

# Scaling is prevailing

Testing theoretical conditions in practice to scale-up local renewable energy cooperatives in the Netherlands

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By

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**drift** for transition

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## Abstract

The current production of renewable energy in the Netherlands is not sufficient to reach the European goals set for 2020. In part, this is due to the centralised governance and locked-in mechanisms that are inherent to the Dutch energy sector. As an alternative to this system, local communities are establishing Local Renewable Energy Cooperatives (LREC). These LREC are self-governing cooperatives that have the potential to enhance a needed energy transition when they are scaled-up. This research attempts to uncover which conditions will foster the upscaling of LREC. To reach this objective, a conceptual framework was constructed from academic literature that identified 29 conditions for upscaling. This conceptual framework was scrutinised by empirically validating the conditions through a multiple case study and questionnaire. The results of the multiple case indicated that having the *right people on the right place* in the board was most relevant for the four consulted cases. While the 15 respondents of the questionnaire identified four conditions for upscaling to be most relevant, namely the *skills of the board*, *having local political support*, *having a dedicated board* and *establishing a positive view in the community*. This lead to the construction of the revised framework for upscaling specifically tailored for LREC. It is advised that LREC who seek to scale-up their activities, focus their efforts on implementing one of these conditions to scale. For future research, the conceptual framework and revised framework could be tested among a larger sample of cooperatives or in different countries that have an established tradition with LREC, as Denmark for example.

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## Table of contents

|  |    |
|--|----|
| Abstract.....  | 2  |
| Acknowledgment .....   | 3  |
| 1. Governing the Dutch energy sector.....                    | 7  |
| 1.1. The problem of a centralised energy system.....         | 7  |
| 1.2. Previous research and knowledge gap .....               | 8  |
| 1.3. Research objective and questions .....                  | 9  |
| 1.4. Outline of thesis .....                                 | 12 |
| 2. Creating the conceptual framework.....                    | 13 |
| 2.1. Introduction .....                                      | 13 |
| 2.2. The theoretical building blocks.....                    | 13 |
| 2.2.1. Strategic niche management .....                      | 13 |
| 2.2.2. Grassroots innovation.....                            | 14 |
| 2.2.3. Social entrepreneurship.....                          | 14 |
| 2.3. Methodology of literature review .....                  | 15 |
| 2.3.1. Process of designing the methodology.....             | 15 |
| 2.3.2. Collection of literature sources.....                 | 16 |
| 2.3.3. Analysis of literature sources.....                   | 17 |
| 2.4. The theoretical conditions for upscaling .....          | 18 |
| 2.4.1. Strategic niche management .....                      | 18 |
| 2.4.2. Grassroots innovation.....                            | 23 |
| 2.4.3. Social entrepreneurship.....                          | 28 |
| 2.5. The conceptual framework.....                           | 32 |
| 2.6. Conclusion.....   | 33 |
| 3. Methodology.....  | 35 |
| 3.1. Introduction .....                                      | 35 |
| 3.2. Methodology of multiple case study .....                | 36 |
| 3.2.1. Motivation for multiple case study.....               | 36 |
| 3.2.2. Case selection .....                                  | 36 |
| 3.2.3. Protocol for multiple case study .....                | 40 |
| 3.3. Methodology for questionnaire.....                      | 42 |
| 3.3.1. Motivation for questionnaire.....                     | 42 |
| 3.3.2. Population selection .....                            | 43 |
| 3.3.3. Protocol for questionnaire .....                      | 44 |
| 4. Multiple case study results .....                         | 45 |
| 4.1. Upscaling conditions from the four cases.....           | 45 |
| 4.2. Conclusion.....   | 57 |
| 5. Questionnaire results.....                                | 59 |
| 5.1. Upscaling conditions from the questionnaire.....        | 59 |
| 5.2. Conclusion.....   | 64 |
| 6. Comparing the multiple case study and questionnaire ..... | 66 |

|        |   |    |
|--------|---|----|
| 7.     | Discussion.....                                   | 68 |
| 7.1.   | Limitations.....                                  | 68 |
| 7.1.1. | Data collection .....                             | 68 |
| 7.1.2. | Data analysis .....                               | 69 |
| 7.2.   | Future research.....                              | 69 |
| 7.3.   | Recommendations .....                             | 71 |
| 7.3.1. | For local renewable energy cooperatives.....      | 71 |
| 7.3.2. | For policy makers.....                            | 71 |
| 8.     | Conclusion.....                                   | 73 |
|        | References .....                                  | 76 |
|        | Appendix .....                                    | 82 |
|        | Appendix 1: Protocol for literature review .....  | 82 |
|        | Appendix 2: Protocol for multiple case study..... | 83 |
|        | Appendix 3: Overview questionnaire contacts.....  | 86 |
|        | Appendix 4: Protocol for questionnaire.....       | 86 |
|        | Appendix 5: Questionnaire .....                   | 87 |

## **Figures**

|            |  |    |
|------------|--|----|
| Figure 1:  | Share of renewables in final energy consumption for EU 28 (Eurostat, 2017) ..... | 7  |
| Figure 2:  | Research framework.....  | 10 |
| Figure 3:  | Cochrane's Systematic Review (adopted from Bilotta et al., 2014) .....           | 15 |
| Figure 4:  | Categorisation in NVivo .....  | 18 |
| Figure 5:  | Conceptual framework .....   | 33 |
| Figure 6:  | Transcripts in NVivo .....   | 41 |
| Figure 8:  | Example of coding in NVivo .....   | 42 |
| Figure 7:  | Categorisation of upscaling conditions in NVivo .....                            | 42 |
| Figure 9:  | Average count of upscaling conditions multiple case study.....                   | 45 |
| Figure 10: | Count upscaling conditions multiple case study.....                              | 45 |
| Figure 11: | Average count upscaling conditions categories questionnaire .....                | 59 |
| Figure 12: | Count of upscaling conditions questionnaire .....                                | 60 |
| Figure 13: | Revised framework for upscaling LREC.....  | 66 |

## **Tables**

|           |   |    |
|-----------|---|----|
| Table 1:  | Overview of academic articles .....   | 17 |
| Table 2:  | Upscaling conditions SNM.....   | 20 |
| Table 3:  | Upscaling conditions GI.....  | 24 |
| Table 4:  | Upscaling conditions SE.....  | 29 |
| Table 5:  | Deltawind key information.....  | 37 |
| Table 6:  | De Windvogel key information .....  | 38 |
| Table 7:  | Zeeuwind key information .....  | 39 |
| Table 8:  | Meerwind key information .....  | 39 |
| Table 9:  | Overview of respondents questionnaire.....  | 43 |
| Table 10: | Count of upscaling conditions in political influence from multiple case study .....   | 46 |
| Table 11: | Count of upscaling conditions in internal organisation from multiple case study ..... | 47 |
| Table 12: | Count of upscaling conditions in intrinsic motivation from multiple case study.....   | 51 |
| Table 13: | Count of upscaling conditions in learning from multiple case study.....               | 53 |
| Table 14: | Count of upscaling conditions in network from multiple case study.....                | 55 |

|   |    |
|---|----|
| Table 15: Count of upscaling conditions in external context from multiple case study..... | 56 |
| Table 16: Count of upscaling conditions in political influence from questionnaire .....   | 60 |
| Table 17: Count of upscaling conditions in external context from questionnaire .....      | 61 |
| Table 18: Count of upscaling conditions in intrinsic motivation from questionnaire .....  | 61 |
| Table 19: Count of upscaling conditions in network from questionnaire .....               | 62 |
| Table 20: Count of upscaling conditions in internal organisation from questionnaire ..... | 63 |
| Table 21: Count of upscaling conditions in learning from questionnaire.....               | 64 |
| Table 22: Summary of conditions for upscaling.....  | 74 |

# 1. Governing the Dutch energy sector

## 1.1. The problem of a centralised energy system

The Netherlands is ranked 25<sup>th</sup> in the EU-28 by Eurostat in the production of renewable energy (Eurostat, 2017) (Figure 1). Of the gross final energy consumption, a mere 5,7% is generated through renewables such as wind, solar or hydro, which is far of the intended goal off 16% that is set for 2020 by the Dutch government (CBS, 2016). These are poor results for a country that is regarded to be at the forefront of environmental innovation in areas such as water and waste management (Wolsink, 2012).

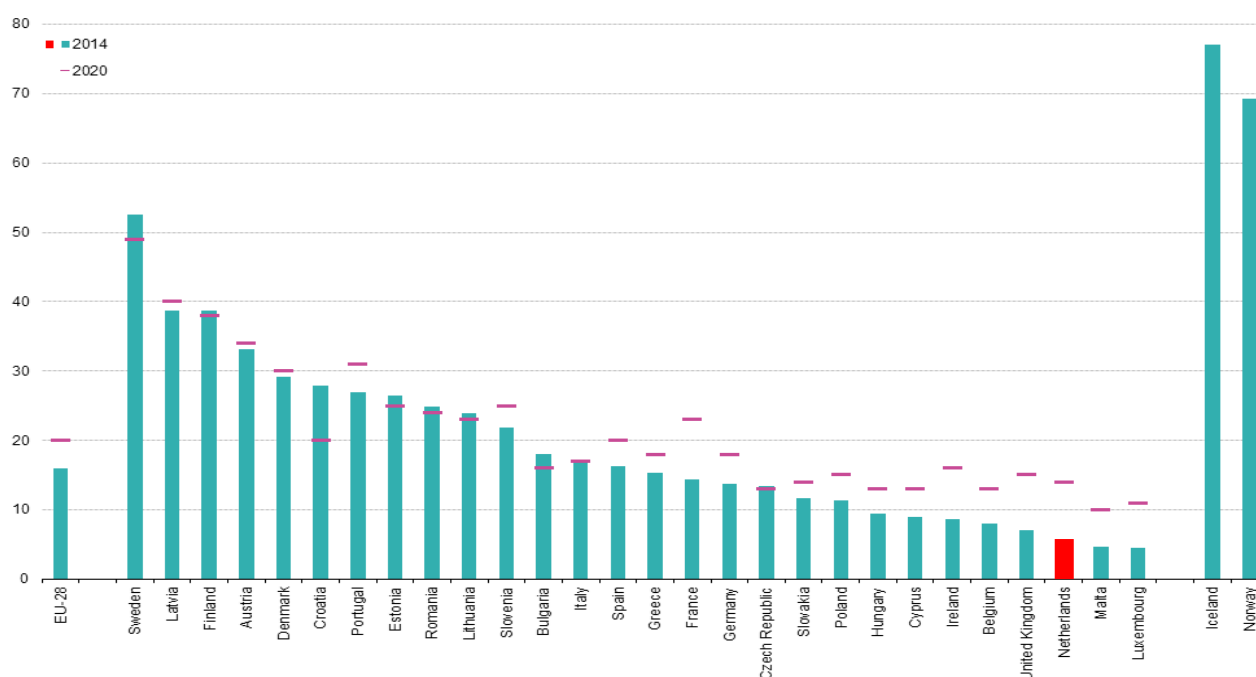


Figure 1: Share of renewables in final energy consumption for EU 28 (Eurostat, 2017)

The problem why the transition from fossil fuels to renewables progresses slowly can be found in the centralised structure of the energy sector (Avelino et al., 2014; Geelen, Reinders, & Keyson, 2013; Verbong, Beemsterboer, & Sengers, 2013). Due to this centralised structure, locked-in mechanisms are still mostly in place that support an energy system powered by fossil fuels. It is challenging to alter this centralised structure as economic benefits are gained by a few parties who want to maintain the current status quo. While this centralised governance is still dominating the energy sector, shifts are taking place that are aiding to foster an energy transition. An observed trend in the industry is the switch from central governance to self-governance (Avelino et al., 2014; Schreuer & Weismeier-Sammer, 2010; Wolsink, 2012). Self-governance implies that efforts are taken by private actors from the market or civil society to achieve environmental goals (Driessen, Dieperink, Laerhoven, Runhaar, & Vermeulen, 2012). It is proclaimed that creating a self-governing energy

system can stimulate the generation of renewables as local citizens are more empowered (Boon & Dieperink, 2014; HIER Opgewekt, 2016; Hufen & Koppenjan, 2011; Van Der Schoor et al., 2016). It allows local actors to actively participate in the process of electricity generation and distributes the benefits more equally among society (Avelino et al., 2014; Driessen et al., 2012; Van Der Schoor et al., 2016; Wolsink, 2012). The emergence of Local Renewable Energy Cooperatives (LREC) is a vivid example of self-governance in the energy sector that can contribute to an energy transition. LREC are here defined as cooperative “organisations, initiated and managed by actors from civil society, that aim to educate or facilitate people on efficient energy use, enable the collective procurement of renewable energy or technologies or actually provide (i.e. generate, treat or distribute), energy derived from renewable resources for consumption by inhabitants, participants or members. The latter live in the vicinity of the place where the renewable energy is generated” (Boon & Dieperink, 2014, p. 298). HIER Opgewekt (2017), a Dutch knowledge platform for local energy initiatives, mentions that there are currently around 313 LREC in the Netherlands compared to 220 in 2016, a notable increase of 42%. This demonstrates how self-governance instead of centralised governance is becoming more evident for the production of renewable energy (Van Der Schoor & Scholtens, 2015). Despite the notable increase in the number of LREC, they only contribute for 4% to the total renewable energy production in the Netherlands (HIER Opgewekt, personal communication, September 19, 2017). This is a very small share and it is argued that to reach the renewable energy goals set by the Dutch government, LREC should scale-up to foster an energy transition. Different definitions in the literature are found that attempt to define the concept of upscaling (Hamilton, Mayne, Parag, & Bergman, 2014). Seyfang and Haxeltine (2012) provide a useful conceptualisation of scaling-up which is defined as growing in scale through the production of more renewable electricity and attraction of more members. Thus, for LREC to prevail in the Dutch energy sector and influence a transition to renewable energy, it is clear that upscaling their activities will be of paramount importance to achieve a more sustainable society.

The next section elaborates on the knowledge gap that is addressed by this research in relation to the upscaling of local renewable energy cooperatives in the Netherlands.

## 1.2. Previous research and knowledge gap

The increase in local renewable energy cooperatives attracts different researchers to investigate this interesting phenomenon. Boon and Dieperink (2014) have studied which characteristics and motivations are most important for the establishment of LREC such as fluctuating energy prices or the environmental awareness in society. In total, they found that 22 different variables had a positive effect on the founding processes of local energy cooperatives such as fluctuating energy prices and social cohesion within a community. The study of Dóci, Vasileiadou and Petersen (2015) focused on



the influence of renewable energy communities in contributing to an energy transitions. They conclude that the potential of LREC to contribute to a transition is depended on creating a favourable policy framework and building relations with other actors (Dóci, Vasileiadou, & Petersen, 2015). Other studies have attempted to uncover what the role of intermediaries for LREC is to become more robust (Hamilton et al., 2014; Hargreaves, Hielscher, Seyfang, & Smith, 2012; Warbroek, Coenen, & Hoppe, 2015) or how financial means strengthened the position of cooperatives (Sumner, Mcurtry, & Renglich, 2014).

The aforementioned research has broadened the knowledge base concerning local renewable energy cooperatives. However, it is believed that two knowledge gaps remain that this thesis attempts to bridge. First, it is necessary to conduct more research concerning the identification and evaluation of the most important conditions that will help LREC scale-up. Research concerning the process of upscaling cooperatives is not widely carried out in academics while there is a clear need to understand these processes better. In the national survey conducted by Seyfang and Haxeltine (2012) on transition towns in the UK, 76% of the respondents report that making the movement grow is a main challenge. Dieperink and Boon (2014) mention a similar issue about Dutch energy cooperatives as they are not been able to grow sufficiently to foster the needed energy transition. Currently, many cooperatives are too small to have a significant impact in the energy sector. For renewable energy initiatives it is a key question how they can scale-up and increase their influence (Boon & Dieperink, 2014; Van Der Schoor et al., 2016). Therefore, more research concerning the upscaling of these initiatives is believed to be necessary. Second, due to the complexity of transitions, it is believed that these self-governing organisations need to be analysed from different perspectives. Theories and conceptual models such as the multi-level perspective or systems function approach are valuable to better understand the occurrence of events that take place during transitions. However, de Haan and Rotmans (2011, p. 91) point out that these tool-kits are not satisfactory because of their “static view on transitions”. More research needs to be done that takes into account multiple perspectives as transitions will alter social, technical, political and economic aspects of modern day life. By studying LREC from three different theoretical perspectives, this knowledge gap is covered.

### **1.3. Research objective and questions**

In light of this knowledge gap, the main objective of this research is to identify the most important conditions for LREC to scale-up. Due to the novelty of this subject and approach, this thesis is of explorative nature in determining the conditions for upscaling. This objective is reached in cooperation with the Dutch Research Institute for Transition (DRIFT) who want to understand the process of upscaling better. To make this research relevant for scientific purposes, a new conceptual framework is developed for the analysis of LREC that has, up until now, not been retrieved in academic literature.

As previously elaborated upon, in transition studies there seems to be a lack of novel research frameworks to study transitions. The conceptual framework that is constructed in this thesis offers an initial step towards achieving a more encompassing theoretical model. By specifically focusing on the upscaling process of local renewable energy cooperatives, a better understanding is gained on how these novel organisations can grow and ultimately alter the energy sector in the Netherlands. Next to this main objective, the secondary objective of this thesis envisions to provide some practical recommendations for LREC on how to best scale up their activities. With this ambition the social relevance of the thesis is addressed. Cooperatives mention that they find it challenging to grow and produce more renewable energy. Once the most important conditions for upscaling are identified in this research, recommendations are formulated for the cooperatives to take into account. By giving the cooperatives practical information on scaling-up, advancements can be made to set in motion the energy transition. These goals are reached in three phases, namely by conducting a literature review, an empirical analysis and from this drawing the final conclusion (Figure 2). This thesis attempts to answer the following research question: **What are the most important conditions for scaling-up local renewable energy cooperatives in the Netherlands?**

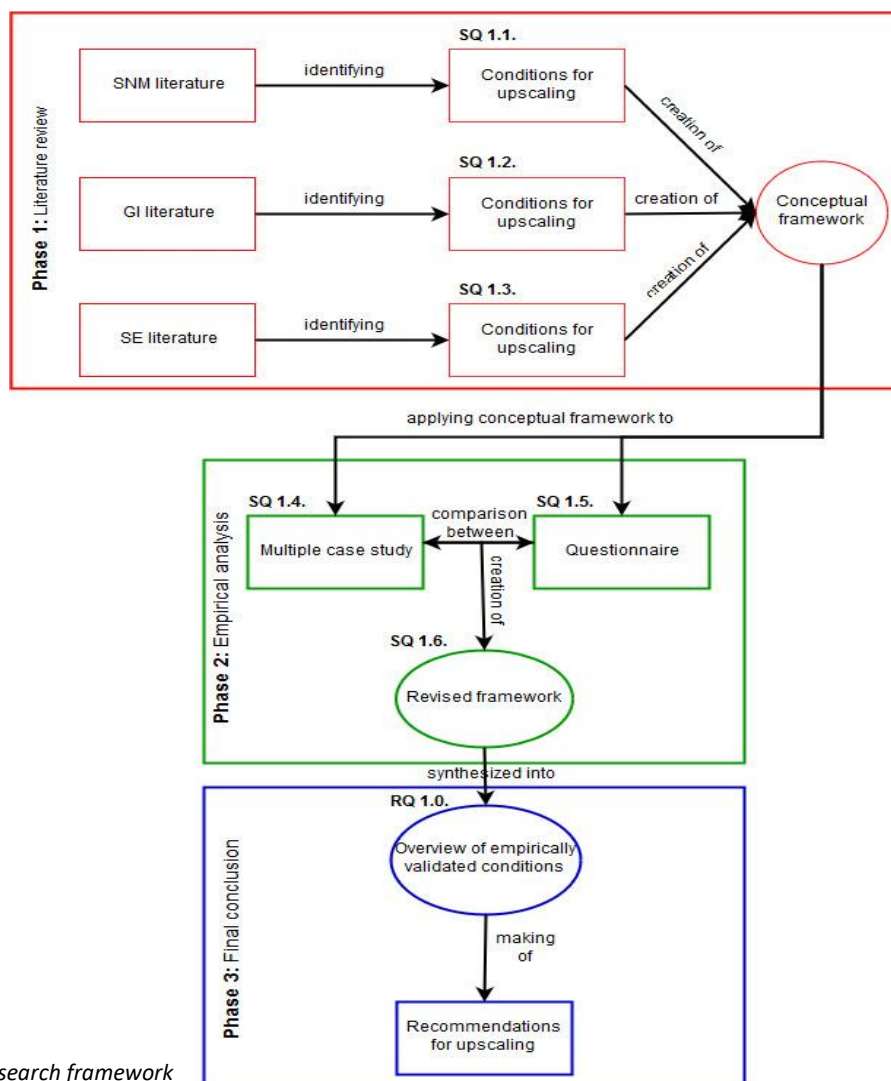


Figure 2: Research framework

### Phase 1: Literature review

In the first phase of this thesis a literature review will be performed. Three bodies of literature are analysed, namely Strategic Niche Management (SNM), Grassroots Innovation (GI) and Social entrepreneurship (SE). Articles from each perspective will be reviewed to have an overview of the conditions that are considered relevant for upscaling LREC. After having analysed the selected sources from each literature body, the conditions for upscaling can be identified, formulating an answer for sub-questions SQ 1.1., SQ 1.2. and SQ 1.3. This leads to the creation of the conceptual framework that is tested in the empirical analysis of this thesis

**SQ 1.1.:** What conditions for upscaling can be identified in the strategic niche management literature?

**SQ 1.2.:** What conditions for upscaling can be identified in the grassroots initiative literature?

**SQ 1.3.:** What conditions for upscaling can be identified in the social entrepreneurship literature?

### Phase 2: Empirical analysis

The purpose of the second phase is to determine which conditions from the conceptual framework are most important in practice. Two types of empirical studies are conducted, namely a multiple case study and a questionnaire. For the case study, 4 of the largest and most successful LREC are selected for analysis (i.e. experienced cooperatives). The case study approach is specifically chosen for this thesis as it allows for in-depth discussion to examine what conditions for upscaling the 4 LREC experience to be more influential or less influential for their success. After conducting the multiple case study, it will be possible to answer sub-question SQ 1.4.. Next to analysing the 4 successful cases, a questionnaire is created to study LREC that are not as developed (i.e. inexperienced cooperatives). In this manner, the survey complements the case study to better analyse the broader population of Dutch local renewable energy cooperatives. After analysing the responses of the survey, an answer is provided for sub-question 1.5.. Finally, the findings from the case study and questionnaire are compared, which results in the revised framework and answering sub-question 1.6..

**SQ 1.4.:** What were the most important conditions for upscaling identified in the multiple case study?

**SQ 1.5.:** What were the most important conditions for upscaling identified from the questionnaire?

**SQ 1.6.:** To what extent are the most important conditions for upscaling from the multiple case study and questionnaire congruent?

### Phase 3: Final conclusion

In the third phase of this research, a final answer and conclusion are given to the main research question 1.0.. A summarising table is created that summarises the empirically validated conditions for upscaling. Also, recommendations are formulated for the LREC on how to scale in the future and for policy makers to foster the process of upscaling.

#### 1.4. Outline of thesis

To answer the posed research questions above this thesis is structured as follows. In the second chapter a literature review is conducted by analysing relevant academic articles from the SNM, GI and SE literature. All the conditions for upscaling mentioned in the sources are explained and integrated into a conceptual framework. The next chapter elaborates on the methodological steps carried out for the multiple case study and the questionnaire. More detailed information is provided concerning the motivation, selection of subjects and the protocols designed. The results of the multiple case study and questionnaire are elaborated upon in Chapter 4 and 5. These two chapters are the practical test for the conceptual framework. To improve the conceptual framework, the results from the cases and survey are compared to highlight which conditions are most important for upscaling in Chapter 6. In Chapter 7 the limitations of the research are highlighted and suggestions for future research given. Finally, the conclusion is elaborated in Chapter 8.

