Synergy in Energy

Participation in spatial energy transition projects within the Dutch region of Twente

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Addendum – 25-4-2019

This version of the report is a modification of the original thesis. The original contains specific references to instances and individuals, and extended interview reports, which are all compressed to summaries without any specific references, to respect the privacy of the interviewees and organisations and instances. Except for my supervisor and second assessor of the University of Twente, and supervisor at Roelofs Groep during my internship, I am the only person who owns the original report. Besides the ownership of the original document, several other issues should be discussed.

Firstly, it should be noted that this research has been conducted during an internship at Roelofs Groep. This results in the characterisation of the consultancy firm in the stakeholder analysis on the basis of the characteristics of Roelofs Groep.

In the second place, several instances and organisations are called by their actual name. Most of the times, this applies to less concrete examples or estimations that are based on publicly accessible information.

In addition, the original report has been awarded a 7/10 by the assessors of the University of Twente and the extern supervisor at Roelofs Groep. Therefore, one should keep in mind that the report does not provide the most optimal insight in the research that has been conducted.

Finally, the original report concludes with several recommendations towards Roelofs/the consultancy firm. However, this does not mean that other instances/organisations/readers cannot conclude recommendations for themselves. In fact, the participation strategy that is set up during this research is the final product, on which the final conclusions and recommendations are based. Of course, it is the free choice of every individual to advocate or not advocate this roadmap on a policy level.

Prefix

"We're gonna die… All of us." – Adelheid Roosen, 2015

So, I can imagine that someone does not find this a very inspirational quote. Well, to a certain extent, neither do I. Death is generally considered to be a pessimistic phenomenon, which is often paired with decay and desolation. Still, we – being the living creatures that we are – see death as something natural, which I think this quote shows well. Maybe we find this phenomenon even a bit too natural, in my opinion.
The subject, which I have discussed in my research, is a good example of that. We have the desire to make the change to a non-fossil fuel-based society that benefits the environment, and eventually the quality of life of the global society. But still, the transition is happening too slowly, as we got used to depleting and using fossil fuels for a long period of time; it is or was considered as something natural.
Initially, I was assigned to map money flows for Roelofs - the consultancy firm where I did my internship – and pick out the interesting flows as attention points, based on opinions of stakeholders in spatial development projects. This did not fit in well with my current curriculum, though, so it was proposed to focus more on the participation and on a current development in the field of spatial development. This happened to be the energy transition. Interestingly, ever since I started writing the proposal for this research, I can hear a woman's voice saying: "We're gonna die". How can this quote be inspirational with regards to this project? It cannot. But for me, it was an incentive to do this research. It emphasises the importance of mapping the social layer of the energy transition. Because, when we continue depleting finite sources of energy and polluting the atmosphere, we will, bluntly said, live ourselves to death. All of us.
I would like to mention a few persons to thank them for their contribution to and support of my research. Firstly I would like to thank my supervisors; Marc van Buiten (University of Twente), for the useful feedback and tips on issues I got confronted with; and Paul van Bruggen (Roelofs Groep), for the fun we had at the office and the supply of useful articles. I also want to thank Dini Marsman for the strong coffee. Furthermore, I would like to thank the interviewees for being rich sources of information. Finally, I would like to thank my parents and Matthijs Luxen for giving me a place to rest during the weekends.

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Abstract

In this research, multiple motivations led to the main aim. In the first place, the consultancy firm annex contractor Roelofs wanted to investigate whether they were able to get involved sooner in spatial development projects. In the meantime, the energy transition in the Netherlands needs a boost by taking larger measures, e.g. implementation as a function in spatial development. These motivations can be combined, as both require an insight in the social layer of the project process. Thus, the main aim is to provide insight in this layer of the process and to set up a strategy to achieved the desired results in (spatial) energy transition projects in the region of Twente until the year 2023. To get the answer to this research issue, literature studies, interviews and surveys are conducted to identify trends in and perceptions of stakeholders upon the energy transition, stakes and instruments of the stakeholders in the projects. Based on the collected data, a conceptual participation strategy is set up. Several conclusions can be drawn from this research.

