Explaining Network Effectiveness in the Dutch Circular Economy

This comparative case-study explains the levels of effectiveness of networks that address the circular economy in the Netherlands.

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Title page

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Preface and acknowledgements

Over the last few years, I became increasingly fascinated by the complexity and importance of solving sustainability issues. Themes like energy transition and circular economy are exciting because they are about really changing the future. The transition towards a circular economy is also interesting because it spills over to many policy-sectors.

As a student of public administration, I wanted to gain as much knowledge as possible about environmental challenges. During an internship at the Interprovincial Board (in Dutch abbreviated: 'IPO'), I supported a team of experts that was active in negotiations for the Dutch Climate Agreement. At the same time, I started my thesis-project to finalise my master in Public Administration. Therefore, I decided to write my thesis with the circular economy as subject. The combination of the internship and thesis-project expanded my knowledge of sustainability issues and how they might be solved.

Nevertheless, I have to admit that writing a master thesis is not always fun or straightforward to do, but seeing the result after months of hard work brings great satisfaction. Lucky for me, I did not have to go through this process all by myself. First of all, I would like to thank Sandra Resodihardjo for all her efforts and guidance. The feedback that you provided was always appropriate and useful to improve my thesis. Additionally, I would like to thank Rareş Bogdan Drăgan for his input and opinion about my thesis and the process surrounding the thesis. And last but not least, I want like to thank my family and friends for their support and providing fun and relaxation whenever the progress was not as smooth as I hoped it would be.

I hope you enjoy reading my thesis, Okko Kruijshoop.

Deventer, December 2018

Thesis Summary

We currently live in a linear economy in which we make, buy, use and dispose of products like a one-way street. We are continuously stimulated to buy something new or better products and dispose of those we do not need anymore, although they still have value. This economic model has brought much wealth, but it is in the long term not sustainable from an environmental perspective. If substantial change remains absent, the ecological consequences will be severe and global annual GDP will suffer. Adjusting the economy is thus necessary to sustain economic prosperity and to prevent further environmental damage (OECD, 2015, p. 12; Stahel, 2016, p. 436).

The circular economy (CE) might be the solution as it sustains economic prosperity and prevents additional environmental damage (Lieder & Rashid, 2016, p. 37). In the CE, we are not only occupied with financial profit, but also consider the environmental and societal impacts of our actions (Sauvé et al., 2016, p. 53). The CE namely aims to minimalise waste from the start of the production process and would, thereby, reduce the dependence on raw materials and fossil fuels (De Wit et al., 2018, p. 14). The CE is, however, difficult to implement and also relatively new as only 9% of the consumed materials and products are recovered and reused for new purposes (De Wit et al., 2018, p. 22; Ghisellini et al., 2016, p. 17)

When governments address complex challenges, they can form networks to collaborate with companies, educational institutions, and non-governmental organisations. This strategy is becoming increasingly necessary to gain resources, knowledge, and legitimacy (Bryson et al., 2006, p. 44; Rainey, 2014, pp. 133–135). Because organisations cannot close the life-cycle loops of products and materials themselves, the CE is often associated with collaborative networks (Jonker et al., 2018, 6; Sauvé et al., 2016, 53). That is why networks are likely to play a vital role in the transition towards a CE (Lozano et al., 2016, p. 9).

Based on the preceding, the transition towards the CE is essential for future generations, and it is more likely to succeed if effective networks address the CE. There is, however, a limited body of knowledge about network effectiveness in the CE and an evaluative framework for it is missing (Korhonen et al., 2018, pp. 44–45). That is why the purpose of this thesis is to explain the effectiveness of networks that address the CE so that lessons can be drawn. Therefore, the following research question stands central in this thesis:

❖ What explains the effectiveness of networks that address the CE in the Netherlands?

To explain the effectiveness of networks that address the CE in the Netherlands, it was essential to know what the CE exactly entails. That is why at first a literature study was conducted in which the CE was defined as "an industrial system that is restorative or regenerative by intention and design" (MacArthur, 2013, p. 7). An important feature of the CE is that it has different levels of circularity which means that business models and products differ on the extent to which they optimise the usage of resources (Cramer, 2015, p. 3, 2017, p. 16).

Governments around the world use the principles of the CE for different reasons and apply them to multiple policy sectors (Winans et al., 2017, p. 826). The governments in the Netherlands find the CE vital because it supports environmental sustainability and also brings diverse new economic opportunities (Bastein et al., 2017, p. 7). The national government, therefore, announced a programme to support the CE and the provincial governments are adjusting their policies and invest heavily in circular projects. Dutch municipalities use the CE to shape and improve their agenda in different policy sectors.

Before the effectiveness of networks could be explained, the concept of network effectiveness was defined as "the attain[ment of] positive outcomes [for the surrounding community] that normally could not be achieved without collaboration" (Provan & Kenis, 2008, p. 230, text added). According to the theory, four variables affect the levels of effectiveness of networks: trust, goal consensus, network composition and network competences (Head, 2008, pp. 739–741; Turrini et al., 2010, pp. 535–539). These variables are mediated by the modes of governance which means that their effect on the effectiveness of a network depends on the type of network (Provan & Kenis, 2008, p. 237).

After describing the explanatory variables and their causal effects on the effectiveness of networks, this thesis proceeded with the methodological framework in which was decided that a comparative case study was the best way to answer the research question. Two real-life cases were carefully selected using multiple selection criteria: geography, (differences in) maturity and policy sector. The cases that were chosen to analyse are the Cleantech Regio and Circulair Friesland. The data was collected by reviewing 19 documents and by conducting 14 semi-structured interviews.

In the analysis, the cases were firstly introduced providing basic information about the history, structure, and composition of the two networks, and the levels of effectiveness are evaluated by assessing the explanatory variables. At the end of the analysis, the cases were compared to reveal commonalities and differences to answer the research question as it allows to make causal inferences. A summary of the results is shown in the table below.

	Cleantech Regio	Circulair Friesland
• Levels of Network Effectiveness	Moderate to high	High
• Modes of Governance	NAO	NAO
• Levels of Goal Consensus	Moderate to high	High
• Levels of Trust	Moderate to high	High
• Suitability of network composition	Moderate	Moderate to high
• Levels of network competences	Moderate to high	Moderate to high

Summary Table: Analytical comparison of the Cleantech Regio and Circulair Friesland, see Table 14

Source: Own document analysis and interview analysis, see section 5.1 and 5.2

Based on this analysis it is concluded that the effectiveness of networks that address the CE in the Netherlands is, at least, increased by three variables: goal consensus, trust, and network composition. Higher values on these variables increase the effectiveness of a network in the Dutch CE. This conclusion is empirically supported as Circulair Friesland is more effective and also has a higher goal consensus, higher trust, and a more suitable network composition compared to the Cleantech Regio. Similar effects were not found for the explanatory variable that regards the competencies that are present within a network.

Finally, three recommendations were given. The first recommendation is to simplify assessing the effectiveness of networks that address the CE because network effectiveness is not an easy concept to measure (see, e.g. Head, 2008, p. 745; Herranz, 2010, p. 447; Provan & Milward, 2001, pp. 416–420). Measuring network effectiveness within the CE is even more difficult as the CE overlaps many policy sectors and knows multiple levels of circularity (Cramer, 2015, p. 3, 2017, p. 16). Thus, what is needed is an evaluative framework which simplifies measuring network effectiveness in the CE. The literature lacks such an evaluative framework. A concept is therefore proposed and explained at the end of this thesis.

The second recommendation is to conduct further research on different network types as this could increase the generalizability of the conclusions. As this thesis only includes networks that are mediated by an administrative organisation, Investigating other network types could increase the generalizability of the findings and improve the proposed framework.

The last recommendation stems from the research findings as they suggest that networks can compensate the shortage of one variable by doing better on the other variables. That is why further research (using causal-process tracing) is needed to determine the correlation and exact effects of the explanatory variables on the effectiveness of networks.

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1. Introduction:

Take, make, use and dispose. That is what our current global economy boils down to. Companies take natural resources, turn them into base materials and transport them to other companies who make profitable products out of them. Value is added along the way until the product is sold to a consumer, the owner and user of the product. From here on, the product starts losing value until the consumer disposes of the product, destroying value and base materials. This economic model 'flows like a river' because it is linear in the sense that the lifecycle of goods and materials have a clear beginning and an end (Stahel, 2016, p. 436).

Although this linear model of our economy brought much wealth and a high standard of living, it is completely unsustainable. This model contributed to complex and urgent problems throughout the world (Andrews, 2015, pp. 307–309). One of those problems is that the use of materials, minerals, fossil fuels and biomass have increased tremendously during the 20th century. At the same time, the global population continues to grow which makes it highly likely that planet Earth will be overburdened if nothing changes (Bastein et al., 2013, p. 7). Besides the environmental necessity to change this economic model, it is also financially attractive. The global annual GDP will suffer 2% if substantial change remains absent (OECD, 2015, p. 12). Overall, adjusting the economy is a necessity to sustain economic prosperity and to prevent further environmental damage.

One major flaw in the current linear economy is that it is consciously designed to stimulate consumption and dispose of materials and products that still have value. Instead of wasting materials, we could recover, reassemble and reuse them for new purposes. Such activities are more circular because they save energy, prevent unnecessary consumption and reduce toxic waste (Stahel, 2016, p. 436). If the Netherlands would focus more on circular activities, it could create 54.000 additional jobs which decrease the current unemployment rate with 10-15% (CBS, 2018; Rizos et al., 2015, p. 2). Benefits, as described above, will be achieved if we change our economic model from linear to circular.

In this Circular Economy (CE), we are not only occupied with financial profit, but also consider the environmental and societal impacts of our actions (Sauvé et al., 2016, p. 53). The CE aims to minimalise waste in production processes and therefore reduces the dependence on raw materials and fossil fuels (De Wit et al., 2018, p. 14). In other words, the CE can be seen as a "solution for harmonising ambitions of economic growth and environmental protection" (Lieder & Rashid, 2016, p. 37).

Having knowledge about the CE is one thing, but putting it into practice seems to be a different story, as the implementation of the CE remains in its early stages throughout the world (Ghisellini et al., 2016, p. 17). It is also evident that the global economy faces a major 'circularity gap' since only 9% of the materials we currently consume are recovered and reused for new purposes (de Wit et al., 2018, p. 22). This gap has to be closed one way or another to prevent catastrophic consequences in the future (Rockström et al., 2009, discussion, para. 5). The transition towards a CE is thus a global and complex challenge.

Governments can address such complex challenges by forming collaborative networks with companies, citizens and non-governmental organisations. This strategy has become increasingly desirable by citizens and also necessary for governments as they do not always have the knowledge, resources or legitimacy to provide public services (Bryson et al., 2006, p. 44; Rainey, 2014, pp. 133–135). Participants of these networks interact and exchange information. This interaction improves the coordination of activities and control over policy implementation. Therefore, collaborative networks play a vital role in the transition towards a CE (Lozano et al., 2016, p. 9).

Based on the preceding, it is important for future generations that the transition towards a CE succeeds. And, the transition towards a CE is more likely to succeed when it is supported by collaborative networks that are effective. The lack of knowledge about the effectiveness of networks that address the CE gives this thesis the purpose of explaining the effectiveness of networks that address the CE so that lessons could be drawn. That is why the following research questions were put central in this thesis:

❖ What explains the effectiveness of networks that address the CE in the Netherlands?

The following three sub-questions address aspects of the main research question:
1) What is the CE and why is it relevant for Dutch governments?
2) What factors could, in theory, affect the effectiveness of networks?
3) What factors affect the effectiveness of networks that address the CE in practice?

Besides the social relevance of answering these questions (as they contribute to closing the 'circularity gap') they also are important for science because they remain unanswered till today, as a grounded framework for analysing the CE in collaborative spheres is still lacking (Korhonen et al., 2018, pp. 44–45). The social and scientific relevance of this thesis is further described in section 1.3.

1.1 Theoretical preview

Governments can manage their country in a couple of ways. The best-known approaches are 'Traditional Public Administration' (PA), 'New Public Management' (NPM) and 'New Public Governance' (NPG). These approaches are most often associated with a certain period, but the different elements of the approaches may overlap and coexist at the same time (Osborne, 2006, pp. 377–383). NPG is currently the most dominant approach for delivering public services. This approach emphasises the importance of collaborative networks because they effectively provide legitimate public services (Osborne, 2006, pp. 377–385; Provan & Milward, 2001, p. 415).

These network collaborations come in many forms and sizes which is why a typology of networks is useful. In this typology, three types of networks are distinguished: 'Shared Governance' networks, networks with a 'Lead Organisation' and networks with an 'Administrative Organisation' (Provan & Kenis, 2008, pp. 234–236).

To narrow down the scope of the research question, three abstraction levels for evaluating network effectiveness are described. In this thesis, network effectiveness is measured at the highest abstraction level: the 'community-level'. This abstraction level was chosen because it also takes the lower abstraction levels into account. Networks can also be best evaluated on the 'community-level' as they aim to contribute to the community they are embedded in (Provan & Milward, 2001, pp. 422–423; Raab et al., 2015, p. 485).

The dependent variable, network effectiveness, is defined as "the attainment of positive outcomes that normally could not be achieved without collaboration" (Provan & Kenis, 2008, p. 230). The dependent variable can be explained in many ways according to the literature, but the most frequently used are (a variation of): trust, the number of participants, goal consensus and the need for network competencies. As these variables are also often found to have a significant and positive effect, they are included in this thesis (Provan & Kenis, 2008, pp. 237–241; Turrini et al., 2010, pp. 535–539). In the last section of the theoretical framework, a short recap is provided which results in the theoretical model that will be operationalised in the methodological chapter that follows directly hereafter.

1.2 Methodological Preview

The strategy for answering the research question has three main components. Firstly, the research is comparative because multiple cases are analysed and their findings compared. Secondly, the research is evaluative because the investigated cases already existed for a couple of years. Thirdly, the research is also explanatory as it explains the levels of effectiveness of two cases, or networks, that are active within the CE in the Netherlands: the Cleantech Regio

and Circulair Friesland. These cases have been carefully selected on the basis of four criteria: geography, maturity, difference in maturity and policy sector.

Two research methods were used to collect data: document analysis and semi-structured interviews. In total, 19 different documents (such as policy reports, annual reports, research reports, internal memos and presentations) have been collected for the document analysis. The documents were read once to determine their relevance and relation to other documents. Hereafter, only the relevant documents were used for the in-depth analysis. The semi-structured interviews were conducted with employees of the selected network organisations. In total, 15 interviews of one hour were conducted and recorded to make transcript verbatims which were used to analyse. A description of the transcripts is included in the methodological chapter.

In the methodological chapter, the theoretical concepts are also operationalised into dimensions and measurable indicators. Each indicator has, at least, one question that measures that indicator. These indicators are measured to collect data of the theoretical concepts. To ensure consistency in the answers, all questions were given a value scale before they were used by the data collection methods. All the steps that were taken to operationalise the theoretical concepts into measurable indicators were explained to improve the reliability of this research. The methodological chapter is finalised with a thorough reflection on the reliability and validity of this research.

1.3   Social and scientific relevance

As described before, it is necessary to transform the linear economy to a circular economy (CE). The transition to a CE is crucial because it unites economic prosperity with ecological balance (Fischer & Pascucci, 2017, pp. 1–3; Jawahir & Bradley, 2016, pp. 103–104). For the ordinary citizen, the CE is something positive as it increases GDP-rates and creates more jobs, especially in the recycling and repair sector (ICF et al., 2018, pp. 7–8).

This research is relevant for society because it indirectly supports the transition towards the CE. It namely explains the levels of effectiveness of networks that address the CE in the Netherlands. This knowledge is important because networks are likely to play a key role in the transition towards a CE (Lozano et al., 2016, p. 9).

From a scientific point of view, this research is necessary because it closes a knowledge gap on network effectiveness in the CE. The current theories about network effectiveness have namely not been used explicitly within the context of the CE. Consequentially, a grounded framework for analysing networks within the CE is lacking (Korhonen et al., 2018, pp. 44–45).

1.4   Structure of the report

Answering the main research question, first, requires background knowledge about the CE and its relevance for Dutch governments. That is why the second chapter will be used to conduct a literature study. In this literature study, the concept of the CE will first be described from a historical perspective and defined by reviewing different schools of thoughts. The CE is further described by explaining different levels of circularity, and in the last section, the current situation and the relevance of the CE for Dutch governments will be described.

The theoretical framework in chapter 3 has the purpose of explaining the effectiveness of networks from a theoretical point of view. The first section of this chapter describes different approaches for governments. The second section of chapter 3 is used to define networks and explain three different modes of governance. Different abstraction levels of network effectiveness will be discussed in the third section, and the concept of network effectiveness will be defined and explained in the fourth section. In the last section of chapter 3, a summary of the theoretical framework is provided which results in a theoretical model for explaining network effectiveness.

The fourth chapter describes the methodological aspects of this thesis. In the first section, it explains the general strategy of this research. In the second section, two cases will be selected, and their selection justified based on different criteria. The used methods for collecting data will be explained in the third section and the data sources in the fourth section of this chapter. The operationalisation of the theoretical concepts is presented in the fifth section and a reflection on the reliability and validity of this research in the sixth section of this chapter.

The fifth chapter consists of the analysis of the Cleantech Regio and Circlair Friesland. In the first section, the Cleantech Regio has been analysed, and Circulair Friesland has been analysed in the second section of this chapter. The findings of the two cases are compared and presented in the third section of the analysis.

The sixth and last chapter of this thesis consists of conclusions, recommendations and reflections. In the first section of this chapter, the research questions are answered. The second section of this chapter is used to give suggestions for future research. And the last section is used to reflect on the theories and methods that were used, as well as the research findings and limitations.

2. The Circular Economy

The aim of this chapter is to give a comprehensive understanding of the CE and its relevance for Dutch governments. This knowledge is needed to answer the first sub-question of this research. In the first section, the CE is described from a historical perspective. A more theoretical view about the CE is adopted hereafter. The different levels of circularity will be addressed in the third section and role of the Dutch government in the fourth section.

2.1   The evolutionary path of the CE

Before the 18th century, people unintentionally followed the principles of the CE because resources were mostly used locally and on a tiny scale. That is why the regenerative capacity of the natural environment was not disturbed. Hereafter, the world underwent a transition from circular to linear which is reflected by the industrial revolutions in the 18th. Since these revolutions, we live in a linear economy in which we aim to maximise profits and production. The concepts 'Linear Economy' and 'Circular Economy', thus, existed for a long time in practice. They were, however, first termed around the 1970s when scientists noticed that economic growth and materialistic progression is limited to the availability of natural resources (Jonker et al., 2018, p. 7).

Currently, the concept of the CE is gaining attention from governments across the globe. Germany started addressing the CE in the early 1990s to solve scarcity of natural resources and secure sustained economic growth. China approached the CE in the late 1990s to achieve more profitable production and technological development. In other countries such as the UK, Denmark, Switzerland and Portugal, the principles of the CE are used to improve waste management (Winans et al., 2017, p. 826). The Dutch governments are also using principles of the CE, but that will be described in section 2.4.

2.2   The CE: an all-embracing concept

So far, we have seen that the CE is becoming more popular and that governments address it from different angles and for various reasons. But, what is the CE exactly? That question will now be answered by discussing the core elements of the CE and describing the different schools of thought about the concept.

The CE is "an industrial system that is restorative or regenerative by intention and design" (MacArthur, 2013, p. 7). The ultimate goal of the CE is to prevent waste by extending the life-cycle of materials and resources. In the CE, the concept of 'waste' is eliminated because

old materials remain in circulation as they are perceived as valuable assets. Once materials are recovered, they are reused, remanufactured or recycled to close the materialistic loop. This process is called "industrial metabolism" because materials are decomposed and reused for new purposes. Most organisations cannot carry out all of these activities by themselves which is why they collaborate. Collaboration is, thus, an inherent aspect of the CE. If "industrial metabolism" happens in collaborative spheres, then the energy and materials flow from one organisation into another. This collaborative process is referred to as "industrial symbiosis" which allows materials to keep their status as productive resources. That is why the CE improves the usage and efficiency of resources and, thereby, unites economic prosperity with ecological balance (Fischer & Pascucci, 2017, pp. 1–3; Jawahir & Bradley, 2016, pp. 103–104).

The previous description emphasises the comprehensiveness of the CE because it is not only concerned with economic objectives but also takes the societal and environmental impacts of its functioning into consideration (Sauvé et al., 2016, p. 53). That is also why the CE does not have one single origin or originator, but many schools of thoughts (Winans et al., 2017, pp. 825–826). Although the schools of thoughts in Table 1 slightly differ on their orientation, they all share the same goal to create additional value by optimising the use of resources.

School of thought	Key principle
• **Performance Economy**	"The economic objective of the *Performance Economy* is to create the highest possible use value for the longest possible time while consuming as few material resources and energy as possible" (Stahel, 2005).
• **Industrial Ecology**	"*Industrial Ecology*, like biological ecology, focusses on the cycling of resources and energy rather than their extraction and eventual discard after they have been used" (Graedel & Allenby, 1995).
• **Blue Economy**	"*The Blue Economy* is focused on nature and encourages companies and entrepreneurs to mimic nature in their processes and in the creation of their products" (Bargh, 2014).
• **Biomimicry**	"*Biomimicry* is an approach for innovation that provides sustainable solutions to human challenges by emulating nature's time-tested patterns and strategies" (Andrews, 2015).
• **Cradle to cradle**	"*Cradle to cradle* is a new approach for designing products and systems that are explicitly beneficial to the individuals involved as well as to the natural environment and society at large" (McDonough & Braungart, 2010).
• **Natural Capitalism**	"*Natural capitalism* is an approach which integrates ecological with economic goals by highlighting the interdependency of human activity and natural capital" (Lovins, Lovins, & Hawken, 1999).

Table 1: School of thoughts that contributed to the concept of the CE

2.3   Levels of circularity

Generating a broad understanding of the CE was the aim of the previous two sections. In this section, a next step is being made by going into detail about different levels of circularity. Organisations and networks can namely differ on the extent to which they are circular. A product or service is not just circular or not. Instead, one can distinguish different ways to close resource and energy loops and prioritise them.

Refusing and reducing the usage of raw materials has the highest priority in the CE because material usage is prevented or decreased to a large extent. Reusing materials and repairing and refurbishing products has a medium priority in the CE because the life-cycle of materials and products is extended. Recycling and recovering materials and products also extend the life-cycle of materials and products, but to a lower extent. That is why these activities have the lowest priority in the CE (Cramer, 2015, p. 3, 2017, p. 16). A more detailed overview of the circularity levels and their meaning is shown in Figure 1. What this figure demonstrates is that recycling is not the only way to achieve more circularity (as is sometimes mistaken).

Nevertheless, recycling is the most usual and easy way for organisations to close resource and energy loops (Ghisellini et al., 2016, pp. 5–6). Dutch examples of circular programs are 'Green Deal Circular Procurement' (re-use), 'Innovation program NL Circular!' (re-use and recycle) and 'Zero Waste(d) Coalition (recycle). Examples of companies and initiatives that contribute to the Dutch CE are 'Het Goed' (re-use) and 'Repair Café's' (repair).

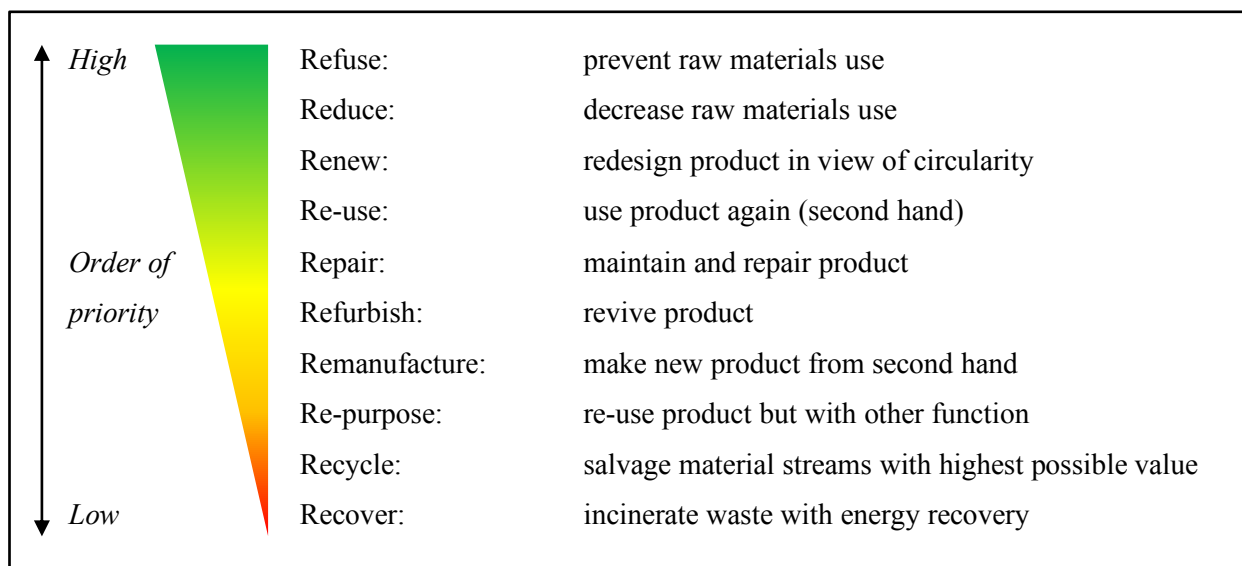|		
High	Refuse:	prevent raw materials use
	Reduce:	decrease raw materials use
	Renew:	redesign product in view of circularity
	Re-use:	use product again (second hand)
Order of	Repair:	maintain and repair product
priority	Refurbish:	revive product
	Remanufacture:	make new product from second hand
	Re-purpose:	re-use product but with other function
	Recycle:	salvage material streams with highest possible value
Low	Recover:	incinerate waste with energy recovery

Figure 1: Levels of circularity, their meaning and Dutch examples.