## **2. Creating the conceptual framework**

### **2.1. Introduction**

This second chapter will explain how the conceptual framework was constructed that integrated the theoretical conditions for upscaling in the conceptual framework. As the amount of local initiatives and cooperatives that have been established in the last years is quite remarkable, different perspectives and theories have been found in the literature to study their emergence and development (de Haan & Rotmans, 2011). The conceptual framework was built by analysing articles from SNM, GI and SE. Both the SNM and GI are theories that build upon each other and originate from Transition Management (TM) Multi-Level Perspective (MLP) theory (Verbong & Loorbach, 2012). The SE literature is more focused on social businesses but was considered relevant because cooperatives are a type of social enterprise.

Next, more explanation is given on the link between the theories and their applicability to study local renewable energy cooperatives. In section 2.3., the methodology of the literature review is explained. Sub-questions 1.1, 1.2. and 1.3. will be answered by identifying the conditions for upscaling mentioned in the literature sources. From this, in the final part of the chapter, the conceptual framework is presented that will be used for the empirical analysis.

### **2.2. The theoretical building blocks**

#### **2.2.1. Strategic niche management**

Strategic niche management is an addition to the multi-level perspective theory. Explained very briefly, the MLP can be seen as an integrated approach to tackle complex challenges such as sustainable development. Critics like Rotmans, Geels and Kemp, argue that current political efforts with incremental changes are not sufficient to solve the fundamental failures that are evident in our systems today (de Haan & Rotmans, 2011; Geels & Schot, 2007; Rip & Kemp, 1998). The MLP is an alternative to combat these embedded mechanisms by acknowledging that to reach a sustainable society, changes are needed on multiple levels and dimensions (de Haan & Rotmans, 2011). This broader MLP theory elaborates what levels exist in socio-technical systems, namely the landscape (macro-level), regime (meso-level) and niche (micro-level) (Geels, 2002). On the landscape level, broad processes take place that influence the regime and niche. Changes in the landscape only occur slowly and gradually. For example, environmental awareness is becoming more embedded within the landscape as this world view is taken up by a larger part of society since the 1990s. The regime refers to the embedded or dominant practices that rule a socio-technical system such as the use of fossil fuels in the energy system. On the niche level, innovation and experimentation takes place which is important to change the embedded (often unsustainable) practices and rules in the regime. Because

of the importance of niches to make changes happen, the strategic niche management theory was conceived. Local renewable energy cooperatives can be considered niches which are defined as “protected spaces that allow for nurturing and experimentation with the co-evolution of technology, user practices, and regulatory structures” (Schot & Geels, 2008, p. 538). According to this definition, LREC can be regarded as niches as they provide a protective space for renewable energy technologies to develop and mature. For example, within LREC the community is most often also the consumer of the renewable electricity that is produced which diminishes the level of competitiveness with other providers. SNM thus investigates what is required for niches to create a space in which they can mature and eventually offset the regime. The focus of SNM has mostly been on technological niches, but Raven (2012) mentions that recently more attention is dedicated to investigate niches that originate from civil society.

### 2.2.2. Grassroots innovation

The second theory which adds to the SNM, is the grassroots innovation approach. Grassroots innovations are defined as “networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved” (Seyfang & Smith, 2007, p. 585). This stream of literature attempts to explain how communities organise themselves to solve certain local and environmental issues. In this sense, the concept of niches is extended to analyse innovations emerging from civil society that have the potential to enhance societal transitions. LREC can be seen as a form of grassroots innovation due to their high degree of local involvement and making the benefits largely flow back into the community. The people who are a member of cooperatives, most often also reside in the same area. This allows for a close connection between civil society and the LREC. Moreover, the financial benefits that are gained by the LREC are returned to the members every year profit is made.

### 2.2.3. Social entrepreneurship

Finally, as cooperatives are a type of business that attempt to reach a social need, literature on social entrepreneurship is considered relevant. Social entrepreneurship is different from regular entrepreneurship in the sense that regular entrepreneurship is focused on creating products and services that solve a problem in markets where users can comfortably afford to purchase them. The value creation of social entrepreneurship lies in creating a large transformation that benefits a significant segment of civil society (Martin & Osberg, 2007). From this perspective, social entrepreneurship is defined as “activities and processes undertaken to discover, define, and exploit opportunities in order to enhance social wealth by creating new ventures or managing existing organisations in an innovative manner” (Jolly, Raven, & Romijn, 2012, p. 201). Local renewable energy

cooperatives fit within this definition of social entrepreneurship as they have the ambition to transform the energy system to be fully renewable.

### 2.3. Methodology of literature review

This section on the methodology of the literature review lays bare how the literature review was carried out. It is relevant to explain this because the literature review forms the basis of the research. In this thesis, the Cochrane's Systematic Review (CSR) was employed to structure the literature review because it provides sound methodological steps to conduct such a review (Higgins & Green, 2011). Cochrane's systematic review is widely used on an international level especially in different areas of research (Unknown author, 2017), but is also used in the field of environmental research (Bilotta, Milner, & Boyd, 2014). The CSR was divided in three parts, namely the *process of designing*, the *collection of the literature sources* and the *analytical assessment of the literature sources* (Figure 3).

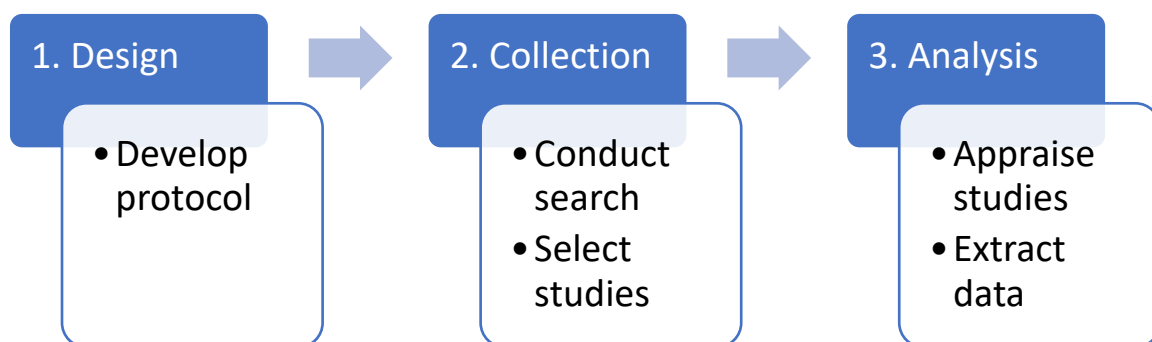


Figure 3: Cochrane's Systematic Review (adopted from Bilotta et al., 2014)

#### 2.3.1. Process of designing the methodology

The first step of this study was to define its focus by **developing a review protocol** (Bilotta et al., 2014; Higgins & Green, 2011). A protocol was designed before carrying out the literature review to structure the search for academic articles. This helped to reduce the possibility of making biased decisions. Bilotta et al. (2014) did not provide more detail on the content of these protocols but the Collaboration for Environmental Evidence did (Collaboration for Environmental Evidence, 2013). The protocol that was designed for this review included the most important elements also elaborated upon by the Collaboration for Environmental Evidence, such as methodology for the collection of literature and assessment of literature (Appendix 1).

### 2.3.2. Collection of literature sources

The second and the third step in the CSR was to **conduct the search** and **select studies** from the literature (Bilotta et al., 2014; Higgins & Green, 2011). To strike a right balance between the amount and quality of the sources, a search strategy had to be thought of. For this review, the search started with a broad orientation on what has been written on strategic niche management, grassroots initiatives and social entrepreneurship. This allowed the researcher to get a grasp on what the general ideas are in the corresponding literature. Next, a more specific search was performed to retrieve useful sources for the review. It was aimed to retrieve around five peer-reviewed sources from each body of literature to be further analysed in the analysis. This search was conducted in the academic databases of Google Scholar as it provided access to numerous amounts of peer reviewed sources. Only peer-reviewed articles were taken into account as this guaranteed their quality and integrity. The following keywords were used to search for the literature “strategic niche management” AND “upscaling”, “grassroots initiatives” AND “upscaling” and “social entrepreneurship” AND “upscaling”. The selection of sources was done by critically reviewing the title, abstract and conclusion to judge if the article could be taken into consideration for further analysis. Specific attention was dedicated to determining if the articles have researched upscaling of local initiatives from a theoretical and practical point of view. After this search, 15 sources were found to be appropriate and useful for further analysis (Table 1).

| Literature body                   | Title  | Author(s)   | Year | Journal or book                                   |
|-----------------------------------|--|---|------|---|
| <b>Strategic niche management</b> | Strategic niche management and sustainable innovation journeys: theory, findings, research agenda, and policy                                    | Schot, J., Geels, F.  | 2008 | Technology Analysis & Strategic Management        |
|                                   | Analysing emerging sustainable energy Niches in Europe: A strategic niche management perspective   | Raven, R.   | 2012 | Chapter in: Governing the energy transition       |
|                                   | Critical factors for implementing and diffusing sustainable product-Service systems: insights from innovation studies and companies' experiences | Ceschin, F.   | 2013 | Journal of Cleaner Production                     |
|                                   | Scaling up local carbon action: the role of partnerships, networks and policy  | Hamilton, J., Mayne, R., Parag, Y., Bergman, N.                             | 2014 | Carbon management                                 |
|                                   | A grassroots sustainable energy niche? Reflections on community energy in the UK   | Seyfang, G., Hielscher, S., Hargreaves, T., Martiskainen, M., Smith, Adrian | 2014 | Environmental Innovation and Societal Transitions |
| <b>Grassroots innovation</b>      | Growing grassroots innovations: exploring the role of community-   | Seyfang, G., Haxeltine, A.  | 2012 | Environment and Planning C:                       |



|                                |  |   |      |  |
|--------------------------------|--|---|------|--|
|                                | based initiatives in governing sustainable energy transitions  |   |      | Government and Policy                      |
|                                | Failure and Success of Transition Initiatives: a study of the international replication of the Transition Movement                   | Feola, G., Nunes, R.                                | 2013 | Global Environmental Change                |
|                                | Of solar collectors, wind power, and car sharing: Comparing and understanding successful cases of grassroots innovations             | Ornetzeder, M., Rohrer, H.                          | 2013 | Global Environmental Change                |
|                                | Understanding role models for change: a multilevel analysis of success factors of grassroots initiatives for sustainable consumption | Grabs, J., Langen, N., Maschkowski, G., Schöpke, N. | 2016 | Journal of Cleaner Production              |
|                                | What influences the diffusion of grassroots innovations for sustainability? Investigating community currency niches                  | Seyfang, G., Longhurst, N.                          | 2017 | Technology Analysis & Strategic Management |
| <b>Social entrepreneurship</b> | Scaling Social Impact: Strategies for spreading social innovations   | Dees, G., Anderson, B.B., Wei-Skillern, J.          | 2004 | Stanford Social Innovation Review          |
|                                | Gauging the success of social ventures initiated by individual social entrepreneurs  | Sharir, M., Lerner, M.                              | 2006 | Journal of World Business                  |
|                                | Social enterprise and renewable energy: emerging initiatives and communities of practice   | Van der Horst, D.                                   | 2008 | Social Enterprise Journal                  |
|                                | Identifying the Drivers of Social Entrepreneurial Impact: Theoretical Development and an Exploratory Empirical Test of SCALERS       | Bloom, P., Smith, B.                                | 2010 | Journal of Social Entrepreneurship         |
|                                | Upscaling of business model experiments in off-grid PV solar energy in India   | Jolly, S., Raven, R., Romijn, H.                    | 2012 | Sustainability Science                     |

Table 1: Overview of academic articles

### 2.3.3. Analysis of literature sources

The final two steps, the **appraisal of the studies** and **the extraction of data**, were carried out simultaneously in this literature review. Bilotta et al. (2014) mentioned that in the appraisal, different elements of the sources are examined in a systematic and unbiased manner. For this analysis, specific focus was dedicated to uncover the conditions that were mentioned to be useful for upscaling. To do so, all the articles were analysed in NVivo which has been used and recommended by other scholars before (Bazeley & Jackson, 2013; Beekhuyzen, 2007). NVivo is a specific research program that allows for qualitative data analysis, helping users to organise, classify and analyse the data that is imported. The advantage of using NVivo for this research was that all the conditions were highlighted and

clustered in appropriate groups without losing overview. All of the fifteen articles were uploaded to NVivo and categorised under the name of their appropriate literature body, similar to the table above. To extract the data (i.e. upscaling conditions) all the conditions mentioned in the sources were marked and labelled under the (so-called) node “Upscaling condition”. After this was carried out, sub-nodes were made to group the conditions that were similar. An example of this categorisation of nodes and sub-nodes can be seen in Figure 4. For example, within the SNM literature upscaling conditions were retrieved that could be categorised under Learning and Network.

The screenshot shows the NVivo interface with a tree view of nodes on the left and a data table on the right. The tree view shows a main node '1. Strategic Niche Management' with sub-nodes: Definition, Future research, Knowledge gap bridged, Limitations, Link SD, Memorable quotes, Methodology, Upscaling condition, External, Internal, Experiments, Learning, Network, Organization, Vision, and Results. The data table below shows the following information:

| Name                          | Sources | References | Created On          | Created By | Modified On      | Modified By |
|-------------------------------|---------|------------|---------------------|------------|------------------|-------------|
| 1. Strategic Niche Management | 0       | 0          | 01/05/2017 09:32    | S          | 21/05/2017 15:29 | S           |
| Definition                    |         | 3          | 5 01/05/2017 09:32  | S          | 21/05/2017 15:31 | S           |
| Future research               |         | 1          | 2 03/05/2017 12:19  | S          | 08/05/2017 10:17 | S           |
| Knowledge gap bridged         |         | 3          | 7 03/05/2017 12:18  | S          | 08/05/2017 09:31 | S           |
| Limitations                   |         | 3          | 4 05/05/2017 10:38  | S          | 08/05/2017 10:41 | S           |
| Link SD                       |         | 2          | 3 06/05/2017 14:52  | S          | 08/05/2017 10:32 | S           |
| Memorable quotes              |         | 0          | 0 01/05/2017 09:34  | S          | 01/05/2017 09:34 | S           |
| Methodology                   |         | 2          | 11 03/05/2017 12:09 | S          | 06/05/2017 15:25 | S           |
| Upscaling condition           |         | 2          | 6 01/05/2017 09:33  | S          | 06/05/2017 14:17 | S           |
| External                      |         | 2          | 2 06/05/2017 13:59  | S          | 08/05/2017 09:41 | S           |
| Internal                      |         | 1          | 1 04/05/2017 16:12  | S          | 05/05/2017 10:53 | S           |
| Experiments                   |         | 1          | 4 06/05/2017 14:11  | S          | 06/05/2017 14:14 | S           |
| Learning                      |         | 6          | 22 04/05/2017 16:11 | S          | 08/05/2017 11:11 | S           |
| Network                       |         | 6          | 15 04/05/2017 16:11 | S          | 02/08/2017 11:02 | S           |
| Organization                  |         | 1          | 1 08/05/2017 08:36  | S          | 08/05/2017 08:36 | S           |
| Vision                        |         | 6          | 14 04/05/2017 16:11 | S          | 08/05/2017 11:14 | S           |
| Results                       |         | 2          | 6 06/05/2017 14:18  | S          | 08/05/2017 09:22 | S           |
| 2. Grassroots Innovation      |         | 0          | 0 01/05/2017 09:38  | S          | 21/05/2017 15:29 | S           |
| 3. Social Entrepreneurship    |         | 0          | 0 01/05/2017 09:38  | S          | 21/05/2017 15:29 | S           |

Figure 4: Categorisation in NVivo

## 2.4. The theoretical conditions for upscaling

In the following sections the upscaling conditions that were identified in the SNM, GI and SE literature are explained. This will provide an answer for sub-questions 1.1., 1.2. and 1.3. but also, lay the basis for the creation of the conceptual framework that will be used in the analytical chapter. The paragraphs will first provide a brief explanation concerning the content of the academic articles followed by answering the sub-questions through the identification of the specific upscaling conditions mentioned.

### 2.4.1. Strategic niche management

Within the strategic niche management literature, five different academic articles have been analysed (Ceschin, 2013; Hamilton et al., 2014; Raven, 2012; Schot & Geels, 2008; Seyfang, Hielscher, Hargreaves, Martiskainen, & Smith, 2014). Both Schot and Geels are one of the main thinkers behind

the SNM theory. Three of the five studies conducted a case study, namely Ceschin (2013), Seyfang et al. (2014) and Hamilton et al. (2014). The former author applied the SNM theory to study how six different companies integrated and diffused eco-efficient innovations. Among these six cases, two of them were involved in the renewable energy industry in Finland and the Netherlands. Seyfang et al (2014) wrote a useful article as it specifically researched 12 energy communities in the United Kingdom. They attempted to determine if the SNM theory was applicable to these communities in terms of their development in the English energy sector. Hamilton et al. (2014) expanded the object of their study by incorporating four local carbon action initiatives but focused on a single region in the UK, namely Oxfordshire. They applied the SNM approach to determine what the role was of local actors involved in these initiatives and how they contributed to the scaling up of the local carbon initiative. In contrast to these three case study articles, the other two articles focused on providing a historical analysis. Raven (2012) published an interesting article that could be seen as a meta-study. He studied the literature on the emergence of sustainable energy niches and determined that six research topics were reoccurring. Finally, Schot and Geels (2008) gave a comprehensive explanation on how empirical results and conceptual interpretations changed over time in the SNM literature. Their main observation was that research on niches has been more focussing on understanding the linkages of niches with the broader regime and landscape level. Advancements have been made due to this broader and interconnected focus, however it has also increased the complexity of SNM research.

The next paragraphs will provide an answer to sub-question 1.1. concerning the identification of the upscaling conditions mentioned in the strategic niche management literature. The conditions that were retrieved in the studied academic articles were related to having a vision, learning and network. As can be seen in Table 2, within each of these three categories the specific upscaling conditions were identified.

| Category | SNM upscaling conditions | Reference(s)  |
|----------|--------------------------|---|
| Vision   | Shared                   | (Ceschin, 2013)<br>(Hamilton et al., 2014)<br>(Raven, 2012) |
|          | Specific                 | (Ceschin, 2013)<br>(Schot & Geels, 2008)                    |
|          | Flexible                 | (Ceschin, 2013)   |

|                 |                                 |   |
|-----------------|---------------------------------|---|
| <b>Learning</b> | Broad                           | (Ceschin, 2013)<br>(Hamilton et al., 2014)<br>(Schot & Geels, 2008)<br>(Seyfang et al., 2014) |
|                 | Reflexive                       | (Ceschin, 2013)<br>(Schot & Geels, 2008)  |
|                 | Network involvement             | (Hamilton et al., 2014)<br>(Schot & Geels, 2008)<br>(Seyfang et al., 2014)                    |
| <b>Network</b>  | Broad                           | (Ceschin, 2013)<br>(Raven, 2012)<br>(Schot & Geels, 2008)<br>(Seyfang et al., 2014)           |
|                 | Deep                            | (Ceschin, 2013)<br>(Schot & Geels, 2008)<br>(Seyfang et al., 2014)                            |
|                 | Flexible                        | (Hamilton, et al., 2014)  |
|                 | Cooperation with intermediaries | (Hamilton et al., 2014)<br>(Seyfang et al., 2014)   |

Table 2: Upscaling conditions SNM

### Vision

Cultivating a vision is an important internal conditions for niches to be successful mentioned in four of the five sources (Ceschin, 2013; Hamilton et al., 2014; Raven, 2012; Schot & Geels, 2008). Having a vision is important for the niches as this orientates their efforts to one or multiple goals (i.e. sustainable development, community development or energy transition). By having a vision, the niche can undertake activities that follow their guidelines which improves their legitimacy. In the words of Ceschin (2013, p. 84) “a proper [...] vision is fundamental in order to attract and enrol actors and give a strategic direction to the innovation”. In the literature mentions that it is useful to have a vision for niches, including having a shared, specific and flexible vision.

First, having a *shared vision* is determined relevant because all the different expectations of the actors in the niche need to be kept aligned (Ceschin, 2013). Creating a shared vision, is beneficial in the long term as specific strategies can be drafted and more stability guaranteed. It also makes it easier for the niche actors to argue for or against certain actions as long as their argumentation is in line with the expressed vision (Hamilton et al., 2014; Raven, 2012). It needs to be mentioned that this shared vision should not be forced upon the actors, but created by consensus (Ceschin, 2013). Next to having a shared vision in a niche, Schot & Geels (2008) mention that a *specific vision* creates more guidance. If a vision is too broad, the efforts of the niches will not be streamlined and actors might lose interest. Especially in the experimental phase of niches, it is very important to have a specific

vision as the limited time and resources need to be used effectively (Ceschin, 2013). The third condition is mentioned by Ceschin (2013) of having a *flexible vision*. Maintaining a vision that is open to adjustments is relevant as over time the goal of the niche might be altered or the context in which the niche operates. To deal with these uncertainties, having a vision that is adjustable to fit the current situation is appropriate.

### Learning

The SNM theory suggests that learning processes will aid niches to develop and diffuse, all the five authors have confirmed this in their research papers (Ceschin, 2013; Hamilton et al., 2014; Raven, 2012; Schot & Geels, 2008; Seyfang et al., 2014). Learning stimulates the niche actor to think about how they are carrying out their actions but also if those actions are appropriate taking into account the circumstances. When learning is facilitated “it enables adjustments of the innovation and increases chances for a successful diffusion” (Ceschin, 2013, p. 77). As mentioned previously, learning is more focussed on the internal organisation of the niches. For learning, three separate conditions are mentioned, namely broad learning, reflexive learning and involving the network.

First, *broad learning* is also referred to as first-order learning in the literature (Ceschin, 2013; Schot & Geels, 2008; Seyfang et al., 2014). This means that the niches reflect upon the practical activities it is conducting. For example, by evaluating how the planning and management of a certain project is carried out. However, the broad learning implies that a move beyond these technical and economic dimensions should be taken. To develop the niche further, reflections on the regulatory, cultural or political impacts need to be taken into account (Hamilton et al., 2014; Schot & Geels, 2008). Seyfang et al. (2014) stated that broad learning is an important prerequisite for the niche movement to grow. In addition, *reflexive learning* (or second-order learning) is postulated as being a crucial addition to the broad learning process. By incorporating reflexive learning, the niche evaluates the underlying norms, values and frames in which it operates (Ceschin, 2013). This type of learning is more difficult, but according to Schot & Geels (2008) relevant to further development. Finally, both broad and reflexive learning are facilitated by *involving the network* (Hamilton et al., 2014; Schot & Geels, 2008). What these authors found in their research is that actors that operate outside the niche often think outside the box and have a different view on what the niche can improve for the future. Sharing of information with intermediary organisations can provide the niche with valuable feedback on their current way of taking action (Seyfang et al., 2014). The more a network is involved to reflect on the practices of the niche, the more a niche can adjust and develop (Schot & Geels, 2008).

## Network

The importance of having a network is stated in all the five articles (Ceschin, 2013; Hamilton et al., 2014; Raven, 2012; Schot & Geels, 2008; Seyfang et al., 2014). To illustrate the importance of networking, Seyfang et al. (2014, p. 391) note that “networking is a core activity, [...] and is undoubtedly key to rapid growth” and Ceschin (2013, p. 76) mentions that having a “network is recognised a crucial process to protect, support and foster radical innovations”. Having a network is important for niches as this allows them to spread their message (i.e. renewable energy) to the wider public. Informing and convincing individuals of alternative options to the once the regime offers (i.e. fossil fuels) is a first step in changing the established socio-technological system. Moreover, a network can enrich niches by providing them with knowledge or financial resources. Networking can be done by following different strategies as having a broad, deep and flexible network but also by cooperating with intermediary organisations.

First, a *broad network* focusses on reaching out to as many different types of stakeholders as possible. Seyfang et al. (2014) argues that part of the success of the energy communities is due to their ample amount of actors included in their network. These are actors interested in the same issues as the niche but from a different domain. For example, relations with the local green parties were kept and niches sought for new innovation opportunities by working together with universities or NGOs. Ceschin (2013) observes that having a broad network with stakeholders that share a similar ideology is not sufficient. He notes that niches should also attempt to focus on ‘outsiders’, which is also mentioned by Raven (2012) and Schot & Geels (2008). This would open up new opportunities to scale-up the activity of niches as these outsiders think outside of the box and might want to get involved in the innovation by sharing knowledge or granting financial resources (Schot & Geels, 2008). Both Seyfang et al. (2014) and Ceschin (2013) argue that niches remain too focussed on their direct local surrounding to find new partners. This is intuitively also the most obvious option, but to scale-up the researchers state that by investing in a network at the national level, their growth can spur. Second, having a *deep network* means that relations should be maintained with people that “have the power and willingness to directly influence the dominant culture, practices and institutions” (Ceschin, 2013, p. 77). More can be accomplished if the niche has a strong relation with individuals that can accomplish something for them, for example a major or director of a company. A deep network can also be with actors in the regime as they can directly influence the dominant practices (Ceschin, 2013). Because it takes times to form these deep networks, Seyfang et al. (2014) mention that a good manner to make use of a deep connection is to consult pre-existing relationships. The individuals that are engaged in these niches tend to be able to mobilise people, especially if it is for a good cause (Schot & Geels, 2008). Third, for niches to have a *flexible network*, options should be kept open about who they have a relationships with and for how long they want to maintain this relationship (Hamilton et al., 2014).