Firstly, when it comes to the trends of the energy transition, it is noticeable that the transition has still problems with getting rid of the current reigning paradigm; financial situations of stakeholders and guaranteed returns are important factors for stakeholders, and the current situation of the socio-technical landscape does not provide substantial support for long-term result projects. To let the transition accelerate, it is important to open the energy transition up to the broad public, which will eventually lead to the formation of collective initiatives. One could also look at broadening the public by means of combining multiple functions of space and dealing with the energy transition in an integral way. This may result in a more complex assignment because of the bigger variety of stakes. However, when executed correctly, this type of project – the energy transition as one of multiple functions of space – may result in an increase in support of the overall energy transition. As the spatial vision is in that case quite vague, the option of involving consultancy firms – including Roelofs – sooner in this type of projects becomes plausible, as it is estimated that they are able to provide insight in the possibilities of combinations of functions.

From the stakeholder analysis, it can be concluded that all interviewed stakeholders see possibilities in the implementation of the energy transition as a function of a spatial development. So does the public, based on a small convenience sample. However, there are a few attention points that need to be taken into account. This includes the lack of variety in alternatives (mainly due to keeping the guarantee of returns for investors), imbalance of instruments and the currently missing transparency in the overall energy transition process. Also, the current resistance should be counteracted by the mobilisation of the younger generation, who are the ones who will be affected the most by the causes of the greenhouse effect and continuing the depletion of fossil fuels.

After setting up the strategy, it can be noticed that the consultancy firms have got an earlier position of involvement in the project compared to regular spatial development projects. Therefore, consultancy firms may also be involved sooner in the project. However, it should be noted that the authorities are the ones who need to facilitate and direct the energy transition and its initiatives. This also means that the local authorities decide whether they want to use this participation strategy or not. Therefore, consultancy firm are recommended to keep networking with authorities and showing this strategy as a sign of knowledge-based power. It is also recommended to conduct further research on the perceptions, desires, stakes and instruments of the public and other stakeholders that are not interviewed. In addition, a theoretic case project should be set up to test the exact fitting of the set up participation strategy. Finally, it is also recommended to test the validity of the participation strategy with the characteristics of another consultancy firm.

1. Introduction

1.1. Motivation and background

Roelofs is a relatively small firm in both consultancy and contracting that is mainly active in the northern, central and eastern parts of The Netherlands. Since its founding, Roelofs has grown from a sand exploiting firm in the 1960s to a leading specialist in multiple disciplines, including sewerage, mobility and spatial development. Their working area is also growing, as new offices near the cities of Amsterdam and Rotterdam are being established (Roelofs, 2018).

The main aim of Roelofs' activities is already described in the slogan: Providing "Meer waarde aan ruimte", or "More quality to space" in English. To achieve this goal in the field of spatial development, Roelofs wants to be involved in spatial development projects at the earliest point of time as possible. At the moment, plans for a project are oftentimes already made (see Figure 1) before Roelofs gets actively involved.