Sources: (Cramer, 2015, p. 3, 2017, p. 16)

2.4 The Dutch government and the CE

The role of governments and their interest in the CE differs per country. Since this thesis only includes two cases that are located in the Netherlands, the role and current activities of the Dutch national, regional and local governments in the CE will now be reviewed.

At a national level, the Dutch government has announced a government-wide programme called "A circular Netherlands by 2050". This programme outlines the circular transition for the Netherlands until 2050. The ambition is to reduce the usage of primary materials with 50% by 2030 and arrive at a fully mature CE in 2050. Achieving this ambition will support environmental sustainability and bring diverse economic opportunities for the Netherlands (A. Bastein et al., 2017, p. 7). The interventions of the Dutch national government include legislative changes that benefit the transition towards the CE. These legislative adjustments are used to remove legal obstacles and to create market incentives for sustainable business models. The national government also encourages circular bottom-up initiatives with financial support. Another way in which the national government supports the CE is by investing in international cooperation, knowledge and innovation. (Dutch Ministry of Infrastructure and the Environment, 2016, pp. 23–42).

The implementation of the national circular program is likely to take place at the provincial and local level. That is why the national government emphasises the relevance of cooperation with businesses and citizens to achieve its ambitions on a national level. At the moment, most of the provinces in the Netherlands have committed themselves to the program and started to investigate how circular their province is at the moment. Many provinces have also formulated appropriate policies for the CE or are busy doing so (IPO, 2018). A more precise overview of the Dutch provinces dealing with the CE is presented in Table 2. This table reveals that all provinces have recognised the relevance of the CE and are taking measures.

The municipalities in the Netherlands also show recognition for the CE as 90% of them have included the CE in their policy agenda. Almost all municipalities that address the CE include the topic into different policy areas such as waste management, sustainable procurement and climate adaptation and mitigation. Most municipalities seem to struggle to create circular networks because it is unclear which actors (the national, the local government or the market) should take the initiative. According to 40% of the municipalities, collaborations with companies would make it easier to approach the CE. Most the municipalities see themselves as enabler, facilitator and mediator for circular networks. In general, municipalities want to experiment with circular initiatives, remove (legal) barriers, support financially and establish networks for collaboration (Schuttelaar & Partners, 2017, pp. 9–21).

Province	Policy efforts made by province	Number of circular projects	Financial investments (x1.000)
• **Noord – Holland**	Several potential studies for the CE; Formulated a circular agenda with multiple programs; Initiates circular projects; Facilitates and mediates (bottom-up) collaboration.	33 minor projects which are embedded in 6 large 'policy tracks' of the province.	€1.600 between 2017 and 2020.
• **Zuid – Holland**	Comprehensive potential study; Created a triple-helix commission (called ACCEZ) to monitor, accelerate and plan the CE in Zuid-Holland; Comprehensive policy programs.	2 major projects are currently executed and 2 projects are in development by the province.	€5.000 between 2018 and 2022.
• **Groningen**	Identified the status quo of the CE in Groningen; Supports (mediates and finances) circular initiatives on a relatively small scale.	±20 which are facilitated, or financed by the province	€367 between 2018 and 2021.
• **Drenthe**	Outsourced the CE to a self-created organisation (N.I.C.E.) for innovation.	None in which the province plays a significant role.	€0 since 2015.
• **Overijssel**	Developed a vision; Stimulates circular initiatives and network collaborations such as the Cleantech Regio.	Unclear how many projects the province is involved in.	€1.141 between 2016 and 2021.
• **Gelderland**	Executed a potential study for the CE; Developed a circular vision and comprehensive policy agenda; Initiates and facilitates projects and collaboration such as BOOST and Cleantech Regio.	24 projects which are embedded in 3 major 'policy tracks'.	One time €3.200 from the EFRO-fund of the EU and €1.000 between 2015 and 2019.
• **Limburg**	Potential study for the CE; Established a fund (LEF) for circular initiatives and projects; funded Circular Science Center, a for innovations; Initiates and facilitates collaborations	Until 2017, LEF invested in 27 projects.	€100 until 2017 and €30 of the European Investment Bank.
• **Zeeland**	Comprehensive potential study for the CE; Placed the transition towards the CE high on the agenda; Facilitates collaboration	4 large 'policy tracks' which include a large sum of projects	€1.530 between 2018 and 2021 for renewable energy and CE.
• **Friesland**	Large funds for circular projects; Established a circular association (VCF) which has formulated a concrete action plan with nine different themes.	Aims to succeed 60 projects between 2016 and 2019	€10.472 between 2016 and 2021.
• **Utrecht**	Potential study for the CE; Partner in the Green Deal Circular procurement; Established Utrecht Sustainability Institute (USI) to foster collaboration and oversee the implementation of the CE.	USI has acknowledged 47 best practices for the CE until 2016.	Unclear what investments are being made.
• **Brabant**	Potential study for the CE; Collaborates with the 'Brabants Ontwikkelmaatschappij' (BOM) to develop and implement policies for the CE; Facilitates and mediates (bottom-up) collaboration.	Unclear how many projects the province is involved in.	Unclear what investments are being made.
• **Flevoland**	Developed a vision and approach for the CE; Established a fund for circular projects; Potential study for the CE; Facilitates collaboration	Currently making an inventory about the projects.	€500 in 2018.

Table 2: Quick scan of the CE in Dutch provinces

Sources: (ACCEZ, 2018; CE Delft, 2016; Provincie Drenthe, 2018; Provincie Flevoland, 2017a, 2017b, 2017c; Provincie Friesland, 2018; Provincie Gelderland, 2016; Provincie Groningen, 2016, 2018; Provincie Noord-Holland, 2017; Provincie Zeeland, 2016, 2017, 2017; RoyalHaskoningDHV, 2017; Scheffer, 2017; TNO, 2016; USI, 2016; Vereniging Circulair Friesland, 2017)

Note that Table 2 is based on secondary data (e.g. policy documents, annual budget reports and websites open to the public) and might, therefore, be missing (accurate) data. Nevertheless, Table 2 is still valuable because it provides a general idea about what the Dutch provincial governments do to accelerate the transition towards the CE.

3. Theoretical framework

The goal of this chapter is to get a better understanding of network effectiveness and the variables that explain network effectiveness. To achieve this goal, the chapter is started broad by describing three main approaches for public administration. Within the approach that is currently most dominant, networks play an essential role for governments and public service delivery. That is why networks are defined, and three modes of governance are described in section 3.2. Because networks have become important, it is essential to know what makes them effective. However, networks can be effective and valuable at different abstraction levels which is why these different abstraction levels will be discussed in section 3.3. After selecting an abstraction, the concept of network effectiveness will be further defined and explained in section 3.4. In the last section of this chapter, a theoretical model will be presented which explains network effectiveness.

3.1   Approaches for Public Administration

Governments can use different strategies to manage their country, make policies and deliver public services. Within the wide pallet that the literature provides of these different strategies, three main approaches stand out. These three approaches are often associated with a certain period, but that is not accurate since elements of the three approaches may overlap and coexist at the same time (Osborne, 2006, pp. 377–383). For the sake of readability, the three main approaches will now be described in chronological order.

The first approach is called 'Traditional Public Administration' (PA). This approach was dominant between the 1950s and the 1970s. Within this timeframe, governments were focussed on the Weberian ideal, aiming to ensure equal quality of treatment. After years of war and instability, it was necessary to establish a welfare state which required the instalment of administrative rules and guidelines. Hierarchy and top-down implementation was important and resulted in a central role for bureaucracies. Political bodies were pulled away from governmental organisations to improve efficiency, neutrality and rationality of public service delivery. Over time, academics and politicians criticised this traditional PA approach for its extreme high expenditures (Osborne et al., 2016, pp. 413–414).

As a result, a new approach – 'New Public Management' (NPM) – gained momentum from the mid-1970s onwards. Governments throughout the world adopted private-sector managerial techniques for delivering public services to drive back the enormous public expenditures. Emphasise was added on control, evaluation and performance management. It

was expected that competitive markets would optimise the efficiency and effectiveness of public services. Many public service organisations were distanced away from policymakers to cut costs. This NPM approach did what it was aimed to do, but, over time, it lost the acceptance of the public. Criticism was aimed at the intra-organisational focus which was outdated, inaccurate and did not capture the increasingly complex world (Osborne, 2006, pp. 377–383). Around the onset of the 21st century, the era of NPM was succeeded by another approach called 'New Public Governance' (NPG). This approach is embedded in organisational, sociological and network theories which means that governments nowadays engage more with their external environment. This external orientation stands in contrast with the former approach which focussed on relations between public organisations. From the NPG perspective, the state is not one actor as previously assumed in the PA approach. Instead, the state consists of multiple actors with different interests, resources and decision-making powers. This means that policy-making and public service delivery opens up and (bottom-up) collaboration becomes necessary to ensure effectiveness. Cooperation among different social actors (governmental, private, education and civic organisations) is typical for NPG and hinges upon trust, relational capital and social contracts. Because NPG incorporates both the legitimacy and relational aspects of policy-making and public service delivery, it overcomes the shortfalls of both PA and NPM (Osborne, 2006, p. 385; Osborne et al., 2016, pp. 6–12).

Collaborative networks are an inherent element of the NPG approach which is currently most dominant among governments. Evaluating the effectiveness of these networks is important for governments because they are responsible and accountable for the allocation of public funds. Since public resources for problem-solving are often scarce, governments have to be extra sure that their chosen network-approach is effective. If networks are (being perceived as) ineffective, then the legitimacy of the government may be undermined (Provan & Milward, 2001, p. 415). The NPG approach is very suitable for dealing with the CE because the CE is often associated with collaborative networks as organisations work together to close loops of resources and materials (Jonker et al., 2018, 6; Sauvé et al., 2016, 53).

3.2   Network governance: definitions and a typology

This section is divided into three parts. In the first part, collaborative networks will be defined. In the second part, a typology of the different ways for governments to organise networks is described. The predicted effectiveness of the different modes of network governance is discussed in the last part of this section.

3.2.1 Defining network governance

The literature provides many definitions of network governance. Scholars of business administration define 'coalitions' as "inter-organisational, cooperative, and synergistic working alliances" (Zakocs & Edwards, 2006, p. 351). Public management scholars define public networks as "a set of organisations (and not individuals or parts of organisations) that coordinate their joint activities through different types of peer-to-peer relations" (Turrini et al., 2010, p. 529). The most accepted definition of a public network is *"a group of three or more legally autonomous organisations that work together to a achieve a collective goal [that fosters the CE]"* (Provan & Kenis, 2008, p. 232, text added). Because the latter definition is widely accepted and used in scholars of public administration, this definition will from now on be used in this thesis.

3.2.2 Modes of governance

Collaborative networks can be organised in various ways which make a typology of the different modes of network governance useful. Such typology helps to understand the features in which networks might differ and in which context they are predicted to be more effective. The literature recognised three modes of network governance which prescribe the structure and predicted the effectiveness of the network.

In the first mode of network governance, the government 'leans back' and leaves the network members responsible. This type of network is called a 'Shared Governance' (SG). In its most extreme form, such network is highly decentralised, and power is equally distributed. In an SG-network, decisions are taken collectively. However, that does not mean that there are no organisational differences concerning size, resources and performance. The network members are directly related to each other and are interdependent to reach goal consensus, make decisions and coordinate activities. This triadic interaction and interdependency between participants imply that SG-networks act collectively and that no single organisation can represent the complete network (Provan & Kenis, 2008, pp. 234–235).

Another way in which governments can arrange a network is by taking authority or giving a mandate to an organisation to take the initiative. The 'Lead Organisation' (LO) makes the network (highly) centralised and hierarchical. The LO namely operates on the basis of power and/or information asymmetries. Sometimes, a centralised authority is necessary for networks to address issues effectively. The role of the LO is to formulate goals, take decisions and coordinates activities among members of the network. Both internal and external communication and interaction happen via the LO (Provan & Kenis, 2008, pp. 235–236).

The two networks that were described previously lay at the end of the continuum, meaning that the one is decentralised and the other is centralised. The alternative is to appoint a 'Network Administrative Organisation' (NAO) which governs the network and the activities. Contrary to the LO, a NAO does not provide its own services because it is not an initial member of the network. The NAO is namely introduced in an already existing network with the purpose to reduce governance complexities or to increase the legitimacy of the network. Most often, the government appoints an organisation to fulfil the role of the NAO, but the network members can also nominate a NAO themselves. Anyhow, the NAO is allowed to intervene in the network

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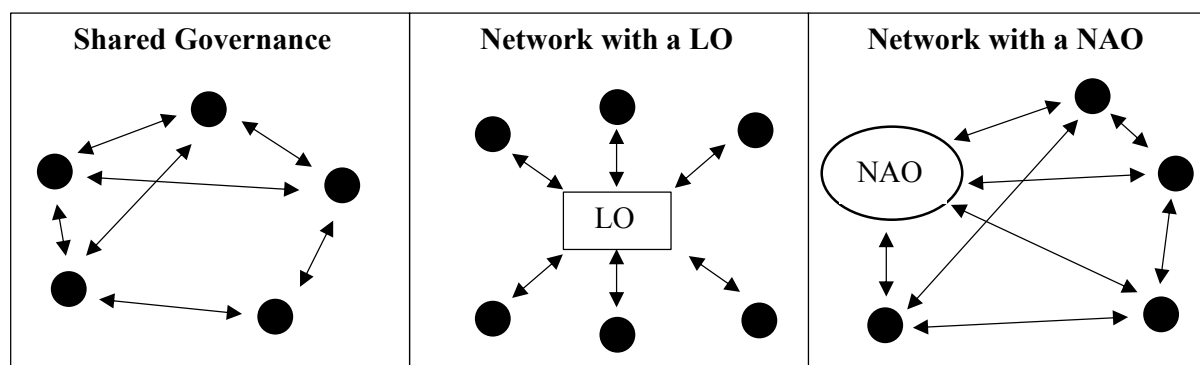
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Figure 2: Overview of the modes of network governance.

Sources: (Cramer, 2015, p. 3, 2017, p. 16)

3.3   Abstraction levels of network effectiveness

The concept of network effectiveness is not easy to investigate due to the multi-sectoral and multi-level nature of networks which causes a lot of complexities. Network effectiveness can be interpreted differently and have different meanings for different members of the network. Network effectiveness is namely a multifaceted concept which requires boundaries and clarification (Head, 2008, p. 745). To measure network effectiveness accurately, a conscious choice for an abstraction level is needed. Three abstraction levels for measuring network effectiveness can be distinguished (Herranz, 2010, p. 447; Provan & Milward, 2001, pp. 416–420).

At the highest abstraction level, networks are embedded in a larger system or community. At this 'community-level', networks are evaluated on their effectiveness based on criteria that are relevant to the community. Networks, here, are judged on their effectiveness based on the contributions they deliver to society. In other words, networks must satisfy interests of the stakeholders surrounding the issue that the network is dealing with (Herranz, 2010, p. 447; Provan & Milward, 2001, pp. 416–417).

One abstraction level lower, networks effectiveness is evaluated at the 'network level'. To become a sustainable inter-organisational collaboration, networks have to survive by being valuable for the participants. To be valuable for participants, networks must produce programs and services that outweigh the transaction costs that stem from collaborating. (Herranz, 2010, p. 447; Provan & Milward, 2001, pp. 417–419).

The last and lowest abstraction level is referred to as the 'organisational level'. Here, it is all about measuring specific performances of an organisation within the network. Each participant of the network has to be motivated by some (self-)interest. Networks may, for instance, contribute to organisational outcomes and competitiveness which would otherwise not be achievable (Herranz, 2010, p. 447; Provan & Milward, 2001, p. 420).

Once a network is effective at one abstraction level, that does not automatically imply that the network is effective at all abstraction levels. To gain a comprehensive understanding of the effectiveness of a network, it is recommended that evaluation takes place at all three levels. However, assessing networks on their effectiveness at all three levels is not feasible. Some researchers have tried this, but measuring the criteria of all three abstraction levels of network effectiveness is often too burdensome for respondents. Another problem that arises is that resources are insufficient for collecting data at all three levels (Raab et al., 2015, p. 485).

Due to these impracticalities, researchers are often forced to investigate only one level of network effectiveness. If a researcher has to choose, then the 'community-level' is the best option for two reasons. Firstly, because public sector networks are most apparent at the 'community-level' as they are judged by their contribution to the surrounding communities. Public sector networks are embedded in a society and, therefore, often more diverse and politicised than private-company-networks. Another reason why the 'community-level' is the best option is that most criteria for 'network-level' and 'organisational-level' network effectiveness are satisfied by securing 'community-level' effectiveness. The 'community-level' effectiveness is namely the cumulative outcome of processes and results of the lower abstraction levels (Provan & Milward, 2001, pp. 422–423; Raab et al., 2015, p. 485).

3.4   Defining and explaining network effectiveness

In this section, network effectiveness will be clearly defined to prevent confusion about this dependent variable. The determinants that explain network effectiveness will also be described. Together, these two sub-sections form the basis for the theoretical framework which is presented in section 3.5.

3.4.1   Defining network effectiveness

In general, networks are defined as effective when they "attain positive outcomes that normally could not be achieved without collaboration" (Provan & Kenis, 2008, p. 230). This definition implies that members of the networks seek to achieve a goal and cannot achieve that goal alone which is the reason why they are motivated to collaborate. In theory, collaborating enhances the competencies of organisations and, thereby, makes it more likely that goals are achieved. Goal-achievement (or network effectiveness) is reflected in more effective service delivery, more legitimacy, the attraction of resources and so on (Provan & Kenis, 2008, pp. 240–241).

At the 'community-level' of network effectiveness, networks are effective when they contribute to the community by providing services which (are perceived to) solve societal issues. In the end, all networks will be evaluated by community-level stakeholders (Provan & Milward, 2001, pp. 422–423). At the community-level, network effectiveness can be measured in various ways, for instance by the changes in the incidence of the problem or by the public perceptions that the problem is being solved (Provan & Milward, 2001, pp. 416–417).

Consequently, network effectiveness at the community-level is defined as *"the attain[ment of] positive outcomes [for the surrounding community] that normally could not be achieved without collaboration"* (Provan & Kenis, 2008, p. 230, text added). Whenever the term "network effectiveness" is being used, a reference is being made to the latter definition which is located at the highest abstraction level.

3.4.2   Explaining network effectiveness

The literature offers many explanations for network effectiveness. Since network effectiveness in this thesis is being evaluated at the community level, a lot of those explanations lose significance because they only explain network effectiveness at a lower abstraction level. The explanations that are most frequently used for explaining community-level network effectiveness are (captured by): goal consensus, trust, the number of participants, and the need for network competencies. All of these four variables are found to have a significant effect on network effectiveness (Head, 2008, pp. 739–741; Turrini et al., 2010, pp. 535–539).

The exact effect of these variables is, however, conditioned by the mode of governance (i.e. the type of the network). This conditional effect implies that the effect of the explanatory variables on network effectiveness differs per mode of governance (Provan & Kenis, 2008, p. 237). Since these modes of governance have already been discussed in section 3.3, they will not be described again. Instead, the conditional effect of the modes of governance is integrated into the description of the explanatory variables below.

Goal consensus is often associated with effectiveness because it allows participants to perform better than in conflict-situations. Organisational goals are, among other factors, an important motivation for collaboration. Organisations are namely more likely to commit themselves and work together when they have more or less the same interest and can satisfy that interest through network-involvement. Some similarity is, thus, required because involvement becomes irrelevant when goal consensus is extremely low. That means that participants define a broad network-goal that forms an umbrella for the individual goals of organisations. For 'Shared Governance' networks, the rational theory is that organisations participate in the network to attain their own goals and thereby contribute to the achievement of network-goals (Provan & Kenis, 2008, pp. 239–240). When the goal consensus is low, a network is likely to be mediated by a LO or NAO. The LO form is more likely to be effective when network members cannot resolve conflicts or are unable to reach goal consensus by themselves. Especially in the short-term, a LO can create a broad network-goal which would otherwise not be possible to achieve. A NAO assumes equal participation and involvement. The NAO has the task to resolve conflicts and facilitate commitment to a shared goal. That is why a NAO-network is most likely to be effective when goal consensus is moderate to high (Provan & Kenis, 2008, p. 240).

Trust is a fundamental condition for collectively formulating goals between the members of the network. Trust can improve communication and cohesion between organisations, secure legitimacy, create a common understanding and prevent conflicts (Dietrich et al., 2010, p. 67; Provan et al., 2008, pp. 131–134). Trust can also create a feeling of safety which makes participants more willing to take risks. Building trust is a time-consuming and very fragile activity. When trust is damaged (due to bad interaction experiences in the past), it may have negative consequences (Ansell & Gash, 2008, pp. 558–559). However, the absence of trust is not always bad. Depending on the mode of governance, a network either requires a high or low trust-level to be effective. For example, a Shared Governance type of network is most likely to be effective when trust between network members is high. When trust is low, a network is expected to be more effective when a LO or NAO mediates it. Since

networks with a LO are characterised by dyadic relations (meaning that network members only interact with the LO), this mode of governance has a lower demand for trust. In a network where a NAO is active, network participants collectively monitor the NAO and vice-versa. This requires triadic interaction between different network participants which makes it more likely for NAOs to be effective when, at least, a medium level of trust has been established (Provan & Kenis, 2008, p. 238).

The number of participants is important for any collaboration because more participants make it harder to coordinate activities. With every additional network member, the number of relationships increases which makes governance more complex. Participants most often desire shared Governance networks because then they remain in power to adjust the direction and activities. However, when more than ten organisations participate in the network, self-coordination and communication becomes highly ineffective. A solution to secure the effectivity of the network is to centralise governance activities by introducing a LO or NAO. Depending on the interest, the sensitivity and context of the issue that the network is addressing, governments can choose one of the two modes of governance. In the LO model, the government opts to actively join and collaborate in the network and, thus, contribute by providing services. In the NOA model, the governments stand more on the sideline and only moderates between network members. In the NAO model, the government takes a more passive and neutral position and does not provide its services (Provan & Kenis, 2008, pp. 237–239).

The *needed amount of network competences* also explains the effectiveness of networks. Every network needs to poses some competences, but some networks need more competences to be effective than others. By participating in a network, organisations get access and contribute to competences and resources of the network. These competencies and resources include legitimacy, money, knowledge and problem-solving capacities. Since different modes of governance demand a different contribution of network participants, it is important to know is which competencies are required to achieve the network goals. The need for coordinating and facilitating competences is high when the network goals rely on interdependence and intense collaboration. In the "Shared Governance" network, individual participants will be burdened with tasks for which they may not have the skills because. This means that a "Shared Governance" network is expected to be more effective when the need for network competences is low. Vice-versa, this means that a network with an LO or NAO is supposed to be effective when the need for network competences is moderate or high. Responding to external events and pressures in a centralised way is easier for a network with an LO or NAO because the governance activities are already centralised. (Provan & Kenis, 2008, pp. 240–241).

To conclude, this section has shown that the mode of governance affects the network effectiveness conditionally. That means that the preferred value of the explanatory variables for network effectiveness differs per mode of governance. An overview of the preferred values of the explanatory variables per modes of governance is presented in Table 3.

Mode of Governance	Goal Consensus	Trust	Number of participants	Need for Network Competences
Shared Governance	High	High	Few	Low
Lead Organisation	Moderately to low	Low	Moderate	Moderate
Network Administrative Organisation	Moderately to high	Moderate	Moderate to many	High

Table 3: Prediction of network effectiveness per mode of governance
Sources: (Provan & Kenis, 2008, p. 237).