In this sense the network of the niche is kept open to adjustment. Finally, niches that *cooperate with intermediaries* are helpful as the intermediaries have a better overview of what is happening within the whole sector (Seyfang et al., 2014). Intermediaries can be seen as the middle man for niches to gain knowledge but also to improve their exposure. By working together with these intermediary organisations, niches can focus more on their goal without having to invest too much effort on building relations with external parties. These intermediaries also have a better picture of what is happening elsewhere to better advise the niches (Hamilton et al., 2014).

#### 2.4.2. Grassroots innovation

In the grassroots innovation literature five different academic papers have been taken into account for further analysis (Feola & Nunes, 2013; Grabs, Langen, Maschkowski, & Schöpke, 2016; Ornetzeder & Rohracher, 2013; Seyfang & Haxeltine, 2012; Seyfang & Longhurst, 2017). It is worth mentioning that especially Seyfang but also Haxeltine and Longhurst can be seen as the main scholars in the field. Apart from Grabs et al. (2016), all the other academics have researched the development and factors for success of GIs in different case studies. These four case study papers posed roughly the same question namely, what are the factors of success for the development and diffusion of specific grassroots innovations. The most elaborate case study was carried out by Feola & Nunes (2013) who focused on the Transition Network. They gathered data from 276 transition networks all over the world that were still active but also from networks that had to discontinued their activities. Seyfang & Longhurst (2017) conducted their research on 12 community currencies in different countries, Seyfang & Haxeltine (2012) investigated 59 Transition Towns in the UK and Ornetzeder & Rohracher (2013) analysed three different GIs that focused on sustainability in their respective countries. Finally, Grabs et al. (2016) took a different approach by performing a literature review that would reinforce the GI theory. They argued that literature on behavioural change and social learning were also important to determine the factors for success of GI. In this manner the authors developed an overview of factors that could be added to the existing literature on grassroots innovation.

The next section will provide an answer to sub-question 1.2. on what conditions for upscaling are identified in the GI literature. To cluster the conditions, six categories were made, namely internal organisation, intrinsic value, external, political support, learning and network (Table 3).

| <b>GI Upscaling category</b> | <b>Upscaling conditions</b>                | <b>Reference(s)</b>   |
|------------------------------|--|---|
| <b>Internal organisation</b> | Skills of board                            | (Feola & Nunes, 2013)<br>(Grabs et al., 2016)<br>(Ornetzeder & Rohrer, 2013)<br>(Seyfang & Haxeltine, 2012) |
|                              | Subgroups                                  | (Feola & Nunes, 2013)<br>(Grabs et al., 2016)   |
|                              | Paid staff members                         | (Feola & Nunes, 2013)<br>(Grabs et al., 2016)   |
|                              | Own working office                         | (Grabs et al., 2016)<br>(Ornetzeder & Rohrer, 2013)   |
|                              | Internal communication                     | (Grabs et al., 2016)<br>(Seyfang & Longhurst, 2017)   |
|                              | Good interaction between board and members | (Grabs et al., 2016)  |
|                              | Age of members                             | (Feola & Nunes, 2013)   |
|                              | <b>Intrinsic motivation</b>                | Motivation of members   |
| Responsibility of members    |  | (Grabs et al., 2016)  |
| Dedicated board              |  | (Feola & Nunes, 2013)<br>(Grabs, et al., 2016)<br>(Ornetzeder & Rohrer, 2013)                               |
| <b>External context</b>      | Location of establishment                  | (Feola & Nunes, 2013)<br>(Grabs et al., 2016)<br>(Seyfang & Longhurst, 2017)                                |
|                              | Positive view in community                 | (Grabs et al., 2016)<br>(Seyfang & Haxeltine, 2012)   |
| <b>Political support</b>     | Local political support                    | (Grabs et al., 2016)<br>(Seyfang & Haxeltine, 2012)   |
| <b>Learning</b>              | Learning                                   | (Feola & Nunes, 2013)<br>(Grabs et al., 2016)<br>(Ornetzeder & Rohrer, 2013)<br>(Seyfang & Haxeltine, 2012) |
| <b>Network</b>               | Recruitment of new members                 | (Feola & Nunes, 2013)<br>(Seyfang & Longhurst, 2017)  |

Table 3: Upscaling conditions GI

### Internal organisation

The conditions that fall under internal organisation category are ample and mentioned in all the five consulted sources (Feola & Nunes, 2013; Grabs et al., 2016; Ornetzeder & Rohrer, 2013; Seyfang & Haxeltine, 2012; Seyfang & Longhurst, 2017). Internal organisation refers to the type of internal conditions that form the basis for a successful GI. In the literature six different types of internal conditions are found to be relevant for having a successful initiative which are explained.



First, the *skills of the board* is an important condition for initiatives to progress. The members of the board are the people who carry out most of the work and bear the responsibility (Ornetzeder & Rohrachner, 2013). Therefore, it is crucial for this group of people to have a suitable set of skills that can contribute to the development of the initiative (Grabs et al., 2016). Leadership within these initiatives is described as an “essential characteristic” (Feola & Nunes, 2013, p. 9). In the study of Seyfang & Haxeltine (2012), 83% of the members involved in the board of the initiative held a degree. This does not mean that a degree is the most important factor for having a group of skilful board members, but the fact that they have specialised in a certain area of expertise is more important. Feola & Nunes (2013) added to this point by remarking that in their sample, most of the board members had experience in economics, engineering, group management or coaching. There is no specific set of skills mentioned to be more or less beneficial for the success of an initiative, but having people with different skills who can complement each other is relevant (Feola & Nunes, 2013). In relation to this first condition, is the division of the board into *subgroups*. Having subgroups within initiatives is mentioned to be associated with success (Feola & Nunes, 2013). Creating subgroups in which a few members of the board participate, allows for better organisational structures. This is especially important in the beginning phase, so that the board members can focus on specific tasks (Grabs et al., 2016). An important feature of the subgroups, is that members with different knowledge areas should be grouped together. In this way there is interaction between them and they can complement each other on diverging issues that may arise (Grabs et al., 2016). Third, if the initiative could *pay staff* members instead of relying on volunteers a big step can be made in terms of upscaling (Feola & Nunes, 2013; Grabs et al., 2016). These initiatives often rely on volunteers who sit on the board or just help occasionally. By having some of the board or staff members receiving a financial compensation for their efforts, they are more incentivised to make the initiative a success. Related to this point, is the fourth condition of having a *working office* (Grabs et al., 2016; Ornetzeder & Rohrachner, 2013). A formal building to work in helps to develop an initiative becoming more prominent and serious in their efforts. Ornetzeder & Rohrachner (2013, p. 863) state that “an organisation building seems to be the next crucial step in the development of grassroots innovations”. Options could be considered that give the staff more inspiration to make their efforts a success. For instance, meeting rooms can be booked for free by organisations that do not have a profit seeking objective. The fifth condition for the internal organisation is the *internal communication within the board* (Grabs et al., 2016; Seyfang & Longhurst, 2017). This means that the board members communicate openly and honestly about what is going in their respective portfolios. This is important as all the members need to be kept informed about issues that might not per se affect their own. In relation, the next condition mentions that *good interaction between the board and members* is also important (Grabs et al., 2016). This refers to open and honest communication within the whole

organisation. In this way all the individual members feel incorporated and empowered to take action (Grabs et al., 2016). According to Feola & Nunes (2013), the *age of the members* can also be an conditions for upscaling. In the sense that older member (50+) have more time available to dedicate on pursuing the goal of the niche.

### Intrinsic motivation

Within the intrinsic motivation category, conditions are mentioned that refer to the internal reward an individual receives from doing something as opposed to external drivers. Intrinsic factors are touched upon by all the five sources (Feola & Nunes, 2013; Grabs et al., 2016; Ornetzeder & Rohracher, 2013; Seyfang & Haxeltine, 2012; Seyfang & Longhurst, 2017). Within initiatives, the intrinsic factors play a particular important role as there is often no financial reward but at the same time the members are motivated because they know they are doing something for the 'greater good'. As Feola & Nunes (2013, p. 24) clearly state "the success or failure [of a GI] can be linked to the compulsion to act". Therefore, it is relevant to establish how individuals can participate in taking action by understanding their intrinsic motivations.

The most widely discussed condition is the *motivation of the members*, referring to all the member acting as board, staff or volunteers. An initiative is most successful when all the individuals engaged are motivated because they feel that something needs to change within the current socio-technical system (Feola & Nunes, 2013; Grabs et al., 2016). Seyfang & Haxeltine (2012) elaborate on what the motivations are of members to join an initiative and nearly 70% mentioned that they wanted to tackle climate change. This shared goal creates a sense of community and purpose within the initiative. If this intrinsic goal of sustainability is being tackled with enthusiasm and fun, a lot can be reached (Feola & Nunes, 2013). If the members are intrinsically motivated to participate, they are also willing to do this voluntarily. Closely related to the motivation of members, is the *feeling of responsibility* that stimulates the members to take action. While the motivational condition can be seen as a sort moral compass, the feeling of responsibility stimulates the individuals to act. By feeling responsible for climate change for instance, people will start changing their own behaviour (Grabs et al., 2016). Finally, the third condition specifically relates to the *dedication of the board* (Feola & Nunes, 2013; Grabs et al., 2016; Ornetzeder & Rohracher, 2013). As mentioned, the board is an important part of the initiative because they are doing most of the work to make a project happen. The board members have an important role and should set an example for the rest of the members to achieve the overarching goal (Grabs et al., 2016). Thus, a dedicated board should demonstrate and prove that they are making the best efforts they can. Especially in the beginning the board needs to be dedicated as most of the members and staff will be participating voluntarily (Ornetzeder & Rohracher, 2013).

### External context

The external context in which a new initiative is established and operates can be influential condition. Three sources determine that the external context plays an important role (Feola & Nunes, 2013; Ornetzeder & Rohrer, 2013; Seyfang & Longhurst, 2017). In the case study of Ornetzeder & Rohrer (2013), they conclude by mentioning that because of certain external factors some GIs were more successful than others.

A first external factor that can influence the success of an initiative is its *location of establishment* (Feola & Nunes, 2013; Grabs et al., 2016; Seyfang & Longhurst, 2017). It is important for the newly started initiative to understand in what kind of location they are operating. Feola & Nunes (2013) come to the conclusion that some of the successful cases in their research are specifically established in rural places because of stronger relations between the locals. These pre-existing relationships make it hard to initially settle in the area, but once trust is built with the local community the initiatives bloomed. The second factor that can influence the upscaling of a GIs is the existence of a *positive view in the community* (Seyfang & Haxeltine, 2012). Taking into account the main political affiliations in the area or certain local traditions can give an indication how the community thinks about GI initiatives. For instance, if the initiative settles in an area that has experienced problems with renewable energy sources, the upscaling might be hampered (Grabs et al., 2016).

### Political support

The *local political support* that initiatives receive can make a big differences between them becoming a success or failure, according to Grabs et al. (2016) and Seyfang & Haxeltine (2012). Having relations with the local political parties can be very beneficial for the initiatives as they are operating on a small-scale basis. It is important for the board members to establish relations with political figures that have similar objective as the initiative itself. With this strategy, congruence can be sought between the two parties and maybe extra funding can be set aside or policies introduced to support the development of a certain project (Grabs et al., 2016). From the literature it became apparent that the more political support a GI has the greater the chances are for it to become successful (Seyfang & Haxeltine, 2012). On the other hand, if political relations are not maintained or there is opposition against the initiative, this can become a large obstacle for further development. So a careful balance is key in order to engage in these type of local political relations (Seyfang & Haxeltine, 2012).

### Learning

Similar to what the SNM theory postulated, *learning processes* are also mentioned in the GI literature (Feola & Nunes, 2013; Grabs et al., 2016; Ornetzeder & Rohrer, 2013; Seyfang & Haxeltine, 2012).

These authors do not go into as much detail but state that learning should be considered by the initiative to become better at what it is doing. The typical strategy that is put forward is learning from a bottom-up manner (Ornetzeder & Rohracher, 2013). It is also mentioned that by cooperating with other initiatives or parties, learning can be facilitated (Feola & Nunes, 2013).

### Network

Within the GI, Seyfang & Longhurst (2017) and Feola & Nunes (2013) mention that *active recruitment of new members* is a favourable condition for an organisation that is mainly dependent on volunteers. Recruiting new members will increase the visibility of the initiative and at the same time bring in people who can dedicate some of their time on realising a project.

### 2.4.3. Social entrepreneurship

The literature on social entrepreneurship originates from the broader research on entrepreneurship. Social entrepreneurship caught the attention of academics in the field as more and more ventures were established not for profit making purposes, but to enhance the social well-being of a target group or area. With the current processes of environmental degradation and climate change, social enterprises that attempt to combat these problems have been emerging all over the world (Dees, Anderson, & Wei-Skillern, 2004). Some would argue that social entrepreneurs have the key in their hands to change the embedded practices in the socio-technical system and that they “are key players in sustainability transitions” (Jolly et al., 2012, p. 201). For the literature on social entrepreneurship, broader and older sources were found compared to SNM and GI as this subject has been object of study for longer time. It was mentioned that research on the scaling up of these type of enterprises is most relevant for the advancements of social ventures in the field of sustainability (Bloom & Smith, 2010). From the five academic papers that were selected, two are theory building (Bloom & Smith, 2010; Dees et al., 2004) and three case study analyses (Jolly et al., 2012; Sharir & Lerner, 2006; Van der Horst, 2008). Of all these academics, Bloom and Dees are well-known and respected researcher in the field of social entrepreneurship. The paper of Bloom & Smith (2010) reflected on the SCALERS model, developed by Bloom himself. The SCALERS model encompasses seven factors (Staffing, Communications, Alliance building, Lobbying, Earnings generation, Replication, and Stimulating market forces) that were of importance for social entrepreneurs to scale-up the impact of their venture. By using a large-scale sample of more than 500 social enterprises in the United States, the research aimed to improve the reliability and validity of the SCALERS model. The second theory building article of Dees et al. (2004) reflected on their own model of the five R’s for upscaling (Readiness, Receptivity, Resources, Risk, Returns). They did this by analysing various different social enterprises in the U.S. that have been very successful in scaling their activities. From the three case

study articles, Jolly et al. (2012) and Van der Horst (2008) focused on renewable energy enterprises. The former analysed what the business model is of five small initiatives that were engaged in off-grid PV installation. From their findings, they created a typology to determine what elements were most important for success. Van der Horst (2008) assessed the role social entrepreneurs played to enhance the development towards renewable energy in the UK. Two cases were studied of social enterprises attempting to establish themselves in the renewable energy sector. From his analysis, Van der Horst (2008) identified which enabling factors made these two cases prosperous. Finally, Sharir & Lerner (2006) researched 33 social ventures operating in a social context in Israel. They found eight factors that were related to the level of success of these ventures.

Similar to the previous two passages, sub-question 1.3. on the upscaling conditions identified in the social entrepreneurship literature will be answered. The same five categories that were created for the GI upscaling conditions are maintained as the conditions found in the SE literature fitted these categories too (Table 4).

| Category                     | SE upscaling conditions         | Reference(s)  |
|------------------------------|---------------------------------|---|
| <b>Internal organisation</b> | Skills of board                 | (Bloom & Smith, 2010)<br>(Sharir & Lerner, 2006)                          |
|                              | Paid staff members              | (Sharir & Lerner, 2006)   |
|                              | Right people, right place       | (Bloom & Smith, 2010)<br>(Sharir & Lerner, 2006)<br>(Van der Horst, 2008) |
| <b>Intrinsic motivation</b>  | Motivation of members           | (Jolly et al., 2012)<br>(Sharir & Lerner, 2006)                           |
|                              | Dedicated board                 | (Dees et al., 2004)<br>(Sharir & Lerner, 2006)                            |
| <b>External context</b>      | Positive view in community      | (Dees et al., 2004)<br>(Sharir & Lerner, 2006)                            |
| <b>Political support</b>     | Local political support         | (Bloom & Smith, 2010)   |
|                              | Lobbying local government       | (Bloom & Smith, 2010)   |
| <b>Learning</b>              | Understanding risk of upscaling | (Dees et al., 2004)   |
| <b>Network</b>               | Communicating key stakeholders  | (Bloom & Smith, 2010)   |

Table 4: Upscaling conditions SE

### Internal organisation

The internal organisation of a social venture is also a main theme addressed in the literature that contributes to their development. As Sharir & Lerner (2006, p. 14) note “the overriding importance of the composition and functioning of the venturing team has been emphasised in the literature [as] key variables affecting the success of the venture”. Four different conditions were mentioned in four sources (Bloom & Smith, 2010; Jolly et al., 2012; Sharir & Lerner, 2006; Van der Horst, 2008)

First, the *skills of the board* are considered to be one of the conditions that influence the development of the enterprise. These skills are mainly involving people in the venture with previous managerial experiences (Bloom & Smith, 2010; Sharir & Lerner, 2006). In Sharir & Lerner’s (2006) case study, they found that out of the 13 successful ventures studied, seven had previous experiences in managing. Two of the ventures that did not have any person with managerial experiences in their organisations and struggled by coming across more difficulties to scale-up. Especially in the early phases of starting a social venture, involving people with knowhow in this area will help to lay a strong basis from which the enterprise can grow further in the future. Even when the initiator does not have these required skills, he or she should attempt to reach out to people who do have, as is illustrated in a case of Sharir & Lerner (2006). One of the entrepreneurs did not have any experience in the field of entrepreneurship or management and therefore consulted her network to find somebody willing and suitable to help for a certain period of time. In similar vein, having *the right people on the right place* helps the venture to make use of the skills of each individual. The composition and functioning of a venture’s team has been addressed elaborately in the literature (Bloom & Smith, 2010; Sharir & Lerner, 2006; Van der Horst, 2008). If the labour needs of a venture are effectively filled, meaning on each internal position (i.e. president, financial, communications, etc.) an appropriate candidate, the social venture can run smoothly (Sharir & Lerner, 2006). In the beginning it might not be feasible to have each position covered, which is not per se bad. It is mentioned that allowing for some flexibility in terms of responsibilities can even be beneficial. However, once the venture starts expanding, it is important that every person knows what its tasks are and carries them out as is required. Another strategy to fulfil the labour needs, is to internally develop human capital (Bloom & Smith, 2010), meaning that the staff gets extra training so that they can also carry out different tasks. If the venture is too depended on one individual for certain duties, this can affect the venture in a negative manner (Van der Horst, 2008). Finally, recruiting *paid staff members* can help the venture find appropriate people with the required expertise (Sharir & Lerner, 2006). It might not be seen as an investment in the social goal the venture attempts to reach, but on the long term investing in this human capital of the company can have great benefits. Finding a balance between payed employees and volunteers is the key message for starting social entrepreneurs.

### Intrinsic motivation

The intrinsic values are paramount to the survival and success for any type of business and also social enterprises. Especially the *motivation of the members* to work on a specific problem, not for their own financial gain, but to contribute to society and attempt to solve the issue at hand. The belief of the entrepreneur that the venture will succeed in its mission, is key and marks the distinction between successful and unsuccessful enterprises (Sharir & Lerner, 2006). Jolly et al (2012) add that this determination should be evident throughout the whole existence of the venture despite the fact that business is going well or not. Next to the individual motivation of the member to participate, the *dedication of the board* steers the venture. If the founder and staff all have the motivation to make their venture a success, they will encourage other people or institutions to take on some efforts too, which could set in motion a positive spill-over effect (Bloom & Smith, 2010). Essential to the founding and success of any venture are the boards with “vision, drive and perseverance” (Sharir & Lerner, 2006, p. 7). Within all the cases of both Sharir & Lerner (2006) and Jolly et al. (2012) the difference between the ventures that were able to become larger was the dedicated and visionary board members that put their energy to achieve the goal of the enterprise.

### External context

Within the category of external conditions, in the SE literature some attention was dedicated towards the *positive view in the community*, concerning the ideas the venture attempts to implement (Dees et al., 2004; Sharir & Lerner, 2006). The acceptance of the venture within public discourse can be of great importance to scale. Especially when an enterprise establishes itself in a region where the initiator is not from, this condition is very important (Sharir & Lerner, 2006). In any case, it is of relevance for the entrepreneur to know what the social values are within a community and broadcasting a message about the added value of the venture that to some extent aligns. In the words of Sharir & Lerner (2006, p. 13) “the value attributed to the activity of the venture within the framework of prevailing cultural and social norms is also likely to determine the chances of it being accepted”. Dees (2004) also refers to the receptivity of the innovation in targeted communities that needs to be positive.

### Political support

Having *local political support* for the venture’s new ideas would make their implementation more efficient. By having the support of the local parties in the area, the social entrepreneur has political capital (Bloom & Smith, 2010). This local political support or political capital entails that the venture succeeds in gaining the support of decision-makers in different governmental institutions. It is suggested that by participating actively in attempting to link civil society with the political system, local political support can be gained for the cause of the social venture (Bloom & Smith, 2010). *Lobbying* is

an important activity that can lead to convincing politicians of the entrepreneur's cause. In order to lobby the local politicians, the entrepreneurs must build a relationship with them, but more importantly, be convincing that the venture is aiming to solve a serious broader social problem (Bloom & Smith, 2010).

### Learning

In Dees et al. (2004), brief attention is dedicated to *understanding the risk of upscaling* as a relevant condition. The researchers stress that the social entrepreneur needs to be aware of the risk that any upscaling effort might bring to the venture itself but also to wider society. If their efforts fail to scale-up, this can have detrimental consequences for the venture, but might also leave a negative impact in society. Before undertaking efforts to scale-up, the entrepreneurs should be aware of how to do this as best as possible but also think about the actions to undertake when the upscaling does not go as planned (Dees et al., 2004).

### Network

*Communicating key stakeholders* can be an important aspect to build a network (Bloom & Smith, 2010). Key stakeholders are seen as individuals that have the power in their hands to change current practices. For example, the mayor could be seen as a key stakeholder within the local government or the director of a fund that stimulates social ventures by making available resources.

## 2.5. The conceptual framework

In the previous sections, all the conditions for each separate body of literature have been identified. This has made it possible to find an answer for sub-questions 1.1. to 1.3.. However, to be able to proceed with this study, a conceptual framework needs to be created. On the one hand, this framework is necessary as some conditions were mentioned in separate bodies of literature but were similar. For instance, the SNM theory mentions having a vision is an important factor, while the GI and SE look at intrinsic motivations. On the other hand, some conditions have been mentioned in all three sources, such as having a network. This merging of conditions for the three literature bodies resulted in a conceptual framework with 29 upscaling conditions (Figure 5). To keep in line with the categorisations made previously, the framework has the same categories but, as mentioned, some conditions that were similar or mentioned multiple times, have been merged together. It is believed that this conceptual framework increases the understanding of what upscaling conditions exist.