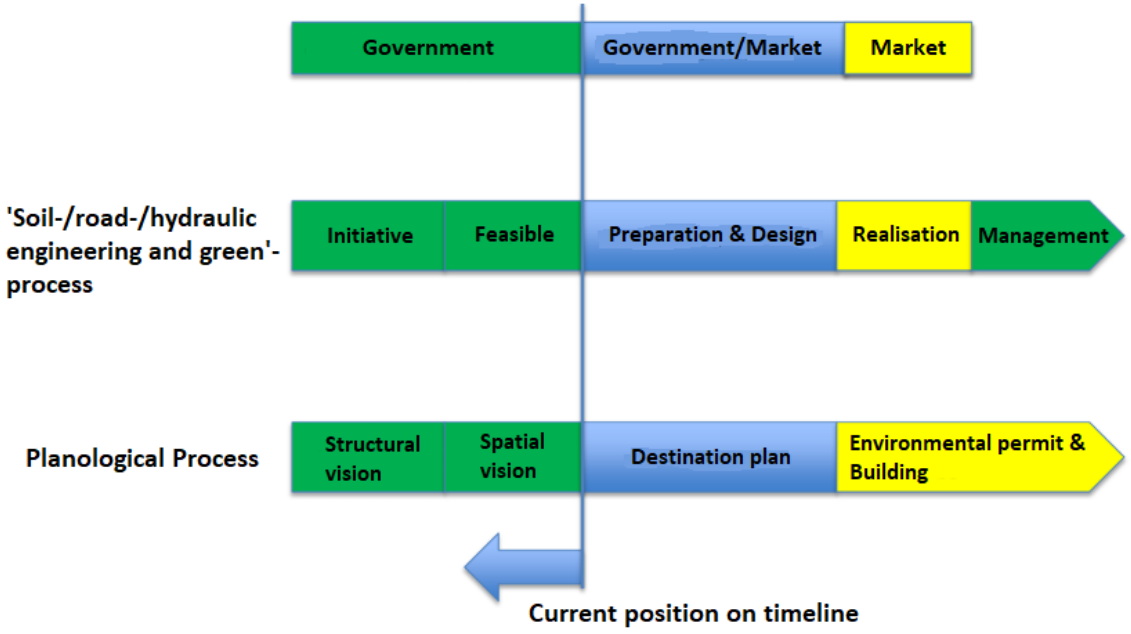

Figure 1. Position of Roelofs on project process timelines (after: Roelofs, 2018)

This means that Roelofs should only have to work out plans that have been formed without their involvement, but that is not what they aim for. In fact, Roelofs wants to contribute to earlier stages of the process as well, which means that they will be involved by the client when the initiative for the project has just started. When this is achieved, Roelofs will be able to synchronise the project vision with their own vision to achieve their main aim; giving more quality to space. However, it is unknown exactly at what point in time Roelofs should get themselves involved in the project. Therefore, it is desired to find that specific point on the project timeline. The leading hint is: the vaguer the project, the earlier Roelofs can and should be involved.

In the meantime, a lot is happening in the field of spatial development within the Netherlands. At the moment of writing, one of the most prominent developments is the implementation of the energy transition. This transition is driven by the awareness of climate change, the depletion of fossil fuels and the concerns of the smaller local economies (Oudes & Stremke, 2018). This awareness led to the Paris agreement, which states that the increase in temperature should be limited to just 1.5°C. It was also stated that one needs to get rid of the usage of fossil fuels and

revert to renewable energy sources instead (UNFCCC, 2015). The latter describes globally the content of the energy transition. Additionally, the European Union has stated that every member state, therefore also including the Netherlands, should bring their energy consumption back with 20% compared to the level from 1990 (European Commission, 2012) . On top of that, 20% of the share of the total energy consumption should be generated by renewable sources. These aims are based on the Trias Energetica principle (Figure 2) and are set for 2020 (van Leeuwen et al, 2017). To achieve these goals quickly, multiple papers have been written about the potential of realising the energy transition on local and regional scale, and on the level of spatial development. One of those papers examined the energy potential of the urban area Parkstad Limburg in the Netherlands (Oudes & Stremke, 2018). Although the potential might be present, there is no extensive description of the manner in which stakeholders will react towards similar projects and how they can be involved.

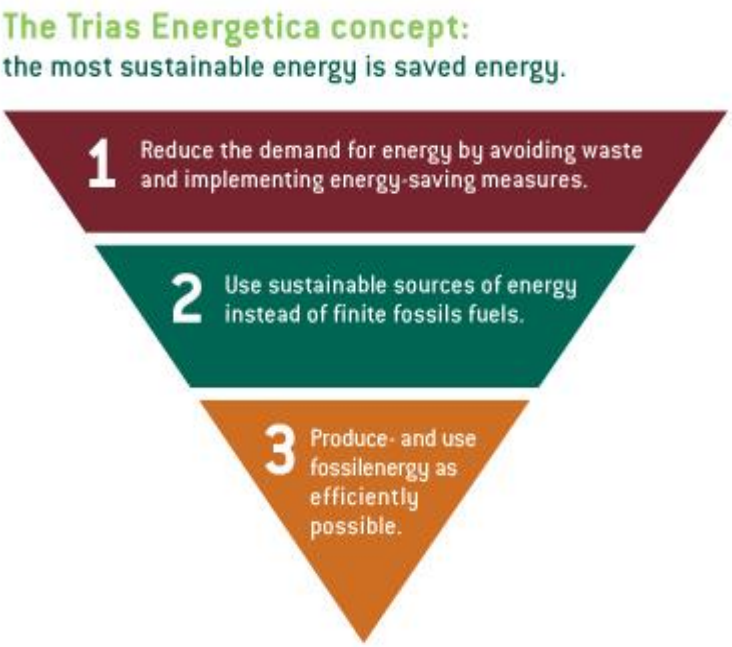

Figure 2. The Trias Energetica concept (EURIMA, 2018)

An opportunity is seen to combine the research for determining the moment of Roelofs' involvement in a spatial development project with the energy transition theme and its concerned stakeholders. This research will be a first step to a helpful tool, which provides an insight in the behaviour of the concerned stakeholders and how they should be involved in the energy transition projects. The research will also make clear how Roelofs is positioning itself towards the other involved stakeholders and when Roelofs should become active in spatial energy transition projects.