3.5   Theoretical model

The NPG approach is currently the most dominant approach in public policy making and service delivery. Networks have become more apparent and important, especially for governments. As governments depend more and more on collaborative networks, it also becomes more important to ensure that these networks are effective (Provan & Milward, 2001, pp. 414–415). By now, network effectiveness has been thoroughly discussed which resulted in a choice for the abstraction level, a definition and multiple explanatory variables for network effectiveness. The theoretical model that explains network effectiveness at the community-level is presented in Figure 3.
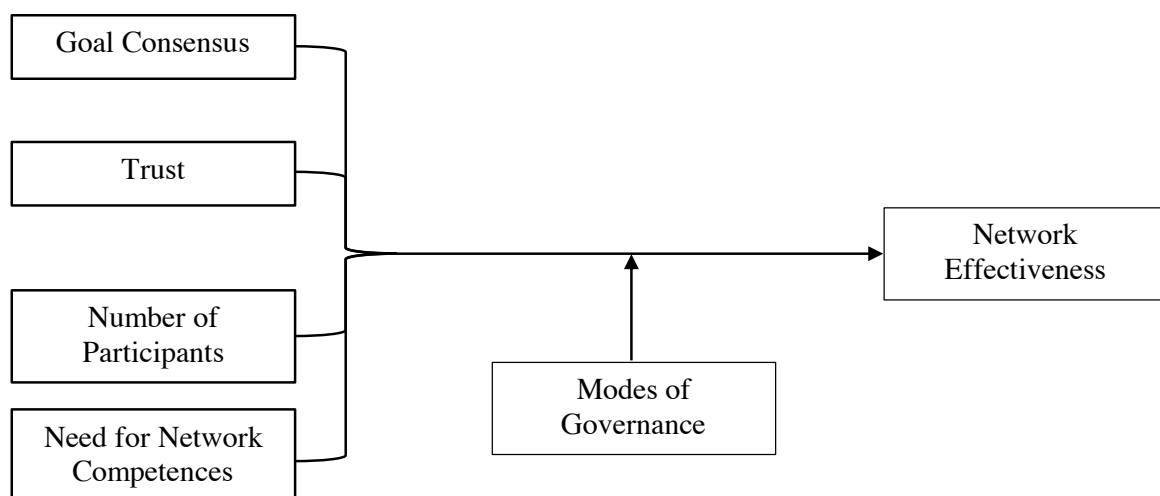
Figure 3: Theoretical model for explaining network effectiveness.
Sources: (Provan & Kenis, 2008, pp. 237–240)

4. Methodological framework

The methodological choices of this thesis will become clear in this chapter. The following subjects will be addressed: research strategy, case selection, data sources, data collection, data analysis, operationalisation, validity and reliability.

4.1   Research strategy

The research questions offer a couple of useful elements in the development of the research strategy. In the first place, the research questions reveal that the CE in The Netherlands is the unit of analysis. Also, multiple cases must be investigated for the findings to be representative and generalizable for the whole CE in The Netherlands. However, to keep the research feasible and to maintain attention for details, the number of cases must also not be too large. A small-N study forms the suitable middle-way because it allows comparing multiple cases while case-specific details are also taken into account. The benefit of small-N research is that it provides insights into causal mechanisms that explain network effectiveness. These causal mechanisms improve internal validity whereas the comparison between cases increases external validity (Gerring, 2007, p. 43). Another element that arises from the research questions is that networks must be evaluated on their (community-level) effectiveness. To answer the research questions, a small number of cases (or: networks) have been assessed on their effectiveness. Subsequently, the findings have been compared to draw causal inferences and generalizable conclusions.

The theoretical framework has also contributed to the development of the research strategy. The overwhelming number of theories about network effectiveness signifies that this thesis is deductive of nature (Blatter & Haverland, 2012, pp. 9–10). To narrow the scope of this thesis, a level of abstraction was chosen, and some explanatory variables had to be eliminated (see section 3.3 and 3.4). A qualitative research strategy is preferred because it can reveal specific in-depth details about cases (Gerring, 2007, pp. 48–50). Some variables (such as 'trust') can be interpreted in different ways since they are subjective and also vulnerable to socially accepted answers when they are asked via surveys. The fact that circular networks consist of multiple organisations and individuals further increases the chance for randomness and ambiguity in the findings. To ensure internal validity, interviews with representatives of network organisations is necessary. During the interviews, respondents can namely signal when additional context is needed to better understand the question (Rathbun, 2008, p. 2).

4.2   Case selection

The case selection criteria and the two selected cases will be described in this section. In the first part, the relevance of each criteria will be explained. In the second part, all potential cases are confronted with the selection criteria. This confrontation eliminates all the cases that are not suitable for investigation. Consequentially, only two cases remain. A short description of these cases follows in chapter 5.

4.2.1   Criteria for case selection

Using criteria for case selection helps to minimalise external influences on the effectiveness of a network (Gerring, 2008, pp. 33–35). By confronting potential cases with criteria, the lesser suited cases will be recognised and excluded so that only the suitable cases remain for investigation. By excluding unsuitable cases, the reliability and external validity of the research increases as the research sample represents the entire population more properly (Gerring, 2008, pp. 1–3). The relevance of each criteria for selecting cases will now be explained.

The first criteria is *geography*. Since the unit of analysis is the CE in The Netherlands, all cases must be located in the Netherlands, and preferably in different provinces. When the selected cases are located in *different provinces*, the external validity (i.e. generalizability) of this research increases as provincial influences are taken into consideration.

The second criteria for the case selection is the *maturity of the network*. The maturity of a network is measured by its age, or, the number of years of existence. This criteria is important as it increases the reliability of the research by controlling for ambiguity in the findings because networks that exist relatively long are more effective than networks that only started collaborating recently. Thus, networks must have formally been *established before 2017*. This criteria also ensures that enough documents can be gathered for the document analysis.

The third criteria regards the *difference of maturity* of the networks. By keeping the difference in network maturity within a narrow range, it is less likely that findings are affected by a long experience in collaborating. Consequentially, the difference in network maturity must *not be more than two years*.

The fourth criteria for selecting cases is the *policy sector*. This criteria is relevant because each policy sector differs in terms of institutional setting, type and complexity of issues, involved actors and public opinion. The five circular policy sectors that are included in the Dutch national government program 'Nederland Circulair!' are Biomass and food, Plastics, Manufacturing industry, Construction sector and Consumer goods To control for differences between policy sectors, the selected cases must have *overlap in the policy sectors*.

4.2.2 Confrontation of potential cases with criteria

After multiple search-actions on the internet and a consultation with an expert on the subject of the CE, nine possible cases came to the fore. The confrontation of these cases with the selection criteria is presented in Table 4. For the requirements regarding the maturity of the networks, only the starting date has been given as this already shows the age and the difference in maturity.

Network name	Geography	Maturity (Starting date)	Policy sector(s) within the CE
• **ACCEZ***	Zuid-Holland	5 April 2018	Unclear, ACCEZ is still starting up.
• **Nijmeegse Economie Circulair (NEC)**	Gelderland	27 June 2017	Biomass and food, Plastics, Construction sector
• **Circulair Friesland**	Friesland	26 February 2016	Biomass and food, Plastics, Construction sector
• **ArgiFood Capital**	Brabant	28 February 2014	Biomass and food, Plastics, Construction sector, Consumer goods,
• **Biomassa Alliantie**	Gelderland	6 November 2013	Biomass and food
• **Circulair Buiksloterham**	Noord-Holland	5 March 2013	Unclear, do not clearly correspond to the policy sectors of the Dutch programme: 'Nederland Circulair!'
• **Cleantech Regio**	Overijssel	20 March 2015	Biomass and food, Plastics, Manufacturing industry, Construction sector and Consumer goods
• **Biobased Delta Regio**	Brabant, Zeeland and Belgium	28 February 2014	Biomass and food
• **Alliantie Cirkelregio Utrecht**	Utrecht	1 December 2015	Biomass and food, Manufacturing industry and Construction sector

Table 4: Confrontation of potential cases with case-selection criteria

Sources: (ArgiFood Capital, 2018; Biomassa Alliantie, 2013; Circulair Buiksloterham, 2017; Cleantech Regio, 2015; MARN, Gemeente Nijmegen, ARN, Dar, 2017; Provincie Zuid-Holland, 2018a, 2018b; USI, 2015; Vereniging Fryslân Circulair, 2018)

Based on the confrontation in Table 4, five networks have been excluded from the research: ACCEZ, NEC, Biomassa Alliantie, Circulair Buiksloterdam and Biobased Delta Regio. The networks called ACCEZ and NEC are excluded because they only just started which makes them unsuitable for this research as they are too inexperienced. Any comparison with these cases will always be a false one. Moreover, these networks do not have useful documents making triangulation between methods of data collection impossible. The case of Biomassa Alliantie has also been excluded because this alliance only focusses on (a part of) one of the five policy sectors: biomass. Thus, this case has not much overlap with the others when it comes down to the policy sector in which it is active. The same goes for the network called Circulair Buiksloterdam as the policy sectors do not correspond to the Dutch programme: 'Nederland Circulair!'.

At last, the network called Biobased Delta Regio is excluded because it falls outside the boundaries of the unit of analysis as it is also operating in Belgium. Selecting the latter case would also not be pragmatic because of the different legislative rules that are in place in Belgium. Moreover, this case is primarily concerned with biomass and not with the other circular policy sectors.

The case-selection criteria already excluded five cases, leaving four suitable cases behind for investigation. One of them, ArgiFood Capital, was not willing to participate in the research, which is why this case is excluded from investigation. Another network (namely the: Alliantie Cirkelregio Utrecht) had just finished intense research and was not willing to burden their network members with another research. Consequently, only two networks remained: the Cleantech Regio and Circulair Friesland. Both these networks passed the selection criteria and were willing to participate which is why these two cases were included.

4.3   Data collection methods

To collect the data needed for answering the research questions, two methods are used: document analysis and semi-structured interviews. An overview of the data collection methods that have been used to measure the variables is presented in Table 5. Since 'Trust' and the 'Need for Network Competences' are sensitive and subjective, they are most often not described in (public) documents. This makes it impossible to collect data of these variables by analysing documents. That is why these variables will only be measured by conducting semi-structured interviews. In the rest of this section, the advantages and disadvantages of the two data collection methods will be discussed, as well as the triangulation of the data collection methods.

Variable	Document analysis	Semi-structured interviews
Network effectiveness	Yes (1/1 indicators)	Yes (1/1 indicators)
Modes of Governance	Yes (5/5 indicators)	Yes (5/5 indicators)
Goal Consensus	No (1/1 indicators)	Yes (1/1 indicators)
Trust	Yes (1/5 indicators)	Yes (5/5 indicators)
Number of Participants	Yes (2/3 indicators)	Yes (3/3 indicators)
Need for Network Competences	No (0/4 indicators)	Yes (4/5 indicators)

Table 5: Usage of the data collection methods per variable.

4.3.1 Document analysis

The first method that has been used to collect information about the two cases is a document analysis. For the case of the Cleantech Regio, ten different documents have been selected. For the case of Circulair Friesland, nine different documents have been selected. More information about these documents follows in section 4.4.1. Each document has been scanned before the analysis to get a general idea about the information in the document and the relevance of that document. Hereafter, some documents were reread to answer the operationalisation questions (of section 4.5). These operationalisation questions measure indicators of the theoretical concepts. Each indicator received a label (as shown in Appendix 1), and certain parts of the documents were marked with the corresponding label.

The advantage of the document analysis is that it gives a direct reflection about what has been decided at a certain moment. That means that past situations are relatively easy to reconstruct. Information in documents is formulated relatively impartial, meaning that ambiguity is limited as information is not likely to be interpreted differently (Bleijenbergh, 2013, pp. 61–71). A downside of this neutrality is that different opinions and discussions will not come to the fore. Most often, the majority or the most powerful actors decide about what ends up in the documents. Consequentially, any conflict about the information in the document will not be brought to light (Bleijenbergh, 2013, pp. 61–71).

4.3.2 Semi-structured interviews

Conducting semi-structured interviews is the second research method that has been used to collect information about the two cases. The actual practices surrounding the semi-structured interviews will now be described. All interviews took place in person, at a location that was preferred by the respondent. Each interview took around one hour and was recorded with the permission of the respondents. The recordings of the interviews were used to make transcript verbatims. Since these transcript verbatims are the most comprehensive type of transcript, they ensure controllability and, thus, reliability (Bleijenbergh, 2016, pp. 73–88). Based on the operationalisation of the theoretical concepts, a Dutch interview guide was made since all

respondents were Dutch. This interview guide ensured that all respondents received the same questions in a similar sequence. Sometimes, a different sequence of questions was followed when that was appropriate for the interview. The benefits and disadvantages of semi-structured interviews will now be discussed.

Interviews, in general, are useful to get a better understanding of (subjective) experiences, opinions and the context of the respondent. Interviews allow researchers to get a better understanding of why things happened from different perspectives (Rathbun, 2008, p. 2). Semi-structured interviews, in specific, have a predeterminant structure and sequence of the questions which ensures more reliability of the collected data. Semi-structured interviews have a moderate to high internal validity as they provide the respondents with room to manoeuvre and because it is possible to aid the respondents in understanding the questions and research context (Bleijenbergh, 2016, pp. 61–71). Compared to structured interviews or surveys, semi-structured interviews have a lower external validity. That is because semi-structured interviews allow the respondent to give an answer in their own words which increases the amount of subjectivity, diversity and misinterpretations (Leech, 2002, p. 666).

4.3.3 Triangulation of data collection methods and sources

The combination of analysing documents and conducting interviews is useful to find similar or contradicting findings. The triangulation of different methods and data increases the external validity of causal inferences if the results (partly) overlap (Blatter & Haverland, 2012, p. 68). The triangulation of this thesis is schematically presented in Figure 4.
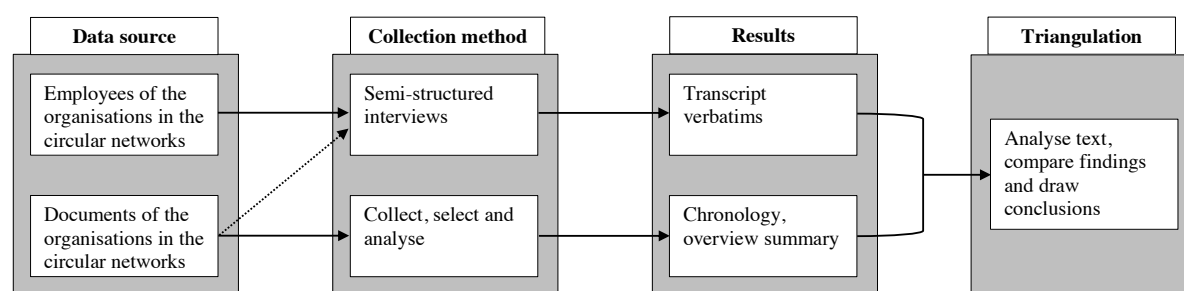
Figure 4: Schematic overview of the triangulation between data sources, collection methods and results.

4.4   Data sources and processing for analysis

The sources that were used for data collection and the processing of the collected data will be described in this section. Since there are two methods used for data collection, there are also two primary data sources used for the analysis: a variety of documents and transcript verbatims of the interviews. These two sources provided different data that was also processed differently. The data sources and the processing of the provided data are described in this section.

4.4.1 A variety of documents

The documents that were used for the document analysis are secondary sources, meaning that they have not been created by the researcher but by organisations within the two networks. Secondary data has often been created with a managerial, administrative or evaluative purpose instead of a specific research purpose. (Sørensen et al., 1996, p. 435). For this research, only documents that have a direct relation to the research questions (or variables of the theoretical framework) were selected for the analysis. An overview of the amount and different type of documents per network has been presented in Table 6.

Type of document	Cleantech Regio	Circulair Friesland
Policy reports / agendas	2	3
Annual (policy) reports	3	5
Research reports	1	2
Internal memo's / reports	2	0
Presentations	2	0
Total number of documents	**10**	**10**

Table 6: Overview of the amount and different type of documents per network

Both networks had policy reports which were useful to get an understanding of how the two networks define the CE, which ambitions the networks have, which organisations participate in the networks and which circular activities are going on. Both networks also provided annual reports. However, in the case of the Circular Friesland, two of these annual reports were published by different organisations which could bias the information as the organisations that published these documents probably have a different perspective. The annual reports describe the network goals in detail and also evaluate to what extent these goals were achieved. The research reports were also valuable since they offered information about governance and context of the networks from a more neutral point of view, making the information more objective and, thus, reliable. In addition to the above documents, members of the Cleantech Regio also handed over internal memos. These documents were valuable because they revealed inside information about the network such as internal differences, discussions and conflicts.

4.4.2 Transcript verbatims of the interviews

The transcript verbatims are the second data source that is used for the analysis. Each interview was recorded with permission of the respondent and these recordings were used to write transcript verbatims. A transcript verbatim is a report of an interview which includes everything

that has been said on the recording. That includes the long pauses, false starts, laughs and repetitions. All sounds were literally written down in the transcript verbatims. The transcript verbatims are primary data sources because they were made by the researcher after conducting interviews, meaning that they are very close to the origin of the event (Bleijenbergh, 2016, pp. 43–52). In this case, the event consists of everything that has been said during the interview.

The transcript verbatims were processed and analysed as follows. Firstly, all the indicators of the operationalisation (in section 4.5) were given a label as shown in Appendix 1. Hereafter, all the interview recordings were transcribed with the help of 'F5', a software programme that saved a lot of time. This programme namely allows researchers to transcribe the interviews and label certain answers at the same time. Whenever the respondents referred to an indicator, that answer was given a label. Next, all the labelled answers were transferred to one single overview with the help of the 'multi-file search' function of 'Text-wrangler', another software programme. Once the answers of a respondent regarding one indicator where combined into one overview, they were summarised in Excel-sheets. After all the answers were filled in the Excel-sheet, the variables were carefully given a value based on the answers of the respondents. The Excel-sheets ensured high reliability as all the data was processed in a structured way. This way of working also increased the internal validity of the analysis as all the provided information by the respondents were taken into consideration.

Although the transcript verbatims were used for the analysis, the respondents were the actual source of information as they described their experiences and opinions. That is why it was very important that the interview respondents were representative of the whole network. To achieve proportional representation of the two network cases, certain organisations were invited and others not. The interview respondents had to be representatives from the network organisations which is why they often have a function in the middle or upper management. These kinds of employees were specially targeted for the interviews since they are likely to have a helicopter view, meaning that they are involved at different issues at a medium and high level of the organisation. They probably started their career at a lower level of the organisation, meaning that they also know what happens at the lower levels of the organisation. These respondents were, thus, capable of providing valuable answers that apply to the entire organisation. Nevertheless, some attitudinal differences within the organisations will always remain present because everyone is different and has opinions and perceptions. An overview of all respondents, including their organisations, organisation types, job descriptions and the date of the interviews is presented in Appendix 2. As the respondents were promised to remain anonymous, their names cannot be mentioned in this thesis.

4.5 Operationalization

The purpose of this section is to make the key concepts (i.e. the variables) of this research measurable. This section is divided into six sub-sections, one operationalisation per variable. Each sub-section is started with a definition of that variable followed by an argumentation for the precise operationalisation. Each operationalisation table includes the dimension(s), indicators, the data collection methods with corresponding questions and the value scale for the indicators. In the methods column of the operationalisation tables, (D) stands for Document analysis and (I) stands for Interviews. The value scale can differ per indicator, and it describes the possible answers that can be given to the corresponding question. The questions that are mentioned in the text correspond with the ones in the operationalisation tables. The operationalisation tables demonstrate the triangulation between data collection methods. The questions in the operationalisation form the starting point for the document analysis and the interview guide (see Appendix 3) that was used for conducting the interviews.

4.5.1 Network Effectiveness

Network effectiveness was earlier defined as "The attain[ment of] positive outcomes that normally could not be achieved without collaboration." (Provan & Kenis, 2008, p. 230, text added). To measure network effectiveness, as defined here, the goals of the network have to be known in the first place. Hence, the first question of the operationalisation is "What are the goals of the network?". This question can easily be answered by analysing documents. The second question of the operationalisation is "To what extent has the network achieved these goals?". This question can be answered by analysing documents and by conducting interviews. The document analysis reveals an objective assessment of goal attainment and the interviews offer subjective opinions of the employees of the network organisations about the accomplishment of the network goals. By answering the second question, one gets to know how effective the network was because network effectiveness has been narrowed down to the achievements of goals. The complete operationalisation of network effectiveness has been presented in Table 7.

Dimension	Indicator	Methods and corresponding questions	Value scale
Network effectiveness	Goal achievement	1. What are the goals of the network? (D)	Open
		2. To what extent has the network achieved these goals? (D and I)	Open

Table 7: Operationalization of network effectiveness

4.5.2   Modes of Governance

The modes of governance can be defined as "The features in which networks might differ and in which context they are predicted to be more effective." (O.K., 2019, Theoretical Framework). Since the modes of governance are conditional for the explanatory variables, the effects of the explanatory variables on network effectiveness depend on the type of network. The operationalisation of the modes of governance should help to identify one of the three the types of network governance: Shared Governance, Lead Organization (LO) and Network Administrative Organization (NAO).

It is essential to know for each case what type of network governance it is because this helps to understand the levels of effectiveness of that network. The easiest way to get to know the type of the network is to look for a mediating organisation in the network that guides the communication and coordination. This is exactly what the first three questions address. The first question is "Which organisation guides the communication between organisations of the network?". When there is an organisation that guides the internal communication, then we have a first sign that there is a mediator present in the network. Questions two and three do the same, but they do not address internal communication, but the external communication and the coordination of tasks between network organisations. Some of these questions can be answered by analysing documents of the network, while others have to be answered by interviewing employees of the network organisations. These three questions have the same value scale as they determine the absence or presence of a mediator by recognising organisations as mediator. The absence of a mediator implies that the network is a Shared Governance type of Network. When there is an organisation responsible for the coordination of activities, the internal or external communication, then this mediating organisation will be recognised and named. The presence of a mediating organisation implies that there is a LO or NAO present in the network.

To separate LO networks from NAO networks, a second dimension has been added: the levels of centralisation. This second dimension has two indicators: the number of organisations that formulate the goals and the number of organisations that take decisions that affect the whole network. By answering question four, "How many and which organisations formulated the goals of the network?", The former indicator has been measured. The latter indicator has been measured by answering question five: "How many and which organisations take decisions that affect the whole network?". Both questions are important for separating a network with a LO from a network with a NAO. When only one organisation can formulate goals and/or take decisions, then the network seems highly centralised. A highly centralised network is led by an LO which has full control over what happens in the network. When multiple organisations

can formulate goals and/or take decisions, then the network seems less centralised which implies that there is a NAO present in the network. One can speak of a network with a NAO when there is a mediator present in the network, but that mediator is not the only organisation in the network that formulates the goals or takes decisions. This NAO coordinates activities and guides the internal and external communication but does not control everything. The questions of the second dimension of the modes of governance (i.e. the levels of centralisation) have been answered by analysing documents. The interviews served to verify the findings of the document analysis and to collect information that was not described in documents. Whenever the different documents contradicted each other, the respondents have been asked to explain how the documents relate to each other and how they should be interpreted. The complete operationalisation of the modes of governance is presented in Table 8 below.

Dimension	Indicator	Methods and corresponding questions	Value scale
Presence or absence of a network mediator	Communication internally	1. Which organisation guides the communication between organisations of the network? (D and I)	Two options for these three questions: - Name(s) of the organisation(s) (=presence) - None (=absence)
	Communication externally	2. Which organisation communicates with external organisations and the public on behalf of the whole network? (D and I)	
	Coordination of activities	3. Which organisation guides the coordination of activities between network organisations? (D and I)	
Levels of centralization	Goal formulation	4. How many and which organisations formulated the goals of the network? (D and I)	Number and name of the organisations that: - Formulate goals - Take decisions
	Decision-making	5. How many and which organisations take decisions that affect the whole network? (D and I)	

Table 8: Operationalization of the Modes of governance

4.5.3   Goal Consensus

Goal consensus has previously been defined as "The level of goal consensus and domain similarity between network participants." (O.K., 2019, Theoretical Framework). The main principle behind goal consensus is a similarity between participants. The similarity between participants is the only dimension of this variable and can be measured by the indicator: Mission similarity (Provan & Kenis, 2008, pp. 239–240).

This indicator can be measured by answering question 1: "What is the purpose of the network in general?". Question 1 has been answered by analysing documents and by conducting interviews with employees of the network organisations. The different answers to this question were, subsequently, compared to reveal to what extent the persons in the network share the same purpose of the network. When there is much overlap in the answers of the respondents, then there is a high goal consensus. The second question that measures the mission similarity is: "How do the network goals relate to the goals of your organisation?". This question has been answered by conducting interviews with employees of the network organisations. By answering this question, one gets to know to what extent the mission of the different network organisations relates to the overreaching network goal. When the goals of many network-organisations align with the goals of the network, then there is a higher goal consensus than when the organisational goals conflict with the network goals. The operationalisation of the goal consensus variable is presented in Table 9 below.