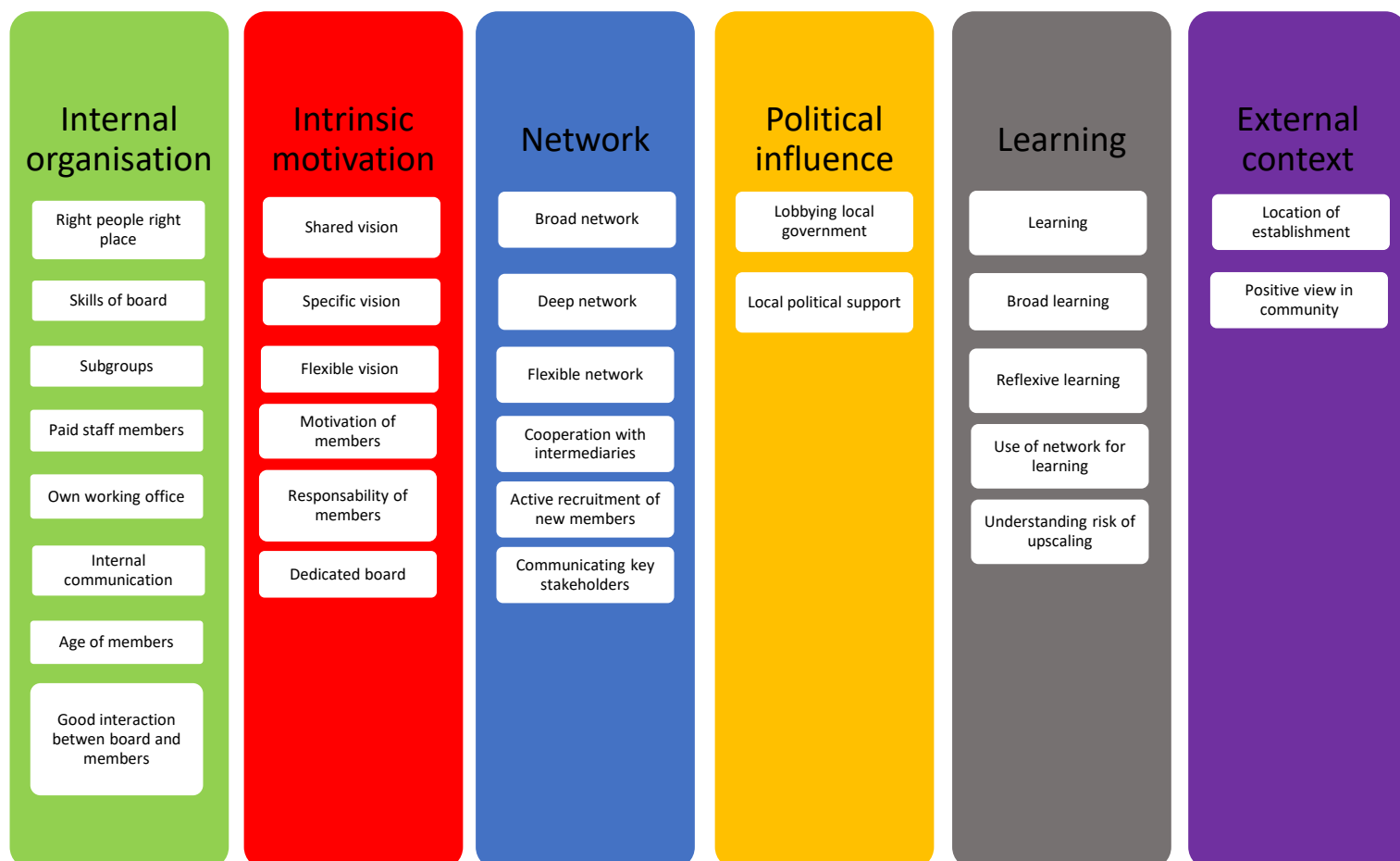


Figure 5: Conceptual framework

## 2.6. Conclusion

This chapter has reviewed the three literature sources in order to create a conceptual framework. The literature on strategic niche management, grassroots innovation and social entrepreneurship was considered appropriate for analysis because local renewable energy cooperatives can be related to all three of them. The cooperatives were niches in the sense that they provide a protective space for renewable energy technologies to mature and potentially offset the regime. LREC were also to an extent grassroots initiative because they are formed by citizens and there is a high degree of involvement with the locals in the area. The local renewable energy cooperatives were seen as a social entrepreneurship, as they attempt to solve a large environmental problem but at the same time generate income to achieve this. From these three literature sources, five academic articles have been analysed to retrieve which upscaling conditions were mentioned to be important. In all the streams of literature, upscaling conditions that were related to the intrinsic motivation (e.g. flexible vision), learning (e.g. reflexive learning) and networking (e.g. use of intermediaries) were found. In addition to these, the GI and SE articles added conditions about the internal organisation (e.g. skills of board), external context (e.g. view in community) and political support (e.g. lobbying local government). A

total of 29 upscaling conditions were clustered in six different categories as illustrated in the conceptual framework above (Figure 5). The conceptual framework provides the basis for the analysis of this research. Now that theoretical conditions for upscaling have been identified from the literature, it can be established which are more important in practice. This empirical analysis will be explained in the next chapter.

### 3. Methodology

#### 3.1. Introduction

As becomes apparent from the research framework and research questions, this thesis aimed to both build and consequently test theory. By approaching the thesis in this manner, it can be argued that a Grounded Theory (GT) methodology was employed which is defined as “developing theory that is grounded in data systematically gathered and analysed” (Strauss & Corbin, 1994, p. 273). On the one hand, some aspects of GT can be identified in this thesis such as the fact that there will be numerous instances of comparative analysis with the data that is gathered from the empirical study. However, on the other hand, the initial framework was constructed from the three literature sources which does not fit within the grounded theory methodology. If this thesis would have had to follow the GT methodology, the upscaling conditions and analytical framework had to be constructed by only analysing and comparing the data from the empirical studies. The reason why a full GT methodology was not applied in this thesis was because valuable information in the various literature sources could be found which has up until now not been analysed. Instead, for this explorative research, a mixed-method approach was chosen, which entails that both qualitative and quantitative research methods were carried out (Croswell & Plano Clark, 2007). For the qualitative research a multiple case study was performed while for the quantitative research a questionnaire was conducted. This mixed-methods approach was suitable for this research as the four cases and questionnaire were complementary to each other. The case study was designed to understand which upscaling conditions were most relevant for four mature and larger local renewable energy cooperatives (i.e. experienced cooperatives) in the Netherlands. For the questionnaire, a broader population of younger and smaller cooperatives (i.e. inexperienced cooperatives) was asked to express which upscaling conditions were most important for them. In this manner, the findings from the multiple case study and questionnaire could be compared to determine which conditions were more relevant. The multiple case study and questionnaire were conducted parallel to each other during the research for reasons of practicality.

The remaining of this methodological chapter will elaborate on how multiple case study and questionnaire have been carried out and analysed during the research. Given (2008) stresses the importance of explaining the methodology so that the reader can determine the appropriateness of the study conducted. Especially in the field of research that is related to environmental studies or sustainable development, it is important to make clear how results have been derived, from which kind of angle they are interpreted and to what extent the findings follow from the collected data (Bilotta et al., 2014). In this relative novel area of research it is important to state clearly what the underlying assumptions were that have guided the researcher to the conclusion drawn from the study.

When the methodology is clearly explained readers can add comments and in this way the scientific field of environmental studies will be improved by developing more robust models of analysis.

## 3.2. Methodology of multiple case study

### 3.2.1. Motivation for multiple case study

Case studies were defined by Thomas (2011, p. 513) as “analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides and analytical frame – an object – within which the study is conducted and which the case illuminates and explicates”. From this definition, it can be implied that case studies are especially useful for research that requires a deep understanding of a single or small number of cases that operate within their own context. By studying the case from close by, the researcher can gain new insights about particular phenomenon or behaviour (Yin, 2012). In this research, four different LREC have been chosen and therefore a multiple case study was performed. By using a multiple case study approach, a wide array of topics and conditions were investigated in each single case. The added value of a multiple case study was that the in-depth findings can be compared between the cases. Another reason why the case study approach has been chosen, was that it allows for diverse types of data collection methodologies that can be tailored to the specific study (Thomas, 2011). The data for this research was collected through interviews with people that have/had a position in the board of the selected LREC.

### 3.2.2. Case selection

HIER Opgewekt (2016) mentioned that a total of 313 energy cooperatives exist in the Netherlands. Out of these, 237 cooperatives have a broad mission to make their area more sustainable, 57 are project cooperatives that are established for the duration of one project and 19 are specialised wind cooperatives. The local renewable energy cooperatives chosen for this research have been specifically selected based on three broad criteria, namely their age, amount of renewable energy produced and number of members. These selection criteria have been developed as they make a distinction between LREC that have gone through some forms of upscaling over the years and other cases that are still in their initial starting-up phase.

The first criterion is the *age of the cooperatives*, as it was argued that the longer a LREC exists the more experiences it has encountered that can explain its long-term existence. An age of at least 25 years was determined to be appropriate for the existence of a LREC. Next, the *amount of renewable energy produced* was also important as upscaling of a LREC. It was determined that the cases should at least produce more than 5.000.000 kWh/year which corresponds to powering +/- 1500 households

(3300 kWh/year on average in 2016 for Dutch households (Milieucentraal, n.d.)). The third criterion specified the *number of members* of a cooperative should have. A minimum of 1000 members was considered to be necessary for a cooperative that has been successful in upscaling. Taking these three criteria into account, four local renewable energy cooperatives have been selected to be suitable for investigation, namely Deltawind, de Windvogel, Zeeuwind and Meerwind (Tables 5 to 8).

### Deltawind

Deltawind is located in the province of Zuid-Holland on the island Goeree-Overflakkee. The cooperative was founded in 1989 by a small group of islanders who wanted to harness the abundant amount of wind. Together with a local energy company they placed the first wind turbine on the island which was the start of the cooperative. People can become member by contributing with a loan of minimal 50€, on which they receive interest every year. In this manner Deltawind can collect funds for future investments in renewables. Over the years, Deltawind has extended its business portfolio from wind energy to also include solar energy. This has resulted in the successful installation of 2.900 solar panels on the island. Keeping connection with the local islanders and its environment is of paramount importance for the cooperative. As Deltawind installs all their wind turbines and solar panels on the island they need to maintain good relations with the local inhabitants. Therefore, people can only become a member if they have a rooted connection to the island (e.g. live there or have family) (Deltawind, n.d.). Over the years Deltawind has become one of the largest Dutch cooperatives in the country.

| <b>Deltawind key information</b>          |   |
|---|---|
| Founded                                   | 1989  |
| Location of establishment                 | Goeree-Overflakkee  |
| Ideology of Deltawind                     | “Provide a substantial contribution to the set goals of the Dutch government regarding the production of renewable energy and responsible consumption of energy” (Deltawind, 2017). |
| Number of members                         | +/- 2100 members  |
| Number of wind turbines                   | 50 wind turbines  |
| Total renewable energy production in 2016 | +/- 48.700.000 kWh  |
| People interviewed                        | Director<br>Policy officer  |

Table 5: Deltawind key information

### De Windvogel

The establishment of de Windvogel was inspired by the concerns expressed by the Club of Rome regarding the environment. A group of local citizens that were all concerned with the environment

decided to take action in their own hands and start different initiatives in their village of Reeuwijk. One of these initiatives was the production of renewable energy, for which they wanted to install a wind turbine. This first turbines was placed in the year 1993 after which 3 more turbines were placed scattered over the Netherlands. De Windvogel was a cooperative more focused on the whole of the Netherlands to broadcast the message of renewable energy. For this reason, de Windvogel sought more cooperation with other cooperatives in the 90s which resulted in the merging of these cooperatives with de Windvogel. Today, de Windvogel has one of the largest member base due to this cooperation and mergers. To become member of de Windvogel, people are asked to provide a loan for a minimum of 50€ for which they receive a yearly interest (De Windvogel, n.d.). Currently, de Windvogel is mostly engaged with find interesting projects to participate in rather than initiative a new project themselves. This is believed to be more in line with the current market situation in the Netherlands, as larger investments are required to build these projects.

| <b>De Windvogel key information</b>       |  |
|---|--|
| Founded                                   | 1991   |
| Location of establishment                 | Reeuwijk   |
| Ideology of de Windvogel                  | “De Windvogel is a cooperative of the citizens with the goal to promote the production of renewable energy in the Netherlands” (de Windvogel, 2017). |
| Number of members                         | +/- 3300 members   |
| Number of wind turbines                   | 4 wind turbines  |
| Total renewable energy production in 2016 | +/- 7.800.000 kWh  |
| People interviewed                        | Secretary<br>Founder   |

Table 6: De Windvogel key information

### Zeeuwind

Zeeuwind is located in Vlissingen, Zeeland, in the southern-west most province of the Netherlands. This province has multiple island and lies next to the sea which makes wind energy the most interesting source of renewable energy. In 1987 the cooperative installed its first turbine on the island and currently Zeeuwind has managed to build 36 more turbines. Zeeuwind was mostly focussed on producing wind energy because of its comparative advantage thanks to its location. However, now more solar projects are being investigated and carried out. The focus of Zeeuwind lies mostly on projects on the islands of Zeeland because the mission of the cooperative is to produce 33% of the energy demand through renewables (Zeeuwind, n.d.). This is an ambitious target, but Zeeuwind was involved in the establishment of one of the largest wind parks, namely *Windpark Krammer*. New

members need to pay a onetime fee after which they can make a loan available to the cooperative. Over the years Zeeuwind will reimburse a margin of their profit to all the members.

| <b>Zeeuwind key information</b>           |  |
|---|--|
| Founded                                   | 1987   |
| Location of establishment                 | Vlissingen   |
| Ideology of Zeeuwind                      | “The cooperative has as its goal to develop the usage of wind energy and other forms of sustainable energy production to contribute to a liveable world” (Zeeuwind, 2017). |
| Number of members                         | +/- 2100 members   |
| Number of wind turbines                   | 37 wind turbines   |
| Total renewable energy production in 2016 | +/- 97.475.000 kWh   |
| Person interviewed                        | Director   |

Table 7: Zeeuwind key information

### Meerwind

A group of 40 people were at the forefront of the establishment of Meerwind in 1989. They were united by the shared concern for the environmental which was becoming more important in those years. Located just under Amsterdam in Hoofddorp, Meerwind was able to realize their first wind turbine in 1993. Soon after the second turbine followed in 1997. Because of the location of Meerwind in the area op the airport of Schiphol, they had to be creative in finding new sights for the installation of their turbines. This made it challenging to get approval for their third turbine which was finally granted in 2013. Meerwind is also actively engaged in education programs by giving guest class in primary schools. This is an extra activity the cooperative wants to pursue as these pupils will be the future of tomorrow and need to be better educated concerning environmental issues in general they believe.

| <b>Meerwind key information</b>           |  |
|---|--|
| Founded                                   | 1989   |
| Location of establishment                 | Hoofddorp  |
| Ideology of Meerwind                      | “The cooperative has as its goal to stimulate the production of sustainable energy through the exploitation of one or more wind turbines and supply the produced energy to its members or third parties” (Meerwind, 2017). |
| Number of members                         | 1072   |
| Number of wind turbines                   | 3 wind turbines  |
| Total renewable energy production in 2016 | +/- 6.200.000 kWh  |
| Person interviewed                        | Chairman   |

Table 8: Meerwind key information

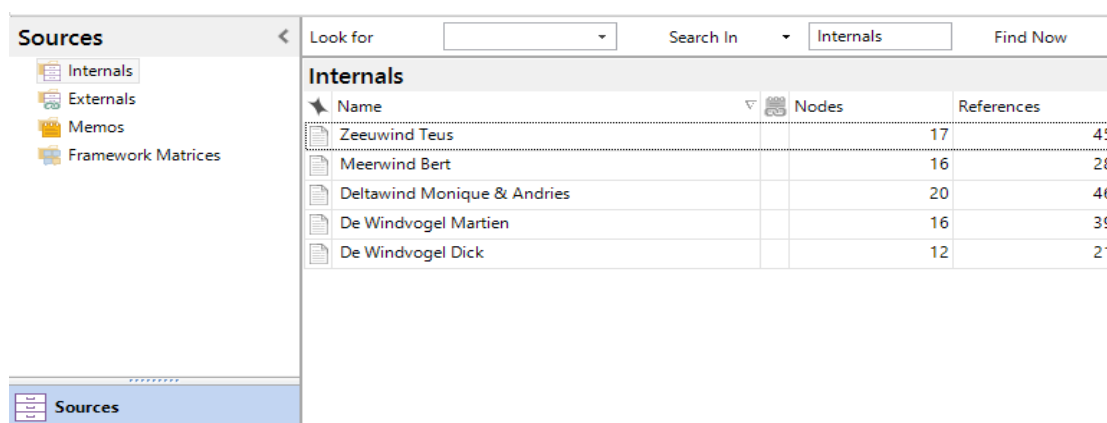
### 3.2.3. Protocol for multiple case study

The protocol for the multiple case study was created to reduce biases and improve the transparency by elaborating on how the different steps of the case study were executed (see Appendix 4). For the case study, three steps were followed that were established in the preparation phase of the thesis. These four steps were the contacting of interviewees, conducting of interviews and analysis of interviews.

First, *the contacting of interviewees* was done by emailing the four cooperatives that were determined appropriate cases for the research. The initial email with some basic information was sent to the mailing address of the cooperative with the question if the chairman wanted to participate in the research. The chairs were specifically asked for as they are the main responsible for decisions that need to be made concerning scaling up. All the cooperatives answered positively and wanted to participate in the study. In the case of de Windvogel, its chairman was too busy but suggested that the secretary could participate. To add to the information given by the secretary, it was decided to contact the founder of de Windvogel as he has been engaged in scaling-up practices of the cooperative. Moreover, Deltawind suggested to have a double interview with the chair and an experienced policy officer that could contribute valuable information. This resulted in having six people being interviewed in five interviews of four LREC. Before the interviews took place a second email was sent that gave more explanation on the purpose and structure of the interview. Also, the identified conditions from the literature study were printed out so that these could be presented and discussed during the interviews. Second, a plan was made *to conduct the interviews* to be well prepared and make sure that all the interviews would have roughly similar structures. All the interviews would start by giving a general introduction about the research that was being carried out. Following this introduction, the main aim of the interview was explained and the identified conditions from the literature were presented and laid down on the table. The interviewees got the instruction to read all of the conditions and to choose around ten conditions which were most important for their LREC. In the double interview with Deltawind both interviewees made this choice individually and only after were the personal preferences communicated. This allowed the interviewees the freedom of selection and created a distinction between important and less important conditions, as the aim of this research is to identify the most relevant upscaling conditions. Once the interviewees selected the conditions the main questions were orientated towards asking why those conditions were selected and how specifically those conditions were helpful in the scaling up of the LREC. When all the selected conditions were explained and clarified some brief attention was dedicated to elaborating on the conditions that were not picked. The third step in the protocol concerned the *analysis of the interviews*. To analyse the interviews, the recordings had to be written out by using the transcription software of oTranscribe. The transcriptions were imported to NVivo as this software was successfully



used for the literature review and considered appropriate for the analysis of the interviews (Figure 6). In NVivo nodes and sub-nodes were created that had a similar structure of the conceptual framework created. The nodes would be the categories and the sub-nodes would be the conditions for upscaling that were assigned within the categories (Figure 7). All the transcripts were read and the information that belonged to a certain sub-node (i.e. upscaling condition) was marked and placed in that sub-node. In Figure 8 an example is given of a piece of text from the interview with Meerwind that was identified to belong to the conditions or sub-nodes 'Understanding the risk of upscaling' and 'Internal communication'. This process can be seen as a form of structured coding as the categories with sub-nodes were already created before the analysis (Campbell, Quincy, Osserman, & Pedersen, 2013). The reason to do this was to adhere to the conceptual framework that was established from the literature and determine which of these conditions were mostly discussed during the interviews. In order to identify the most important conditions the amount of times each conditions was chosen by the interviewees was counted. This gave an indication based on counting which condition was chosen most often and seen as more relevant. Tables were created to represent these numbers. Moreover, for each category a mean count was calculated by summing the counts for each condition and dividing them by the amount of conditions that were classified in the respective category. This made it possible to see how relevant on average the upscaling category were and compare the upscaling categories among each other. As was mentioned, to complement the cases a questionnaire was conducted to have more results from a broader population sample of which the methodology is explained next.



The screenshot shows the NVivo interface with a search results table. The table is titled 'Internals' and has columns for 'Name', 'Nodes', and 'References'. The data is as follows:

| Name                        | Nodes | References |
|-----------------------------|-------|------------|
| Zeeuwind Teus               | 17    | 45         |
| Meerwind Bert               | 16    | 28         |
| Deltawind Monique & Andries | 20    | 46         |
| De Windvogel Martien        | 16    | 39         |
| De Windvogel Dick           | 12    | 21         |

Figure 6: Transcripts in NVivo

| Name                                 | Sources | References | Created On       | Created By | Modified On      |
|--------------------------------------|---------|------------|------------------|------------|------------------|
| A. Internal organisation             | 0       | 0          | 09/08/2017 16:02 | S          | 09/08/2017 16:02 |
| B. Intrinsic values                  | 0       | 0          | 09/08/2017 16:02 | S          | 09/08/2017 16:02 |
| Dedicated board                      | 3       | 3          | 09/08/2017 19:54 | S          | 12/08/2017 21:01 |
| Flexible vision                      | 5       | 18         | 09/08/2017 19:54 | S          | 23/08/2017 10:57 |
| Motivation of members                | 4       | 5          | 09/08/2017 19:54 | S          | 07/09/2017 10:59 |
| Responsibility of members            | 1       | 2          | 09/08/2017 19:54 | S          | 12/08/2017 16:53 |
| Shared vision                        | 4       | 7          | 09/08/2017 19:53 | S          | 12/08/2017 20:38 |
| Specific vision                      | 3       | 8          | 09/08/2017 19:53 | S          | 12/08/2017 18:01 |
| C. Network                           | 0       | 0          | 09/08/2017 16:03 | S          | 09/08/2017 16:03 |
| Active recruitment of new members    | 2       | 4          | 09/08/2017 19:55 | S          | 22/08/2017 16:22 |
| Broad network                        | 3       | 7          | 09/08/2017 19:54 | S          | 12/08/2017 21:09 |
| Communicating key external stakehold | 4       | 11         | 09/08/2017 19:56 | S          | 12/08/2017 21:08 |
| Cooperation with intermediaries      | 2       | 2          | 09/08/2017 19:55 | S          | 12/08/2017 21:09 |
| Deep network                         | 4       | 12         | 09/08/2017 19:55 | S          | 24/08/2017 12:48 |
| Flexible network                     | 0       | 0          | 09/08/2017 19:55 | S          | 09/08/2017 19:55 |
| D. Political support                 | 0       | 0          | 09/08/2017 16:03 | S          | 09/08/2017 16:03 |
| E. Learning                          | 0       | 0          | 09/08/2017 16:03 | S          | 09/08/2017 16:03 |
| F. External                          | 0       | 0          | 09/08/2017 16:03 | S          | 09/08/2017 16:03 |
| Other information                    | 3       | 6          | 09/08/2017 19:59 | S          | 12/08/2017 20:04 |

Figure 8: Categorisation of upscaling conditions in NVivo

Figure 7: Example of coding in NVivo

### 3.3. Methodology for questionnaire

#### 3.3.1. Motivation for questionnaire

Questionnaires are a widely accepted method of data collection in the social science. With a well-designed survey researchers can obtain a vast amount of data from numerous amounts of subjects. In contrast to case studies, surveys allow for the analysis of quantitative data. One of the main motivations to conduct a survey for this research was to have a complement to the qualitative data

from the multiple case study. Moreover, by conducting a survey a broader picture of the scaling up process among the population of local renewable energy cooperatives could be obtained. While the case study was specifically focused on mature and larger wind cooperatives, the questionnaire was more orientated toward the inexperienced LREC. To illustrate, the average age of the four cases was 28 years old while for the cooperatives that answered the survey their mean age was seven years old. It needs to be noted that Noordenwind is a cooperative that participated in the survey that was established already in 1986. They were not contacted for the multiple case study as they only have 450 members and therefore asked to fill-out the survey instead. It was believed that a comparison could be made between the results from the multiple case study and questionnaire to identify the most important upscaling conditions.

