0	0	1	1	0	0	0	1	0	0	1	1
Holthausen	0			0	0	0	0	0	0	0	0	0	0
Municipality Ameland	0	0					0	0	0	0	0	0	0
Municipality Delfzijl	0	0					0	0	0	0	0	0	0
Municipality Groningen	0	0		0			0	0	0	0	0	0	0
Municipality Leeuwarden	0	1	0	0	0		1	0	0	1	1	1	0
NAM	1	1	1	1	1	1		1	1	1	0	1	1
Nedmag	0	0	0	0	0	0	0		0	0	0	0	0
New Energy Coalition	1	1	0	0	1	0	1	0		1	0	1	1
NHL	0	0	0	0	0	0	0	0			0	0	0
NLD Energie	0	0	0	1	0	0	0	0	0	0		0	0
NOM	1	1	0	1	1	1	1	1	1	0	0		0
Nuon	0	0	0	0	0	0	0	0	0	0	0	0	
Powerfields	1	0	0	1	0	0	0	0	0	0	0	0	0
Province Drenthe	0	1	0	0	0	0	1	1	0	0	1	1	1
Province Friesland	0	0	0	0	0	1	0	0	0	1	0	1	0
Province Groningen	0	0	0	0	0	0	0	0	0	0	0	0	0
Rijkswaterstaat	0	0	0	0	0	0	0	0	0	0	0	0	0
RUG	0	0	0	0	0	0	0	0	0	0	0	0	0
Stichting Groninger Landschap	0	0	0	0	0	0	1	1	0	0	1	0	0
VNO NCW	1	1	0	1	1	0	1	1	1	0	0	1	1
Waddenfonds	0	0	0	0	0	0	0	0	0	0	0	0	0
Yard	1	0	0	1	1	0	0	0	0	0	0	0	0

Table 10: Directed matrix with all found integrated ties, which were given the value 1.

	Powerfields	Province Drenthe	Province Friesland	Province Groningen	Rijkswaterstaat	RUG	Stichting Groninger Landschap	VNO NCW	Waddenfonds	Yard
Akzo Nobel	0	1	1	1	1	1	0	1	1	1
Ameland E.C.	0	0	0	0	0	1	0	0	0	0
ASN Dokkum	0	0	1	0	0	0	0	0	0	0
Duurzaam Ameland	0	0	1	0	1	0	0	0	1	0
EemsDeltaGreen	0	0	0	0	0	0	0	0	0	0
Ekwadraat	0	0	0	0	0	0	0	0	0	0
Eneco	0	0	0	0	0	0	1	0	0	1
Essent	0	0	0	0	0	0	0	0	0	0
Friesland Campina	0	0	0	0	0	0	0	0	0	0
GasTerra	0	0	0	0	0	0	0	0	0	0
GasUnie	0	0	0	0	0	1	0	0	0	0
Google	0	0	0	0	0	0	0	0	0	0
Groningen Seaports	0	0	0	1	0	1	1	1	0	1
Holthausen	0	0	0	0	0	0	0	0	0	0
Municipality Ameland	0	0	0	0	0	0	0	0	0	0
Municipality Delfzijl	0	0	0	0	0	0	0	0	0	0
Municipality Groningen	0	1	1	1	1	1	0	1	0	0
Municipality Leeuwarden	0	0	1	0	0	0	0	1	0	0
NAM	0	1	1	1	1	1	1	1	0	0
Nedmag	0	0	0	0	0	0	0	0	0	0
New Energy Coalition	1	1	1	1	0	1	0	1	0	0
NHL	0	0	0	0	0	0	0	0	0	0
NLD Energie	0	0	0	1	0	0	0	0	0	0
NOM	0	1	1	1	0	1	0	1	0	0
Nuon	0	0	0	0	0	0	0	0	0	0
Powerfields		1	1	1	1	1	0	0	0	0
Province Drenthe	0		1	1	0	0	0	0	0	0
Province Friesland	0	1		1	0	0	0	0	1	0
Province Groningen	0	0	0		0	0	0	0	0	0
Rijkswaterstaat	0	0	0	0		0	0	0	0	0
RUG	0	0	0	0	0		0	0	0	0
Stichting Groninger Landschap	0	0	0	1	1	1		0	1	1
VNO NCW	0	0	0	1	1	1	0		0	0
Waddenfonds	0	0	0	0	0	0	0	0		0
Yard	0	0	0	1	0	0	0	0	0	

Attachment VI: Frequency of given answers by Eneco employees per actor

Table 9 below shows the frequency of answers given by employees of Eneco.

Table 9: Frequency of given answers by Eneco employees per actor in the region.

Attribute	Akzo Nobel	Ameland Energy Cooperation	ASN Dokkum	Duurzaam Ameland	Eems DeltaGreen	Ekwadraat	Friesland Campina	GasTerra	GasUnie	Google
Not linked or integrated at all	5	5	0	10	11	9	10	4	4	7
Communication	1	3	0	0	2	5	6	2	3	1
Cooperation	6	4	1	5	2	5	4	9	7	5
Coordination	5	2	0	3	3	2	2	5	1	5
Collaboration	1	4	0	1	2	0	1	1	2	2
Partnership	3	5	0	3	1	0	0	2	2	3
Fully integrated or linked	3	3	0	2	1	1	1	1	2	2

Attribute	Groningen Seaports	Holthausen	Municipality Ameland	Municipality Delfzijl	NAM	Nedmag	New Energy Coalition	NHL	NLD Energie	NOM
Not linked or integrated at all	7	0	6	8	5	0	10	14	0	0
Communication	0	0	2	1	4	0	3	3	0	0
Cooperation	4	0	8	4	6	0	3	4	0	0
Coordination	3	0	0	5	2	0	1	0	1	1
Collaboration	4	0	1	4	2	0	0	1	1	0
Partnership	4	0	7	2	5	0	1	0	0	0
Fully integrated or linked	5	1	2	0	1	1	1	1	0	0

Attribute	Province Drenthe	Province Friesland	Province Groningen	Rijks-waterstaat	RUG	Stichting Groninger Landschap	VNO NCW	Waddenfonds	Yard
Not linked or integrated at all	13	8	6	7	9	0	6	12	0
Communication	5	7	4	4	6	0	3	7	0
Cooperation	2	5	5	5	5	0	6	3	0
Coordination	1	1	4	2	1	0	4	1	0
Collaboration	1	1	3	1	0	0	1	0	0
Partnership	0	0	2	3	0	0	0	0	0
Fully integrated or linked	0	0	0	0	1	1	1	0	1