Dimension	Indicator	Methods and corresponding questions	Value scale
Similarity between participants	Mission similarity	1. What is the purpose of the network in general? (D and I)	Open
		2. How do the network goals relate to the goals of your organisation? (I)	Open

Table 9: Operationalization of Goal consensus

4.2.4 Trust

Trust can be defined as "an aspect of a relationship that reflects the willingness to accept vulnerability based on positive expectations about another's intentions or behaviour." (Provan & Kenis, 2008, p. 237). Trust has two dimensions, a Risk taking dimension and a dimension that focusses on the Relationship. The Risk-taking has three indicators: the Sharing of sensitive information, the Sharing of tasks and Formal control mechanisms.

The first indicator, the Sharing of sensitive information, is important because sensitive information can put the organisation in a vulnerable position when it ends up in the wrong hands. The Sharing of sensitive information can be measured by answering four questions. The first question, "How is information being shared between organisations of the network?" can be measured by conducting interviews. This first question gives insight into the way information is being shared. The second question, "With which organisations in the network does your organisation share sensitive information?" signifies the extent to which sensitive information is being spread within the network. Sensitive information can namely be shared

with everyone in the network or just the relevant actors that need that information to do something. Since such information is not described in documents, the second question can only be answered by asking them during interviews. The third question, "How sensitive is the information that your organisation shares with other organisations in the network?", reveals the sensitivity levels of the information that is being shared. When the shared information is susceptible, the levels of trust are likely to be very high due to exposure risks. The sensitivity of information is also not described in the documents, that is why the third question has also been used during the interviews. The fourth question, "How much sensitive information does your organisation share with other organisations in the network?", addresses the amount of sensitive information that is being shared. When the network organisations share much sensitive information, the levels of trust are very high. The fourth question has to be asked during an interview because the needed information is not described in documents and interviews allow the interviewer to ask follow-up questions which increases the internal validity.

The second indicator of the Risk-taking dimension is the Sharing of tasks. When employees of the network organisations find it easy to delegate or exchange tasks, then the levels of trust are likely to be higher than when they do not. Hence, this indicator can be measured by asking "How easily do you share tasks with employees of other organisations in the network?". Another question to measure this indicator is "How reassured are you that employees of other organisations in the network also perform these tasks correctly?". This sixth question is also useful to get a better understanding of Trust because when employees are not reassured at all with sharing their tasks with others, that may signify that they the levels of trust are low. Question five and six have been asked during interviews because this increases the internal validity as follow-up questions can be asked during interviews.

The third indicator of the Risk-taking dimension regards the Formal control mechanisms. When organisations share much or sensitive information, or when employees do not feel comfortable with others executing tasks, they are likely to install Formal control mechanisms (Wennekes, 2016, pp. 22–23). The presence of formal agreements, rules or contracts signifies a lower level of trust. This can be measured by asking employees of the network organisations "Are there formal agreements, rules or contracts that you have to comply with in order to carry out your work?".

Trust has another dimension, namely the Relational dimension. This dimension has two indicators: Past interaction and Image about other network organisations. The Past interaction is important as it shapes the attitudes of employees in the present, and thus, affects the collaboration between organisations. To measure the experiences of past collaboration,

question eight ("How many years have the network organisations worked together in the network?") will be answered by analysing documents and by conducting interviews. When the collaboration experiences of the past are awful, organisations are unlikely to continue collaborating unless that is top-down demanded by the state. Moreover, the levels of Trust increase over time, so longer collaboration experiences signify a higher level of trust. Question 9 also measures the past interaction by asking "How did you experience the cooperation with the network organisations in the past?". This question can only be asked during an interview as it directly asks for a subjective opinion. The tenth question, "Have major milestones been achieved during the cooperation in the past?", also has been asked during an interview. The achievement of many or important milestones shows that the organisations in the network have benefitted from the network and had a positive experience which increases the levels of Trust.

The second indicator of the Relational dimension regards the Image and expectations that the employees have about other organisations and persons in the network. When the image of employees about others is good, and the expectations are high, then the levels of Trust are higher than when this is not the case because organisations are then more willing to collaborate (Provan & Kenis, 2008, p. 237). Consequentially, question 11 asks for the image that employees have about other organisations and persons with whom they collaborate, and question 12 asks for the expectations that employees have about other organisations and persons with whom they collaborate in the network. The operationalisation of Trust is shown in Table 10.

Dimension	Indicator	Methods and corresponding questions	Value scale
Risk taking	The sharing of sensitive information	1. How is information being shared between organisations of the network? (I)	Open
		2. With which organisations in the network does your organisation share sensitive information? (I)	Open
		3. How sensitive is the information that your organisation shares with other organisations in the network? (I)	Open
		4. How much sensitive information does your organisation share with other organisations in the network? (I)	Open
	Comfortable with the sharing tasks	5. How easily do you share tasks with employees of other organisations in the network? (I)	Open
		6. How reassured are you that employees of other organisations in the network also perform these tasks correctly? (I)	Open

	Formal control mechanisms	7. Are there formal agreements, rules or contracts that organisations must comply with in order to carry out work? (I)	Open
Relationship	Past interaction	8. How many years have the network organisations worked together in the network? (D and I)	… years
		9. How did you experience the cooperation with the network organisations in the past? (I)	Open
		10. Have major milestones been achieved during the cooperation in the past? (I)	Open
	Image and expectations	11. How do you perceive the organisations and people you work with in the network? (I)	Open
		12. What do you expect of the organisations and people you work with in the network? (I)	Open

Table 10: Operationalization of Trust

4.5.5 Composition of Network Participants

The number of participants is defined as "The number of organisations participating in a network". (c.f. Provan & Kenis, 2008, p. 238-239). This definition is too narrow because an effective network also needs a certain diversity of organisations is to supply the needed resources, knowledge and capacity. A network is also more effective when the composition of participants remains stable because every collaborative process requires some commitment. When organisations only participate in the network for a short period and can leave whenever they want, then the network might become less effective. Consequentially, the variable of the Number of participants has been broadened to the Composition of participants. The composition of participants can be operationalised into three indicators: the Number of participants, the Type of participants and the Stability of the network composition.

The first indicator is relevant because every network needs a suitable number of participants; not too much and not too little. A certain number of participants is needed to obtain enough resources and capacity to address issues effectively. However, too many participants will make the network unnecessarily complicated and thereby ineffective (Provan & Kenis, 2008, pp. 238–239). The first indicator can easily be measured by analysing documents since annual reports, policy and strategic documents often describe the organisations that were involved. The first question for this indicator is, therefore, "How many organisations participate in the network?" To determine whether or not this number is suitable for the nature and goals of the network, employees of the network organisations have been asked: "Would the network be better off if fewer or more organisations would participate in the network?".

The second indicator, the Type of participants, is relevant for this variable because a diverse composition of network organisations is not only needed to be responsive to challenges, but it also enables the network to provide diverse resources such as market information and technical expertise. This indicator can be measured by analysing documents as the type of organisations have often been described in documents. That is why the third question for measuring this question, "Which type of organisations participate in the network?", will be answered by analysing documents. To determine whether or not this composition of organisations is suitable for the nature and goals of the network, a fourth question has to be asked during interviews with the employees of the network organisations: "Would the network better be off if the composition of organisations would look different?".

The last indicator for measuring the composition of the network regards the stability of the network composition. A network will be less effective when organisations can leave the network whenever they want without consequences. When organisations are more committed to the process and goals of the network, they do not leave the network on a regular basis. Such commitment is positively related to the effectiveness of networks (Ansell & Gash, 2008, pp. 559–560). To measure how hard it is to leave the network, question five ("How hard is it for an organisations to leave the network?") is answered by conducting interviews. Once an organisation leaves the network, it can remain stable if a new organisation joins or when remaining network participants continue the activities of the leaving organisation. That is why question six ("What happens in the collaborative process when an organisation leaves the network?") is relevant to determine the stability of the network. The needed information to answer the sixth question is not described in documents, which is why this question will be answered by conducting interviews. The effects of organisations leaving the network could be similar to the effects of organisations joining the network. When an organisation joins the network, the dynamics and procedures of the network might also change which is why question seven ("How hard is it for a new organisation to join the network?"), is also asked during the interviews. Once a new organisation joins the network, other network organisations might start feeling less important as the newcomer may know more, work faster or more efficient. Hence, question eight ("What happens in the collaborative process when a new organisation joins the network?") is also helpful to understand the stability of the network. Because the needed information for answering question eight is often not described in documents, this question will be answered by asking it during the interviews. The complete operationalisation of the Composition of network participants is shown in Table 11.

Dimension	Indicator	Methods and corresponding questions	Value scale
Composition of the network	Number of participants	1. How many organisations are part of the network? (D)	Number
		2. Would the network be better off if fewer or more organisations would participate in the network? (I)	Fewer / more (because…)
	Type of participants	3. Which type of organisations participate in the network? (D)	Name and description
		4. Would the network better off if the composition of organisations would look different? (I)	Yes / No (because)
	Stability of the network composition	5. How hard is it for an organisations to leave the network? (I)	Easy / Moderate / Hard
		6. What happens in the collaborative process when an organisation leaves the network? (I)	Open
		7. How hard is it for a new organisation to join the network? (I)	Easy / Moderate / Hard
		8. What happens in the collaborative process when an organisation joins the network? (I)	Open

Table 11: Operationalization of the Composition of network participants

4.5.6   Network Competences

The last explanatory variable, the Need for Network Competences, is defined as "[The] competences [that] are required from the individual organisations to achieve the goal of the whole network." (O.K., 2019, Theoretical Framework, text added). In this definition, the network uses the competences of its participants to achieve the goals of the network. That is why this variable is, from now on, referred to as 'The levels of network competences'. This variable is divided into three dimensions: The levels of communication competences, The levels of coordination competencies and the Levels of network capital.

The first dimension of this variable, The levels of communication competences, has one indicator: Quality of communication within the network. The external communication is not relevant for this research since network effectiveness is internally defined as it only concerns the achievement of internally formulated network goals. The first question that measures this indicator is: "How important is the communication between network organisations for achieving the network objectives?". This question is important because it reveals how high the need is for good internal communication for achieving the network goals. Since this has often not been described in documents, this question has been answered by conducting interviews.

The second question of the first dimension is: "How well goes the communication between participants of the network?". This question demonstrates the actual quality of the internal network communication. As this question focusses on the opinion of the employees of network organisations, it must be asked during interviews. The last question that measures the quality of the communication in the network is: "What can be improved in the communication between network organisations?". This third question zooms in on the reflective and learning capacities of the network which is important to remain or improve the effectiveness of the network.

The second dimension, The levels of coordination competencies, is operationalised into the Quality of coordination of network activities. To determine how important a high quality of coordination is for the network, fourth question ("How important is the coordination of tasks between network organisations for achieving the goals of the network?") is asked during interviews because documents cannot provide an answer to this question. The fifth question that measures the quality of coordination competences is: "How well goes the coordination of tasks between participants of the network?". Knowing the perceived coordination skills is important to determine to what extent this matches the demanded coordination skills. Since question five also aims to reveal the subjective opinions of employees of the network organisations, this question is asked during interviews. The sixth question is: "What can be improved in the coordination of tasks between network organisations?". This question reveals the reflective and learning capacities of the network and can, therefore, only be answered by conducting interviews as documents do not been describe such information.

The last dimension of the Levels of network competences is about the Levels of network capital. Every network needs financial resources and competent staff to be effective. When there are insufficient of these resources available, the effectiveness of the network might decrease. That is why this variable is operationalised into two indicators: levels of financial capital and levels of human capital. The first indicator is measured by asking employees of the network organisations question seven and eight. By answering question seven ("Does the network have sufficient financial resources to reach its goals?), the employees of the network organisations have to reflect on the needed financial capital and the available financial capital. When many respondents notice a gap between these two, the network effectiveness is probably reduced since there are too little financial resources available. An interesting follow-up question for the interview is then to ask: "How well can the network solve financial problems when there are too few financial resources available?". By answering this eight-question, one gets to know how good the network is in solving financial problems. When a network is good in solving financial problems, it is likely to be more effective than when it is not.

The second indicator, the need for human capital, is measured by asking employees of the network organisations question nine and then. Question nine ("What do you think about the expertise of the employees in the network organisations?") serves to gain knowledge about human capital. When many respondents are negative about the expertise of participants, the network probably has a shortage of human capital which can decrease the effectiveness of the network. A shortage of human capital becomes problematic when the network is not able to solve that problem. Question ten, therefore, serves to determine to what extent the network can overcome a shortage of human capital. This question is formulated as follows: "How well can the network organisations solve a shortage of expertise among their employees?". When the network organisations can solve the problem of insufficiently skilled employees, the network is capable of improving, or at least remaining, its effectiveness in the future. The complete operationalisation of this variable has been presented in Table 12.

Dimension	Indicator	Methods and corresponding questions	Value scale
The levels of communication competences	Quality of communication within the network	1. How important is the communication between network organisations for achieving the network objectives? (I)	Open
		2. How well goes the communication between participants of the network? (I)	Open
		3. What can be improved in the communication between network organisations? (I)	Open
The levels of coordination competences	Quality of coordination of network activities	4. How important is the coordination of tasks between network organisations for achieving the goals of the network? (I)	Open
		5. How well goes the coordination of tasks between participants of the network? (I)	Open
		6. What can be improved in the coordination of tasks between network organisations? (I)	Open
The levels of network capital	Levels of financial capital	7. Does the network have sufficient financial resources to reach its goals? (I)	Yes / No (because…)
		8. How well can the network solve financial problems when there are too few financial resources available? (I)	Open
	Levels of human capital	9. What do you think about the expertise of the employees that work in the network organisations? (I)	Open
		10. How well can the network organisations solve a shortage of expertise among their employees? (I)	Open

Table 12: Operationalization of the Network competences

4.6   Reliability and validity

This section consists of a critical reflection on the reliability and validity of this research.

4.6.1   Reliability

A research has high *reliability* when similar, if not the same, results are found when the research is repeated by someone else or at a different moment (Vennix, 2010, p. 186). Qualitative research is, in general, less reliable compared to quantitative research because the researcher is part of the research method as he conducts and thereby influences the interviews. A small number of respondents is an inherent element of qualitative research and makes it more likely that random errors occur in the results (Gerring, 2007, p. 43; Rathbun, 2008, pp. 1–3).

In defence of this qualitative oriented thesis, three steps have been taken to minimalise these flaws. Firstly, the majority of the potential cases were excluded from this research because they did not pass the case-selection criteria which made them unsuitable as they would only produce biased findings (Gerring, 2007, pp. 50–53). Secondly, all interviews were recorded to make complete transcript verbatims. These transcript verbatims allow other researchers to re-do the analysis. The transcript-verbatims, thus, increase the controllability of the research, an important aspect of the reliability of qualitative research. To secure anonymity of the respondents, the transcript verbatims are not included in the public appendices of this thesis. Thirdly, the interviews were semi-structured which means that they had a predetermined structure and a similar sequence of questions which increased the external validity (Gerring, 2007, p. 43). One additional step might have further increased the reliability of the research. If the transcripts were analysed separately by different researchers, misinterpretations could have been reduced. However, because this thesis is an individual project, it is not allowed to analyse the transcripts with the help of other persons.

4.6.2   Validity

The *internal validity* of a research signifies the extent to which the data collection methods measures what it intends to measure (Vennix, 2010, p. 184). The internal validity is highly influenced by the operationalisation of theoretical concepts (Blatter & Haverland, 2012, pp. 65–66). In this thesis, each independent variable has been measured with at least three indicators, meaning that these variables were covered broadly. The operationalisation of the theoretical concepts occurred based on theory. The literature explained that the independent variables of the theoretical framework affect the dependent variable and that the indicators represent all of these variables. That means that the indicators truly measure the variables and

the independent variables truly affect the dependent variable. Thus, the internal validity of the theoretical framework is high which explains why many studies about network effectiveness use these variables and indicators. In addition to the operationalisation, the semi-structured interviews improved the internal validity of this research in two ways. One of the advantages of the semi-structured interviews is that it leaves the respondent with some room to manoeuvre, meaning that the respondents could signal when they needed more context or explanation. Another benefit of the semi-structured interviews was that follow-up questions could be asked to reveal more information about a variable (Rathbun, 2008, pp. 1–3).

The *external validity* regards the extent to which the research findings can be generalised to the whole research population (Bleijenbergh, 2016, p. 111). Qualitative research, in general, has a lower external validity compared to quantitative research due to a lower number of cases and respondents (Rathbun, 2008, pp. 1–3). In this thesis, two of the nine potential networks were investigated which is still a relatively large sample. Because two cases were selected, they can be compared which also increases external validity. Besides the sample size of this research, there are a few other measures taken to increase external validity. One of those measures was to carefully select the cases that would be researched. By selecting cases that passed specific criteria (as explained in section 4.2), a sample was created that was representative of the unit of analysis. The use of multiple data collection methods (i.e. triangulation) also improved the external validity of this research. Because of this triangulation, most indicators were namely measured twice and, hereafter, compared. That means that commonalities in the research findings strengthened the inferences.

5. Analysis

This chapter is divided into three sections. In the first section, the case description, as well as the analysis of the Cleantech Regio, will be presented. In the second section, the case description, as well as the analysis of Circulair Friesland, will be presented. In the third section, the two cases will be compared in order to find commonalities and contradictions in the results. This comparison helps to answer the research questions as it strengthens the causal inferences and, thus, external validity (i.e. generalizability) of the research. The results of the document analysis and the analysis of the semi-structured interviews are presented simultaneously per case because this increases the readability.

5.1 Case 1: The Cleantech Regio

This section has eight sub-sections in which the Cleantech Regio will be described and the levels of effectiveness of the network explained. In the first sub-section, a brief description of the Cleantech Regio as a network will be offered. In the second until the seventh sub-section, the document analysis and the analysis of the interview transcriptions are presented. In the last section, an overall analytical conclusion will be provided about the Cleantech Regio.

5.1.1 Description of the Cleantech Regio

The municipalities in the geographical area of what now is called 'the Cleantech Regio' noticed that regional cooperation has changed over time and that more actors became involved in public policy-making which made regional cooperation more diffuse and complex. To maintain a grip on specific policy issues, the municipalities of Apeldoorn, Brummen, Deventer, Epe, Lochem, Voorst and Zutphen worked together in a regional board: the "Regio Raad". At the end of 2013, these municipalities intensified their cooperation by including educational institutions and companies in a network called the Cleantech Regio. The organisations located in the Cleantech Regio became united in the Strategic Board, consisting of seven persons; one independent chairman, two businesses representatives, two municipal representatives and two educational representatives (Bureau Stedendriehoek, 2018, pp. 4–5; Strategische Board, 2018b, pp. 2–3).

The Strategic Board installed an administrative organisation to support the implementation of policies. This executive organisation is called 'Cleantech Regio Development', abbreviated: CTRD. On 16 Augustus 2017, the municipality of Heerde asked the Strategic Board to join the network. The municipality of Heerde was granted membership to the Strategic Board on the 1st of September 2018 (Bureau Stedendriehoek, 2018, p. 5). An organogram of the Cleantech Regio, including the functions and composition of the different bodies, is presented in Figure 5.

The ultimate ambition that the Cleantech Regio pursues is to achieve sustainable prosperity for its residents. Achieving an energy-neutral region with an economy that is entirely circular is the top priority. The Cleantech Regio acknowledges the importance of not wasting fossil fuels and materials. This understanding is partially practical because the municipalities have to follow guidelines of the national government. However, this understanding also rises from a genuine concern about the environment and economy. By accelerating the transition towards an energy-neutral and CE, the Cleantech Regio believes in responsibly strengthening the regional labour market (Strategische Board, 2018a, pp. 4–15, 2018b, p. 1).

The RR:
- Decides about general ambitions and frameworks

Regioraad (RR)

Provides the SB with drafts of decisions

Strategic Board (SB)

The SB:
- Stimulates network collaboration
- Lobbies for policies and subsidies
- Decides over policy implementation

Choses persons for DB

Supervises and monitors the SB

Indicates assignments to the CTRD

Daily Board (DB)

The DB:
- Secures focus and clear procedures
- Keeps overview and control
- Has no mandate!

CTRD

The CTRD:
- Collects, plans and coordinates initiatives
- Support participants with knowledge and funds
- Innovates and develops new business models

Table 1: Energy Transition   Table 2: Circular   Table 3: Human Capital   Table 4: Communication

Network participants

Composition per body:
- RR: 16 representatives. 8 municipalities, 2 persons (major/alderman) per municipality
- DB: 10 representatives. 8 from municipalities, 2 from provinces.
- SB: 7 representatives. 1 chairman, 2 of companies, 2 of municipalities and 2 of educational institutions.
- CTRD: due to fast rotation, it is unclear how many persons and wherefrom.
- Tables: due to fast rotation, it is unclear how many persons and wherefrom.
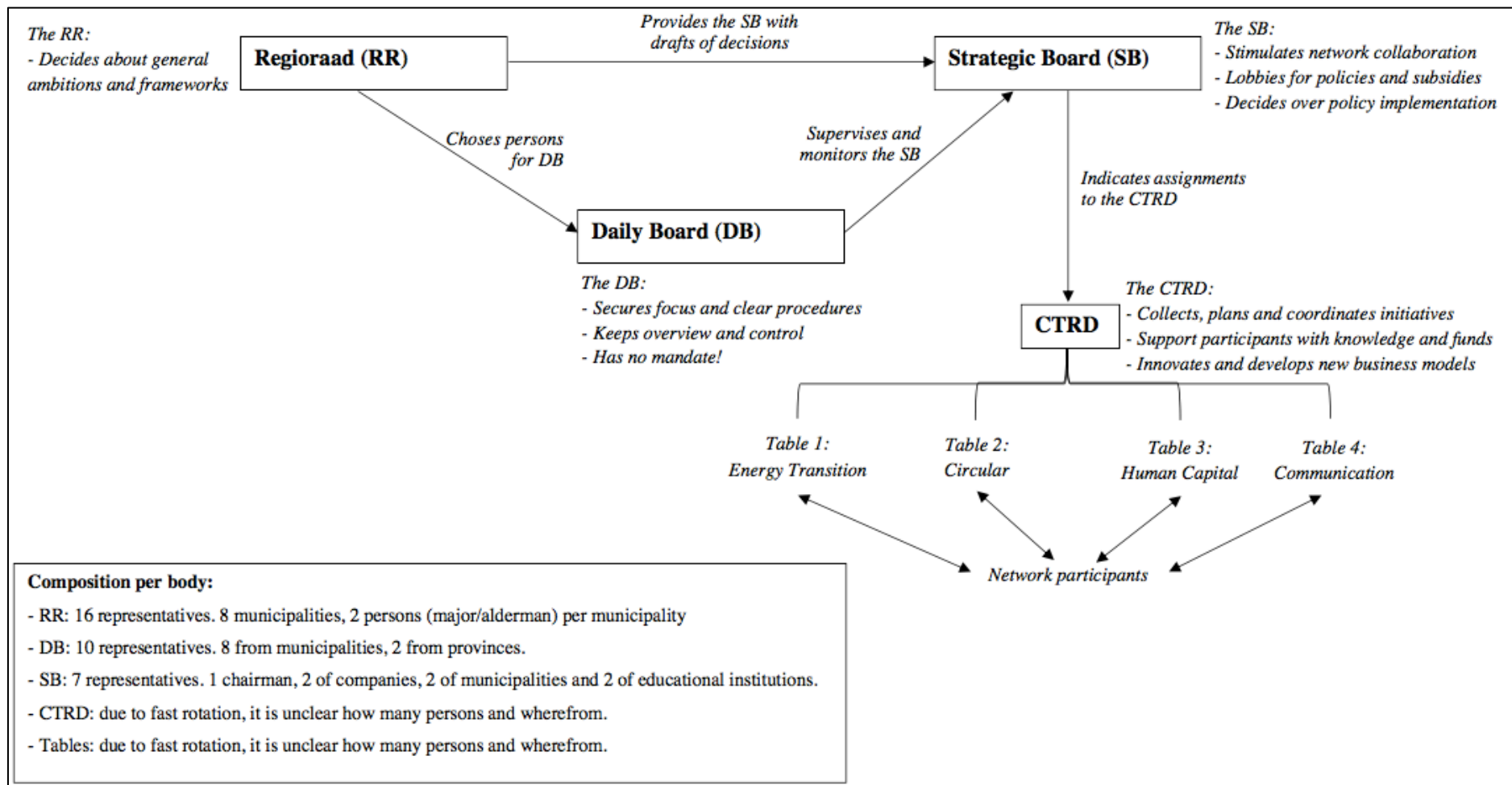
Figure 5: Organogram of the Cleantech Regio, including the functions and composition of the different bodies

Sources: (Bureau Stedendriehoek, 2018, pp. 4–5; Cleantech Regio, 2018; Strategische Board, 2018b, pp. 2–3)

Note: The Regioraad is sometimes referred to as "WGR-regio Stedendriehoek", "WGR" and "Stedendriehoek" but they all refer the same organisational body.