### 3.3.2. Population selection

The total population of local renewable energy cooperatives in Netherlands was estimated by HIER Opgewekt (2017) to be around 313. In an attempt to reach all of the LREC with the questionnaire, HIER Opgewekt was contacted to distribute the survey to all the cooperatives in their database. However, this was not possible thus the email addresses had to be found manually. Because of the cumbersome task to retrieve all the contacts, five random cooperatives were chosen from 10 of the 12 Dutch provinces. Cooperatives from Zeeland and Flevoland were not included in this list as there were respectively two and four LREC established in these two provinces. A total of 50 LREC were contacted by email in the months of June, July and August (Appendix 3). From these 50, 15 respondents filled out the questionnaire (Table 9).

| Name cooperative               | Province      | Year established |
|--------------------------------|---------------|------------------|
| Noordenwind                    | Friesland     | 1986             |
| Amelander energie coöperatie   | Friesland     | 2009             |
| GrienEko                       | Friesland     | 2015             |
| Coöperatie Bommelerwaard       | Gelderland    | 2016             |
| Windpark Nijmegen-Betuwe       | Gelderland    | 2013             |
| Grunneger Power                | Groningen     | 2009             |
| Energiecoöperatie Zonedorpen   | Groningen     | 2015             |
| Zuidenwind                     | Limburg       | 2011             |
| Energiek Moerdijk              | Noord-Brabant | 2013             |
| Duurzaam Drimmelen             | Noord-Brabant | 2014             |
| Amsterdam Energie              | Noord-Holland | 2011             |
| Heiloo Energie                 | Noord-Holland | 2012             |
| EigenWijkse Energie Coöperatie | Utrecht       | 2013             |
| Energie-U                      | Utrecht       | 2010             |
| Coöperatie E-Lekstroom         | Utrecht       | 2014             |

Table 9: Overview of respondents questionnaire

### 3.3.3. Protocol for questionnaire

The protocol that was developed for the questionnaire focused on the design of the questionnaire and analysis of the results obtained. The more elaborate protocol can be found in Appendix 4, here a brief explanation is provided.

First, the *design of the questionnaire* had to be made in such a way that it would attain to the goal of this research, namely retrieve the most important conditions for upscaling. Moreover, the design had to be to some extent in similar vein to the way in which the interviews were conducted to allow for comparison between the two analytical methods. Taking these two requirements into account it was decided to create a questionnaire that allowed the respondents to choose and rank the ten most important conditions from the conceptual framework (Appendix 5). Different survey programs were tried but Freeonlinesurvey was chosen as this program made it possible to rank the conditions easily. The software randomly ordered the condition each time a respondent filled-out the survey which was considered as a benefit as well. To have a better understanding of the top 10 ranking, five text boxes were included that asked the respondents to elaborate on their first five choices. In this manner more explanation could be given and the questionnaire would be more alike the interviews. After the survey was sent out, the *results could be analysed*. For the analysis SPSS and Excel were used as these are established programs that make it possible to perform different kind of statistical test. As only 15 out of 313 cooperatives filled out the questionnaire, by definition no statistical significant test could be performed in SPSS. However, descriptive analysis could be made which made it possible to retrieve the most important conditions according to the survey respondents. Similar to the multiple case study, the amount of times a particular condition was chosen was counted to identify the most important conditions. Also, the average score of the categories was calculated by adding the count of each condition and dividing it by the total amount of conditions in a category. This analysis was specifically carried out to retrieve the most important conditions for upscaling which would answer sub-question 1.5.. Chapter 4 will proceed with the identification of the most important upscaling conditions from the multiple case study and questionnaire.

## 4. Multiple case study results

### 4.1. Upscaling conditions from the four cases

As was explained in the methodology, four LREC have been approached to participate in this case study. Figures 9 and 10 give a brief overview concerning the importance of the upscaling categories and upscaling conditions. In order to answer sub-question 1.4., the results will be presented by first elaborating on the category with the highest average count, followed by the categories with lower averages. Before elaborating upon all the conditions from a particular category a summarizing table is presented that shows which conditions have been chosen by which interviewee, marked by a tick in the table ( ✓ ).

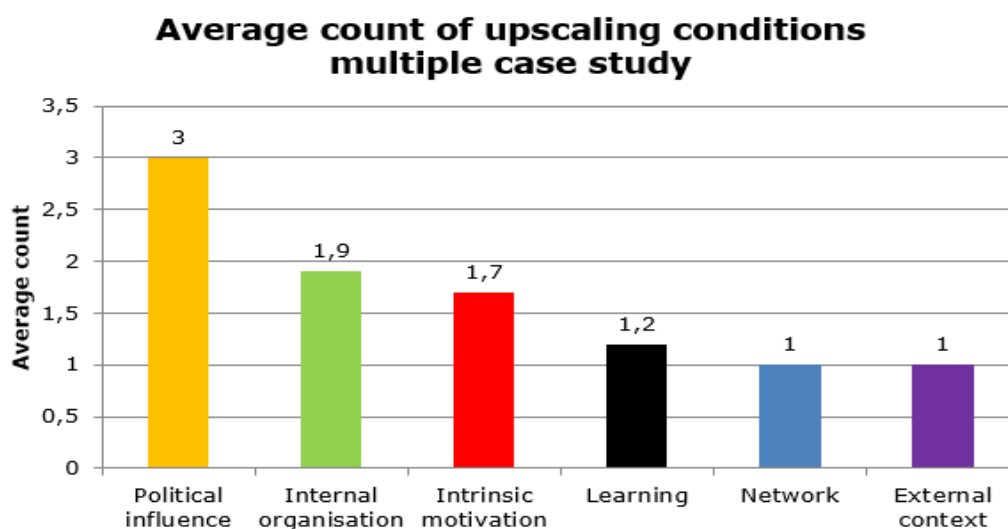


Figure 9: Average count of upscaling conditions multiple case study

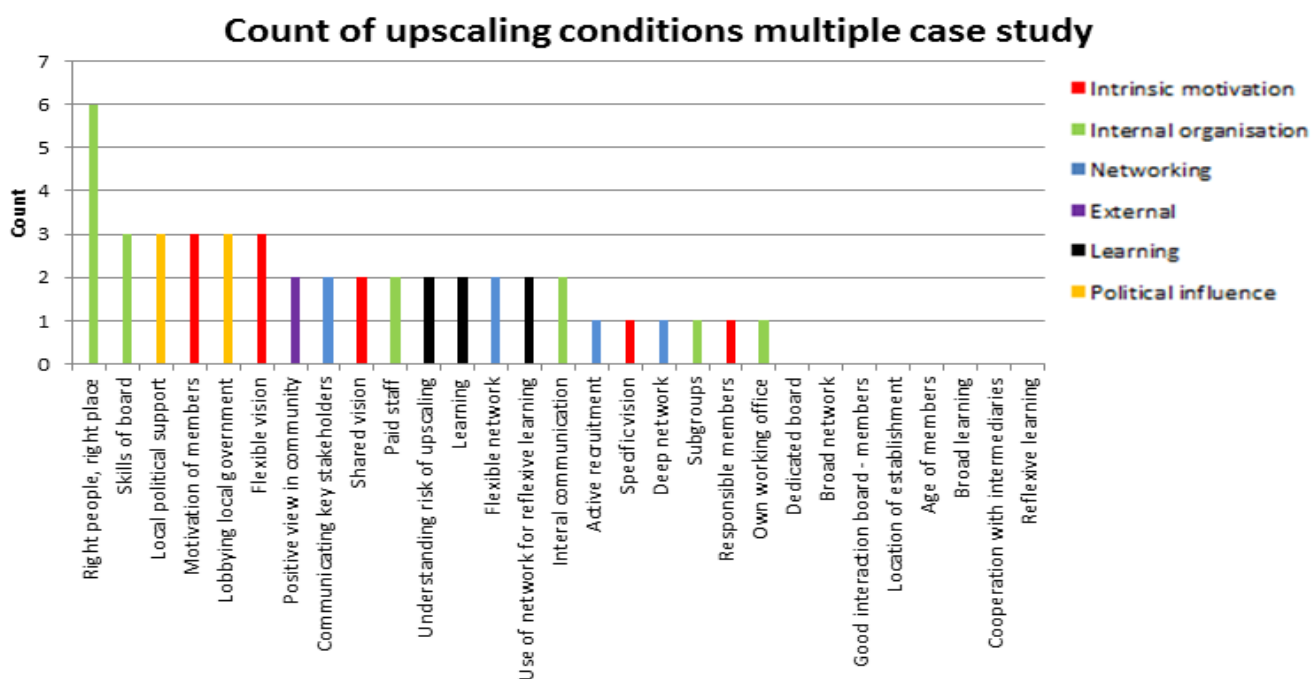


Figure 10: Count upscaling conditions multiple case study

Political influence

Both the conditions that are part of the political influence category have been selected by three interviewees (Table 10). This first category had an average count of three which means that the two conditions in this category have been chosen on average three times.

| Category            | Upscaling conditions      | Deltawind |            | de Windvogel |            | Zeeuwind  | Meerwind   | Count    |
|---------------------|---------------------------|-----------|------------|--------------|------------|-----------|------------|----------|
|                     |                           | Subject I | Subject II | Subject III  | Subject IV | Subject V | Subject VI |          |
| Political influence | Lobbying local government | ✓         | ✓          | ✓            |            |           |            | 3        |
|                     | Local political support   | ✓         |            | ✓            |            |           | ✓          | 3        |
|                     | <b>Average count</b>      |           |            |              |            |           |            | <b>3</b> |

Table 10: Count of upscaling conditions in political influence from multiple case study

*Lobbying the local government* was seen as a crucial part of successful upscaling that can be done by showing that the LREC is attempting to solve wider social problems (Bloom & Smith, 2010). For de Windvogel a lobbying opportunity arose with the new climate and energy acts that were agreed upon in the Paris Agreement of 2015. The cooperative made use of the goals stated for the Netherlands to demonstrate that their efforts in the production of renewable energy can bring the government closer to its ambitions (Interview II, 2017). As de Windvogel operated on a national level, it was more difficult to focus the lobbying efforts on certain municipalities or provinces. But they still actively attempted to lobby politicians in the areas where new projects were started by inviting them to come to meetings and discuss the plans with local citizens. In the case of Deltawind, they wanted to have a direct link with local politics to show them how their efforts would develop the region. Therefore, in the initial years they only recruited people that were affiliated with the local government as their chair such as a mayor or deputy. This worked successfully until people started being more critical about their success and direct involvement in the local political arena. Deltawind decided that after 10 years of having this intense lobbying, the chair should be someone outside of politics (Interview I, 2017).

Lobbying enhances the *local political support* LREC seek for. Local political support entails that the broader political bodies (parties, municipalities or councils) support the activities the LREC undertake (Bloom & Smith, 2010). It takes time and trust to achieve the local political support the LREC need to realise projects. However, Deltawind mentioned that by framing the cooperative as a “club of good and hard-working people” politicians were more inclined to support the activities of the cooperative (Interview I, 2017). De Windvogel added that it was often the local government that

needed to be convinced the most as “they decide if the project can be realised or not” so gaining local political support was very important (Interview III, 2017).

### Internal organisation

Within the internal organisation category, six of the eight conditions have been mentioned by the interviewees to be relevant for the success of their LREC (Table 11). This second category has an average count of 1,9.

| Category                     | Upscaling conditions                       | Deltawind |            | de Windvogel |            | Zeeuwind  | Meerwind   | Count      |
|------------------------------|--|-----------|------------|--------------|------------|-----------|------------|------------|
|                              |  | Subject I | Subject II | Subject III  | Subject IV | Subject V | Subject VI |            |
| <b>Internal organisation</b> | Right people, right place                  | ✓         | ✓          | ✓            | ✓          | ✓         | ✓          | 6          |
|                              | Skills of board                            |           | ✓          | ✓            |            |           | ✓          | 3          |
|                              | Paid staff members                         |           | ✓          |              |            | ✓         |            | 2          |
|                              | Internal communication                     |           |            |              |            | ✓         | ✓          | 2          |
|                              | Subgroups                                  |           |            |              |            |           | ✓          | 1          |
|                              | Own working office                         |           | ✓          |              |            |           |            | 1          |
|                              | Age of members                             |           |            |              |            |           |            | 0          |
|                              | Good interaction between board and members |           |            |              |            |           |            | 0          |
|                              | <b>Average count</b>                       |           |            |              |            |           |            | <b>1,9</b> |

Table 11: Count of upscaling conditions in internal organisation from multiple case study

Having the *right people on the right place* was the only condition selected in all the interviews. In the literature it was established that this meant having the most essential positions of the board covered by people who have an appropriate background in that area (Bloom & Smith, 2010; Sharir & Lerner, 2006; Van der Horst, 2008). The main functions that each LREC had to take into account were chairman, treasurer, engineer and secretary (Interview I, 2017; Interview II, 2017; Interview III, 2017; Interview IV, 2017; Interview V, 2017). Especially in the starting-up phase, when the board is mostly made up of volunteers this clear division of tasks allowed for each individual to focus on their own portfolio. In order to find the right people for these positions it was relevant to be quite specific in the recruitment of these individuals. For the main position of chairman, a person who is embedded in the

local political and/or social context can be a big asset to the LREC. In the case of Deltawind, the chairman was specifically recruited on having experience in the local political system. During the first 10 years of Deltawind's existence, the first two chairmen were an old major and alderman on the island of Goeree-Overflakkee (Interview I, 2017). For de Windvogel, the current chair did not have such great local political experience, but it was mentioned that he was recruited because of his capabilities to interact with locals in their environments (Interview III, 2017). A treasurer was mentioned as somebody that should have experience within the financial sector. In the LREC of de Windvogel, Zeeuwind and Meerwind treasurers were recruited who worked for banks and understood financial terms and calculations (Interview II, 2017; Interview IV, 2017; Interview V, 2017). Additionally for Meerwind, it was of importance that the treasurer already had experience in financially managing other smaller organisations such as a local football team (Interview V, 2017). The technician was an important person within the board as they possessed most of the expertise concerning the supervision of wind turbines. These were mostly people that have abundant knowledge and experience in this specific industry. Especially since the technical aspect of wind turbines got more and more complex over the years, finding a suitable technician was particularly relevant. While all the LREC have an engineer, Deltawind has even got two in their board to maintain an overview on how the wind turbines are performing (Interview I, 2017). The position of secretary should be also taken into account. The secretary administrates the member database, communicates with the members and is often the first point of contact for external parties. The four LREC mentioned that social media and public relations are more and more important and falls mostly within the responsibility of the secretary (Interview I, 2017; Interview II, 2017; Interview III, 2017; Interview IV, 2017; Interview V, 2017). The position of secretary was also only occupied when the LREC was further in its development. Deltawind took on a secretary after nearly 10 years, as before these tasks were small enough to allocate them among the other board members (Interview I, 2017).

Next to having most board vacancies covered with people that have appropriate backgrounds, it was also mentioned that the overall *skills of the board* had an influence on the success of LREC. The skills of the board were broadly explained in the literature as being the essential set of characteristics that will foster the success of LREC. In the analysed cases, these skills were formulated as having affinity with the renewable energy industry, local community interest and having a problem solving mindset (Interview I, 2017; Interview II, 2017; Interview V, 2017). Being a renewable energy cooperative, having an understanding of how the energy sector works was fundamental. The cooperatives operate within this specific sector so the board should have the necessary understanding on for instance, how renewable energy is produced, what parties are involved and how policy is made (Interview V, 2017). Next, knowing the local community was key for the cooperatives as these local people are their main subject of interest. The LREC try to produce renewable energy, but at the same



time, the locals need to be involved to achieve social support. For example, in the case of Deltawind, the interest in the local community was a relevant feature the board needs to possess. Deltawind only operates on the island of Goeree-Overflakkee and all their board members need to have some sort of relation of the island (Interview I, 2017). For de Windvogel, the local connection was also stressed but more in a sense that the members of the board should be familiar on how to talk and mobilise local citizens instead of focusing on the technical aspect of installing wind turbines (Interview II, 2017). This was because de Windvogel sees itself more as a national LREC in the sense that they do not want to be bound to any fixed area or region. Finally, the problem solving skill referred to the board being able to act rational and conclusively when problems arise. The board is in place to oversee the money of their members so this should be their main preoccupation when problems arise. De Windvogel stressed this point by noting that “at some point a lot of problems need to be solved in a LREC” so the importance of this skills should not be underestimated (Interview II, 2017).

Third, all four LREC started as voluntary organisations of which de Windvogel and Meerwind still are, but Deltawind and Zeeuwind agreed that by having *paid staff members* they made some great progress (Interview I, 2017; Interview IV, 2017). The two cooperatives made the decision to take on paid staff members mainly because the work that the board was doing voluntarily was consuming a lot of their time and became more complex. This was stressed by Deltawind that “after the completion of our first windfarm, this is no job for volunteers” (Interview I, 2017). After 5 to 10 years when Deltawind and Zeeuwind installed the first wind turbines and farms, they started making profitable returns. The profits could be used to buy and built more turbines but also to make the organisation more professional by hiring staff members. By having official employees, the LRECs had to change their organisational structure. This was done by having a division between a voluntary board of directors and paid executive board. The board of directors was mentioned to be mainly in charge of supervising the plans of the executive board and consisted of volunteers since this function did not require much time or effort (they would meet occasionally). The executive boards of Deltawind and Zeeuwind consisted of part-time and fulltime employees. For the former, currently there are 9 part-time employees and the latter consists of 5 fulltime staff members. The fact that the LREC hired staff members who have a responsibility towards the members and board of directors, has increased the effectiveness with which tasks are carried out. As was stated “because I get paid to think about [the future of Zeeuwind] I get taken more serious. The fact that I am seen as a professional works to push the cooperative forward” (Interview IV, 2017).

The fourth condition that was elaborated upon was the *internal communication* referring to communicating openly among the board but also with the rest of the members of the cooperative (Grabs et al., 2016; Seyfang & Longhurst, 2017). All the cooperatives must do this in a way as on general assemblies the members are consulted. In the cases of Zeeuwind and Meerwind open

communication was especially relevant for their development. In the interview with Zeeuwind it became clear that the dialogue with the members was actively sought. For instance, the LREC held questionnaires amongst all the registered members to have a better idea on why members joined, what their expectations were and how they saw the future of Zeeuwind. This allowed the board to better align their activities with the desires of the members. What emerged from the survey was that next to contributing financially, the members expressed the wish to contribute in a hands-on way. With this knowledge, Zeeuwind started recruiting internal members to help develop projects in the area. By giving the members an opportunity to put in effort for the cooperative, a stronger bond was created (Interview IV, 2017). For Meerwind open communication entailed elaborating very thoroughly with their members what the risks were of certain projects. Before the plans got presented at the general assembly, the whole board would first discuss which scenarios were possible, positive and negative. These forecasts were then clearly presented at the assembly, during which the members would vote on how the particular project would be carried out (Interview V, 2017).

The presence of *subgroups* was the fifth condition in the internal organisation category and was especially useful when members with different areas of expertise are grouped (Feola & Nunes, 2013). This condition was pointed out by Meerwind to be influential. Some 5 years ago, in a time period where Meerwind started to grow, there were only a few board members motivated to put in the necessary effort to make this happen. The chair realised that this would work counterproductive and decided to create subgroups within the board. In this manner pairs or trios would be formed that worked on certain elements to realise new projects (i.e. finance, permits or turbines). The reasoning behind creating subgroups was twofold. In a first instance the people in the subgroups would have mixed expertise so that they had a broader view on how to approach their tasks. The second reason was to give the subgroups more autonomy to make decision instead of always reporting within the whole board. According to the chair with the subgroups in place “the dynamics changed” within the board by seeing the results of their new working style (Interview V, 2017).

The condition of having an *own working office* for the LREC logically implied that they have an office available to work from and receive people, this enhanced the professionalism of the organisation further (Grabs et al., 2016; Ornetzeder & Rohracher, 2013). Both Zeeuwind and Deltawind had their own office, which seems logical as they have expanded largely in the last decades and benefit from such new infrastructure. However, only in the interview with Deltawind this condition was selected (Interview I, 2017). Since 2001 Deltawind has an office on their home island. The reason to move the working activities to an office were more pragmatic and functional. With the office, all the staff of Deltawind would be able to work from a centralised place and better facilities such as meeting rooms, desks and computers were provided for having a “working apparatus” (Interview I, 2017).

Finally, the *age of the members* was not specifically selected by any cooperative as an important upscaling condition (Feola & Nunes, 2013). In the literature it was noted that cooperatives with older members have more time. Indeed, the cooperatives that work with volunteers (i.e. de Windvogel and Meerwind) did acknowledge that their members are older. This was because they have spare time to spent on other activities such as helping their local renewable energy cooperative (Interview III, 2017; Interview V, 2017). Moreover, *good interaction between the board and members* was not selected by any other the cooperatives.

### Intrinsic motivation

The third category of intrinsic motivation comprises six upscaling conditions of which five have been determined relevant (Table 12). The average amount of time the conditions from the intrinsic motivation category were selected was 1,7.

| Category             | Upscaling conditions      | Deltawind |            | de Windvogel |            | Zeeuwind  | Meerwind   | Count      |
|----------------------|---------------------------|-----------|------------|--------------|------------|-----------|------------|------------|
|                      |                           | Subject I | Subject II | Subject III  | Subject IV | Subject V | Subject VI |            |
| Intrinsic motivation | Motivation of members     | ✓         |            |              | ✓          | ✓         |            | 3          |
|                      | Flexible vision           |           |            | ✓            |            | ✓         | ✓          | 3          |
|                      | Shared vision             |           |            |              | ✓          |           | ✓          | 2          |
|                      | Responsibility of members |           |            |              | ✓          |           |            | 1          |
|                      | Specific vision           |           |            |              |            | ✓         |            | 1          |
|                      | Dedicated board           |           |            |              |            |           |            | 0          |
|                      | <b>Average count</b>      |           |            |              |            |           |            | <b>1,7</b> |

Table 12: Count of upscaling conditions in intrinsic motivation from multiple case study

The *motivation of the members* was one of the most relevant condition in the intrinsic motivation category as it was chosen by three of the four LREC. In the literature it was mentioned that members who join should be inherently inspired to contribute to a greater goal, which in the case of LREC can be determined to be sustainable development (Feola & Nunes, 2013; Grabs et al., 2016; Seyfang & Haxeltine, 2012). What was mentioned in the three the cases of Deltawind, de Windvogel and Zeeuwind was that all the members joined because of their intrinsic motivation to change the Dutch energy system and make it more sustainable (Interview I, 2017; Interview III, 2017; Interview IV, 2017). As was indicated in the interview with de Windvogel “[the members] all wanted to

contribute in solving environmental issues” to which Zeeuwind added that “this intrinsic motivation is what made the group strong” (Interview II, 2017; Interview IV, 2017).

Second, the *flexible vision* was also chosen by three interviews and it was argued to be necessary for upscaling as the context within the cooperatives operate change (Ceschin, 2013). In the case of Zeeuwind, the flexible ideology was determined significant for their growth and even future survival of the cooperative. The chair stated that Zeeuwind has become more flexible in their vision as sustainability and renewable energy can be achieved through combining them with broader aspects of civil society. For example, investigations were carried out on how a small neighbourhood micro grid can be realized that is powered through wind and solar energy (Interview IV, 2017). The idea is that the people in the micro grid become more aware of their usage, manage the grid themselves and might live longer in their homes which is “something completely different than solely focusing on producing wind energy” (Interview IV, 2017). So instead of just being a cooperative that produces renewable energy, Zeeuwind wants to be engaged in multiple areas of society. A similar development can be seen in the case of Meerwind, who have been broadening their activities in teaching. They deemed it necessary that children should be better educated in order to solve the environmental issues that society is currently facing. In the words of the chair “the sustainable ideology needs to be transcended to the future generation” (Interview V, 2017). Therefore, he visited schools in the area to give presentations and have interactive classes with the young pupils.

Next, having a *shared vision* in an organisation gave the people involved a target and sense of purpose (Ceschin, 2013; Hamilton et al., 2014; Raven, 2012). What de Windvogel has done to create a shared vision was to state in their articles of association that the cooperative strives to achieve sustainable development through the production of local renewable energy (Interview III, 2017). It was argued that this ensures that members of de Windvogel pursue the same goal. For Meerwind, a similar statement was made in their articles of association to keep everybody working towards installing more wind turbines (Interview V, 2017).

As fourth and fifth condition, the *responsibility of the members* and having a *specific vision* were chosen only once by de Windvogel and Zeeuwind respectively. In terms of the responsibility of the members, de Windvogel mentioned that the members themselves are responsible to add to the goal of the cooperative. So they should take this responsibility into their own hands and act accordingly (Interview III, 2017). The specific vision has allowed Zeeuwind to focus all their energy and resources on building wind turbines. This resulted in numerous parks and profitable returns which is especially helpful when the LREC is in the initial phase. This gave them a comparative advantage and profits were made that could be invested in more turbines (Interview IV, 2017).

Finally, no one selected the condition *dedication of the board*. It can be argued that by already being in the board of a LREC, individuals are already dedicated to help the cooperative forward. In this sense the dedicated board condition can be regarded as a given for LREC.