1.2. Research aim, questions, methodology and data

1.2.1. Research aim, questions and methodology

The aim of the research is to provide a participation strategy for the upcoming years considering the energy transition within the field of spatial development. The strategy is based on the stakes and relative power of the stakeholders. The participation strategy will give a clear advice on the involvement of stakeholders – and Roelofs itself – within spatial energy transition projects. The scope boundaries are defined by geography (region of Twente), time (validity of results from January 2019 until 2023) and renewable energy techniques and policies, within the energy transition. When the problem context and its scope come together, the main question can be formulated as:

"How and when can stakeholders be involved into future energy transition projects on spatial development level within the region of Twente until the year 2023, and how can the position of Roelofs be characterised in this strategy?"

This main question can be answered by answering multiple sub-questions:

1. *"What are expected to be the various attention points within the sector of energy transition until 2023 in the Netherlands?"*
2. *"How can the attitude from stakeholders in the region of Twente towards the energy transition developments be characterised?"*
3. *"How can stakeholders be involved within energy transition projects?"*

To answer these questions, methods are chosen to collect and process data and get results. This methodology in the research process is visualised in Figure 3.

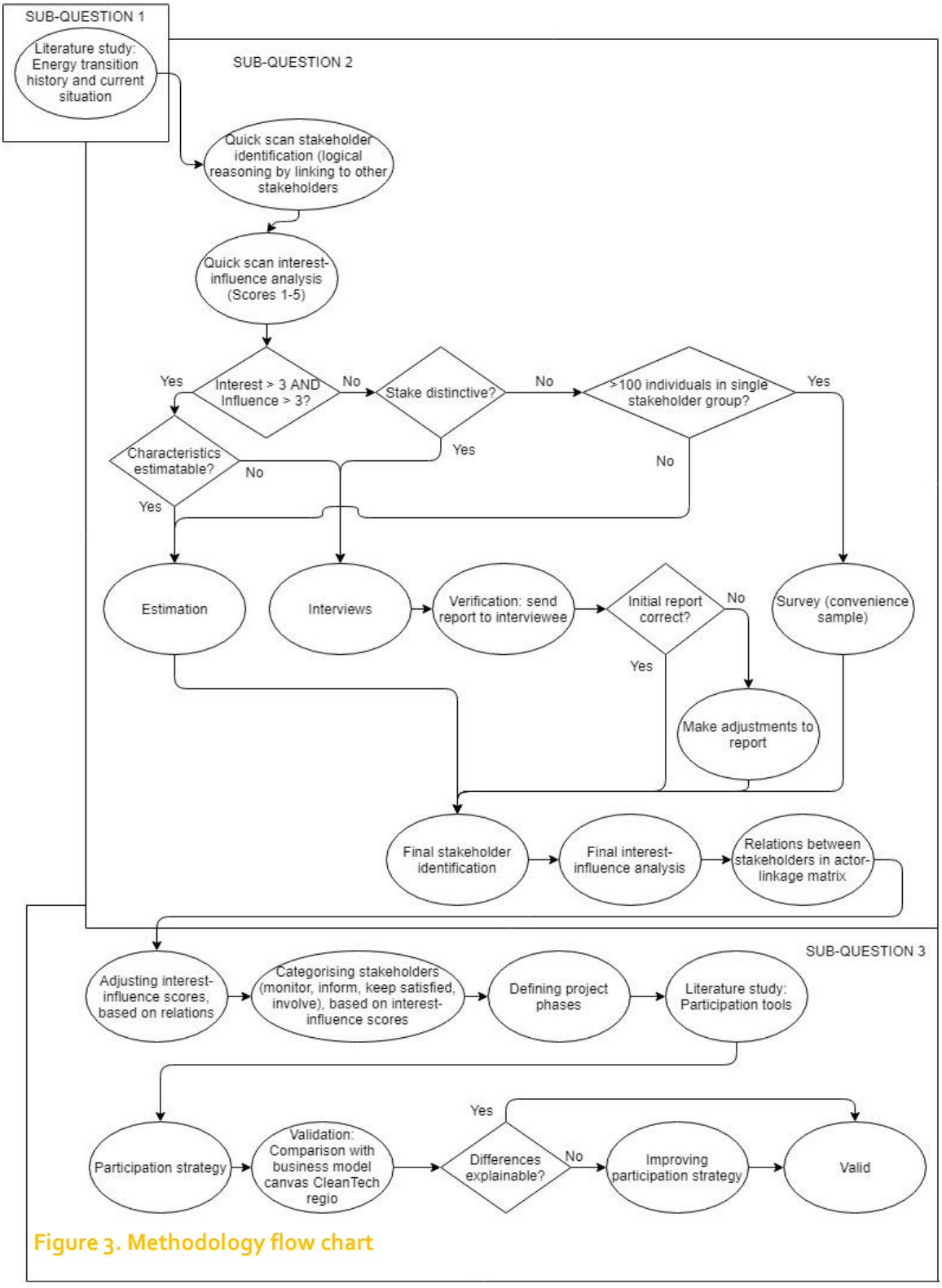

Figure 3. Methodology flow chart

1.2.2. Data Flow

To make clear what data is used as input for the sub-questions and what the output consisted of, a data flow chart was set up to provide this overview. This chart is shown in Figure 4. The structure of the report is similar to the data flow chart. Firstly, the outcomes of the orientating literature study will be discussed. Second, the stakeholder analysis and its outcomes are explained. After that, the participation strategy will be discussed and validated. Finally, this leads to the conclusions and final recommendations towards Roelofs.