5.1.2   Network Effectiveness

The Cleantech Regio clearly describe their network goals in the annual reports of 2015, 2016 and 2017. These documents describe one general purpose of the Cleantech Regio that is associated with the CE. The network strives to be a waste-free region by 2030. On the short term, a more tangible goal was formulated: Before 2020, the Cleantech Regio aims to reduce the amount of household waste with 33% (20,000 tons) compared to 2014 by recycling and reusing raw materials. This goal is objectively measured by the number of kilograms of household waste per inhabitant of the Cleantech Regio per year. For 2020, the goal is to limit the waste production per inhabitant of the Cleantech Regio to 100 kilograms per year. In 2014, each inhabitant of the Cleantech Regio produced 149 kilograms of household waste per inhabitant. In 2017, each inhabitant of the Cleantech Regio produced 125 kilograms of waste. That means that the network has achieved a waste reduction of 16% between 2014 and 2017. Although the network is only halfway, it still believes that the waste-reduction goal can be reached (Strategische Board, 2016, p. 3, 2017, pp. 2–4, 10). This belief makes sense because the network already completed half of the waste-reduction goal between 2014 and 2017 and it still has three years left to complete its goal. Thus, if the network continues this way, it is likely that the waste-reduction goal will be achieved by 2020. Based on previous information, the Cleantech Regio can be labelled as an effective network.

The respondents of the interviews did not argue otherwise when they were asked if they think that the Cleantech Regio would achieve its waste-reduction goal. Almost all respondents believed that the waste reduction goal would be achieved before 2020. A couple of respondents even argued that the Cleantech Regio is one of the best waste management regions.

❖   *"The Cleantech Regio is at the top of waste separating regions in Europe."*
      (Respondent 1, translated text from transcript)

However, about half of the respondents argued that the Cleantech Regio could achieve much more if the network were more ambitious. The network mainly focusses on waste-management while the CE is about much more (also see Figure 1 in section 2.3):

❖   *"One of the important things is not only to manage waste but also to think about*
      the design. [...] Recycling is namely located at one of the lowest levels of
      circularity [...], and you want to be active in the higher levels of circularity."
      (Respondent 5, translated text from transcript)

A few other respondents criticised the Cleantech Regio for lack of control. According to these few respondents, past results relied on coincidence and luck because the decision-making processes are too complicated, slow and not transparent. Respondents also pointed out that there are no direct consequences for an organisation when it does not comply with network decisions. Most respondents believe that the Cleantech Regio has a high potential. But, they do not experience the benefits of the network yet. For some participants, that raised doubts about the added value (and effectiveness) of the network.

❖ *"If you ask me about the added value of the Cleantech Regio, I could give you a politically correct answer. [...] But if my organisation had done this alone, we might have done it even faster. So, I think that the successes of the network are hard to demonstrate." (Respondent 8, translated text from transcript)*

When everything is taken into consideration, the levels of effectiveness of the Cleantech Regio are labelled as moderate to high. On the one hand, the network will achieve its goals which signifies a high level of effectiveness. On the other hand, some network participants do not yet perceive the network as highly effective. These participants noticed the high potential of the Cleantech Regio but argued that the network lacks control and is not ambitious enough.

5.1.3   Modes of Governance

This variable has five indicators which are measured both by analysing documents of the Cleantech Regio, as well as conducting interviews with employees of the network participants. The documents of the Cleantech Regio do not describe one single organisation that guides the internal communication of the network. Based on the documents, it seems like the network participants are self-responsible for communication within the network and that they interact directly, rather than via one single organisation. The interviews, in contrast, revealed something different. Almost all respondents identified the Strategic Board and the 'Cleantech Regio Development' (abbreviated: CTRD) as a mediating party when it comes down to the internal communication of the network. These organisational bodies of the Cleantech Regio facilitate communication by passing on information about specific projects and initiatives. These bodies also connect network participants by organising meetings.

The second indicator of the modes of governance is about external communication. Over time, the Cleantech Regio grew and appointed a communication team that is responsible for the external communication. This team existed for a longer period of time but was only formally

appointed in 2017. The priority of this communication team is to win awareness for the Cleantech Regio and to position it as a strong network due to the triple-helix composition in which governments, educational institutions and companies collaborate (Strategische Board, 2017, pp. 3–4). Most interview respondents knew that the Cleantech Regio had formed an external communication team. However, the respondents explained that the network respondents also have their own communication channels to the outer world. Some respondents said that more collaboration on this front would increase the overall PR-impact for the network.

Regarding the third indicator of the coordination of activities, the results of the document analysis and the interview analysis overlap. Both methods point towards the Strategic Board and the CTRD as organisations that coordinate activities. The Strategic Board is an organisational body of the Cleantech Regio which decides over the policy implementation. The Strategic Board stimulates interaction and collaboration between participants of the network. It does so by promoting circular initiatives, organising events and meetings, advising organisations and by connecting organisations. Besides, the Strategic Board lobbies for specific policies and mediates to get subsidies and other financial revenues (Strategische Board, 2018c, pp. 5–6). The executive body of the Strategic Board is called the CTRD (see before). The CTRD collects all initiatives that arise from the network and, subsequently, supports organisations with financial matters and the development of these initiatives into real projects. Along with this process, the CRTD shares knowledge, contacts and other resources that contribute to the development of initiatives and projects (Strategische Board, 2017, pp. 6–7). The functioning of these network administrative organisations (NAO's) is nicely described in a chronical order by one of the respondents:

- ❖ *"Collaborating is complex, so a person was appointed to guide and oversee the general direction of the collaboration. […]. At a certain moment, the workload became too much, and this coordinator needed secretarial support. That is why a board was created which needed an executive organisation. Over time, a new organism was born that aims to facilitate the participants. At the same time, that organism wants to prove its value by actively contributing to the process."*
  (Respondent 8, translated text from transcript)

Based on the documents, the formulation of goals and the decision-making process of the Cleantech Regio is rather complex as it knows two phases. The first decision-making round is done by the 'Regioraad'. The Regioraad is a board that consists of members of eight municipal

councils: Apeldoorn, Brummen, Deventer, Epe, Heerde, Lochem, Voorst and Zutphen. In the Regioraad, each municipality has one vote, and a majority is needed to approve decisions formally. This Regioraad decides about general ambitions of the region and policy frameworks. When a decision is made in the Regioraad, the second decision-making phase starts. In this second phase, the Strategic Board decides over the actual policies and also oversees the implementation of these policies (through the CTRD). The Strategic Board of the Cleantech Regio consists of seven persons; one independent chairman, two representatives of businesses, two representatives of municipalities and two representatives educational institutions. Each person of the Strategic Board has one vote, and a majority is needed to approve decisions formally. The Strategic Board is supervised by a Daily board. However, this Daily board has no direct role to play in the decision-making process as it lacks the political mandate to hold the executive body responsible for its functioning (Bureau Stedendriehoek, 2018, pp. 4–5).

Remarkably, only a few respondents could explain the decision-making process and goal formulation of the Cleantech Regio in such detail as previously done. Most respondents only knew about the existence of the Strategic Board and CTRD. The exact role of the Regioraad was often not mentioned during the interviews. The reason why the decision-making process and goal formulation of the Cleantech Regio remains somewhat unknown is that none of the documents clearly explain these matters. Multiple documents explain the decision-making process, but they all do that slightly different and not complete which makes it hard to grasp a comprehensive understanding:

❖ *"What you want is that the organisations that contribute to the goals play a part in the decision-making process and the goal formulation. I doubt if that actually happened. To me, those processes were vague, like a black box."* *(Respondent 3, translated text from transcript)*

About half of the respondents said that the decision-making process and the goal formulation processes are rather complex and slow because every partner has their constituency and internal procedures. Another problem that became visible is that decisions do not have direct or formal consequences when network participants do not comply:

❖ *"There is no legal translation from the network goals to the separate organisations. The Strategic Board cannot say: 'You have to do this now'. No, they can only ask it, at most."* *(Respondent 1, translated text from transcript)*

In sum, the Cleantech Regio has two organisations that operate as mediators. The Strategic Board and CTRD coordinate activities and support the development of initiatives and projects. They do so by connecting network participants and by guiding the internal communication. The Strategic Board also has a team that is responsible for external communication and PR. The first phase of the decision-making can only be influenced by the eight members of the municipal councils. In the second stage, the seven representatives of businesses, municipalities and educational institutions affect more detailed decisions about policies and their implementation. Since the number of persons that affect the process of decision-making is limited, the network is somewhat centralised. Considering that the Cleantech Regio is centralised and communication and coordination mediated, the network is labelled as a network with an administrative organisation (NAO).

5.1.4 Goal Consensus

This variable has one indicator, being mission similarity, which has only been measured by analysing transcripts of the conducted interviews. Having a similar mission is vital because it allows network participants to perform better. In the case of the Cleantech Regio, all interview respondents said that they perceive consensus at the level of ambitions. Thus, one can speak of a mission similarity among the participants of the Cleantech Regio. Most respondents also experience real commitment of the network participants towards the network goals:

❖ *"What I also find fantastic to witness is that the business community from the entire region has embraced the agenda of the Cleantech Regio." (Respondent 2, translated text from transcript)*

However, when network goals are further specified, and individual organisations are being held responsible, the consensus starts to drift away and the lobby to change the network goals intensifies. Multiple respondents recognised and described this mechanism:

❖ *"An ambition is never bad. You cannot dislike an ambition. Things become fluid when you mix up ambitions with specific goals and accountability." (Respondent 7, translated text from transcript)*

Four interview respondents explained this mechanism and argued that all network participants are motivated by self-interest as they have their organisational problems, goals and constituency to deal with. Consulting these constituencies slows down the process to reach consensus and can, therefore, become frustrating for participants that want to make speed with certain projects. Despite the presence of this mechanism, none of the respondents experienced frustration. Some respondents even were positive about the existence of this mechanism:

❖ *"The network participants primarily look at how they can please their constituency the best way possible. That is common in a healthy system."* (Respondent 2, translated text from transcript)

In short, all interview respondents experienced a similarity in the ambitions of the network participants. However, when these ambitions are further specified, things get complicated, and goal consensus decreases slightly. This mechanism does not trouble the respondents as it signifies a healthy democratic system. Nonetheless, the levels of goal consensus are valued as moderate to high due to the previously described mechanism.

5.1.5 Levels of Trust

This variable has five indicators, some of them are measured by analysing documents and the transcripts while others have only been measured by analysing transcripts. The first indicator of this variable regards the sharing of sensitive information. This indicator has only been measured by analysing the transcripts. About the half of the respondents were satisfied with the amount and sensitivity of the information that is being shared. The other half of the respondents were more neutral. The governmental and educational participants of the Cleantech Regio are very generous and share almost everything they know. For companies, sharing sensitive information can be a huge disadvantage which is why they are a bit hesitant about that:

❖ *"Governments and educational institutions are very transparent and share a lot of information, some of which is also sensitive. [...] The business community is less transparent because they have corporate secrets and shareholders."* (Respondent 1, translated text from transcript)

The second indicator of this variable is the sharing of tasks. This indicator has only been measured by analysing the transcripts. When organisations share a lot of tasks, they are more

likely to trust each other. In general, the sharing of tasks was not discussed in length during the interviews. Two respondents explained that tasks are often shared with governments and educational institutions, but not so much with companies. However, if they did exchange tasks with companies, they trusted the companies to complete the tasks correctly and in time. Another respondent said that there is enough trust to share tasks with other network participants. However, in practice, that respondent did not yet experience the sharing of tasks.

The third indicator of this variable is about formal control mechanisms. This indicator has been measured by analysing the transcripts. Almost all respondents explained that the collaboration within Cleantech Regio is not based on formal contracts. Intentional statements and covenant agreements are being signed to demonstrate commitment. But, those documents are not formally binding, meaning that network participants cannot be held accountable for their actions. Instead, the network participants of the Cleantech Regio operate on the basis of mutual dependency. There is one exception, and that is Circulus Berkel, the waste-management company that is commissioned by the separate municipalities of the Regioraad:

❖ *"We have a service agreement with all municipalities of the Cleantech Regio. That service agreement is often the reflection of the municipal policy." (Respondent 3, translated text from transcript)*

The fourth indicator of this variable is about the past interaction of the network. This indicator has been measured by analysing documents and interview transcripts. The prior interaction affects the collaboration between organisations in the present. The Cleantech Regio is formally created with the establishment of the Strategic Board in 2013. Some of the organisations that now participate in the Cleantech Regio already collaborated before 2013. In 2015, the Strategic Board decided to establish an executive organisation, the CTRD. The Strategic Board and the CTRD together form the core of the network as they can be seen as brokers of the network (Strategische Board, 2018b, pp. 2–3). The evolution of the Cleantech Regio demonstrates the continuous need of the network participants to intensify and better structure the collaboration. The fact that these organisations wanted to bring the cooperation further signifies that they trusted each other enough (Bureau Stedendriehoek, 2018, pp. 4–6; Strategische Board, 2018b, pp. 1–3). A few respondents confirmed this view:

❖ *"When I look back from 2014 to now, then I think… The way we are gradually evolving is beautiful." (Respondent 5, translated text from transcript)*

Most of the respondents were satisfied with the interaction in the past and the direction in which things are going now. Only a few were a bit negative. For them, the collaboration within the Cleantech Regio was too slow and rather exhaustive:

❖ *"The collaboration in the past was exhaustive. We had to talk a lot to reach consensus finally." (Respondent 1, translated text from transcript)*

Criticism was aimed at the differences between the municipalities and the business community. These differences caused some frustration and suspicion but not to the extent that is unusual or troublesome. In fact, five out of the eight respondents noticed a positive change over time:

❖ *"The collaboration is going very well in my experience. Some network participants have a slightly different perspective and way of doing things. These differences can be frustrating, but there are a growing understanding and acceptance for each other to remain committed to the collaborative process". (Respondent 6, translated text from transcript)*

The fifth and last indicator of this variable is about the image and expectations that network participants have about each other. This indicator has been measured by analysing the interview transcripts. In general, the image and expectations of the respondents about others in the network were positive. None of the respondents had negative feelings about other network participants. Most respondents expect the collaboration in the Cleantech Regio to intensify as result of the new agenda that is broadly supported. Two respondents talked about the sincerity of the commitment of the business community. They believed that companies in the Cleantech Regio are not only concerned with economic profit, but also with the environment. Over time, the attitude of the business community seems to have changed in favour of the CE:

❖ *"Five years ago, there was resistance from local entrepreneurs while they are now supporting the ambitions of the Cleantech Regio. […] This support is reflected in the signature of a sustainability covenant which is a big milestone." (Respondent 6, translated text from transcript)*

Due to this increased interest in the CE, most respondents think that collaboration in the Cleantech Regio will be improved. According to two respondents, it is necessary to increase

the sense of urgency and awareness among citizens in the Cleantech Regio. Another problem for the transition towards a CE in the Cleantech Regio was put forward during the interviews:

❖ *"It is awkward when a company does a circular invention and does not share that with a company in the same branch. At a certain moment, organisations must share their knowledge and operational processes to become fully circular. That is, however, not easy to do due to market competition."* (Respondent 7, translated text from transcript)

This quote signifies the importance and ambiguity of transparency for circular (network) collaborations. To be transparent, it is essential that network participants trust each other. In the case of the Cleantech Regio, there is enough trust. The companies are not very transparent which signifies a low level of confidence. However, this caution is explainable from a market competition perspective and is likely to decrease when collaboration in the Cleantech Regio intensifies, something that multiple respondents expect. When the network participants share tasks, they trust the other parties to complete that task correctly and in time, something that shows mutual trust. Formal control mechanisms are absent, meaning that efforts are voluntary which also indicates trust. The interaction in the past was mainly perceived positive with a footnote here and there. What is more important is that the respondents are optimistic about the future. At last, the image and expectations that network participants have about others are somewhat positive. In conclusion, the levels of trust in the Cleantech Regio are moderate to high.

5.1.6 Suitability of Network Composition

This variable has three indicators which are measured both by analysing documents of the Cleantech Regio, as well as conducting interviews with employees of the network participants. The first indicator is the number of participants. A network is more effective when the number of participants fits in with the context, structure and decision-making process of the network. The documents of the Cleantech Regio revealed that a precise number of participants could be identified within the core of the network. That is because the composition and role of the Regioraad and the Strategic Board have been described in detail. The Regioraad has eight members, one per municipality. The Strategic board has seven members, one independent chairman, two business representatives, two municipal representatives and two educational representatives. In total, the core of the Cleantech Regio consists of thirteen different

organisations because two of the municipalities have a double role as they take place in the Regioraad and the Strategic Board. At the moment, the municipality of Epe and Apeldoorn have this double role (Bureau Stedendriehoek, 2018, pp. 4–5; Cleantech Regio, 2018). This double role made it interesting to interview an alderman of Epe and a high placed civil servant of Apeldoorn (see Appendix 2 for a complete overview of the respondents). Note that the Daily board has no direct role in the decision-making process and that it consists of the same municipalities as the Strategic Board. Although these municipalities have a more prominent role to play in the network, they are not counted twice for the number of participants of the core of the Cleantech Regio because only different organisations are counted.

The interviews were used to zoom in on the suitability of the number of participants because the documents were analysed before most interviews and already described the number of participants into detail. However, to verify the previous description, some respondents were asked to check and explain the number of participants briefly. These respondents all described the same story, but not in such detail. An important point was made by one of the respondents:

❖ *"I only want to involve organisations that contribute. Otherwise, they become ballast. And, I cannot oversee what the contributions of all the participants involved are". (Respondent 3, translated text from transcript)*

As it seems, it is not clear to everyone in the network what the contributions of all the involved participants are. To make the network more understandable, it might be useful to create an overview of all the participants and their contribution. When respondents were asked questions about the current number of participants, their answer was two-sided. On the one hand, they argued that you need to limit the number of participants to maintain speed in the process. On the other hand, they argued that a large number of participants is required to gain broad support and many resources. About half of the respondents did not give their opinion about this matter, and the other half argued that the Cleantech Regio is coping well with this challenge:

❖ *"The composition of the Cleantech Regio makes sense to me. With each extra organisation, things slow down. But, if you want to create a movement, you must try to include everyone." (Respondent 2, translated text from transcript)*

The second indicator of this variable is the type of participants. The Cleantech Regio claims to be a triple-helix network, and that is true because there are network participants from all three spheres (i.e. government, education and market) in the Daily Board and the Strategic Board, also known as the inner core of the network. However, in reality, that triple-helix is not equally reflected in the composition of the inner core. The majority (8 out of 13 organisations) of the network's inner core is namely municipalities. Moreover, there are only two places available for educational institutions or companies to join this core which makes it is hard for organisations to join this inner core. To clarify this issue of misrepresentation: there are only two places available in the Strategic Board while there were 130 companies within the geographical location of the Cleantech Regio in 2015 (Cleantech Regio, 2015, pp. 7–8). That means that only 1.5% of all the companies in the Cleantech Regio can be part of the inner core. The same goes for educational institutions but to a lesser extent. A couple of respondents identified the misrepresentation as well and explained that the Strategic Board is, therefore, likely to expand the number of seats:

❖ *"The business community will get one extra chair in the Strategic Board which is a big step forward for the relation between entrepreneurs in the Strategic Board and their constituency." (Respondent 1, translated text from transcript)*

To gain more commitment of the business community, multiple covenant agreements have been signed by municipalities and companies in which they underline the ambitions of the Cleantech Regio. Gaining this commitment is essential to most of the respondents because the companies, eventually, need to make the transition towards the CE. Municipalities and educational institutions can facilitate them with funds, favourable policies, research and so on. But, the majority of the work has to be done by the companies who have to transform their operational processes. Thus, the representation of the business community within the Cleantech Regio is not perfect. But, the network tries very hard to gain broad support and commitment. That is why the composition of participants is likely to become more suitable in the near future.

The last indicator of this variable is the stability of the network composition. This indicator has only been measured by analysing transcripts of the conducted interviews. In a stable network, participants are not often replaced. That is why a stable network is a sign of high commitment of network participants which is positively related to the effectiveness of a network. Based on the analysis of the interview transcripts, it is safe to say that the Cleantech Regio is a stable and, thus, committed network. The composition of the Regioraad is somewhat

stable. Ever since its existence, no organisation joined the core body of the Cleantech Regio, and only the municipality of Heerde has joined:

❖ *"Heerde has recently joined the Cleantech Regio. Very cool, but that process was not easy. But it happened!" (Respondent 7, translated text from transcript)*

According to two respondents, the process of joining the network was not easy for Heerde because the Strategic Board was worried about the commitment of the entrepreneurs and educational institutions towards the ambitions of the Cleantech Regio. The fact that the municipality of Heerde had shown commitment towards the new agenda of the Cleantech Regio did not convince the Strategic Board that the business community and educational institutions in Heerde also were committed:

❖ *"It is true that the Strategic Boards wants to talk with the business community and educational institutions of Heerde to make sure if they are committed to the Cleantech Agenda." (Respondent 6, translated text from transcript)*

Whereas the composition of the Regioraad does not change often, the composition of the Strategic Board does so. Every few years, a company leaves the Strategic Board and makes room for a new one. The same goes for the municipal and educational representatives. However, in the case of the municipalities and educational institutions, the person instead of the whole organisation switches. The departure of persons and organisations from the Strategic Board do not always mean that they completely leave the Cleantech Regio. Most of the time, organisations and persons merely leave the inner core of the network but keep participating in the network. Whenever organisations join or leave the core of the network, it is announced via the communication channels of the CTRD. The changes in the composition of the Strategic Board are not experienced as problematic by most of the respondents. However, they are not always expected or understood by all network participants:

❖ *"The director of the CTRD left about two years ago. I do not know why because he had a fine character and, in my opinion, also sufficient expertise." (Respondent 8, translated text from transcript)*

In sum, the Cleantech Regio seems to be a mid-sized network regarding the number of participants. The participants of the network originate from different spheres, but the business community and the educational institutions only have limited influence on decision-making and goal formulation. That means that the decision-making process of the Cleantech Regio is still quite closed which could make it a less attractive network for some. However, on a positive note, the Cleantech Regio takes measures to improve the representation issue which will result in more commitment. The signature of covenant agreements also gains commitment. The Cleantech Regio also is a stable network since changes the composition only happen on a yearly basis and only in the Strategic Board. Overall, the composition of the core bodies of the Cleantech Regio seems the be moderate suitable for the nature and goals of the entire network.

5.1.7 Levels of Network Competences

This variable has four indicators that were measured by analysing the interview transcripts. The first indicator regards the internal communication competences of the network. In the case of the Cleantech Regio, all interview respondents argued that internal network communication is very important for achieving the goals of the network:

❖ *"Communication is essential, especially because the Strategic Board cannot force participants to contribute, we can only facilitate and inspire them." (Respondent 1, translated text from transcript)*

Although all respondents highly value the internal communication, only one was positive about internal communication. Three of the respondents thought the communication was mediocre and the other respondents were (a bit) negative about how well the communication between network participants is going. Two of the eight respondents noticed that the internal communication should, in theory, be mediated by the Strategic Board and the CTRD. However, in practice, that was not what they experience as they described the internal communication as chaotic, ad-hoc and fragmentary.

❖ *"Everything hinges upon communication, and I must say that there is not much structure in the current communication. […] Much more should be done in the guidance of information." (Respondent 3, translated text from transcript)*

Although a couple of respondents were negative about the communication, they believed that the situation would improve over time. The establishment of the table Circular (part of the CTRD) made them more optimistic about the internal communication in the future. Improving internal communication seems necessary for the Cleantech Regio to become more effective. In the end, all respondents argued that internal communication is important to achieve goals. Some respondents made suggestions about how internal communication could be improved. These suggestions all concerned the role of the administrative organisations (i.e. the Regioraad, the Strategic Board and the CTRD). These organisational bodies should become more transparent and active in informing all relevant parties about meetings, decisions, projects and progress. In other words, the network should open up and become more understandable for all network participants.