### Learning

The learning category consists of five conditions of which three have been chosen twice and the other two have not been selected (Table 13). The learning condition amounted to a mean score of 1,2.

| Category | Upscaling conditions                  | Deltawind |            | de Windvogel |            | Zeeuwind  | Meerwind   | Count      |
|----------|---------------------------------------|-----------|------------|--------------|------------|-----------|------------|------------|
|          |                                       | Subject I | Subject II | Subject III  | Subject IV | Subject V | Subject VI |            |
| Learning | Learning                              |           |            | ✓            | ✓          |           |            | 2          |
|          | Use of network for reflexive learning | ✓         |            |              |            | ✓         |            | 2          |
|          | Understanding risk of upscaling       | ✓         |            |              |            |           | ✓          | 2          |
|          | Reflexive learning                    |           |            |              |            |           |            | 0          |
|          | Broad learning                        |           |            |              |            |           |            | 0          |
|          | <b>Average count</b>                  |           |            |              |            |           |            | <b>1,2</b> |

Table 13: Count of upscaling conditions in learning from multiple case study

The *learning* was explained in the literature as a form of bottom-up deliberation that can facilitate the improvement of certain process within the LREC (Feola & Nunes, 2013; Ornetzeder & Rohrer, 2013). Both interviewees from de Windvogel mentioned this as an important condition for upscaling. The learning entailed for them that over the years they learned to actively listen to the locals that were living in the area where a turbine could be placed. In the initial years, projects would not be carried out because of a lack of interaction and made it difficult to install wind turbines. But by learning from these mistakes, de Windvogel has a good understanding on how to approach local citizens and talk with them (Interview II, 2017).

*Using the network for reflexive learning* was seen as integrating outside actors to help the LREC reflect upon certain elements of its business (Hamilton et al., 2014; Schot & Geels, 2008). Both Zeeuwind and Deltawind have made use of their networks to determine what opportunities there were for them to become more successful. Zeeuwind has actively involved different partners to think about the future of the cooperative. People from universities, banks and local government were consulted to explore new pathways Zeeuwind could follow to have a higher impact. The involvement of the network for reflexive learning resulted in broadening the scope of Zeeuwind's mission as was

mentioned earlier for the flexible vision condition. In this way Zeeuwind has learned greatly from “organising its own resistance” meaning that they proactively sought the confrontation with outside actors (Interview IV, 2017). To illustrate, Zeeuwind asked a working commission of old Prime Minister Jan-Peter Balkenende to critically reflect on their plans and received valuable feedback. In the case of Deltawind, the network was not as actively involved but in more informal settings they would talk with partners. They mentioned that during events were local cooperatives were invited, an opportunity arose to think about the practices of Deltawind. The cooperative was also engaged in a workshop to determine what the feasible strategies could be for after 2020 (Interview I, 2017).

The third condition that was explained concerns the *understanding of the risk of upscaling*. This meant that the cooperatives need to be aware of the negative scenarios that can occur when upscaling efforts do not go as foreseen (Dees et al., 2004). Both Deltawind and Meerwind took this condition into account. The former argued that the risk of upscaling can be countered by having a good insight in how the financial resources flow within the cooperative. If there was a stable basis of income generated every year through existing projects, the cooperative could take a risk and invest in a larger project. Deltawind applied this strategy by first having a fixed income and only after investing in a large park (Interview I, 2017). Meerwind has a different approach as they created business models that took into account different risk scenarios. These were then presented during the general assembly so that all the members were informed about the risk different strategies that could occur during the building of new projects (Interview V, 2017).

The two final conditions of *reflexive learning* and *broad learning* were not selected by any of the cases in the interviews.

### Network

The fifth category of network contained six upscaling conditions of which four were selected to be relevant in the cases of the LREC (Table 14). The conditions of the networking category were chosen on average one time.

| Category       | Upscaling conditions                    | Deltawind |            | de Windvogel |            | Zeeuwind  | Meerwind   | Count |
|----------------|---|-----------|------------|--------------|------------|-----------|------------|-------|
|                |   | Subject I | Subject II | Subject III  | Subject IV | Subject V | Subject VI |       |
| <b>Network</b> | Flexible network                        |           |            |              | ✓          |           | ✓          | 2     |
|                | Communication key external stakeholders |           |            | ✓            | ✓          |           |            | 2     |
|                | Deep network                            |           |            |              |            |           | ✓          | 1     |

|  |                                   |  |   |  |  |  |  |          |
|--|-----------------------------------|--|---|--|--|--|--|----------|
|  | Active recruitment of new members |  | ✓ |  |  |  |  | 1        |
|  | Cooperation with intermediaries   |  |   |  |  |  |  | 0        |
|  | Broad network                     |  |   |  |  |  |  | 0        |
|  | <b>Average count</b>              |  |   |  |  |  |  | <b>1</b> |

Table 14: Count of upscaling conditions in network from multiple case study

A *flexible network* was explained in the theoretical chapter as having an open mind about which parties to cooperate with (Hamilton et al., 2014). For de Windvogel and Meerwind this has been an evident element in their success as they co-initiated the establishment of the organisation RESCoop, the European Federation for Renewable Energy Cooperatives (Interview II, 2017; Interview V, 2017). They worked closely together with a diverse range of partners to make RESCoop happen. A similar strategy the two cooperatives used to have a flexible network, was to diversify the range of stakeholders they cooperated and to always re-evaluate contracts (Interview II, 2017; Interview V, 2017). This often resulted in better deals as was illustrated by Meerwind when they negotiated a large loan with 0% interest and the bank would be accountable for the risk in case the project would not succeed.

The second condition, *communicating key external stakeholders* was mentioned twice by de Windvogel. Focussing more attention on key stakeholders was beneficial for the upscaling process as these people have the power in their hands to make things happen (Bloom & Smith, 2010). What was interesting about the explanation both interviewees gave, was that they mentioned that for them the key stakeholder were the citizens (Interview II, 2017; Interview III, 2017). The local citizens were seen as most important stakeholder because the LREC exists because of their trust in the cooperative business model. Another reason why the citizens were seen as most important stakeholder was because the renewable energy projects should have the support of the broader community. It was explained that a few of de Windvogel's projects could not be realised because of the lack in local support (Interview II, 2017).

The *deep network* condition is similar to communicating key external stakeholder but with the difference being that pre-existing relations were used to form these type of networks (Ceschin, 2013). Meerwind has been cooperating for a very long time with the green energy company Greenchoice. This has resulted in a very good business relationship between the two entities that allowed Meerwind to demand some specific requests to satisfy their wishes (Interview V, 2017).

*Actively recruiting new members* was a specific condition that Deltawind helped to scale-u. Having more members also brought in more financial resources and support for the LREC, so in the beginning of Deltawind, they were actively recruiting new members by going to markets, handing out

flyers and knocking on doors (Interview I, 2017). After doing this for a few years, Deltawind reached the limit of members they could provide with the renewable energy produced. Despite this limit, the recruitment always remained an important aspect as “it is a valuable manner to achieve support among the local people” (Interview I, 2017).

The last conditions, *cooperation with intermediaries* and *broad network* were not selected during the interviews. The most probable reason for this was that they are very much overlapping with some of the other conditions. For instance, cooperation with intermediaries is similar to having flexible network.

### External context

The external category only comprised two upscaling conditions of which only one was considered relevant by two LREC (Table 15). The conditions in the external category scored a mean of one.

| Category                | Upscaling conditions       | Deltawind |            | de Windvogel |            | Zeeuwind  | Meerwind   | Count    |
|-------------------------|----------------------------|-----------|------------|--------------|------------|-----------|------------|----------|
|                         |                            | Subject I | Subject II | Subject III  | Subject IV | Subject V | Subject VI |          |
| <b>External context</b> | Positive view in community |           |            | ✓            |            |           | ✓          | 2        |
|                         | Location of establishment  |           |            |              |            |           |            | 0        |
|                         | <b>Average count</b>       |           |            |              |            |           |            | <b>1</b> |

Table 15: Count of upscaling conditions in external context from multiple case study

For the LREC to succeed it was helpful if the *community has a positive view* about them, as this will facilitate their operations (Seyfang & Haxeltine, 2012). Meerwind was a case in which the positive view helped them scaling up their activities while for de Windvogel a negative view existed which made it challenging to proceed with the plans. In the interview with Meerwind, it was explained that they did only invest in projects related to wind energy. To gain the public support of the citizens they also attempted to financially contribute to other projects. This often resulted in positive publicity and made the cooperative more likeable among the community. For example, Meerwind opened a fund for everyone who wanted to realise something for the community. From this fund and appreciation among the locals “it was hoped that there is a spill over effect to wind energy” (Interview V, 2017). De Windvogel encountered how important a positive view is in a local setting as one of their planned projects encountered too much resistance to be realised. This could have been prevented by fostering discussion among the different parties earlier as they were not involved during the same stage of the project (Interview II, 2017).



## 4.2. Conclusion

For this multiple case study, four of the largest wind cooperatives in the Netherlands were interviewed. These cooperatives were chosen because of their long lasting presence in the Dutch energy market, their higher production of renewable energy and their large member base. To test the conceptual framework and distillate which conditions were more relevant for these cases to scale-up their activities, interviews were conducted with responsible people within the organisation that had experience with scaling up. During the interviews the interviewees were presented with the conceptual framework and asked to select the 10 most important upscaling conditions in their opinion. The results of their choices are illustrated in the tables above and three main conclusions can be drawn from the information provided.

The most important condition that emerged from the multiple case study and which provided an answer to sub-question 1.4. was the condition *right people on the right place*. The upscaling condition of having *the right people on the right place* was the most relevant condition for the cooperatives as it was highlighted by all the interviewees. This condition was retrieved from the social entrepreneurship literature and mentioned that within enterprises some crucial positions need to be covered with people that have the appropriate background to carry out their specific task. The roles of president, treasurer, engineer and secretary were stressed to be paramount for the functioning of a cooperative. Recruiting the appropriate people to carry out these functions created a better working environment which helped the cooperative grow. Also, the professionalisation of the cooperative was improved by having all the functions covered. An important element to have the right people on the right place was to look at previous experiences and capabilities that would fit with one of the functions. In this way some of the cooperatives employed people that in the past carried out similar tasks.

A second conclusion that can be drawn for the analysis of the case studies was that on average the category of political support is the most relevant. From all the six categories, the upscaling conditions from the political support category were chosen on average three times. The two conditions *lobbying local government* and *local political support* were both considered equally important for the upscaling of the cooperatives. It was mentioned that having and maintaining good relations with the local authorities can increase the chances of scaling up by finding local political support. The local governments were most often responsible for the decision-making in the case of renewable energy projects. Therefore, it was of crucial importance for the LREC to lobby and make clear how important their projects are for the broader society. This can be used to convince the governments as the LREC probably aid in achieving environmental goals set by the municipalities.

Third, both the categories of internal organisation and intrinsic motivation were on average determined as second and third important respectively. The former included the condition *right*

*people on right place* which was explained above, but also the *skills of the board*. The skills of the board were mostly related to having good insights in the renewable energy market and local community. These two skills were paramount for board members of LREC as they are the essence of the sector in which they work. For the intrinsic motivation, the *motivation of members* and *flexible vision* were essential. Having a motivation to change current practices in the energy sector and contributing to improving the environmental situation were the main reasons for members to participate in a LREC. This strong altruistic behaviour united the members to work hard together to achieve their ambitions. While the flexible vision was considered because of the changing environment in which LREC operate. Especially now a days, social, economic and technological changes are taking place fast to which the cooperatives need to be aware. Keeping an open vision allowed to be open for changes and adopt the strategy of the cooperative to better fit with the needs and wishes of the people.

It is also worth noting that a few conditions have not been selected at all by the respondent of which the *age of the members*, *interaction with intermediaries* and *location of establishment* will be briefly mentioned. The former condition, the age of the members, was considered irrelevant for the success of the cooperatives. It can be assumed that the age of members was irrelevant for being supportive of renewable energy. However, the people that are actively engaged within a cooperative tend to be of older age. They generally have more time available to invest in a voluntary job. The age of the members was probably not mentioned as it might be so inherent to the members of the cooperative that it was not a key success factor. The second condition which was not chosen a single time was the interaction with intermediaries. The four cases were already established within the energy sector and therefore might not need intermediaries anymore to help them. A possible reason why the location of establishment is not relevant for success could be that this condition was also inherent to the LREC. Once a group of people from a village or area united themselves they are more likely to establish a cooperative there instead of turning outwards.

Now that relevant insights have been gained from the multiple case study concerning the importance of certain upscaling conditions, analysing the results obtained from the questionnaire will make it possible to compare the findings and construct the revised framework.

## 5. Questionnaire results

### 5.1. Upscaling conditions from the questionnaire

The questionnaire was created to take into account the insights of the broader population of local renewable energy cooperatives in this research. In total 15 cooperatives were receptive to providing an answer. This means that of the overall population of 313, a share of 4,79% participated in the survey. Because of this small participation, descriptive analytical tests were performed. From the descriptive tests, the average count of the upscaling categories were calculated (Figure 11) and the amount of times each upscaling condition was selected (Figure 12). This allowed for comparison with the multiple case study results. As was mentioned in the methodology, the survey gave the opportunity for respondents to elaborate on their first five upscaling conditions. Because of this fact, not all the conditions are explained and the results will be presented slightly different from the multiple case study. In the next paragraphs, only the conditions that were accompanied by an explanation in the survey (i.e. that were in the top five) will be touched upon. An answer will be provided for sub-question 1.5. in this chapter. The results of the questionnaire are represented in a similar fashion as the multiple case study, by first describing the conditions within the category with the highest average rank, followed by the categories with lower averages.

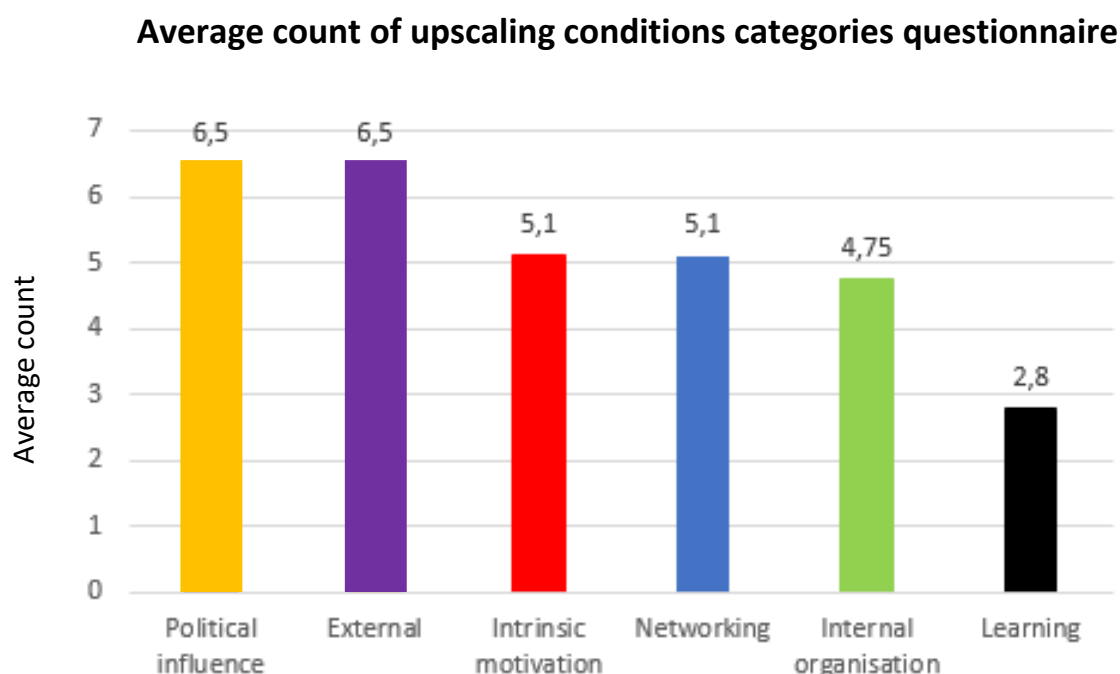


Figure 11: Average count upscaling conditions categories questionnaire

### Count of upscaling conditions questionnaire

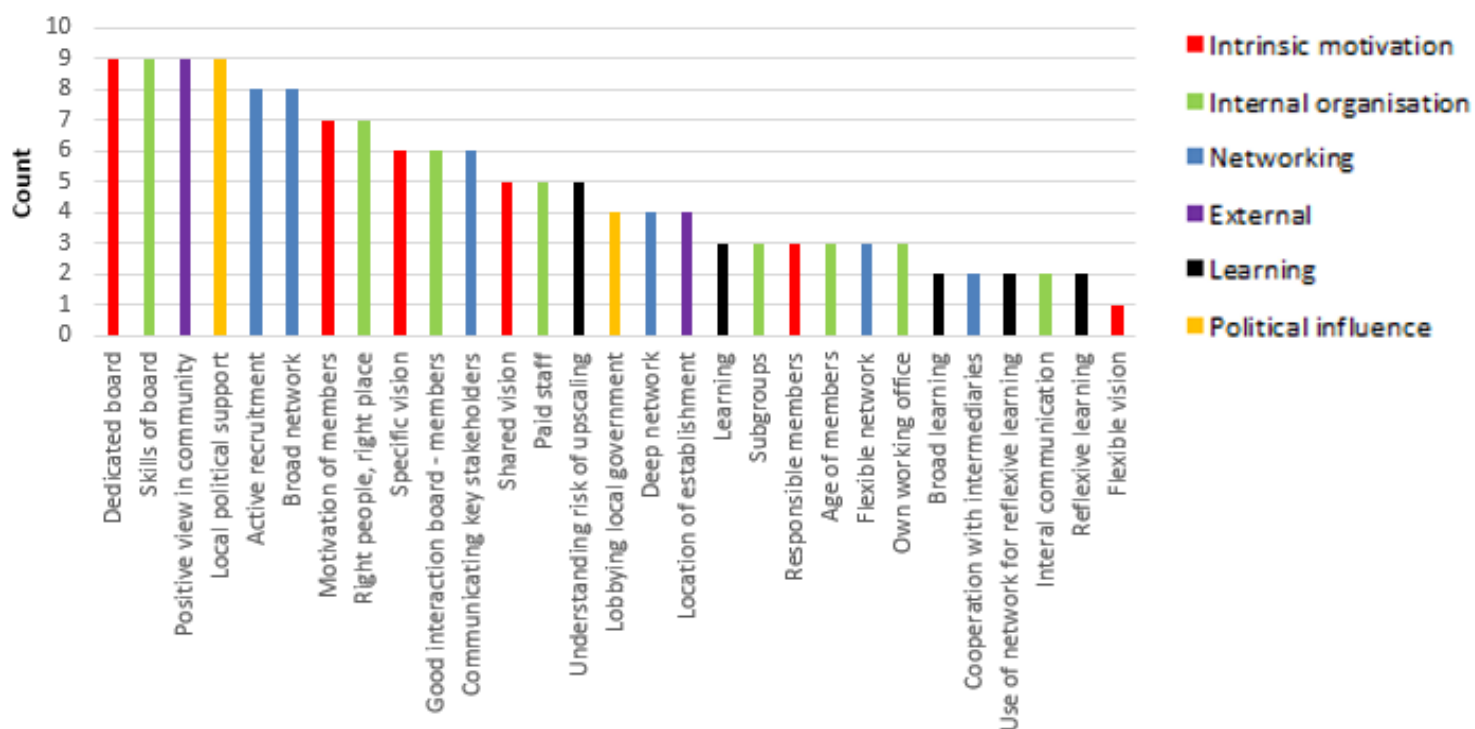


Figure 12: Count of upscaling conditions questionnaire

#### Political influence

The political influence category consisted of one condition that was mentioned in the top five. In general two conditions in the category had a mean count of 6,5 (Table 16).

| Category            | Upscaling conditions      | Count      |
|---------------------|---------------------------|------------|
| Political influence | Local political support   | 9          |
|                     | Lobbying local government | 4          |
|                     | <b>Average count</b>      | <b>6,5</b> |

Table 16: Count of upscaling conditions in political influence from questionnaire

The *local political support* was chosen nine times. This condition was stressed to be important for the realisation of new projects. To make them happen, local municipalities needed to be supportive of the project which can facilitate the process to a great extent. This could be financial support or more advise concerning the rules and regulations that needed to be followed. The renewable energy that was produced in a certain area can be even used by the governments as a local product to support the region for instance. In this manner the support went both ways, from the politicians to the cooperatives and vice versa.

External context

The second category of external conditions had a mean score of 6,5 for its two conditions (Table 17). Of these two conditions only one was explained further in the questionnaire.

| Category         | Upscaling conditions       | Count      |
|------------------|----------------------------|------------|
| External context | Positive view in community | 9          |
|                  | Location of establishment  | 4          |
|                  | <b>Average count</b>       | <b>6,5</b> |

Table 17: Count of upscaling conditions in external context from questionnaire

Having a *positive view in the community* was associated with trust and social support. It made it easier to find new members within the community but also to realise projects. The cooperatives needed to work together with the local people which was easier if they are already in favour of renewable energy.

Intrinsic motivation

From the survey it became clear that the intrinsic motivation category was relevant with an average count of 5,1 (Table 18). Four out of the six upscaling conditions were chosen and explained in the survey and will be touched upon next.

| Category             | Upscaling conditions  | Count      |
|----------------------|-----------------------|------------|
| Intrinsic motivation | Dedicated board       | 9          |
|                      | Motivation of members | 7          |
|                      | Specific vision       | 6          |
|                      | Shared vision         | 5          |
|                      | Responsible members   | 3          |
|                      | Flexible vision       | 1          |
|                      | <b>Average count</b>  | <b>5,1</b> |

Table 18: Count of upscaling conditions in intrinsic motivation from questionnaire

The *dedicated board* was chosen nine times as a relevant upscaling condition. Having a dedicated board was seen as a must to realise renewable energy projects. During this process numerous amounts of challenges will arise that can hamper the realisation of new projects but with a board in place that was dedicated enough, success could be achieved.

Second, the *motivation of the members* was selected by seven respondents. By having motivated members in the cooperative there was a bigger drive to achieve something together. It was mentioned that the board can experience extra stimulation to develop projects if they notice that the members are motivated about their plans. Also, these members can function as a great promoter because they talk positively about the LREC within their communities.

The upscaling condition *specific vision* was chosen six times. Being goal orientated and having a specific vision in mind guided the cooperatives forward. By being clear what the specific goal is of the cooperative everybody was able to align their efforts. For some cooperatives, the vision was very straight forward such as installing more solar panels but other cooperatives had a specific social vision they wanted to achieve such as making renewable energy affordable for everyone in society.

Finally, the *shared vision* condition was mentioned five times in the survey. Having a shared vision was what brought all the members of the cooperative together, creating a strong sense of unity. Most of them are part of the cooperative for the same reason, namely to combat climate change through the promotion of renewable energy.

### Network

In the network category three conditions have been classified in the top five. The mean count of the six conditions in this category is 5,1 (Table 19).

| Category       | Upscaling conditions              | Count      |
|----------------|-----------------------------------|------------|
| <b>Network</b> | Active recruitment of new members | 8          |
|                | Broad network                     | 8          |
|                | Communicating key stakeholder     | 6          |
|                | Deep network                      | 4          |
|                | Flexible network                  | 3          |
|                | Cooperation with intermediaries   | 2          |
|                | <b>Average count</b>              | <b>5,1</b> |

Table 19: Count of upscaling conditions in network from questionnaire

First, the *active recruitment of new members* was chosen eight times. Recruiting new members for the cooperative was an important factor as more members generate more financial resources that can be invested. The monetary gains was just one benefit of recruiting new members as they also provided a large basis for the cooperative to gain support from the broader community. Some cooperative mentioned that they have specific marketing projects organised to recruit new members.

The second upscaling condition in this category was having a *broad network*. This condition was chosen eight times too. The benefit of a broad network for the scaling up of a cooperative was mentioned to be that different types of people and organisations can be approached for help. It was explained that the board should be actively looking for new partners that can stimulate the growth of the cooperative even if these partners were not connected to the energy sector.

The final condition elaborated is the *communication with key stakeholders* mentioned six times. Stakeholders that were mentioned in the questionnaire to be of importance were the Duurzame Energie Unie, RESCoop NL and ODE Decentraal. These three stakeholders were mentioned

in the survey to have played an important role for LREC to gain information concerning different aspects of realising a project.