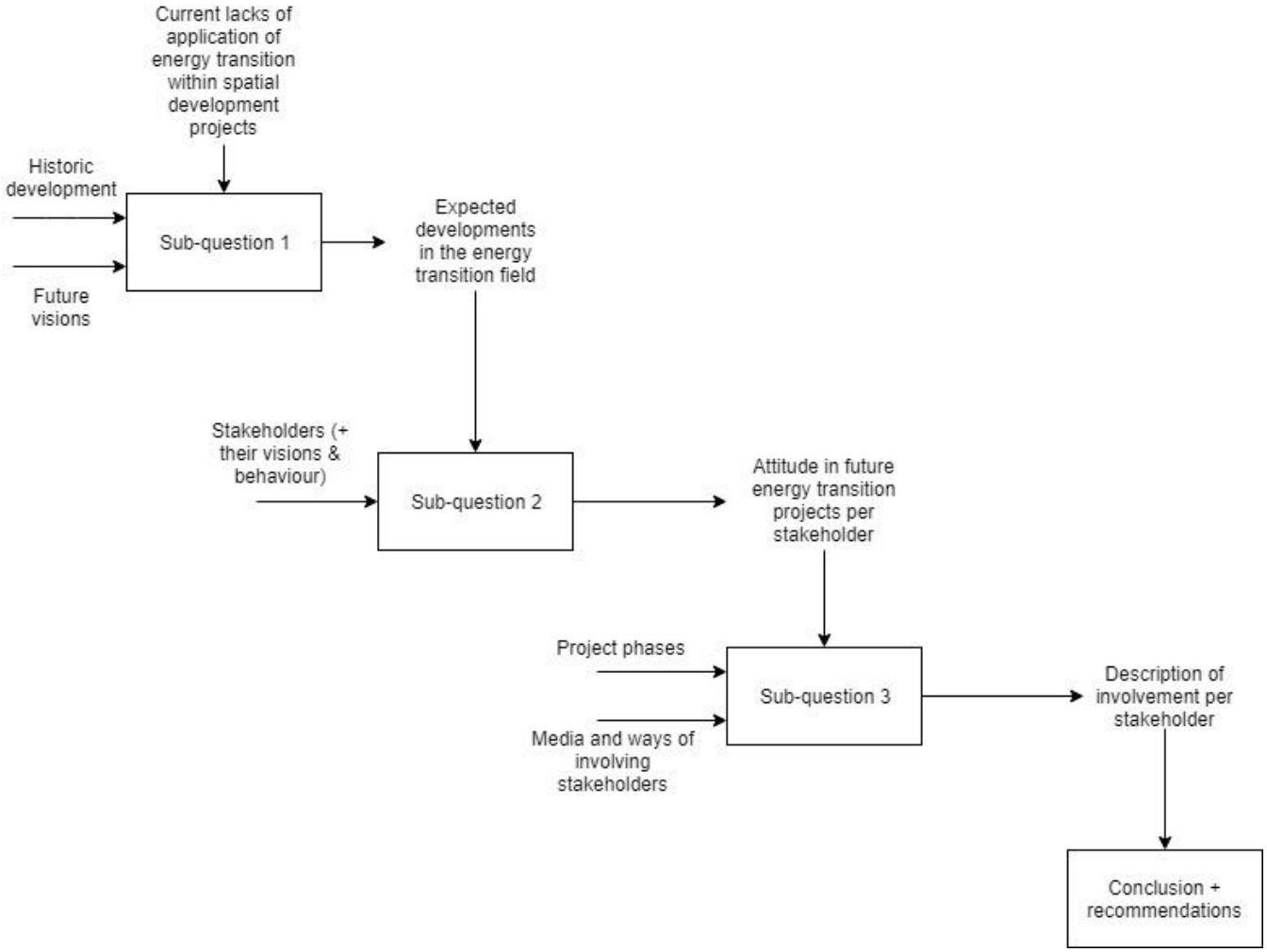

Figure 4. Flow of in-/output data per separate sub-question

2. Past, present and future of the Dutch energy transition

2.1 Introduction

Before starting the stakeholder analysis, it was necessary to identify any attention points that may be useful to address during the interviews or in the survey/questionnaire. These points are identified by means of a literature study, which discusses the global history of renewable energy sources and the Dutch energy transition policy. Also, the latest findings in the Dutch energy transition have been examined, which includes a conceptual model for a non-fossil energy grid. The complete literature study is documented in Appendix A. Literature study: Past, present and future of the energy transition in the Netherlands In the next few sections, the findings and a global conclusion of the literature study can be found.

2.2. Literature study

By conducting the literature study, it can be concluded that embracing renewable energy sources on a large scale has initially been neglected because of economic motivations. This was already the case during the Industrial Revolution, when fossil fuels were depleted on a large scale because they were cheaper than their renewable congeners (Sørensen, 1991). The first attempt at a paradigm shift from a fossil-fuel based to a non-fossil fuel based regime has also failed because of economic motivations. Main reasons were