The second indicator of this variable regards the capacity of the network participants to coordinate activities. The half of the respondents were somewhat positive about the current coordination capacities while the other half was slightly cynical about it. The more positive respondents described the way of working of the Cleantech Regio in theory. They argued that the coordination was going according to plan:

❖ *"The CTRD facilitates and inspires, but the ownership of projects remains in the hands of the network participants because they have to do a profitable business out of it". (Respondent 5, translated text from transcript)*

During the interviews, it became clear that all respondents are aware of the theoretical structures and functioning of the Cleantech Regio. However, two respondents said that they sometimes perceive the current structures of the network as one of a hierarchical organisation. According to them, this hierarchy and division of tasks were not always clear. That is why they experience the coordination of activities confusing and somewhat chaotic from time to time:

❖ *"The hierarchy of the Cleantech Regio is not clear to me. All those different organisational, communicational and decision-making lines that is like a constant search for me." (Respondent 2, translated text from transcript)*

A couple of respondents criticised the way in which activities were coordinated in the network. They explained that the coordination of circular projects is not sufficient. They hope for improvements as a result of the recent establishment of the table Circular within the CTRD.

❖ *"I do not recognise any, what in theory is called, 'webbers'. I do not see them in the network of the Cleantech Regio. [....] I see too little connectors which make new connections and maintain them. And, I miss that very much in the network." (Respondent 3, translated text from transcript)*

The third indicator of this variable regards the financial resources that are available for the Cleantech Regio. If financial resources are lacking, the effectiveness of a network might decrease. In the case of the Cleantech Regio, there are plenty of financial resources. None of the respondents complained about too little money being available in the Cleantech Regio. Most interview respondents explained that there is more than enough money available. The Cleantech Regio generates cash in different ways. Firstly, each participating municipality pays the CTRD €2 per inhabitant per year. That means that the CTRD receives almost €900.000 from the municipalities each year. That money is used to fund the employees of the CTRD, organise meetings and conferences, do the communication and PR and to stimulate network participants via vouchers (a small form of subsidy for network participants). Secondly, the CTRD supports network participants with the application of provincial, national and European grants:

❖ *"We are currently thinking about alternative financial revenue's, for example from Europe. That textile sortation centrum [...] was also partially financed with European money." (Respondent 6, translated text from transcript)*

Besides these two cash flows, the network participants also pay for circular projects and operational processes. According to the respondents, the network participants remain the owner of the projects which is why it logic that they also contribute financially.

The fact that all respondents argued that there is enough money available within the Cleantech Regio does not mean that every organisation within the network is financial health. On the contrary, one respondent talked about how the core of the network supported an organisation which was struggling with money:

❖ *"When a network participant has not enough money, the network has proven to be flexible and creative in finding ways to keep that participant on board." (Respondent 5, translated text from transcript)*

The last indicator of this variable is human capital. This indicator has only been measured by analysing the interview transcript. Human capital regards the presence of knowledge and expertise to pursue the network goals. In the case of the Cleantech Regio, there is more than enough human capital present in the network:

❖ *"Over the past years, professional capacity has increased. [...] It was necessary to invest in human capacity because, otherwise, we would not achieve certain goals." (Respondent 6, translated text from transcript)*

Although there seems to be plenty of human capital in the network, the challenge remains to connect the right people. According to a couple of respondents, we are currently stuck in a linear way of thinking, and that can only be changed if the right connections are being made:

❖ *"Only a few people can make cross-over connections […] Someone who picks up multiple signals in the network and tries to connect them. […] That is what we are truly looking for." (Respondent 7, translated text from transcript)*

In sum, the Cleantech Regio needs to improve internal communication as many respondents were somewhat negative about it. Criticism was aimed at the randomness of the communication and the fact that many participants do not perceive the communication as something that is being managed. Multiple respondents identified the establishment of the table Circular as possible turning-point for improving the internal communication. In the same vein, the coordination of activities of circular initiatives and projects is not going very well. A couple of respondents sometimes perceive the coordination of activities as confusing and chaotic. Whereas capacities regarding communication and coordination are lacking, the Cleantech Regio has plenty of financial resources available as there are multiple cash flows of proportional size. But, what is maybe even more important is that the network participants are creative, flexible and help each other out financially. When it comes down to human capital, the situation is stable and the forecast even brighter as multiple investments are being made to improve knowledge and expertise further. When all these indicators are taken into consideration, the levels of capacities of the Cleantech Regio are valued as moderate to high.

5.1.8 Conclusion: The Cleantech Regio

After discussing all the variables, this sub-section is used to summarise everything briefly and to explain the levels of effectiveness of the Cleantech Regio. At the beginning of this section, it became clear that the Cleantech Regio will achieve its goals, making the network highly effective. However, these goals are not very ambitious according to multiple respondents which is why some network participants do not perceive the network to be effective. Other respondents criticised the Cleantech Regio for the lack of control. Accordingly, the levels of effectiveness of the Cleantech Regio have been valued as moderate to high.

The analysis, subsequently, focussed on the modes of governance of the Cleantech Regio. Here, it became clear that two organisations mediate the network which makes the Cleantech Regio a network with administrative organisations (NAOs). The Strategic Board and the CTRD are the most active mediators in the Cleantech Regio. These bodies are responsible for making decisions, formulating goals, coordinating activities, guiding internal communication and more.

The third variable that was analysed is goal consensus. The participants of the Cleantech Regio have a high consensus regarding the ambitions of the network. However, when the ambitions are specified into concrete goals and result agreements, the network participants increase their lobby to change the goals. Consequentially, the speed of decision-making and the decreases which could cause frustration. However, in practice, none of the respondents actually felt frustrated. Nevertheless, due to the presence of this mechanism in the Cleantech Regio, the levels of goal consensus are labelled as moderate to high.

The levels of trust in the Cleantech Regio are valued as moderate to high. Some trust-related matters were pointed out by the interview respondents. Firstly, the business community is not very transparent, but that makes sense from a market competition perspective. Secondly, the sharing of tasks is not done often because that is not really necessary. Thirdly, the fact that formal control mechanisms are absent shows genuine commitment and trust. Fourthly, the interaction of the network participants in the past was not great. However, the prospects for future collaboration are favourable as the new agenda is broadly supported. At last, the images and expectations that network participants have about each other were discussed. Here, the most important finding was that network respondents are positive about each other. The respondents were, specifically, positive about the changing attitudes of local entrepreneurs and companies.

The composition of participants of the Cleantech Regio proved moderately suitable. The network is mid-sized regarding the number of participants, and all societal spheres (education, government and companies) are present in the network. The composition of network

participants also remained relatively stable and diverse. A significant downside of the composition of network participants of the Cleantech Regio is that the core of the network is over-represented by the municipalities. Consequentially, the network becomes less attractive for other actors. Luckily, measures are taken to improve the representation of educational institutions and companies in the core of the network.

The last variable that has been analysed regarded the difference between the needed and actual capacities that are present in the Cleantech Regio. The findings here were a bit two-sided. On the one hand, the Cleantech Regio has more than enough financial resources and is well capable of dealing with financial problems. The network also has sufficient knowledge, and expertise and investments are made to improve human capital further. However, on a more negative note, the internal communication and coordination of activities are perceived as rather random and chaotic.

Many respondents also addressed certain external factors such as (inter)national climate agreements which improved the conditions to make real progress with the new agenda. Most respondents were, in general, rather positive about the network and saw real potential in the Cleantech Regio. Given the large potential of the Cleantech Regio, improvements should be made to increase the levels of effectiveness. These improvements must lead to more connection and communication between network participants, as well as a more transparent and more understandable division of tasks and coordination of activities.

The moderate to high levels of effectiveness of Cleantech Regio can be explained in a couple of ways. Firstly, the levels of goal consensus of the Cleantech Regio are strong at the abstraction level of ambitions. This forms a solid starting point for the development of goal consensus at a lower abstraction level in which specific organisations are being made responsible for the achievement of specific tasks. Secondly, the levels of trust are high enough to establish a common understanding which improves the communication and cohesion in the network. This shared understanding is, in the case of the Cleantech Regio, demonstrated by the voluntary participation as well as the positive image and expectation that participants have about each other. Thirdly, the network composition of the Cleantech Regio partly explains why the network is not highly effective as the network currently faces with the problem of misrepresentation. The composition of participants in the cores of the network is, however, being addressed as the Strategic Board is going to expand its seats which leaves more room for educational institutions and companies to affect network-decisions and goals. Fourthly, the Cleantech Regio could increase its levels of effectiveness to high if it can improve the internal communication and better coordinate activities between network participants.

5.2   Case 2: Circulair Friesland

This section is divided into eight sub-sections to give a comprehensive understanding of Circulair Friesland and to explain the levels of effectiveness of this network. In the first sub-section, a brief description of Circulair Friesland will be offered. In the second until the seventh sub-section, the document analysis and the analysis of the interview transcriptions are presented. In these sub-sections, more is told about Circulair Friesland on the basis of theoretical variables. In the last section, an overall analytical conclusion will be provided about Circulair Friesland.

5.2.1   Description of Circulair Friesland

The network of Circulair Friesland was created in 2016 when seven companies established an association called "Vereniging Circulair Friesland" (VCF). This association was established because the founding organisations saw a societal problem that could be solved by accelerating the circular transition via a collaborative network. The VCF serves as a platform on which the members of the association (i.e. participants of the network) can find each other, share knowledge and co-develop circular projects. Via the VCF, the network participants of Circulair Friesland intensified collaboration on seven circular themes: agriculture, plastic, organic residual flows, construction, food & saline cultivation, water and mobility. In the beginning, the network was relatively small until it received subsidies of the European Union and "Samenwerkingsverband Noord-Nederland" (SNN). These subsidies allowed Circulair Friesland the VCF to professionalise and restructure its organisation. Over time, the VCF gained the attention of many organisations in Friesland which, subsequently, wanted to join the network. Only organisations that promised to contribute to the network and previously mentioned themes were allowed to become a member of the association and, thereby, participant of the network. In 2017, Circulair Friesland won the price for being the most circular region of the Netherlands in 2017. This price encouraged further pursue its ambition to become the most circular region of Europe by 2025 (Omrin BV, 2016, pp. 11–12, 2017, pp. 13–14; Vereniging Circulair Friesland, 2018a, pp. 5–6).

At the moment, Circulair Friesland consists of more than 70 organisations from governmental, educational and private-market spheres. All these organisations pay a contribution to the VCF for their membership. In return, they gain access to a network of relevant and nearby organisations that also address the CE. Moreover, the members of the VCF get one vote in the 'Algemene Leden Vergadering' (ALV). The ALV is the highest organ of the VCF. It consists of a (bi-)annual meeting on which all the members of the VCF are welcome

and have one vote. The ALV decides over and evaluates on the general direction and the policy themes of the VCF. Besides the ALV, the VCF also has a board which has been chosen by the members on the ALV. The ALV can also hold the board accountable for when mistakes are made. The role of the board is to direct and regulate the VCF. The board is supported by a professional team which connects, monitors, coordinates and mediates between participants and projects of Circular Friesland (Vereniging Circulair Friesland, 2018b). An organogram of Circulair Friesland, which is built around the VCF is presented in Figure 6.
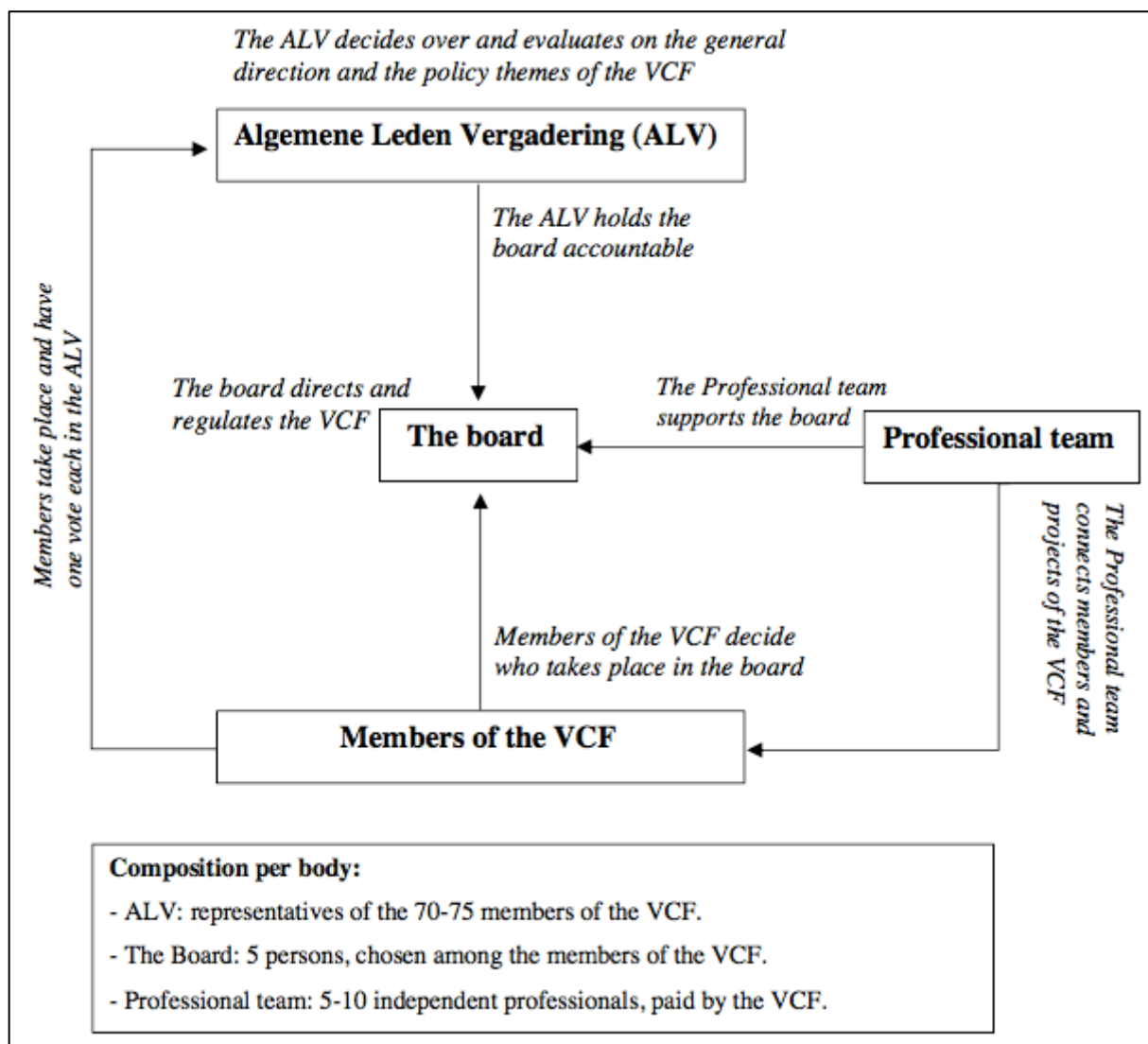

Figure 6: Organogram Circulair Friesland, including the functions and composition of the different bodies
Sources: Vereniging Circulair Friesland (2017, pp. 23–24; 2018a, p. 29; 2018b).

The general ambition of the VCF is for the province of Friesland to become the most circular region of Europe by 2025. Underneath this ambition, the VCF has formulated six specific goals for 2018. The goals of Circulair Friesland, as well as the performances on these goals, is presented in Table 13. Based on the document analysis, the levels of effectiveness of Circulair Friesland are very high because the network achieves most of its goals. Moreover, the goals are ambitious given the short time-period and far-reaching as they have a large scope and reach high levels of circularity.

Goal description	Measured in (KPI's)	Goals for 2019	Goals for 2017	Achieved at the end of 2017
Increase of knowledge and innovative capacity	#participants #organisations	2600 200	900 70	1068 170
Support circular projects	#projects	60-90	30	48
Initiate collaborations around new themes	#new themes	14	8	7
Generate and develop innovations	#innovations #involved organisations	60 240	20 80	30 Unknown
Increase in the number of network participants	#new network participants	12	3	5
Improve labour-market	#created full-time jobs	Unknown	Unknown	Unknown

Table 13: The network goals and achievements of Circulair Friesland

Sources: (Vereniging Circulair Friesland, 2017, pp. 23–24; 2018a, p. 29).

The interview respondents were also asked to what extent and why they perceive Circulair Friesland to be effective. The main message based on the interviews is that the network is, indeed, effective because at least half of the goals in table 13 will be achieved by the end of 2018. Multiple respondents explained that the professional team of the VCF and the network participants are work very hard to achieve these goals.

❖ *"A couple of circular themes are currently being developed, and these collaborations which are based on transition agendas will be beneficial." (Respondent 11, translated text from transcript)*

As a result, Circulair Friesland has already been nominated twice for being the most circular region in the Netherlands. In 2017, the network won the ABN AMRO awards for being

the most circular region. The network participants have also won prizes for having built the most sustainable industrial buildings. Some respondents talked about the driving forces behind the successes of the network:

- ❖ *"This way of collaborating, in which the companies take the lead and the government follows is the most effective way of working I have ever seen." (Respondent 9, translated text from transcript)*

The half of the respondents talked proudly about the interest they received from abroad and other networks and governments in the Netherlands. Over the last few years, much has changed in Friesland. Sustainability and the CE in specific have significantly moved up on the agenda of the municipalities in Friesland. And that seems to pay off:

- ❖ *"What we see is that Friesland is way ahead when it comes down to the CE and that is why other provinces also come over and pay a visit to everything that happens here." (Respondent 12, translated text from transcript)*

Despite all the enthusiasm and positivity that the respondents showed during the interviews, there was also room for real criticism. One respondent said that the VCF should develop a sort of score-card which enables network participants to measure and benchmark their operational processes on the extent to which they are circular. Another respondent explained that the network has high potential, but that the added value is currently not being experienced:

- ❖ *"The idea is that our contributions to Circulair Friesland pay off. However, at the moment, our contributions do not outweigh the benefits that we experience from the network. […] But I think we can only blame ourselves for that because we give it too little priority." (Respondent 14, translated text from transcript)*

In sum, the network of Circulair Friesland is likely to achieve the majority of its ambitious goals. The network has won multiple prices for its achievements and is becoming a 'circular hot spot' for outside parties. Moreover, all but one respondent were very satisfied with the network for a variety of reasons. That is why Circulair Friesland has been labelled as a highly effective network.

5.1.3 Modes of Governance

This variable has five indicators that have been measured by analysing documents of Circulair Friesland as well as conducting interviews with persons in the network. The documents of Circulair Friesland do not clearly describe an organisation that guides the communication between network participants. The only thing that the documents describe is that the professional team of the VCF organises a variety of events and meetings which are aimed to stimulate interaction between network participants. About all of the interview respondents said that they experience this in practice as well:

❖ *"The VCF, of course, plays a role in the communication between the network participants. [...] We make the connection between network participants and help to see what is possible." (Respondent 9, translated text from transcript)*

The respondents that recognised the Professional team of the VCF as network administrative organisation (NAO) also were positive about the way they are taking this role. Anyway, it can be concluded that a NAO (namely the VCF) is mediating the internal communication of Circular Friesland.

Circulair Friesland also has a mediator for the external communication. The documents explained that the Professional team of the VCF-board has several persons employed for the external communication and PR (e.g. newsletters, website, social media, acquisition). Multiple respondents knew about this mediating role of the VCF. However, that does not mean that the network organisations do not have their communication channels to reach the outer world. One respondent talked about the unanimity of the external communications of the network participants:

❖ *"Employees of my organisation and the VCF always know how to find each other. [...] So, the message to the outer world is always the same." (Respondent 12, translated text from transcript)*

The documents of Circulair Friesland do not explicitly describe an organisation that mediates the network by coordinating activities. The interview respondents, on the contrary, were unanimous when they identified the Professional team of the VCF as mediating organisation. Especially in the early stages of projects, the VCF has a significant role to play.

❖ *"The VCF coordinates the transition agendas. [...] They initiate meetings in which all the relevant parties are invited to discuss a certain topic."* (Respondent 13, translated text from transcript)

According to four of the seven respondents, the Professional team of the VCF often takes the initiative to start collaborative projects. The employees of the VCF initiate, facilitate and coordinate during the start of projects. Once projects are successful and reach a new stage, the VCF withdraws, and the network participants have become fully self-responsible in the coordination and owner of the project:

❖ *"Projects are primarily the responsibility of the network participants. [...] This bottom-up way of working, in which the organisations remain the owner and responsible, is one of the reasons why Circulair Friesland is so successful."* (Respondent 15, translated text from transcript)

Regarding the decision-making and formulation of network goals, the VCF can, again, be identified as a network administrative organisation (NAO). Each participant has one single vote in the VCF through the ALV. Network participants, thus, control the board of the VCF and each participant can run for a position in this board. The board of the VCF formulates network goals and makes decisions that affect the whole network. The structure of the VCF has as a consequence that each participant of Circulair Friesland contributes to the formulation of network-goals and decisions that affect the entire network via the VCF. (Vereniging Circulair Friesland, 2017, pp. 20–25, 2018a, pp. 24–29, 2018b). All of the interview respondents have confirmed the functioning of this system. Additionally, the respondents explained that the Professional team of the VCF makes transition agendas in consultation with the relevant network participants. The Professional team of the VCF can, thus, again, be identified as NAO.

In short, Circulair Friesland is being mediated by a NAO, namely the VCF. The Professional team of the VCF facilitates internal communication in the network and also organises meetings and coordinates activities between network participants. This team also takes care of external communication, but, network participants also have their communication channels. The decision-making processes and the formulation of goals also takes place via the VCF, but all network participants have an equal influence to change decisions, transition agendas and network goals.

5.2.4 Goal Consensus

This variable has one indicator that has been measured by analysing transcripts of the conducted interviews. In the case of Circulair Friesland, all interview respondents explained that the mission of the network aligned with their organisational goals. None of the respondents talked about having different ambitions than the network:

❖ *"I have meetings that are short because we all want to head in the same direction. [...] Of course, everyone has self-interests. But, that is gradually becoming a shared interest of all the participants together [...] because everyone in Circulair Friesland is starting to embrace the circular principles." (Respondent 10, translated text from transcript)*

Whereas the respondents in the Cleantech Regio experienced a decrease in the levels of consensus when ambitions are specified into concrete goals and result agreements per organisations, the network participants in Circulair Friesland did not say anything in that vein:

❖ *"If you put the six goals of Circulair Friesland next to our three goals regarding the CE, then they are formulated slightly different, but we actually want the same." (Respondent 12, translated text from transcript)*

Thus, in conclusion, the network participants of Circulair Friesland all seem to agree on one single ambition, and that is to make Friesland the most circular region of Europe by 2025. Since there was no contradicting argument made by the interview respondents, the levels of goal consensus in Circulair Friesland are labelled as high.

5.2.5 Levels of Trust

This variable has five indicators, some of them are measured by analysing documents and transcripts while others have only been measured by analysing transcripts. The first indicator of this variable regards the sharing of sensitive information. This indicator has only been measured by examining the transcripts. In general, information is being shared relatively transparent within Ciruclair Friesland. None of the respondents was cynical about the sharing of sensitive information. However, four of the eight respondents explained that companies still have to make financial profits which is why they do not share specific details on operational

processes, products and innovations. Sharing such sensitive information would give them a competitive disadvantage which made sense to these four respondents:

* *"My preference is to share as much information as is possible because that stimulates innovation. [...] However, I can understand that companies do not share certain information because that gives them a competitive disadvantage. Sensitive information is, therefore, only shared with the relevant parties."* (Respondent 11, translated text from transcript)

Three of the eight respondents are working for governmental and network administrative organisations, and they did not experience that anyone within Circulair Friesland is withholding information. These respondents explained that they have less sensitive information to share and that everything they know is public:

* *"I do not believe that information is being held back. We only want one thing, and that is to contribute to the transition from linear to circular. And, to do so, there is only one way, and that is to be very open and transparent. [...] I have not experienced that other people in the network withhold any information."* (Respondent 14, translated text from transcript)

Two respondents also pointed out that there are differences to the extent to which sensitive information is shared. These respondents explained that less confidential information is shared with everyone via the VCF. However, the more sensitive information (about the cash flow and internal struggles) is only being shared face-to-face. In sum, the sharing of the information is going pretty transparent in the case of Circulair Friesland. There is some hesitation when information is very sensitive or giving companies a competitive disadvantage. However, the interviewed respondents showed an understanding for this hesitation.