### Internal organisation

The category of internal organisation has a mean count of 4,75 (Table 20). Within this category, four out of the eight conditions were elaborated further by the respondents as they were among the top five conditions.

| Category              | Upscaling conditions             | Count       |
|-----------------------|----------------------------------|-------------|
| Internal organisation | Skills of board                  | 9           |
|                       | Right people, right place        | 7           |
|                       | Good interaction board – members | 6           |
|                       | Paid staff                       | 5           |
|                       | Subgroups                        | 3           |
|                       | Age of members                   | 3           |
|                       | Own working office               | 3           |
|                       | Internal communication           | 2           |
|                       | <b>Average count</b>             | <b>4,75</b> |

Table 20: Count of upscaling conditions in internal organisation from questionnaire

First, the *skills of the board* was the condition chosen most often by the respondents with a count of nine. In the questionnaire it was mentioned that the board should have appropriate skills to lead an organisation. This entailed for one respondent that the board should be always looking for new opportunities for the cooperative to grow and be a source of inspiration for other members to continue doing their job well.

The second condition of having the *right people on the right place* was chosen seven times. The argument put forward in some of the survey responses was that the board should be made up of people who have professional backgrounds that are also relevant for managing a LREC. An example that was given was finding individuals for the board that are experienced in project development or marketing. Because people are doing the job that they are most experienced in will allow for a good working environment within the board.

Third, the *communication between the board and the members* was chosen six times. The connection between the board and the members was on average. Providing the members with open and clear information gives them a better sense of involvement. Also feedback from the members to the board can be quickly taken into consideration and can be valuable for the growth process of the local renewable energy cooperative.

The last condition that was explained in the survey was having *paid staff*. This condition was selected five times. Having paid staff members instead of relying on volunteers made the cooperative more devoted to scale-up. People got paid to do a good job and thus there was some pressure to be successful. Also, relying on volunteers has its limitations as the tasks that are required to be a board member are often not determined to be of primary importance.

### Learning

The learning category scored a mean score of 2,8 which is the lowest score of all the six categories addressed (Table 21). One out of the five conditions has been deemed important enough by the respondents to provide some extra explanation.

| Category | Upscaling conditions               | Count      |
|----------|------------------------------------|------------|
| Learning | Understanding risk of upscaling    | 5          |
|          | Learning                           | 3          |
|          | Broad learning                     | 2          |
|          | Use network for reflexive learning | 2          |
|          | Reflexive learning                 | 2          |
|          | <b>Average count</b>               | <b>2,8</b> |

Table 21: Count of upscaling conditions in learning from questionnaire

*Understanding the risk of upscaling* was relevant with a count of five. The fact that a cooperative is owned by local people who have given their trust and financial resources to the board meant that risks needed to be seriously evaluated. Some cooperative mentioned that they attempted to find security by applying for grants which are free but these are only limited. Most of the cooperatives needed to make well considered scenarios and evaluate which strategy served the members best in the long term.

## 5.2. Conclusion

In addition to the multiple case study, the questionnaire was conducted among a broader sample of local renewable energy cooperatives in the Netherlands. The questionnaire was sent out to cooperatives that were younger and did not have as much experience in scaling up their activities. By allowing these cooperatives to select and explain the most important upscaling conditions a more encompassing view could be constructed in addition to the multiple case study. A total of 15 cooperative provided an answer to the questionnaire. After having explained the results in the previous section, the most important findings will be explained and an answer given to sub-question 1.5. about the most important upscaling conditions identified from the questionnaire.



From the questionnaire it became apparent that the respondents found four different upscaling conditions equally important. The conditions of *dedicated board*, *skills of board*, *positive view in community* and *local political support* were all chosen an equal amount of times in the survey. These four conditions also each belong to a different category so the survey respondents had a diverging idea about what the most important conditions were for upscaling. As most of the cooperative were still in the beginning of their existence, it can be imaged that they are experimenting with different scaling techniques. This could explain the spread in answers given on the question what the most important upscaling condition is. While for some having a dedicated board was relevant for their development, others were more positive about having a board with relevant skills to increase their success. Some cooperatives mentioned the importance of being well embedded in a local environment. As a cooperative needs the locals to be supportive of their ambition to install renewables, having a positive view in the community was relevant for them. Having local support can also be an meaningful condition for cooperatives who seek approval of their first projects. By looking at the count to determine the most important upscaling conditions, no decisive single condition can be identified to answer sub-question 1.5.. The four conditions explained above can be seen as most important for the inexperienced cooperatives to scale up.

In addition to the upscaling condition some conclusions can be derived from the average scores of the upscaling categories. The two categories of political influence and external context were on average the highest scoring conditions with both an average count of 6,5. For the inexperienced cooperatives, these conditions can be of relevance for their upscaling. By turning to local politicians for support, projects were more likely to get approved by the municipality. The cooperatives attempted to use their projects as promotion for the region which suits the local institutions to create a positive image. Also, being well-embedded in the local community can facilitate the process of growth for starting cooperatives. Having locals in the area that have a positive view towards the initiative and support the cause of installing renewable energy can only help the cooperatives to become successful.

## 6. Comparing the multiple case study and questionnaire

Now that the results have been derived from the data of the multiple case study and questionnaire, a comparison can be made between them to answer sub-question 1.6.. From this comparison, the revised framework for upscaling is developed, specifically tailored for local renewable energy cooperatives in the Netherlands (Figure 13).

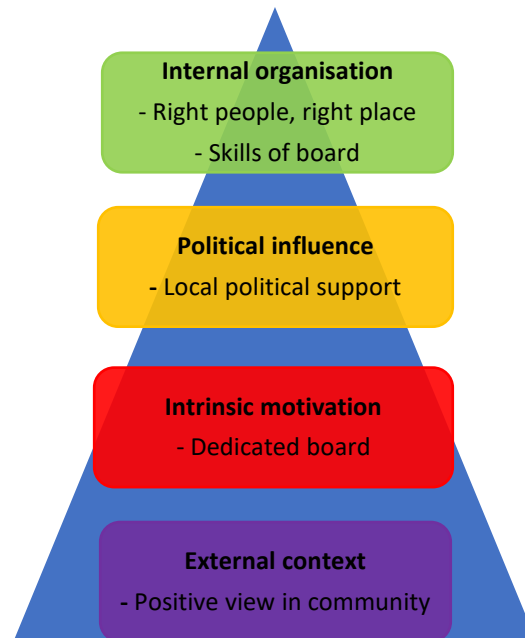


Figure 13: Revised framework for upscaling LREC

By looking at the results of the multiple case study and questionnaire, it can be stated that the results are not fully congruent or supportive of each other when looking at the individual upscaling conditions. In the case study, the condition *right people on right place* was selected by all the six cases and determined most important to have within a LREC. From the questionnaire, four conditions were seen as equally important by the respondents, namely the *skills of the board*, *dedicated board*, *positive view in community* and *local political support*. This divergence between the multiple case study and questionnaire might be explained by the difference in age of the respective cooperatives. As the experienced cooperatives had a clearer idea about what conditions have helped them to scale-up. The younger cooperatives are still searching and experimenting with multiple conditions to determine which ones are more applicable in their situation. However, when looking at the categories of upscaling more congruence can be seen between the results. In both the case study and survey, the political influence category scored the highest average count. This category was thus relevant for cooperatives that just started installing renewable energy project but also for the established cooperatives it remained an important condition to grow. As local politicians are the decision makers

within their jurisdiction, cooperatives needed their approval for a new project. This remained the same for experienced and inexperienced cooperatives.

From this comparison the revised framework was created as illustrated above. The two conditions *right people on the right place* and *skills of the board* were placed at the top because these are the only conditions that belong to the same category. Having, the *right people on the right place* was chosen by all the interviewees from the four cases while the *skills of the board* was selected nine times in the questionnaire. Moreover, the political influence category encompassing the *local political support* was placed second with a count of nine because the category as a whole had the highest average count in the case study and questionnaire. It became evident that local political support was needed regardless of the age of the cooperative. In the lower half of the pyramid the condition of *dedicated board* was positioned because this condition was only determined important by the questionnaire respondents with a count of nine. In the case study this condition was not considered. For the younger cooperative the dedication of the board was of big value because in the initial phase the board needs perseverance to overcome the problems encountered. For the experienced cooperatives these voluntary boards were replaced by paid staff members who need to put in their best effort because it's their job. The *positive view in the community* was the last condition mentioned to be of importance especially for the inexperienced cooperatives. They still needed to establish a good relationship with the local community and if this was done successfully more opportunities will arise for further project development.

## 7. Discussion

This research has employed different types of methods to construct the conceptual framework, gather the empirical data, analyse the results and develop the revised framework for upscaling. All the steps and decisions taken were justified in the methodology and attached protocols. In order to be as transparent as possible, this is an essential part of the academic research process. This transparency also allows for the opportunity to highlight certain issues that were encountered during the research. The most relevant constraints of the thesis that will be discussed are focussed on data collection and data analysis.

### 7.1. Limitations

#### 7.1.1. Data collection

In terms of limitations regarding the data collection, three issues will be stressed that were encountered in this research.

First, the sample size that was investigated was rather small. From the total population of 313 cooperatives, 19 have been consulted to participate in this research. This has had an influence on the generalisability of the results. This research was meant to function as a first exploration into the conditions that were crucial for LREC. It cannot be stated that for the whole population of cooperatives these results are applicable. However, despite the small sample size it was possible to get a better understanding of relevant upscaling conditions. The in-depth interviews that were held for the multiple case study generated interesting findings that can be used by cooperatives in the future to scale-up. Additionally, some elements from the questionnaire were found among the cooperatives that provided new insights concerning the issue of upscaling.

Second, while constructing the conceptual framework, it was an issue to find appropriate definitions of the upscaling conditions. In some articles, no definitions were given about the meaning of a certain condition while in other articles, diverging explanations were given. This made it challenging to assign a clear definition to each condition. Moreover, overlap in meaning existed among different conditions as for instance *communicating key stakeholders* and having a *deep network* are relatively similar. In order to have an conceptual framework that was as encompassing as possible, it was decided to leave these similar conditions in the framework as some subtle differences exist. During the interviews, extra explanation would be given about the meaning of certain conditions that were not clear for the interviewees. For the respondents to the questionnaire, it was not possible to provide them with extra oral clarification, however extra explanation was provided through email when respondents had doubts about the meaning of a condition.

Finally, the questionnaire could have been improved on its design. Some respondents complained about the cumbersome process of dragging the first ten conditions to the top of the survey. For the respondents it was not always directly clear what they were asked to do because of the lengthy list with 29 conditions that was presented in front of them. Posing different types of questions or altering the design of the survey could solve this issue. Nonetheless, the questionnaire was successfully submitted by 15 cooperatives that understood what they had to do by placing their first 10 conditions in good order.

### 7.1.2. Data analysis

For the analysis of the data, it was challenging to operationalise the research questions at hand. By determining the most important conditions based on count, this does not show what the rank is of the conditions in terms of importance. By giving weight to the conditions more insights could have been gained in terms of importance of the upscaling conditions. This weight can be expressed by hierarchically ordering the conditions or assigning a + or – to them. During the interviews, the interviewees were asked to select around 10 conditions that were most relevant for their LREC. This already distinguished the selected conditions from the conditions that were not selected. For the purpose of this thesis it was more important to investigate this and research in which manner the conditions were influential for the upscaling of the cooperative.

## 7.2. Future research

The contribution of this thesis has extended the academic knowledge on upscaling possibilities for LREC to scale-up. Before this explorative study, no in-depth study was performed on the phenomenon of these cooperatives and how they can gain more influence in the energy sector. By looking into which conditions for upscaling have been more relevant for experienced and inexperienced cooperatives a better understanding has been gained on how they can grow. These findings also contribute to the broader literature on transitions. Local renewable energy cooperatives can arguably play an important role in fostering an energy transition in the Netherlands. Therefore, by researching how they can develop further, the cooperatives can provide an alternative for the established regime. However, some possible pathways for future research remain and will be explained further.

First, the conceptual framework in this research was novel and specifically constructed for the purpose of this study. A comprehensive and elaborate literature review was carried out to develop an encompassing conceptual framework, but different conditions might have been overlooked and not added. Further research could delve deeper into the literature to confirm or disconfirm the conditions of the conceptual framework. This could result in an improved version of the conceptual framework which is better embedded in academic literature. In addition to improving the conceptual framework

from the literature, the testing of the framework can be more encompassing in the future. In this research the focus was geared on Dutch cooperatives. Of the total population of Dutch LREC, a small population was consulted for this research. Engaging more cooperatives from the Netherlands could enhance the validity of the result. It would be also interesting to extend the research to different countries and test which conditions have been determined important elsewhere. This can reveal interesting results that can help cooperatives in different countries to scale-up. For instance, Denmark might be an interesting country to investigate, because cooperatives have been more present in stimulating the production of renewable energy.

Furthermore, future research could incorporate a more refined method to operationalise the results. A useful method could be the Constant Comparative Method (CCM) (Boeije, 2002) or Fuzzy Set Qualitative Comparative Analysis (fsQCA) (Downey & Stanyer, 2013). These two methods are specifically developed to analyse research that follows the principles of grounded theory. They provide a better methodology to analyse qualitative data retrieved from a small amount of cases and consequently imply results from them. The CCM elaborates on a useful step-by-step approach to compare results from different interviews by making a comparison within and between different interviews held with subjects of the same group or different groups. This method can be chosen if in future research only interviews are conducted with LREC, then the results can be compared. The fsQCA is especially useful to compare results from qualitative and quantitative methods of data collection. A specific methodology is explained through which cases are qualified within certain groups or sets which makes it possible to find explicit connections between outcomes across cases. By employing fsQCA to determine which conditions for upscaling are more relevant, relations can be drawn between conditions. It might become evident that a combination of upscaling conditions is especially crucial for LREC to make progress.

Finally, this research has focused on local renewable energy cooperatives that were determined to be self-governing. The emergence of these self-governing organisations is only since recently being studied. What is being observed is that more groups of people attempt to organise themselves to be completely autonomous or self-sufficient. Different technological advancements such as smart metering and smart contracts are making this possible. It is believed that autonomous governance is the next step from self-governance which could result in a drastic shift in the way the energy sector is organised. It is already possible for individuals to produce, manage and distribute the renewable energy produced within their own distributed networks. These developments are occurring at a fast pace and it is suggested that academic researchers investigate what the implications are of these trends on energy consumption, safety of usage and privacy for instance.

## 7.3. Recommendations

### 7.3.1. For local renewable energy cooperatives

The insights from this thesis are especially relevant for local renewable energy cooperatives that want to grow in scale. For both immature and mature cooperatives recommendations will be provided that can be relevant to scale up in the Dutch energy market.

It has become evident that different conditions are relevant for the upscaling of LREC. The five most important conditions belong to four different categories of upscaling. This provides inexperienced cooperatives with an array of elements that can be considered when they want to develop further. It is advised that starting cooperatives do not focus on one particular condition but attempt to incorporate elements of all the five conditions. This will give them more flexibility to determine which of the identified conditions works best in their particular situation. By trying out different conditions they do not speculate on a specific strategy to scale-up but spread their efforts. A more specific recommendation for younger cooperatives is to find *local political support*. This was one of the most often selected conditions and belonged to the category of political support which scored the highest average score in both the multiple case study and questionnaire. Having the support of local political institutions can give the cooperative the needed backing to realise the first renewable energy projects. Especially in the starting-up phase this can be of paramount relevance to successful develop the projects and generate a fixed stream of income. The cooperative can use their strong and close relationship as leeway to gather this political support. For more mature cooperatives who want to continue to scale it is advised that they focus on having *the right people of the right place*. This conditions emerged from the multiple case study in which 4 established cooperatives were asked to identify the most relevant upscaling condition. Attracting people with the needed experience in the field has been determined important in becoming a larger and more professional LREC.

### 7.3.2. For policy makers

For policy makers there are also recommendations to be suggested on how they can influence the development of the LREC.

The upscaling category of political support had the highest average score in both the multiple case study and questionnaire. It can be inferred from this that cooperatives in general are looking for support from their local governments to scale-up. The cooperatives see the municipalities as important partners in realise projects and are also engaged with improving the well-being of the citizens. Thus, in first instance local politicians should be aware of this fact and see the cooperatives as organisations that can help them achieve broader societal goals. What local governments can do to have a closer relationship with the LREC is to provide more support. The cooperatives mentioned that they are looking for financial or regulatory help as, especially in the initial stage, this is crucial for their

survival. Making available some budget for the cooperatives to start their initial projects would be beneficial for both parties as the cooperatives can start producing renewable energy and the local government is making their area more sustainable. Next to financial support, a better flow of information between the politicians and the cooperatives can improve the cumbersome administrative process that precedes the approval of a project. By having a specific person assigned of the municipality to deal with the questions of cooperatives more projects can be approved and progress can be made by the LREC and municipality in terms of renewable energy production.



## 8. Conclusion

The main research objective that was pursued during this study was to identify the most important conditions for upscaling of local renewable energy cooperatives in the Netherlands. To come closer to finding an answer to the research question a conceptual model was created that would be tested in practice with qualitative and quantitative methods of analysis. First, a literature review was carried to construct the conceptual framework. As there was no specific body of literature that analysed LREC, three theoretical approaches were analysed that focused on studying niches, grassroots innovations and social enterprises. By looking into these three sources of literature, the conceptual framework could be built that identified the upscaling conditions mentioned in the articles. In total 29 conditions were retrieved from the sources, which were classified in six categories to enhance the comprehensibility of the conceptual framework. The next step of this research entailed testing the conceptual framework in practice through a multiple case study and questionnaire. These two analytical methods were chosen as they are complementary to each other as the former provides quantitative results while the latter generates quantitative results. For the multiple case study, interviews were conducted with four well established cooperatives in the Netherlands that have experience with scaling up their activities. To test the conceptual framework among a broader population, the questionnaire was created and answered by 15 inexperienced cooperatives. The results of the multiple case study and questionnaire were compared to construct the revised framework for upscaling.

According to the findings from the multiple case study and the questionnaire, the conditions that have been found to be most important for local renewable energy cooperatives in the Netherlands to scale-up are having the *right people on the right place, dedicated board, skills of the board, local political support* and a *positive view in the community*. This is also the answer to the main research question of this thesis. Table 22 shows a summary for the results by integrating all the individual tables from the results of the multiple case study and questionnaire. The most important conditions are highlighted in green as they have been chosen most often.

| Upscaling category          | Upscaling conditions       | Count multiple case study | Count questionnaire |
|-----------------------------|----------------------------|---------------------------|---------------------|
| <b>Political support</b>    | Local political support    | 3                         | 9                   |
|                             | Lobbying local government  | 3                         | 4                   |
| <b>External context</b>     | Positive view in community | 2                         | 9                   |
|                             | Location of establishment  | 0                         | 4                   |
| <b>Intrinsic motivation</b> | Dedicated board            | 0                         | 9                   |
|                             | Motivation of members      | 3                         | 7                   |
|                             | Specific vision            | 1                         | 6                   |
|                             | Shared vision              | 2                         | 5                   |

|                              |                                    |   |   |
|------------------------------|------------------------------------|---|---|
|                              | Responsibility of members          | 1 | 3 |
|                              | Flexible vision                    | 3 | 1 |
| <b>Network</b>               | Active recruitment of new members  | 1 | 8 |
|                              | Broad network                      | 0 | 8 |
|                              | Communicating key stakeholder      | 2 | 6 |
|                              | Deep network                       | 1 | 4 |
|                              | Flexible network                   | 2 | 3 |
|                              | Cooperation with intermediaries    | 0 | 2 |
| <b>Internal organisation</b> | Skills of board                    | 3 | 9 |
|                              | Right people, right place          | 6 | 7 |
|                              | Good interaction board – members   | 0 | 6 |
|                              | Paid staff                         | 2 | 5 |
|                              | Subgroups                          | 1 | 3 |
|                              | Age of members                     | 0 | 3 |
|                              | Own working office                 | 1 | 3 |
|                              | Internal communication             | 2 | 2 |
| <b>Learning</b>              | Understanding risk of upscaling    | 2 | 5 |
|                              | Learning                           | 2 | 3 |
|                              | Broad learning                     | 0 | 2 |
|                              | Use network for reflexive learning | 2 | 2 |
|                              | Reflexive learning                 | 0 | 2 |

Table 22: Summary of conditions for upscaling

From the multiple case study, having the *right people on the right place* emerged as most relevant condition. A local renewable energy cooperative cannot function without having the four main positions of president, treasurer, engineer and secretary covered. This clarifies who is responsible for which tasks within the board and allows for an efficient working environment. For the experienced cooperatives, having the *right people on the right place* was important to become more professional and develop more renewable energy projects. It can be inferred that the respondents of the survey did not see this condition as most important because they are more focused on having a group of people in the board that are motivated to kick start the initiative. This can be concluded because of the fact that the condition of having a *dedicated board* was one of the most selected conditions in the questionnaire. For the more inexperienced cooperatives a dedicated board is paramount to overcome the challenges that lie ahead. In the initial stage of the cooperative, the board members are working voluntarily which entails that they need to be intrinsically motivated to take up a function. In addition to this condition, the *skills of the board* was also mentioned to be important in the questionnaire. A board member had to be skilful concerning the tasks they needed to carry out. The skills mentioned by the respondents relate to being creative in finding new opportunities for the cooperative. In the beginning creativity is more important because problems need to be fixed in a different manner. Being creative can ensure that a cooperative adapts to new situations and guarantees its longevity. While these two conditions are more focussed within the cooperative itself,

the *positive view in the community* and the *local political support* are more outside of the cooperative. For the cooperatives that just started exploring opportunities to install renewable energy projects, having a *positive view in the community* can be helpful. The local community in which a LREC operates needs to be engaged so that they do not hamper the development of the particular project of the cooperative as a whole. It was mentioned that by allowing locals to work together on new project this positive view can be realised. Finally, the *local political support* for a cooperative to succeed is paramount. Municipalities are an important partner as they need to give the green light for the realisation of a new project. At the same time, the cooperatives should use the acquired local support to put pressure on the municipalities. The LREC are there to solve a communal problem by engaging citizens in the realisation of renewable energy, which is also in the interest of local governments as they generally need to adhere to environmental goals set. Thus, it has become clear that a mix of conditions is determined to be important for the upscaling of local renewable energy cooperatives. These conditions belong to diverging categories which give the LREC different opportunities to prevail in the Dutch energy sector.

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## Appendix

### Appendix 1: Protocol for literature review

#### **Collection of literature**

For the collection of literature, a step-by-step search system will be used. The collection of literature is needed to have enough sources from which a selection can be made that is further analysed.

- 'Database' method will be used:

This is a widely used method of retrieving literature by searching for words in a particular database. For the collection of literature, the main keywords that were computed in the first part will be used. Each keyword will be searched for individually but also combinations of keywords will be made to specify the search. Google scholar is used as the main database because of its extensive inclusion of academic sources

- Organising sources

The sources that are retrieved from these two described methods will be organised in an Excel or Word document mentioning the most important information such as Title, Author, Year, Journal and Key Words.

#### **Result:**

- Extensive list of retrieved literature

#### **Selection of literature**

Before delving deeper into the literature a selection needs to be made concerning which sources will be used and which can be discarded. To determine the usability of the resources found, the following elements are critically read and evaluated.

- Title
- Abstract
- Conclusion

Some additional information that is taken into account is based on the following questions:

- Written by authoritative author?
- Published by reputable publisher?
- Empirical evidence?
- Includes extensive references?
- Clear message?

#### **Result:**

- Concise list of sources that are analysed

#### **Analysis of literature**

Once a selection of the literature sources is made, they can be analysed to get a better understanding on upscaling. With this analysis the information that the articles convey will become evident which is crucial for the literature review. According to perspectives employed (i.e. SNM, GI or SE) the articles will be group in categories in the software program of NVivo.

Categories will be made for the following elements found in the articles:

- Definition
- Knowledge gap
- Methodology
- Upscaling conditions
  - o External
  - o Internal

This list can still be extended during the research as new categories can be identified.