the close involvement of the fossil energy suppliers, the wish of investors for having a guaranteed return of their investments and the liberal political environment, which characterises itself by the desire of having short-term results (Kern & Smith, 2008). However, in 2015, the signing of the Paris Agreement (UNFCCC, 2015) by the Dutch government marked the take-off for a paradigm shift from a fossil-fuel based to a non-fossil fuel-based society.

The article of Kern and Smith (2008), which describes the problems of the energy transition before signing the Paris Agreement, states that it is necessary to open up energy transition projects for a broader public (Kern & Smith, 2008). Sørensen already mentioned decentralisation, but more in terms of implementing the energy transition in public space on a local and/or regional level, e.g. in the form of local sustainable energy grids (Sørensen, 1991). Though, informing and involving a broad public will help realising these local and regional initiatives. Also, each option needs to be kept in mind, the traditional as well as the more sophisticated ones. A combination of these two might attract investors because of the traditional back-up option, while in the meantime trying to open themselves up for the innovative option.

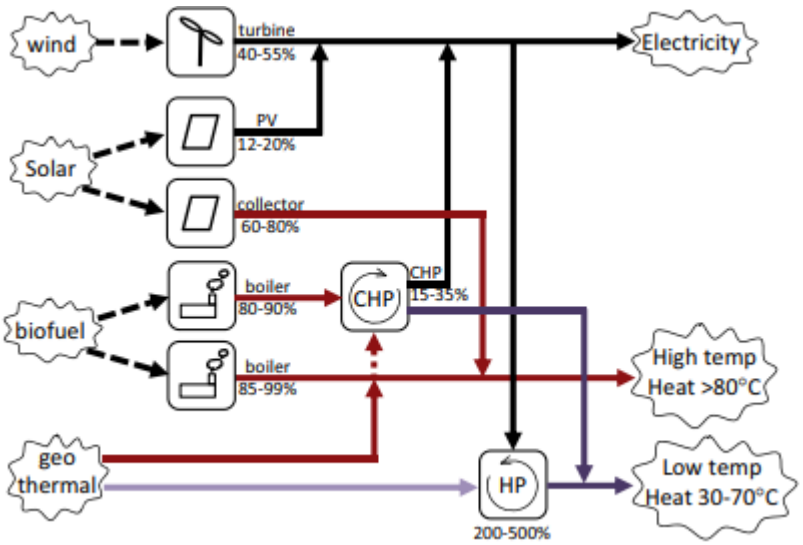

Figure 5. Conversion of renewable energy sources to useful energy in an all-covering energy grid (van Leeuwen et al , 2017)