The second indicator of this variable is the sharing of tasks. This indicator has only been measured by analysing the transcripts. About half of the respondents was a bit negative about the sharing of tasks with other participants of Circulair Friesland, and the other half was neutral about it. The more negative respondents criticised themselves for not sharing tasks enough. Criticism was also aimed at companies who do not always see the potential or are too afraid to share tasks. The overall message was that tasks are not often divided and when tasks are shared, that is not done to everyone's satisfaction:

❖ *"We occasionally take over certain tasks but, I am personally not very satisfied with the way that is going." (Respondent 13, translated text from transcript)*

The third indicator of this variable is about formal control mechanisms. This indicator has only been measured by analysing the transcripts. Almost all the respondents explained that the network participants could not control each other via formal control mechanisms such as contracts or service agreements. There was one respondent that explained that the VCF and the Province of Friesland have a formal agreement about financial subsidies. But, besides this agreement, there are no formal control mechanisms in the network of Circulair Friesland. Moreover, all of the respondents explained that the network operates on the basis of trust:

❖ *"The connection that we have with others in the network is very loosely. We cannot force anyone to do something. [...] Not being able to force participants has the advantage of not having to control if participants comply. That only generates negative energy." (Respondent 10, translated text from transcript)*

The fourth indicator of this variable is about the past interaction of the network. This indicator has been measured by analysing both the network documents and the interview transcripts. The documents of Circulair Friesland clearly describe that the network was established in January 2016 when the VCF was created. The VCF, at that time, consisted of less than ten organisations that collaborated within the CE. In two years, the number of network participants grew to more than 70. The documents, thus, reveal that the network participants of Circulair Friesland have collaborated between one and three years. During these years, more and more organisations joined the network and contributed to the achievement of network goals. The growing number of participants and the emergence of new cross-organisational projects signify a high level of trust between participants of Circulair Friesland (Vereniging Circulair Friesland, 2018a, 2018b, pp. 5–8). All of the respondents verified this during the interviews as they were very positive about the past collaboration.

❖ *"The past collaboration with other participants of Circulair Friesland has always been positive." (Respondent 13, translated text from a transcript)*

Two respondents made an important point regarding the past interaction. They namely explained that all members of Circulair Friesland are very enthusiastic and internally motivated

to contribute to the network. It seems like all network participants are genuinely committed to serving the ambitions of Circulair Friesland. This unanimity possibly explains why all the network participants are so positive about the collaboration within Circulair Friesland.

The fifth indicator of this variable is about the image and expectations that network participants have about each other. This indicator has only been measured by analysing the transcripts. None of the interview respondents described a negative image or expectation of other participants of Circulair Friesland. All of the respondents were rather positive about the network participants. The respondents were also positive about the VCF as network administrative organisation:

❖ *"The board of the VCF is very inspiring which jumps over to the network participants. [...] We have a motivated club of people with nice additions in character and perspective". (Respondent 15, translated text from transcript)*

The answers of the respondents were unanimous because most praised other network participants for being very enthusiastic and genuinely committed. Some respondents applied their response to themselves by explaining what other network participants could expect of them:

❖ *"What others may expect of us is that we are very committed and want to collaborate more actively in the network and contribute to circular projects". (Respondent 14, translated text from transcript)*

When all the five different indicators are considered together, the levels of trust of Circulair Friesland are high. All respondents perceived the past interaction as very positive. Network participants view each other as enthusiastic, inspiring and genuinely committed to contributing to the ambitions of the network. Some participants praised themselves and others for their contributions. The commitment of the network participants is demonstrated by the fact that no participant left the network and that there are no formal control mechanisms. The increasing amount of cross-organisational projects also shows mutual trust between the network participants. The image and expectations that participants of Circulair Friesland have about each other have also proven to be very positive. No respondents complained about other network respondents, and they all seemed happy with the skills of employees of the VCF.

Despite all these signs of very high levels of trust, there are also matters that could be improved in the case of Circulair Friesland. One of those matters is the sharing of information and the other concerns the sharing of tasks. Some respondents wanted information to be more accessible and transparent, and the sharing of tasks should become more structural according to a couple of respondents. That is why the levels of trust in Circulair Friesland have been labelled as high and not as very high.

5.2.6 Suitability of Network Composition

This variable has three indicators which are measured both by analysing documents as well as transcripts of the interviews. The first indicator is the number of participants. The documents revealed that Circulair Friesland was established in 2016. At that time, the network consisted of less than 10 participants. The number of participants multiplied over time. At the end of 2018, the network counted 71 participants (Vereniging Circulair Friesland, 2018a, p. 5, 2018b). According to some respondents, this growth is very positive, but the majority of the respondents also identified risks that this growth brings.

❖ *"The network has to remain a coalition of the willing. We do not need all companies in Friesland to become a member of Circulair Friesland because we are also not able to satisfy all of them as they all want to be seen, appreciated and feel included. [...] That is why the network cannot grow unlimited." (Respondent 9, translated text from transcript)*

Two respondents also noticed another danger of a continuously growing network and that is that network participants will lose touch with each other. As a result, communicating becomes more difficult and making decisions about circular projects will become more complex as more participants are involved. In the end, the network will become slower and thereby less effective. In conclusion, the number of participants of Circulair Friesland can be very beneficial, but it brings some risks to be anticipated on.

The second indicator of this variable regards the type of participants. Based on the document analysis, Circulair Friesland is a triple-helix network because network participants originate from all kind of spheres: the government, education and business community. In specific, the following types of organisations are participants of Circulair Friesland: municipalities, the Province of Friesland, universities and vocational training institutions.

Besides, there is a vast diversity of participants that originate from business communities. Examples of these types of participants are water- and waste-management companies, consultancy firms, banks, architects, construction companies, technical companies, farmers, unions and even health insurers, lawyers and notaries. (Vereniging Circulair Friesland, 2018a, p. 5, 2018b). The interview respondents could all verify the vast diversity of network participants. Most of the respondents were also quite positive about the large difference in the type of network participants:

- ❖ *"It will be cool if several participants of Circulair Friesland would come together around a project and do something really ground-breaking. [...] And I think that that is possible with the current composition of the network." (Respondent 14, translated text from transcript)*

Whereas the half of the respondents were positive about the current network composition, the other half was less positive. According to the less positive respondents, currently, there are a large number of municipalities becoming a member of the network. This 'trend' could slow things down and, thereby, cause friction among the very progressive and ambitious network participants.

- ❖ *"Everyone is welcome to become a member of Circulair Friesland [...]. However, at the moment, almost all municipalities in Friesland are part of the network, and I think that too much government is dangerous for the effectiveness of the network." (Respondent 12, translated text from transcript)*

The last indicator of this variable is the stability of the network composition. This indicator has only been measured by analysing transcripts of the conducted interviews. The network composition of Circulair Friesland does not seem to be very stable as the number and type of network participants have changed rapidly over the past few years. That growth might partially be explained by the fact that network participants only have to pay their annual membership fee and do not have other obligations to be part of the network:

- ❖ *"New participants of Circulair Friesland do not have to join all sorts of commissions or something [...] They only have to participate actively." (Respondent 10, translated text from transcript)*

Although the number and type of network participants are growing significantly, the board of the VCF (i.e. the core of the network) has not changed its composition ever since the establishment of the network:

❖ *"We currently have a skilled and diverse composition of persons in the board of the VCF [...] I think that the network members are content with this composition as well." (Respondent 9, translated text from transcript)*

In sum, it seems that the network composition of Circulair Friesland is currently highly suited given the structure and ambitions of the network. At the same time, the network has to be aware of potential risks. That is why the suitability of the network composition of Ciruclair Friesland has been labelled as moderate to high.

5.2.7 Levels of Network Competences

This variable has four indicators that were measured by analysing the interview transcripts. The first indicator regards the internal communication competences of the network. In the case of the Circulair Friesland, the majority of the respondents argued that the internal network communication is essential for achieving the goals of the network:

❖ *"Communication is very important and requires an equal relation which is built on trust. [...] Without good communication, nothing will work." (Respondent 13, translated text from transcript)*

Although the internal communication is vital according to the respondents of Circulair Friesland, only a few of them is satisfied with the current quality of communication. To be exact, four of the eight respondents had a neutral opinion about the quality of the internal communication. They were neither positive nor negative and saw room for improvement.

❖ *"The internal communication is our big struggle. Let us be clear about that. On a scale of 1 to 10, I would not give it a 10, nor a 9 and also not an 8. The communication within Circulair Friesland can, in my opinion, be improved." (Respondent 10, translated text from transcript)*

The second indicator of this variable regards the capacity of network participants to coordinate activities. Half of the respondents of Circulair Friesland were positive about the current coordination capacities while the other half was more neutral. The positive respondents explained that the VCF is fulfilling its task as network administrative organisation very well:

❖ *"The nice thing about Circulair Friesland is that the VCF enables network participants to connect and learn from each other. [...] You meet different people with the same interests, and that often produces something new." (Respondent 11, translated text from transcript)*

The more neutral respondents did not address the coordination between organisations in the network. Instead, they explained that the coordination of individual organisations could be improved internally:

❖ *"There is much to gain when it comes down to the coordination of our organisational activities. [...] Somewhere along the process, we lose efficiency." (Respondent 14, translated text from transcript)*

The third indicator of this variable regards the financial resources that are available for Circulair Friesland. Multiple respondents explained that the VCF had a hard time during the first couple of years. With the support of the Province of Friesland, the VCF was able to apply for a large EFRO-subsidy successfully. That means that there are currently sufficient financial resources available within Circulair Friesland. However, this EFRO-subsidy is not a structural cash flow:

❖ *"The large EFRO-subsidy will stop [...], and we are worrying about what happens next because the VCF cannot continue to exist merely on the membership fees." (Respondent 15, translated text from transcript)*

Even though the VCF largely depends on the subsidy described above, the rest of the network seems to have a more stable cash flow. Multiple respondents have namely explained that their organisation, as well as other network participants, are making substantial investments in the CE:

❖ *"I think that, during the provincial elections in 2019, there will be much support for Circulair Friesland. No political party will be against us. That means that all governments in Friesland will be contributing financially, as well as companies." (Respondent 10, translated text from transcript)*

The last indicator of this variable is human capital. This indicator has only been measured by analysing the interview transcript. In general, all respondents were positive about the expertise of their employees as well as that of other network participants. Two respondents explained that many cross-over projects within the CE are new for them. This created an experimental setting in which network participants learn from the projects and each other.

❖ *"I am rather optimistic about the expertise that is present within Circulair Friesland. The network participants are quite skilled and willing to learn when they lack skills or knowledge." (Respondent 11, translated text from transcript)*

Three other respondents were also positive about the improved size and expertise of the staff of their organisation. These respondents explained that the EFRO-subsidy had a significant impact on the VCF as it allowed the network administrative organisation to hire more people. One of these respondents also said that the Province of Friesland is also supporting the VCF with human capital.

❖ *"We try to be flexible and to help the VCF […] by supporting them with human capital. We do that because we see Circulair Friesland as an important mean to achieve our own goals." (Respondent 12, translated text from transcript)*

In sum, the network participants of Circulair Friesland think that internal communication is essential. However, only a few of the interview respondents are satisfied with the current quantity and quality of communication between network participants. That means that the internal communication should be improved. Unfortunately, the interviews did not lead to any concrete suggestions about how to improve the internal communication of Circulair Friesland. When it comes down to the coordination of activities between network participants, most respondents were positive. That positivism was mainly caused by the VCF which is experienced as proper functioning administrative organisation for the network. Subsequently, the availability of financial resources within Circulair Friesland was analysed. Here, it turned

out that the VCF, an essential mediating organisation of Circulair Friesland, is mainly depending on one single cash flow. Multiple respondents identified that dependency as a substantial risk for the future existence of the VCF and thereby the network as a whole. Other than that, the network participants themselves did not experience any immediate financial problems. The same is true for the human capital of Ciruclair Friesland. None of the respondents was unsatisfied with the current levels of expertise and knowledge within Circulair Friesland. Moreover, three respondents experienced improvements regarding their capacity to contribute to the network goals. In conclusion, Circulair Friesland should improve its internal communication and think about financial revenues for the VCF. At the same time, the coordination is going well, and there is enough human capital available in the network. That is why the capacity levels of capacities of Circulair Friesland have been valued as moderate to high.

5.2.8   Conclusion: Circulair Friesland

In this sub-section, a summary will be provided about everything that has been said about Circulair Friesland. At the beginning of this analysis, it was concluded that Circulair Friesland is a highly effective network because it achieves the majority of its goals. The network is active in the higher levels of circularity as it is not only concerned with recycling. Most network participants perceive the network as highly effective. They explained that the network won prizes for being the most circular region. The participants also talked about receiving attention from outside parties which wanted to learn about what is going on within Circulair Friesland.

In the second part of the analysis, it became clear that the Circulair Friesland is mediated by a network administrative organisation (NAO) The VCF is responsible for initiating and facilitating collaborative processes among the network participants. During the early stages of circular projects, the VCF acts as a coordinator because it brings people together, organises meetings, does administrative and secretarial tasks. Meanwhile, the network participants remain the owner of the project at all times. The VCF can only stimulate network participants to work together and to increase their efforts. The external communication is also mediated, but network participants also use their channels for external communication. The decision-making process of Circulair Friesland is fair because all participants are fully included. They can affect decisions in several ways, for example, via the ALV or working groups around an agenda.

In the third part of the analysis, the levels of goal consensus were discussed. It became clear that the network participants of Circulair Friesland all participate actively in serving one higher goal and that is to make Friesland a fully circular region. When this ambition is specified

into concrete network goals, the consensus among network participants does not disappear. The interview respondents explained that the levels of consensus and unanimity in Circulair Friesland are high. The participants contribute to the network goals on a voluntary basis, and there is a widespread feeling of enthusiasm, motivation and pride to be part of the network.

In the fourth part of the analysis, it was concluded that the levels of trust in Circulair Friesland is high. This conclusion is supported by the fact that all interview respondents were positive about the past interaction. They also had a positive image and expectation about other network participants. Most respondents talked about the enthusiasm, motivation and valuable contributions of other network participants. Additionally, there are no formal control mechanisms in Circulair Friesland that signify the genuine commitment of the network respondents. Matters that could be improved within Circulair Friesland regards the sharing of information and the sharing of tasks.

During the analysis of the suitability of the network composition, it became clear that the current composition of network participants of Circulair Friesland is highly suited for the structure and ambitions of the network. However, due to rapid changes in the composition, there are some risks of which the VCF should be aware. Those risks regard the continuous growth of the number of participants and the inclusion of too many municipalities in the network. Because of these risks, the composition of Circulair Friesland, overall, has been labelled as high and not as very high.

In the last part of the analysis, the capacities of Circulair Friesland were labelled as moderate to high. The internal communication was valued as moderate as the interview respondents argued that the current quantity and quality of communication should be improved. The coordination of activities was going well according to half of the respondents. Especially the role of the VCF is perceived very positive as it connects network participants and stimulates them to collaborate. However, the VCF is not financially self-sufficient which could pose a risk for Circulair Friesland. When the VCF is confronted with financial problems, the network of Circulair Friesland might collapse as the VCF is the centre of this network. The VCF is aware of this risk and is currently exploring other ways to generate funding. The levels of expertise of the persons within Circulair Friesland were also discussed with respondents, and they were rather positive about the skills and knowledge of other persons in the network.

The high levels of goal consensus can explain the high levels of effectiveness of Circulair Friesland. Due to this strong consensus, participants of Circulair Friesland are motivated to pursue the general ambition of the network by taking responsibility for the achievement of specific organisational goals. The high levels of trust of Circulair Friesland also

contribute to the high levels of effectiveness as participants genuinely want to collaborate in the network since they enjoy and benefit from it. The fast changes in the network composition could pose a risk for the effectiveness of Circulair Friesland as makes the internal communication and coordination more difficult. The growth of Circulair Friesland limits the effectiveness of the network. Creating smaller networks within Circulair Friesland might solve this and so improves the effectiveness of the network. Additionally, Circulair Friesland could raise its levels of effectiveness to very high by enhancing its current competences. Especially the communication in the network could be improved. Solving the financial situation of the VCF is maybe even more important for Circulair Friesland if it wants to remain or increase its effectiveness. During the interviews, it became clear that the VCF is already working on solutions for these problems. When they succeed, the levels of effectiveness of Ciruclair Friesland will likely rise to very high.

5.3   Comparing the cases

In this section, the two cases are compared to reveal commonalities and differences and better explain the findings. A summary of all results of the two cases is presented in Table 14. The comparison is further proceeded in the same order of variables as before.

	Cleantech Regio	**Circulair Friesland**
• **Levels of Network Effectiveness**	Moderate to high	High
• **Modes of Governance**	NAO	NAO
• **Levels of Goal Consensus**	Moderate to high	High
• **Levels of Trust**	Moderate to high	High
• **Suitability of network composition**	Moderate	Moderate to high
• **Levels of network competences**	Moderate to high	Moderate to high

Table 14: Analytical comparison of the Cleantech Regio and Circulair Friesland

Source: Own document analysis and interview analysis, see section 5.1 and 5.2

As shown in Table 14, the effectiveness of the two networks differs. The Cleantech Regio will achieve its goals, but, multiple respondents explained that they do not perceive the network as highly effective as it lacks control and is not ambitious enough. That is why the levels of effectiveness of the Cleantech Regio have been valued as moderate to high. The goals of Circulair Friesland will also be achieved, and the interview respondents were also positive about the network effectiveness which is why the levels of effectiveness of Circulair Friesland are labelled as high. According to the respondents, Circulair Friesland has a large impact as it operates within high levels of circularity. Although the respondents of both networks were positive about their network, some criticism was expressed during the interviews. All of this criticism was raised by self-interest, meaning that network participants do not experience enough added value of participation in the network. The lesson that can be drawn from this criticism is that it is crucial for circular networks to include all participants, gain small, short-term results that are tangible for everyone.

Although the two networks were not selected on the modes of governance, the analysis has shown that both cases are mediated by network administrative organisations (NAOs). Within the Cleantech Regio, however, there are two NAO's active while there is only one in Circulair Friesland. A more important difference in the modes of governance is the way network participants are represented. In Circulair Friesland, all network participants have a direct influence on the decision-making process and goal formulation via the ALV and transition agendas which are created in consultation with the relevant network participants. Meanwhile, the Cleantech Regio works with representatives for municipalities, educational institutions and the business community. Consequentially, many network participants of the Cleantech Regio are not directly represented which decreases commitment towards the network. Thus, although network administrative organisations mediate both networks, the Cleantech Regio is a more closed and centralised network compared to Circulair Friesland.

Circulair Friesland has a higher consensus because the network participants of this network agree on a particular abstraction level of goals whereas the goal consensus of the Cleantech Regio decrease when ambitions are specified into goals, result agreements and accountability. It is also noteworthy that Circulair Friesland has a high goal consensus given the fact that the network goals are difficult to achieve given their high level of circularity. Based on the analysis, the commitment within Circulair Friesland is very genuine and robust whereas that was not so much the case within the Cleantech Regio. Because the levels of goal consensus are higher in Circulair Friesland than they are in the Cleantech Regio, this variable partially explains why the one network is more effective than the other.

The levels of trust are higher in Circulair Friesland than they are in the Cleantech Regio. The respondents of Circulair Friesland were very positive about the past interaction whereas that was not the case for the Cleantech Regio. The image and expectation of participants about others in the network are positive in both networks. However, in Circulair Friesland, there is a sense of pride to be part of the network. This obvious pride increases efforts of participants because they are more committed and expressing sympathy with the network. Another difference regards the sharing of information. Within Circulair Friesland, the participants are more willing to share sensitive information than the participants of the Cleantech Regio. The sharing of tasks has proven to be a challenge for both networks. Overall, the levels of trust in Ciruclair Friesland are slightly higher than those in the Cleantech Regio. That means that the levels of trust could also explain why one network is more effective than the other.

The network composition of the Cleantech Regio is moderately suitable while the composition of Circulair Friesland is moderate to highly suitable. The composition of the Cleantech Regio is moderately suitable because its inner core has relatively much decision-making power while the business community and the educational institutions are not adequately represented and included in these parts of the network. The composition of Circulair Friesland is moderate to highly suitable because all network participants have equal decision-making powers. Circulair Friesland has a different issue because it is growing in size rapidly which makes it difficult to keep all participants included and committed. Although the composition of participants is not perfect in both cases, both networks are adaptive and changing the (core) composition because they are aware of their shortfalls. In the Cleantech Regio, that means that the Strategic Board is probably expanding which results in an improved representation of the business community and the educational institutions. In Circulair Friesland, working groups of network participants are being created around transition agendas. With these working groups, the VCF hopes to maintain Circulair Friesland small and transparent so that participants can find each other rather quickly. In the end, the network composition of Circulair Friesland is more suitable than the one of the Cleantech Regio. Thus, the suitability of a network composition, partially, explains the levels of effectiveness a network.

The last comparison regards the levels of network capacities. Both networks have a moderate to high level of competences. All respondents explained that communication between network participants is important, but, respondents of both networks described the current communication as moderate. Both networks could, therefore, improve their levels of effectiveness by improving internal communication. The coordination of tasks is also not going very well in both networks. The respondents of the Cleantech Regio criticised the network for

not having a clear hierarchy which sometimes confused them about the coordination and communication. The respondents of Circulair Friesland, in contrast, criticised the way in which activities are being coordinated within organisations. When the financial resources are being compared, the Cleantech Regio comes out on top. This network has a high certainty about its survival as it has big and structural cashflows and a couple of incidental cashflows. In contrast, the core of Circulair Friesland is, mostly dependent on one incidental cashflow which makes the future existence of the network far less confident. On a positive note, many respondents were conscious about the shortfalls of their network and are trying to overcome those. In conclusion, the competences of both Circulair Friesland and the Cleantech Regio are equally valued. That means that, based on this analysis, the levels of network competences does not explain why one network is more effective than other networks.

6. Conclusions, recommendations and reflection

This final chapter has three sections. In the first section, the research questions will be answered. In the second section, recommendations for future research will be given, and a reflection will be offered in the third section.

6.1   Conclusions

The current linear model of our economy is completely unsustainable for several reasons. The circular economy (CE) might be the solution since it sustains economic prosperity and prevents further environmental damage (Lieder & Rashid, 2016, p. 37). The problem is that the CE is in its early stages as it is difficult to implement and relatively new to most (Ghisellini et al., 2016, p. 17). The transition to the CE is a complex challenge, and when governments address complex problems, they can form networks in which they collaborate with relevant actors of society. (Bryson et al., p. 44; Rainey, 2014, pp. 133–135). Because these networks can improve the quality and control of policy implementation, they are likely to play a key role for the transition towards a CE (Lozano et al., 2016, p. 9). For the transition towards the CE to be successful, it is vital that these networks are effective. There is, however, a lack of knowledge about the effectiveness of networks that address the CE. That is why the purpose of this thesis is to explain the levels of effectiveness of networks that address the CE so that lessons could be drawn. Based on this line of thinking, the following research question was put central in this thesis:

❖ What explains the effectiveness of networks that address the CE in the Netherlands?

To answer this research question, it was first important to know what the CE is and why it is relevant for Dutch governments. That is why a literature study was conducted in which the CE was defined as *"an industrial system that is restorative or regenerative by intention and design"* (MacArthur, 2013, p. 7). In the CE, materialistic loops are closed, and because most organisations cannot do this alone, collaboration is necessary (Jonker et al., 2018, 6; Sauvé et al., 2016, 53). The CE also has different levels of circularity which means that products differ on the extent to which they optimise the usage of resources (Cramer, 2015, p. 3, 2017, p. 16).

The CE has become more popular, and governments around the world use its principles for different reasons (Winans et al., 2017, p. 826). The governments in the Netherlands find the CE important because it supports environmental sustainability and creates diverse economic opportunities (Bastein et al., 2017, p. 7). The Dutch national government has announced a programme to support the CE, and the provincial governments are adjusting their policies and invest heavily in circular projects (see Table 2 in section 2.4). The Dutch municipalities use the CE to shape and improve their agenda in different policy sectors.

To answer the research question, it was secondly important to know which factors affect the effectiveness of network collaborations in theory. That is why the theoretical framework was used to explain which factors influence the effectiveness of network collaborations. In this theoretical framework, network effectiveness was defined as *"the attain[ment of] positive outcomes [for the surrounding community] that normally could not be achieved without collaboration"* (Provan & Kenis, 2008, p. 230, text added). Four variables significantly affect the levels of effectiveness of networks: trust, goal consensus, the network composition and the network capacities (Head, 2008, pp. 739–741; Turrini et al., 2010, pp. 535–539). These four variables are mediated by the *modes of governance* which means that their effect on the effectiveness of a network depends on the type of that network (Provan & Kenis, 2008, p. 237).

The first explanatory variable, *goal consensus*, is associated with effectiveness as organisations are more likely to commit themselves and collaborate when they have a mutual interest and can satisfy that interest via network-involvement (Provan & Kenis, 2008, pp. 239–240). *Trust* is also essential for the effectiveness of a network as it too improves communication and cohesion in the network. Trust also prevents conflicts by creating a feeling of safety in which participants are willing to take risks. Furthermore, a network is more effective if the *network composition* is suitable given the tasks and goals of the network. (Provan & Kenis, 2008, pp. 238–239). At last, a network can only adequately address issues when it possesses the right and a sufficient amount of *network competencies*. That means that participants must

be able to communicate and coordinate activities and also have an adequate amount of financial resources and human capital (Provan & Kenis, 2008, pp. 240–241).