**Result:**

- Encompassing list of all the upscaling conditions identified in the literature

## Appendix 2: Protocol for multiple case study

### **Prior to interview**

- First contact for case study
  - o Deltawind: Monique Sweep (& Andries) first approach 15/05 & confirmation 15/05
  - o De Windvogel: Siward Zomer first approach 15/05 too busy & Martien Vogelesang confirmation 23/05
  - o De Windvogel: Dick van Elk first approach + confirmation 14/06, interview took place 24/06
  - o Zeeuwind: Teus Baars first approach + confirmation 26/06, interview took place 11/07
  - o Meerwind: Bert van Noord first approach 29/06, confirmation 1/07, interview took place 12/07

“Beste XXX,

Als onderdeel van mijn stage op DRIFT en master scriptie ben ik onderzoek aan doen naar de condities voor het opschalen van de Nederlandse energie coöperaties.

Hiervoor heb ik eerst condities uit verschillende academische bronnen gehaald die ik nu wil testen in de praktijk.

Hiervoor contacteer ik jou aangezien COOP XXX als een succes kan worden gezien in Nederland met een groot aantal leden en behoorlijke productie van hernieuwbare energie.

Daarom wil ik jullie als casus gebruiken om de condities uit de literatuur te testen. Als onderdeel van de casus studie zal ik eerst zelfonderzoek doen naar COOP XXX en zou ik daarna graag interviews afnemen.

Hierbij vraag ik vriendelijk om jullie medewerking.

Zou jij hieraan mee willen werken of zijn er enkele lange zittende bestuursleden bereid om over de ontwikkeling van COOP XXX te vertellen?

De interviews zullen ongeveer 1 à 1:30 uur in beslag nemen.

Hieronder stel ik eventuele data voor maar wees natuurlijk vrij om andere data, tijden en locaties voor te stellen als die beter schikken.

- Suggesteerde data, tijd en locatie

Bij voorbaat dank en vriendelijke groet,

Sjors”

- Send email with info
  - o Introduction and few questions
  - o Ask for any documentation that could be relevant
  - o Request permission for recording
  - o Transcript will be provided for clarification and amendment

“Beste XXX,

Nogmaals bedankt om de tijd te nemen voor het interview en daardoor bij te dragen aan mijn onderzoek. Met deze email wil ik jullie kort van wat informatie voorzien voor het plaats vinden van het interview.

Voor mijn master scriptie (en stage bij DRIFT) doe ik onderzoek naar het opschalen van lokale hernieuwbare energie coöperaties. Hiervoor heb ik tot op heden condities uit verschillende bronnen literatuur gehaald die ik nu in de praktijk wil testen. Ik heb COOP XXX uitgekozen omdat jullie als een succes casus kunnen worden gezien binnen Nederland. Tijdens het interview wil ik dus kijken welke condities belangrijk zijn geweest in jullie ontwikkeling en zo mijn theoretische kader testen en aanpassen. Ik kan niet echt voorbeeld vragen geven aangezien deze afhangen van de inleidende oefening maar in het algemeen zijn het vragen over waarom en op welke manier sommige condities (bv. netwerk) belangrijk zijn geweest voor het succes van de coöperatie. Mochten jullie hier nog documentatie over hebben die met mij gedeeld kan worden, zal ik dat zeker op prijs stellen.

Wat meer praktische info, de eerste 10 a 15 minuten kunnen wij gebruiken voor een korte inleiding en om vragen te beantwoorden van jullie kant. Daarna wil ik ongeveer een uur over de verschillende condities spreken. Om het gesprek te bevorderen zal ik jullie op de dag zelve een kleine oefening voorstellen en uitleggen. Ik vraag jullie hierbij ook alvast of het oké is als ik het gesprek opneem, dit om later weer terug te luisteren en te analyseren? Als jullie dat willen, kan ik het uitgeschreven rapport van het gesprek toe sturen en natuurlijk de eindversie van mijn scriptie.

Ik hoop jullie hierbij voorlopig genoeg geïnformeerd te hebben. Mochten er toch nog vragen zijn, laat het mij weten.

Bij voorbaat dank en vriendelijke groeten,

Sjors”

## During interview

Semi-structured interview, see (Qu & Dumay, 2011) for more information on the characteristics of semi-structured interviews.

- What to say to interviewee when setting up interview (10 min)
  - o Play recording; ask if this is okay
  - o Self-introduction; thesis EG; research at DRIFT
  - o Interest in topic of (local) renewable energy
  - o Topic of thesis: scaling-up LREC in the Netherlands
  - o Any questions?
  
  - o Who is interviewee? How you got involved with COOP? What is the current function? (10 min)
  
  - o Explain 'game' to them
    - 29 conditions presented that are found in literature
    - Please chose 10 which you have found most important for the development of the COOP; (In double interview this is done separately by the participants)
  
- What to say to interviewees when starting interview (10 min)
  - o Please chose 10 of the conditions presented
  
- What to do during interview (40 – 60 min)
  - o Notes will be taken by interviewer
  - o Interviewer will be actively listening at the same time
  - o Paying special attention to the reasoning behind the chosen conditions and how they contributed to the success of the LREC. This HOW can be in terms of numbers, organisation or processes that are put in place.
  - o Follow-up questions (depending on chosen conditions)
    - See table with all conditions and questions
  
  - o Double interview
    - Conditions chosen of each participant will be compared
    - First, similar conditions will be explained by both
    - Second, diverging conditions will be explained by each individual
  
- What to say to interviewees when concluding interview (10 min)
  - o Short comments on the conditions that have not been chosen
  - o Thanking for collaboration
  - o Asking for follow-up permission
  - o End audio recording

## Analyse data

- Transcribe recordings using oTranscribe
- Upload transcriptions to NVivo
- Create categorisation of nodes and sub-nodes in NVivo that is similar to conceptual framework

- Structure coding according to Campbell, Quincy, Osserman and Pedersen (2013)
  - o Code and categorise all the specific information from the transcripts in appropriate nodes and sub-nodes

### Disseminate findings

- Create overview of which conditions were chosen during the overview
  - o Results for each interviewee shown in table form
- Explain why the chosen conditions of the interviewees were chosen based on the information provided during the interview and that was coded in NVivo

## Appendix 3: Overview questionnaire contacts

|    | A                                       | B             | C    | D                         | E  | F   | G          | H           | I            | J           | K                        | L          |
|----|---|---------------|------|---------------------------|--|---|------------|-------------|--------------|-------------|--------------------------|------------|
| 1  | Name Cooperative                        | Provincie     | Jaar | Addressed to              | Email  | WWW   | RES        | First email | Second email | Third email | Response                 | Completion |
| 2  | Noordenwind                             | Friesland     | 1986 |                           | <a href="mailto:info@noordenwind.org">info@noordenwind.org</a>                                     | <a href="http://www.noordenwind.org/">http://www.noordenwind.org/</a>   | Vind       | 13/07/2017  |              |             |                          | 13/07/2017 |
| 3  | Amelandse Energie Coöperatie            | Friesland     | 2009 | Johan Kieviet             | <a href="mailto:info@amelandenergie.nl">info@amelandenergie.nl</a>                                 | <a href="http://www.amelandenergie.nl">http://www.amelandenergie.nl</a>   | Zon        | 13/07/2017  |              |             |                          | 15/07/2017 |
| 4  | Energiecoöperatie Achter de Hoven       | Friesland     | 2012 |                           | <a href="mailto:info@achterdehoven.nl">info@achterdehoven.nl</a>                                   | <a href="http://www.achterdehoven.nl">http://www.achterdehoven.nl</a>   | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 5  | Energiecoöperatie Gaasterland           | Friesland     | 2014 | Tjebbe Dijkstra           | <a href="mailto:hebbedijkstra@online.nl">hebbedijkstra@online.nl</a>                               | <a href="http://www.energiecooperatiegaasterland.nl">www.energiecooperatiegaasterland.nl</a>                          | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 6  | GrieneKo                                | Friesland     | 2015 | Ronald van Giessen        | <a href="mailto:r.van.giessen@grieneko.nl">r.van.giessen@grieneko.nl</a>                           | <a href="http://www.grieneko.nl">www.grieneko.nl</a>  |            | 13/07/2017  | 20/07/2017   |             |                          | 20/07/2017 |
| 7  | Coöperatie Bommelerwaard                | Gelderland    | 2016 | Onno van Bekkum           | <a href="mailto:onno@bommelerwaard.nl">onno@bommelerwaard.nl</a>                                   | <a href="http://www.bommelerwaard.nl">http://www.bommelerwaard.nl</a>   | ?          | 13/07/2017  | 20/07/2017   |             | Over twee weken invullen | 20/07/2017 |
| 8  | Vallei Energie                          | Gelderland    | 2012 | Les Hoefstoot             | <a href="mailto:leshoefstoot@chello.nl">leshoefstoot@chello.nl</a>                                 | <a href="http://www.valleienergie.nl/index.mchil?pages=?">http://www.valleienergie.nl/index.mchil?pages=?</a>         |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 9  | Achterhoekse Energie Maatsch.           | Gelderland    | 2013 | Guus Ydema                | <a href="mailto:guus.ydema@agem.nl">guus.ydema@agem.nl</a>   | <a href="https://agem.nl">https://agem.nl</a>   | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 10 | Vindpark Hijneggen-Behave               | Gelderland    | 2015 | Lies van der Raaij        | <a href="mailto:info@vindparkhijneggenbehave.nl">info@vindparkhijneggenbehave.nl</a>               | <a href="http://www.vindparkhijneggenbehave.nl">http://www.vindparkhijneggenbehave.nl</a>                             |            | 13/07/2017  | 20/07/2017   |             | Arbeid tot 13/08         | 22/07/2017 |
| 11 | Zonneoöperatie Vest-Friesland           | Gelderland    | 2015 | Ad Verhage                | <a href="mailto:info@zonneooperatievestfriesland.nl">info@zonneooperatievestfriesland.nl</a>       | <a href="http://www.zonneooperatievestfriesland.nl">http://www.zonneooperatievestfriesland.nl</a>                     | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 12 | Grünneger Power                         | Groningen     | 2009 | Steven Volkers            | <a href="mailto:steven.volkers@grunnegerpower.nl">steven.volkers@grunnegerpower.nl</a>             | <a href="http://www.grunnegerpower.nl">http://www.grunnegerpower.nl</a>   | Zon        | 13/07/2017  | 20/07/2017   |             | Arbeid tot 14/08         | 27/08/2017 |
| 13 | Veenstroom                              | Groningen     | 2012 | Mart Disson               | <a href="mailto:info@veenstroom.nl">info@veenstroom.nl</a>   | <a href="http://www.veenstroom.nl">http://www.veenstroom.nl</a>   |            | 13/07/2017  | 20/07/2017   |             | Mailbox full             |            |
| 14 | Coöperatieve vereniging Duurzaam Mente  | Groningen     | 2013 |                           | <a href="mailto:info@indenergie.org">info@indenergie.org</a>                                       | <a href="https://www.noordelijk.lok.aalduurzaam.nl">https://www.noordelijk.lok.aalduurzaam.nl</a>                     | Vind & Zoi | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 15 | Hogelandster Energie Coöperatie         | Groningen     | 2015 | Jan Hink                  | <a href="mailto:info@hogelandsterenergiecooperatie.org">info@hogelandsterenergiecooperatie.org</a> | <a href="https://www.hogelandsterenergiecooperatie.org">https://www.hogelandsterenergiecooperatie.org</a>             |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 16 | Energiecoöperatie Zonnedorpen           | Groningen     | 2016 | Patrik Capsters           | <a href="mailto:info@zonnedorpen.nl">info@zonnedorpen.nl</a>                                       | <a href="http://zonnedorpen.nl">http://zonnedorpen.nl</a>   |            | 13/07/2017  | 20/07/2017   |             |                          | 20/08/2017 |
| 17 | Zuidewind                               | Limburg       | 2011 | John Salkonbroodt         | <a href="mailto:info@zuidewind.org">info@zuidewind.org</a>   | <a href="http://www.zuidewind.org/">http://www.zuidewind.org/</a>   | Vind       | 13/07/2017  | 20/07/2017   |             |                          | 01/09/2017 |
| 18 | Leudal Energie (DE coöperatie Leudal)   | Limburg       | 2013 | Har Geenen                | <a href="mailto:info@leudalenergie.nl">info@leudalenergie.nl</a>                                   | <a href="http://www.leudalenergie.nl">http://www.leudalenergie.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 19 | Energiecoöperatie Sittard-Geleen        | Limburg       | 2013 | Harrie Sniijders          | <a href="mailto:info@ecsittardgeleen.nl">info@ecsittardgeleen.nl</a>                               | <a href="http://www.ecsittardgeleen.nl">http://www.ecsittardgeleen.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 20 | PeelEnergie                             | Limburg       | 2014 | Theo Neessen              | <a href="mailto:info@peelenergie.nl">info@peelenergie.nl</a>                                       | <a href="http://www.peelenergie.nl">http://www.peelenergie.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 21 | Reindonk Energie                        | Limburg       | 2015 | Geert Claessens           | <a href="mailto:geert@reindonkenergie.nl">geert@reindonkenergie.nl</a>                             | <a href="http://www.reindonkenergie.nl">www.reindonkenergie.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 22 | Coöperatie Groene Hart Energie          | Zuid-Holland  | 2013 | Frank Kouwenhoven         | <a href="mailto:info@groenehart.nl">info@groenehart.nl</a>   | <a href="http://www.groenehartenergie.nl">www.groenehartenergie.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 23 | Energiek.Schiedams Schiedams Energie Co | Zuid-Holland  | 2013 | Inge Albrechts-Vilgerse   | <a href="mailto:info@energiek.schiedam.nl">info@energiek.schiedam.nl</a>                           | <a href="http://www.energiek.schiedam.nl">www.energiek.schiedam.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 24 | 070Energiek                             | Zuid-Holland  | 2014 | Alexander van de Beek     | <a href="mailto:info@070energiek.nl">info@070energiek.nl</a>                                       | <a href="http://www.070energiek.nl">www.070energiek.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 25 | Energiek Aalst                          | Zuid-Holland  | 2014 |                           | <a href="mailto:info@energiek.aalst.nl">info@energiek.aalst.nl</a>                                 | <a href="http://www.energiek.aalst.nl">www.energiek.aalst.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 26 | Duurzame energiecoöperatie Zoetermeer   | Zuid-Holland  | 2014 | Peter van Oppen           | <a href="mailto:info@dezo.eu">info@dezo.eu</a>   | <a href="http://dezo.eu/">http://dezo.eu/</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 27 | Coöperatie Morgen Groene Energie Eindh  | Noord-Brabant | 2011 | Ernst van der Leij        | <a href="mailto:e.van.der.leij@bink.nl">e.van.der.leij@bink.nl</a>                                 | <a href="http://www.morgengroeneenergie.nl">http://www.morgengroeneenergie.nl</a>                                     | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 28 | Coöperatieve vereniging Energie Dongen  | Noord-Brabant | 2012 | Karen Westerveen-Brouwer  | <a href="mailto:karen@energie dongen.nl">karen@energie dongen.nl</a>                               | <a href="http://www.energie dongen.nl">http://www.energie dongen.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 29 | Energiek Moerdijk                       | Noord-Brabant | 2013 | Dimph Rubbens             | <a href="mailto:dimph@energiekmoerdijk.nl">dimph@energiekmoerdijk.nl</a>                           | <a href="http://www.energiekmoerdijk.nl">http://www.energiekmoerdijk.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          | 18/07/2017 |
| 30 | Energiecoöperatie 073                   | Noord-Brabant | 2014 | Lennart Lalleu            | <a href="mailto:info@073.nl">info@073.nl</a>   | <a href="http://www.energiecooperatie073.nl">http://www.energiecooperatie073.nl</a>                                   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 31 | Duurzaam Dimmelen                       | Noord-Brabant | 2014 | Jan Pieter Veldraaijer    | <a href="mailto:janpieter@duurzaamdimmelen.nl">janpieter@duurzaamdimmelen.nl</a>                   | <a href="https://www.duurzaamdimmelen.nl">https://www.duurzaamdimmelen.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          | 24/07/2017 |
| 32 | Zuiderlicht                             | Noord-Holland | 2014 | Frank Boon                | <a href="mailto:frank@zuiderlicht.nl">frank@zuiderlicht.nl</a>                                     | <a href="https://www.zuiderlicht.nl">https://www.zuiderlicht.nl</a>   | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 33 | Tezel Energie                           | Noord-Holland | 2007 | Leo Timmers               | <a href="mailto:Directie@tezelenergie.nl">Directie@tezelenergie.nl</a>                             | <a href="http://www.tezelenergie.nl">http://www.tezelenergie.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 34 | Amsterdam Energie                       | Noord-Holland | 2011 | Rolf Steenwinkel          | <a href="mailto:rolf@amsterdamenergie.nl">rolf@amsterdamenergie.nl</a>                             | <a href="http://www.amsterdamenergie.nl">http://www.amsterdamenergie.nl</a>   | Vind & Zoi | 13/07/2017  | 20/07/2017   |             |                          | 14/07/2017 |
| 35 | NHEC/ Noord Hollandse Energie Coöper    | Noord-Holland | 2010 |                           | <a href="mailto:info@nhec.nl">info@nhec.nl</a>   | <a href="http://www.nhec.nl">http://www.nhec.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 36 | Helloo Energie                          | Noord-Holland | 2012 | Peter Leenders            | <a href="mailto:info@helloenergie.nl">info@helloenergie.nl</a>                                     | <a href="https://www.helloenergie.nl">https://www.helloenergie.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          | 23/07/2017 |
| 37 | Zuiver Hof van Twente                   | Overijssel    | 2016 | Wilma Paalman-Vloedgraver | <a href="mailto:w.paalman@zuiverhof.nl">w.paalman@zuiverhof.nl</a>                                 | <a href="http://www.zuiverhof.nl/producten-en-dienste/Zon?">http://www.zuiverhof.nl/producten-en-dienste/Zon?</a>     |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 38 | Deventer Energie                        | Overijssel    | 2012 | Thijs Swartjes            | <a href="mailto:info@deventerenergie.nl">info@deventerenergie.nl</a>                               | <a href="https://www.deventerenergie.nl">https://www.deventerenergie.nl</a>   | Vind       | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 39 | Reggestroom                             | Overijssel    | 2011 | José Fluiter              | <a href="mailto:info@reggestroom.nl">info@reggestroom.nl</a>                                       | <a href="http://www.regge-stroom.nl">http://www.regge-stroom.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 40 | Borne Energie Coöperatie                | Overijssel    | 2014 | Johan Viersma             | <a href="mailto:info@borneenergie.nl">info@borneenergie.nl</a>                                     | <a href="http://www.borneenergie.nl">http://www.borneenergie.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 41 | Elstevinger Energie                     | Overijssel    | 2013 |                           | <a href="mailto:info@elstevingerenergie.nl">info@elstevingerenergie.nl</a>                         | <a href="http://www.elstevingerenergie.nl">www.elstevingerenergie.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 42 | Eigen Vrijke Energie Coöperatie         | Utrecht       | 2013 | Henk Muis                 | <a href="mailto:info@eigenvrijkeenergiecooperatie.nl">info@eigenvrijkeenergiecooperatie.nl</a>     | <a href="http://www.eigenvrijkeenergiecooperatie.nl">http://www.eigenvrijkeenergiecooperatie.nl</a>                   | Zon        | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          | 18/07/2017 |
| 43 | Eemstroom                               | Utrecht       | 2012 |                           | <a href="mailto:info@eemstroom.nl">info@eemstroom.nl</a>   | <a href="http://www.eemstroom.nl">http://www.eemstroom.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 44 | Energie IJ                              | Utrecht       | 2010 | Paul van Seters           | <a href="mailto:info@beng2030.nl">info@beng2030.nl</a>   | <a href="http://www.energie-ij.nl">http://www.energie-ij.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          | 04/09/2017 |
| 45 | BENGI                                   | Utrecht       | 2013 |                           | <a href="mailto:info@beng2030.nl">info@beng2030.nl</a>   | <a href="https://www.beng2030.nl/pg-27565-7-107706/paginabeh">https://www.beng2030.nl/pg-27565-7-107706/paginabeh</a> |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 46 | Coöperatie E Lekstroom                  | Utrecht       | 2014 |                           | <a href="mailto:info@lekstroom.nl">info@lekstroom.nl</a>   | <a href="http://www.e-lekstroom.nl">http://www.e-lekstroom.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 47 | Energiecoöperatie NoordseVeld           | Drenthe       | 2011 | Richard Ton               | <a href="mailto:info@noordseveld.nl">info@noordseveld.nl</a>                                       | <a href="http://www.noordseveld.nl">http://www.noordseveld.nl</a>   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 48 | Energie Coöperatie Coevorden            | Drenthe       | 2012 |                           | <a href="mailto:samendoen@coevordensea.nl">samendoen@coevordensea.nl</a>                           | <a href="http://www.energiecooperatiecoevorden.nl">www.energiecooperatiecoevorden.nl</a>                              |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 49 | Coöperatie Zonnie Toekomst              | Drenthe       | 2013 |                           | <a href="mailto:info@zonnietoekomst.nl">info@zonnietoekomst.nl</a>                                 | <a href="http://www.zonnietoekomst.nl">www.zonnietoekomst.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 50 | Energie Coöperatie Drenthe Aa           | Drenthe       | 2014 |                           | <a href="mailto:info@drentheaa.nl">info@drentheaa.nl</a>   | <a href="http://www.drentheaa.nl">www.drentheaa.nl</a>  |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |
| 51 | Energie Coöperatie Duurzaam Bovensmilde | Drenthe       | 2015 |                           | <a href="mailto:info@duurzaambovensmilde.nl">info@duurzaambovensmilde.nl</a>                       | <a href="https://duurzaambovensmilde.wordpress.com/">https://duurzaambovensmilde.wordpress.com/</a>                   |            | 13/07/2017  | 20/07/2017   | 28/08/2017  |                          |            |

## Appendix 4: Protocol for questionnaire

### Design

Purpose: make it possible for respondents to select the 10 most important conditions for their LREC

- Find questionnaire software that allows for ranking
- Find questionnaire software that allows for extra explanation

### Analysis

- Usage of Excel and/or SPSS for analysis of data
- Transfer data from questionnaire results to SPSS or Excel
- Demonstrate for each condition how many times chosen by cooperatives

## Appendix 5: Questionnaire

### 1\* Welke 10 condities zijn het belangrijkste geweest in het opschalen van uw LHEC?

U kunt de condities slepen en op deze manier aangeven welke u de belangrijkste acht. De belangrijkste conditie sleept u naar positie 1; de op een na belangrijkste conditie naar positie 2; etc

- ⇅ 1 Flexibele ideologie
- ⇅ 2 Open interne communicatie
- ⇅ 3 Geschikte mensen op geschikte functie
- ⇅ 4 Leer processen
- ⇅ 5 Coöperatie met tussenpersonen
- ⇅ 6 Leden nemen verantwoordelijkheid
- ⇅ 7 Gebruik van netwerk voor reflexief leren
- ⇅ 8 Toegewijd bestuur
- ⇅ 9 Leeftijd van leden
- ⇅ 10 Lobbyen van lokale overheid
- ⇅ 11 Eigen werkruimte
- ⇅ 12 Positief beeld van LHEC
- ⇅ 13 Lokale politieke steun
- ⇅ 14 De lokatie van de LHEC
- ⇅ 15 Specifieke ideologie
- ⇅ 16 Begrijpen van risico's van opschaling
- ⇅ 17 Vaardigheden van bestuur
- ⇅ 18 Breed netwerk
- ⇅ 19 Brede leer processen
- ⇅ 20 Flexibel netwerk
- ⇅ 21 Motivatie van leden
- ⇅ 22 Reflexieve leer processen
- ⇅ 23 Goede interactie tussen bestuur en leden
- ⇅ 24 Diep netwerk
- ⇅ 25 Gedeelde ideologie
- ⇅ 26 Communicatie met belangrijke stakeholders
- ⇅ 27 Betaalde medewerkers
- ⇅ 28 Werving van nieuwe leden
- ⇅ 29 Sub-groepen aanwezig
- finished sorting?

### 2\* Geef hier een korte toelichting voor uw 1ste keuze

### 3\* Geef hier een korte toelichting voor uw 2de keuze

### 4\* Geef hier een korte toelichting voor uw 3de keuze

### 5\* Geef hier een korte toelichting voor uw 4de keuze

### 6\* Geef hier een korte toelichting voor uw 5de keuze

### 7 Zijn er nog condities die ontbreken volgens u?

### 8 Geef hier een korte toelichting over de ontbrekende condities die u belangrijk acht

Klaar met invullen