Based on the latest technical developments within the energy transition field, it can be concluded that a non-fossil energy grid can actually be set up by using the most suitable renewable energy sources for the Netherlands (van Leeuwen et al, 2017). This conceptual model is schematically visualised in Figure 5. This model is validated during interviews with the grid operator and an energy expert from Roelofs.

Although it will take a lot of time and effort to fit within the Dutch society, the implementation of this conceptual model cannot be called 'spatial development'. To get this label, it is required to give multiple functions to space. There are already some examples of projects that combine the generation of renewable energy with other spatial functions. An example is the spatial project on the Dutch isle of Goeree-Overflakkee, where the functions of energy generation, nature, water and recreation are combined (de Zeeuw, 2018). For Roelofs, this means that the difference between a multifunctional or non-multifunctional energy transition project will determine the moment when they will start being actively involved into the project process; the more multidimensional the project, the vaguer the plan, thus the sooner Roelofs wants to get involved. Though, it should be noted that this is not the current situation, but the desired one from the perspective of Roelofs.

2.3. Conclusions

In short, there are a few attention points, which are used when identifying stakeholders and their power and interests in the energy transition:

- Large influence of financial situation of stakeholder in perception towards the energy transition
- Low guarantee of return due to need of innovative methods; investors hold back
- Current socio-technical landscape desires short-term results

These three issues are considered to be typical problems at the beginning of the paradigm shift, which characterises the energy transition. To let the transition accelerate, it is necessary to open up to the broad public to form supported collective initiatives . An example is a local sustainable energy grid (Figure 5), which is used to investigate the realism of such a system. One should though keep several points in mind:

- Being open to innovative as well as traditional renewable energy production techniques, thus keeping the range of alternatives wide
- The energy grid, as visualised in Figure 5, is not an example of the energy transition as a function of spatial development by itself; to be a part of spatial development, the energy transition should be combined with other functions of space, e.g. water, nature, buildings, mobility, etc.
    - More stakeholders involved, thus more complex
    - However, might result in more support, consequently in an acceleration of the energy transition
    - Consultancy firms – including Roelofs – can provide insight in multifunctionality of space; sooner involvement in these projects may be a result.

Whether the implementation of the energy transition in spatial development is also desired by other stakeholders in such a project, is investigated in further stages of the research.

3. Stakeholder Analysis

3.1. Introduction

Taking the encountered attention points from the literature study in account, a stakeholder analysis has been conducted. This stakeholder analysis identified the different stakeholders within the system boundaries and their attitudes towards the various focal points of a specific project. It should be noted that this stakeholder analysis is also set up from a bird's view to preserve independence of the research as much as possible. First, a quick scan is executed to find the key players in a spatial energy transition project. Then, interviews and public surveys are conducted to identify power and stakes of the stakeholders. Afterwards, the final stakeholder analysis is conducted with the obtained information from the interviews and survey. The outcomes of the final analysis are used later for the set-up of the participation strategy. In this section of the report, the results of the quick scan, interviews and survey are discussed, together with the outcomes of the final stakeholder analysis.

3.2. Quick Scan – Identification of stakeholders

When stakeholders are considered to be influential and interested in the project, it is desired to identify their specific stakes and powers by means of conducting interviews. These interviews will obtain information from the source itself. This information is therefore more accurate than when it is merely estimated. However, to assess which stakeholders need to be interviewed, a quick scan is conducted. This quick scan is a global identification of stakeholders and their estimated stakes and powers. After these stakes and powers have been listed, scores are assigned on a scale from 1 to 5, from low stake/power to high stake/power. It has been decided to interview the stakeholders who score at least a 3 on both the stake and the power scale, though there are a few exceptions. In Appendix B. Quick Scan Stakeholder Analysis, the identification of the stakeholders is shown. Also, the assessment whether an interview is necessary or not is described. Finally, the information which needs to be obtained is described per groups of stakeholders.