After explaining the theory, the effectiveness of two real-life networks was explained by which the research question will be answered. These carefully for analysis selected cases were the Cleantech Regio and Circulair Friesland. The Cleantech Regio is moderate to highly effective, and Circulair Friesland is highly effective. The levels of effectiveness of networks that address the CE in the Netherlands positively affected by three variables: the levels of goal consensus, the levels of trust and the suitability of the network composition. Higher values on these variables increase the effectiveness of a network in the CE. The empirical support for this conclusion is that Circulair Friesland is more effective and also has a higher level of goal consensus, a higher level of trust and higher suitability of the network composition compared to the Cleantech Regio. According to the theory, the competences of a network also affect the levels of effectiveness of that network. This claim could, however, not be supported empirically as the levels of competencies of the two cases were equally valued which made it impossible to make any causal inference.

6.2   Recommendations

In this section, three recommendations for future research will be provided. Recommendations for the Cleantech Regio and Circulair Friesland have already been given in the analysis. The first recommendation for future research stems from the need for an evaluative framework by which the effectiveness of circular networks can be measured. The concept of network effectiveness is in itself already a multifaced concept with different meanings for different members of the network (Head, 2008, p. 745). Measuring network effectiveness is also tricky because it has different abstraction levels with each their dimensions and indicators (Herranz, 2010, p. 447; Provan & Milward, 2001, pp. 416–420). On top of these complexities, the effectiveness of networks in the CE is also not easy to measure because the CE reaches a variety of policy sectors (e.g. agriculture, construction, food, waste-management) and because the CE knows multiple levels of circularity (Cramer, 2015, p. 3, 2017, p. 16). Thus an evaluative framework is needed which simplifies the measurement of the effectiveness of networks that address the CE in different policy sectors. The theoretical model that was provided in section 3.5 of this thesis could form the starting point for such an evaluative framework.

This theoretical model is, however, not yet tested for all modes of governance which leads to the second recommendation for future research. Since this thesis only explains the effectiveness of two NAO-networks, other types of networks should also be researched in the

same way. Investigating different types of networks (such as shared-governance networks or networks with a lead-organisation) could increase the generalizability of the theoretical model. When these studies are completed the same way as done as in this thesis, the findings and conclusions could, subsequently, be compared systematically so that the theoretical explanation for network effectiveness in the CE is further strengthened. Doing so could help the further development of the new evaluative framework.

The last recommendation for future research might also improve the theoretical model. As described in section 3.5, different network types require different values on the variables (i.e. goal consensus, trust, network composition and network competencies) to be effective. According to the theory, NAO-networks need to have high competences to be effective. However, Circulair Friesland is a highly effective NAO-network while its levels of competences were labelled as moderate to high. This was the only theoretical inconsistency found in this thesis, and it could mean that networks can compensate a shortage of one variable by doing better on the other variables. At the moment, this assumption remains speculation. Investigating this assumption (with the help of causal-process tracing) is valuable because it might be an important step in the development of the previous mentioned evaluative framework.

6.3 Reflection

This section is used to reflect on a variety of things. The first sub-section is used to reflect on the theories that were used. The second part of the reflection is about the methods, and the third is about the research findings. In the last part, the limitations of this research will be discussed which leads to a new evaluative model for measuring network effectiveness in the CE.

6.3.1 Theories

The main priority of this research was to explain the effectiveness of networks that are active within the CE in the Netherlands. Since there were no theories developed about network effectiveness for networks in the CE, the traditional theories were used. Nevertheless, these traditional theories helped to answer the main research question. The theory was namely used to define the concept of network effectiveness which contributed to the understanding of the dependent variable. The theory also offered four explanatory variables of which three variables, for sure, affect the effectiveness of networks that address the CE. Moreover, the theory was relatively easy to apply to the cases because all of the variables were explainable for the cases by analysing the documents or interview transcripts.

The theory, however, also missed one variable which came to the fore during the interviews with respondents of the two investigated networks. During the interviews, many participants talked about how the external context affects the network and its effectiveness. The external context of the network can be beneficial for the effectiveness of the network but also harm it. The external context can, for example, be beneficial when (inter)national agreements about climate or sustainability change the attitude of governments and companies. The external context can also hurt the effectiveness of a network, for example when the law is too strict and slows down circular initiatives or even forbids them. In any case, it would be worthwhile to include the external context in the theoretical model as it might significantly affect the levels of network effectiveness.

6.3.2   Methods

The theoretical concepts were not very easy to operationalise as they could be interpreted in different ways. Especially the subjective variables (i.e. the levels of trust and network competences) were hard to operationalise because they are all-embracing concepts. That is also why these variables, probably, had more indicators than most of the other variable. Because the literature provided much information about the causal effects of the variables on the levels of network effectiveness, the operationalisation remained possible.

Of the interview questions, a few were not very easy to answer. Sometimes, interview respondents had difficulty answering a question because of their position or knowledge. At other times, questions were not properly phrased or relevant to ask which caused confusion. An example of such question is: 'How easily do you share tasks with employees of other organisations in the network?'. Whenever respondents struggled to answer a question, they were assisted with additional information and examples. Sometimes, the respondent could still not provide a useful answer so, in those case, the question was rephrased or skipped. At other times, this assistance was enough for the respondent to give a helpful answer. None of the respondents expressed any frustration or scepticism whenever a question was not understandable at once.

After a certain number of interviews, theoretical saturation started to make an entrance which means that most respondents provided more or less the same information. The similarity in the answers became a bit annoying at a certain point. However, at the same time, it was very positive to notice that respondents had the same feeling and experience. Because the information that was collected through interviews was similar, certain variables could very easily be valued. The theoretical saturation also provided some room to manoeuvre and deviate from the standard interview questions which were useful to gain some contextual information.

6.3.3   Findings

The findings have been described in detail in the analysis, and they served as mean to answer the research question. What the findings reveal is that the traditional theories about network effectiveness, in general, apply to network effectiveness in the CE. Three variables (i.e. the levels of goal consensus, the levels of trust and the suitability of the network composition) contributed to the explanation why Circulair Friesland is more effective in approaching the CE than the Cleantech Regio is at the moment. The effects of one variable (i.e. the network competences) on the effectiveness of networks in the CE could not be explained as two analysed networks namely did not differ on this variable which is why it was not possible to make a causal inference here. To examine whether or not this variable also affects the effectiveness of networks in the CE, further research is needed as described in the previous section. Because both cases are mediated by a network administrative organisation (NAO), the generalizability of the conclusions is limited as they only apply to NAO-networks. The similarity in the cases is also beneficial because the conclusions are more reliable as the conditional variable remained a constant value. In sum, the findings provided insight into the factors that explain the levels of effectiveness of NAO-networks that are active within the CE in the Netherlands.

6.3.4 Limitation

The operationalisation of network effectiveness is too narrow because the impact of networks on the transition towards a CE and the opinion of respondents is not taken into consideration. The effectiveness of networks in the CE should be measured by more than goal achievement. Network effectiveness in the CE should be evaluated in three ways. Firstly, by the objective network effectiveness which regards the actual goal achievement of the network. Secondly, the subjective network effectiveness which is about the perception of network participants about the effectiveness of their network. Thirdly, the impact of networks on the transition towards a CE should be included by explaining in what levels of circularity the network is active.

Because the literature lacks an evaluative model for measuring the effectiveness of networks in the CE (Korhonen et al., 2018, pp. 44–45), these dimensions were not examined in the document analysis. However, during the interviews, it became clear that these factors matter as several respondents explained how they affect the effectiveness of their network. In the case of the Cleantech Regio, some respondents experienced their network not as effective as it lacks control or ambition. Because these explanations were reliable as multiple respondents shared them, the levels of effectiveness of the Cleantech Regio were downscaled from high to

moderate to high. The previously described limitation was, thus, solved by listening carefully to what the respondents had to say and by using this information to improve the analysis.

To prevent similar problems in the future, an evaluative framework is proposed in Figure 7. This framework measures network effectiveness much better as it includes all three dimensions of network effectiveness in the CE whereas the current theory only accounts for one of them. This framework should be tested and improved, but it can increase the internal validity of network effectiveness in the CE and also simplify measuring this concept.

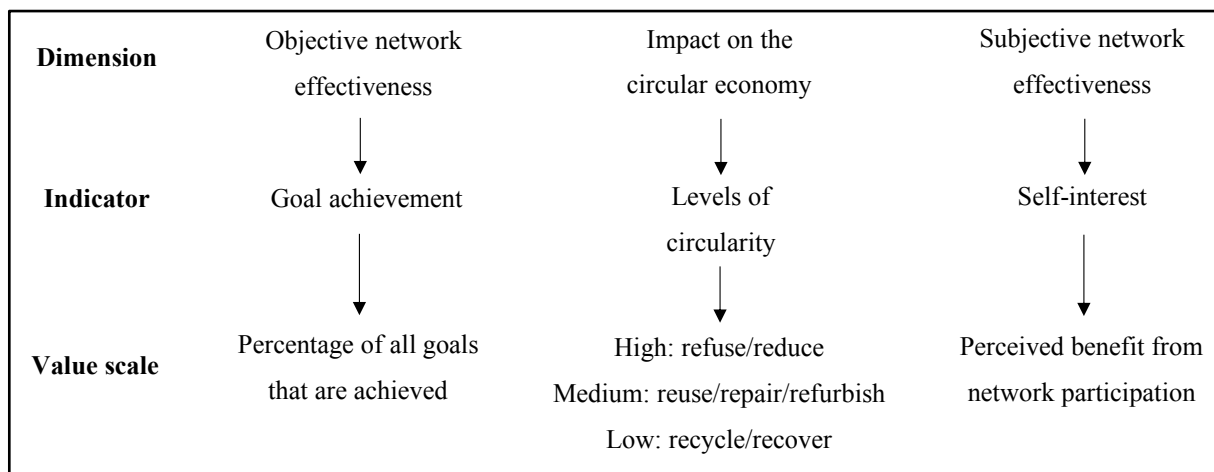|	Concept	Network effectiveness in the CE	
Dimension	Objective network effectiveness	Impact on the circular economy	Subjective network effectiveness
	↓	↓	↓
Indicator	Goal achievement	Levels of circularity	Self-interest
	↓	↓	↓
Value scale	Percentage of all goals that are achieved	High: refuse/reduce Medium: reuse/repair/refurbish Low: recycle/recover	Perceived benefit from network participation

Figure 7: Evaluative model for measuring network effectiveness in the CE
Source: Own research findings and reflection

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Appendices

This thesis has the following appendices:

- ❖ Appendix 1: List of labels for indicators of the theoretical concepts
- ❖ Appendix 2: Overview of the interviewed persons per case
- ❖ Appendix 3: Interview guide, used for the semi-structured interviews

Appendix 1: Label list for the indicators of the theoretical concepts

VARIABLE	INDICATOR IN ENGLISH	INDICATOR IN DUTCH	LABEL IN TRANSCRIPT
Network Effectiveness	Goal achievement	Doelverwezenlijking	[Doelverwezenlijking]
Modes of governance	Communication internally	Communicatie intern	[Communicatie intern]
	Communication externally	Communicatie extern	[Communicatie extern]
	Coordination of activities	Coördinatie van werkzaamheden	[Coördinatie van werkzaamheden]
	Goal formulation	Doel formulering	[Doel formulering]
	Decision-making	Besluitvorming	[Besluitvorming]
Goal consensus	Mission similarity	Overeenkomstigheid in doelstelling	[Overeenkomstigheid in doelstelling]
Trust	The sharing of sensitive information	Delen van gevoelige informatie	[Delen van gevoelige informatie]
	Comfortable with the sharing tasks	Op gemak bij uitwisselen van taken	[Op gemak bij uitwisselen van taken]
	Formal control mechanisms	Formele controle mechanismen	[Formele controle mechanismen]
	Past interaction	Samenwerking in het verleden	[Samenwerking in het verleden]
	Image and expectations	Beeld en verwachting	[Beeld en verwachting]
Number of participants	Number of participants	Aantal deelnemende organisaties	[Aantal deelnemende organisaties]
	Type of participants	Type deelnemende organisaties	[Type deelnemende organisaties]
	Stability of the network composition	Stabiliteit van het netwerk	[Stabiliteit van het netwerk]
The need for network competences	Communication within the network	Communicatie intern	[Communicatie intern]
	Coordination of network activities	Coördinatie van werkzaamheden	[Coördinatie van werkzaamheden]
	The need for financial capital	Benodigde financiële middelen	[Benodigde financiële middelen]
	The need for human capital	Benodigde personele middelen	[Benodigde personele middelen]

Appendix Table 1: List of labels for the indicators of the theoretical concepts

Appendix 2: Overview of the interview respondents

The first table below shows the information about the respondents of the Cleantech Regio and the second table below shows similar information for the case of Circulair Friesland.

Date interview	Reference to respondent	Organisation name	Organisation type	Job description	Relation to the network
16-07-2018	R1	Saxion University of Applied Science	Educational	Manager Circular Economy and Cleantech Regio	Part of the core of the network. Does research and improves education.
16-07-2018	R2	KplusV	Consultancy Firm	Senior advisor Circular Economy	Active participant of the network. Does research, shares knowledge and advises.
27-09-2018	R3	Circulus Berkel	Waste-management	Strategic manager and development	Executive waste-management organisation for network municipalities.
02-10-2018	R4	Stichting Kiemt	Green Foundation	Director	Exchanges knowledge and innovations.
11-10-2018	R5	Aventus / Strategic Board CTR / Table CE of the CTRD	Vocational education / Non-profit	Deputy secretary / Secretary	Part of the core of the network. Co-decides over network goals and policy frames. The CTRD oversees implementation.
15-10-2018	R6	Municpality of Epe / Strategic Board / Daily Board CTR,	Local government, small / Non-profit	Alderman / Vice-chairman / Member	Part of the core of the network. Co-decides over network goals and policy frames.
23-10-2018	R7	Municipality of Apeldoorn	Local government, big	Program manager waste	Part of the core of the network. Co-decides over network goals and policy frames.
30-10-2018	R8	Municipality of Deventer	Local government, medium/big	Managing director	Part of the core of the network. Co-decides over network goals and policy frames.

Appendix Table 2: List of interview respondents of the Cleantech Regio

Date interview	Reference to respondent	Organisation name	Organisation type	Job description	Relation to the network
12-09-2018	R9	VCF professional team	Non-profit (VCF is a triple-helix association)	General Director	Supporting body of the VCF which forms the core of the network.
05-10-2018	R10	Omrin / VCF board	Waste-management	General director / Chairman	Executive organisation for the network municipalities. / Part of the core of the network.
08-10-2018	R11	ECOstyle	International retail company for circular agriculture	CEO	Active participant of the network. Does research, innovates and sells circular solutions to members of the network.
18-10-2018	R12	Province Friesland	Provincial Governmental	Program manager for sustainable innovations	Participant of the network which facilitates and supports the network with personal and by aligning provincial policies and funds.
06-11-2018	R13	Municipality of Oostellingwerf	Local government, small/medium	Program manager Biobased Economy	Participant of the network which facilitates and supports the network with personal and by aligning municipal policies and funds.
07-11-2018	R14	Antea Group	Consultancy and engineering firm	Manager contracts and programs	Participant of the network which advises others in the development and implementation of project.
01-11-2018	R15	Nordwin College	Secondary school and vocational education in sustainability	Coordinator sustainability and policy advisor	Participant of the network which develops and teaches circular and green educational programs. Students also do projects and internships at organisations of the network.

Appendix Table 3: List of interview respondents of Circulair Friesland

Appendix 3: Interview guide, used for the semi-structured interviews

Please not that this appendix is in Dutch and serves only as an example because the interview-guides were specified to the network, organisation and person that was being interviewed.

<u>**PRAKTISCHE ZAKEN**</u>

Hallo [naam respondent],

Allereerst wil ik je hartelijk bedanken dat je bereid bent om deel te nemen aan dit interview. Hiermee help je mij enorm bij het maken van mijn scriptie voor de masteropleiding Bestuurskunde.

Voor we beginnen met het interview, wil ik kort wat praktische zaken vertellen over het interview:

Tijd
- Het interview duurt ongeveer een uur, afhankelijk van hoe snel we door de interviewvragen gaan. Komt dit nog steeds uit?

- Als we te weinig tijd hebben om alle interviewvragen nu te behandelen, dan is dat geen probleem.

- Ik wil je dan wel op een later moment nog een keer spreken om het interview af te maken.

Procedures
Voor dit interview heb ik een aantal procedures opgezet waarvoor ik graag jouw akkoord wil:

- Wegens onderzoekstechnische redenen wil ik het interview graag opnemen.

- De opname gebruik ik enkel om dit interview woord-voor-woord uit te typen zodat ik straks geen informatie mis. De opname wordt een jaar na het maken van een transcript verwijderd.

- De opname en het transcript wordt niet gedeeld met derden, wordt strikt anoniem verwerkt en geanalyseerd.

- Je naam zal niet letterlijk terugkomen in de resultaten van mijn scriptie.

- Wel beschrijf ik in het verslag binnen welk netwerk u actief bent, voor welke organisatie u werkt en wat uw functie is.

- Ben je akkoord met deze procedures?

De respondent
- Als je tussendoor vragen hebt omdat er iets onduidelijk is, dan kun je dat gerust aangeven en dan zal ik het proberen beter uit te leggen, een vraag beter toe te lichten of anders te stellen.

- Ook als je (om wat voor reden dan ook) de opname wilt stoppen, dan kun je dat tussendoor aangeven en dan zal ik de opname stopzetten.

- Heeft u nog op dit moment nog vragen over het interview of de procedures?

INTRODUCTIE RESPONDENT
- Met mijn scriptie doe ik onderzoek naar de effectiviteit van netwerk samenwerkingen in de circulaire economie.

- Eén van de netwerken die ik onderzoek is [de Cleantech Regio / Circulair Friesland] en omdat u als [functie / relatie to network] van [naam organisatie] een belangrijke rol heeft binnen dit netwerk, wil ik u graag interviewen.

- Kun je iets vertellen over jezelf, het netwerk en de rol die jouw organisatie daarin heeft?

VRAGEN UIT OPERATIONALISERING

Volgorde van vragen per thema:
- Om structuur aan te brengen in het interview, heb ik van tevoren 3 brede thema's bedacht die alle samen alle interviewvragen bevatten. Hiermee bespreek ik alle onderdelen waarin ik geïnteresseerd ben.

- We kunnen echter nog wel afwijken van deze volgorde afhankelijk van hoe het gesprek zich ontwikkelt:

- De drie thema's zijn:
  1. Doelen van het netwerk
  2. Netwerk-samenstelling
  3. Samenwerking in het netwerk

Vragen over de doelen van het netwerk:

➢ *Betrekking op variabele: Netwerk effectiviteit*

Doelverwezenlijking
Uit documenten van Circulair Friesland, heb ik afgeleid dat jullie de missie hebben om in 2025 dé circulaire regio van Europa te zijn.

Deze missie is door de VCF vertaald naar 6 concrete doelen voor 2018, namelijk:

- Toename kennisontwikkeling en innovatie-vermogen
- Ondersteunen bij vraagstukken middels het Circulair Versnellingsloket
- Creëren van 14 nieuwe thematische samenwerkingsverbanden
- Ontwikkeling van 60 innovatieve samenwerkingsprojecten (innovatiemotoren) met daarbinnen 240 samenwerkende organisaties
- Groei in de bedrijvigheid met 12 nieuwe bedrijven
- Positief effect op de werkgelegenheid in de Noordelijke regio

1. In hoeverre heeft het netwerk deze doelen bereikt?

> *Betrekking op variabele: Doel consensus*

<u>Overeenkomstigheid in doelstellingen</u>

1. Wat is het doel van het netwerk in algemene zin?

2. Hoe verhouden de netwerkdoelen zich tot de doelen van uw organisatie?

> *Betrekking op variabele: Type en structuur van netwerk*

<u>Mate van centralisatie van het netwerk</u>

3. Hoeveel en welke organisaties formuleren de doelen van het netwerk?

4. Hoeveel en welke organisaties maken beslissingen die het hele netwerk beïnvloeden?

Vragen over de netwerk-samenstelling:

> *Betrekking op variabele: Aantal netwerk-deelnemers*

<u>Aantal netwerk deelnemers</u>
• Uit documenten heb ik opgemaakt dat er in totaal zo'n 71 verschillende organisaties deel uitmaken van het netwerk rondom Vereniging Circulair Friesland.
   o 12 Overheidsorganisaties
   o 5 onderwijsinstellingen
   o 15 dienstverlenende organisaties
   o 23 Bouw- en transport gerelateerd
   o 4 Kunststoffen gerelateerd
   o 12 Agrarisch & biomassa gerelateerd

1. Zou het netwerk beter af zijn als er meer of juist minder organisaties deelnemen in het netwerk?

<u>Type netwerk deelnemers</u>

2. Zou het netwerk beter af zijn als de samenstelling van organisaties er anders zou uitzien?

<u>Stabiliteit van de netwerk samenstelling</u>

3. Hoe lastig is het voor organisaties om het netwerk te verlaten?

4. Wat gebeurt er in het samenwerkingsproces als een organisatie het netwerk verlaat?

5. Hoe lastig is het voor een nieuwe organisatie om deelnemer te worden van het netwerk?

6. Wat gebeurt er in het samenwerkingsproces als een organisatie toetreedt tot het netwerk?

> *Betrekking op variabele: Type en structuur van het netwerk*

Aanwezigheid van bemiddelende organisatie(s)

1. Welke organisatie coördineert de werkzaamheden en activiteiten binnen het netwerk?

2. Welke organisatie ziet erop toe dat de communicatie binnen het netwerk soepel verloopt?

3. Welke organisatie communiceert er namens het netwerk met externe organisaties en het publiek?

Vragen over de samenwerking in het netwerk

> *Betrekking op variabele: Aanwezigheid van capaciteiten*

Interne communicatie

1. Hoe belangrijk is communicatie tussen deelnemers van het netwerk voor het halen van de netwerk-doelstellingen?

2. Hoe goed verloopt de communicatie tussen deelnemers van het netwerk?

3. Wat kan er verbeterd worden in de communicatie tussen netwerk-organisaties?

> *Betrekking op variabele: Vertrouwen*

Delen van gevoelige informatie

1. Hoe deelt uw organisatie informatie met andere organisaties in het netwerk?

2. Met welke organisaties in het netwerk deelt uw organisatie gevoelige informatie?

3. Hoe gevoelig is de informatie die uw organisatie deelt met andere organisaties in het netwerk?

4. Hoeveel gevoelige informatie deelt uw organisatie met andere organisaties in het netwerk?

Gevoel bij het delen van taken

5. Hoe makkelijk deelt u taken met medewerkers van andere organisaties in het netwerk?

6. Hoe gerust bent u erop dat medewerkers van andere organisaties in het netwerk deze taken ook juist uitvoeren?

Formele controle mechanismes

7. Zijn er formele afspraken, regels of contracten die organisaties moeten naleven voor het uitvoeren van werkzaamheden?

Interactie in het verleden

8. Hoe heeft u de samenwerking met de netwerk organisaties in het verleden ervaren?

9. Zijn er belangrijke mijlpalen gehaald tijdens de samenwerking in het verleden?

Beeld en verwachting van anderen

10. Wat is uw beeld van de organisaties en mensen met wie u samenwerkt in het netwerk?

11. Wat verwacht u van andere organisaties en mensen met wie u samenwerkt in het netwerk?

➢ Betrekking op variabele: Aanwezigheid van capaciteiten

Coördinatie en afstemming

4. Hoe belangrijk is de coördinatie en afstemming van taken tussen netwerk-organisaties voor het behalen van de netwerk-doelstellingen?

5. Hoe verloopt de coördinatie en afstemming van taken tussen deelnemers van het netwerk?

6. Wat kan er verbeterd worden in de coördinatie en afstemming van taken tussen netwerk-organisaties?

Financiële middelen

7. Heeft het netwerk voldoende financiële middelen om haar doelstellingen te halen?

8. Hoe goed kan het netwerk financiële problemen oplossen als er te weinig financiële middelen beschikbaar zijn?

Deskundigheid van personeel

9. Wat vindt je van de deskundigheid van medewerkers in de netwerk-organisaties?

10. Hoe goed kan het netwerk een tekort aan expertise bij de medewerkers van de netwerkorganisaties oplossen?

AFRONDING

- Dat waren al mijn interviewvragen. Ik wil je bedanken voor het prettige interview.
- Heeft u nog vragen of suggesties voor mij?
- Hartstikke mooi, dan wil ik bij deze het interview definitief afronden.
- Wanneer ik het interview uitgetypt heb, zal ik je het transcript ter kennisgeving naar je toesturen.
- Nadat ik mijn scriptie heb afgerond en ingeleverd, ontvang je deze van mij per mail.