3.3. Questionnaires

3.3.1. Interviews

Based on the description of information to obtain (Appendix B. Quick Scan Stakeholder Analysis), the interview protocols per groups of stakeholders are set up. These protocols are documented in Appendix C. . The interviews are conducted in the Dutch language, but the answers are worked out in English. The detailed outcomes of the interviews are described in Appendix D. Outcomes interviews.

3.3.2. Survey

Although the remaining stakeholders – who are not interviewed – are doubtfully marked as 'less important', a survey is spread through several social media platforms. This survey has been set up in such a way that everyone is able to answer the questions. This means that it is not necessary to separate the submissions of already interviewed stakeholders from this 'crowd', which consists of the inhabitants, farmers, employers, employees and tourists in Twente. The list of questions, which are discussed in the survey, is also shown in Appendix C. The survey itself is written in the Dutch language, but the answers are worked out in English. The outcomes of the survey are, just like the outcomes of the interviews, described in Appendix D. Outcomes interviews.

3.3.3. Outcomes

All things considered, it seems that the energy transition as a part of spatial development is widely supported by the interviewed stakeholders. However, there are some issues with the different perceptions on how this energy transition should take place. For instance, the lack of variety in alternatives is addressed. Also, another point of attention is the imbalance of instruments between the various stakeholders. A good example is the occurrence of the phenomenon that the urban municipalities in Twente have a substantial lack of space to generate sufficient renewable energy to provide in the energy consumption of the inhabitants. This imbalance reflects the need of local/regional energy transition projects, or in this case, spatial energy transition projects on a local or regional level. The local or regional approach might solve this imbalance by gathering all different instruments and spread those over the concerned land area. Moreover, the mobilisation of the younger generations seems to be an important aspect, as this group is considered to be able to provide a response to the current resistance against the energy transition. Finally, it has also become clear that transparency is an important aspect in this type of project, as the public is missing sufficient communication about ongoing projects in the context of the energy transition. Solving this communication problem might also be the key to the solution of the awareness issue in this transition.

3.4. Final stakeholder analysis

Based on the additional information, obtained from the interviews and surveys, the stakeholder analysis process has been gone through again. This complete process can be followed in Appendix E. Final Stakeholder Analysis. The final list of stakeholders is shown in Table 1.

Table 1. List of involved stakeholders

Group	Stakeholder	Influence	Stake
Authorities	Central government	Money, authority	Fluent project process, 'good' quality of space, compliance with legislation
	Province of Overijssel	Money, authority	'good' quality of space, compliance with legislation
	Municipalities	Authority, connections, money, knowledge	Sustainable/Durable energy consumption, 'good' quality of space, integral solutions, market balance, preservation of talent and opportunities, participation
	Water boards	Authority, connections, money, knowledge, materials	Sufficient, clean and safe water. Contributing to energy transition with knowledge of water
	Ministry of Economic Affairs and Climate Policy	Money, authority	Compliance with economic, energy and climate policies
	Ministry of Infrastructure and Water Management	Money, authority	Good quality of infrastructure and proper water management
	Ministry of Finance	Money, authority	Compliance with economic, energy and climate policies
	Ministry of Agriculture, Nature and Food Quality	Money, authority	Preservation of agriculture values and nature

	Rijkswaterstaat Oost-Nederland	Money, knowledge, materials	Good quality of infrastructure and water management
NGOs/NPOs	Natural organisations (incl. Greenpeace, Staatsbosbeheer, Natuurmonumenten, Milieudefensie, Natuur & Milieu Overijssel, WWF)	Connections, knowledge, materials, money	Developing, preserve and manage forest, nature and landscape
	Het Oversticht	Knowledge, connections	Create a better environment and society by finding a balance between new and existing space
	LTO Noord (Land- en Tuinbouw Organisatie Noord, Agri/Horticulture Organisation North-Netherlands)	Connections, knowledge, money	Looking for opportunities for agriculture/agricultural members
Business	Energy suppliers	Money, knowledge, materials	Guarantee of employment and revenues in transition to non-fossil energy
	Grid operators	Money, knowledge, materials	Sustainable energy always available, return of self-produced sustainable energy possible
	Contractors	Money, knowledge, materials	Clear and viable plans
	Investors	Money, knowledge	Guarantee of revenues
	(Future) Employers/Employees	Money, connections	Accessibility/Supply of utilities (mobility, electricity, heat)
	Farmers	Connections, materials	Preservation of property
	Consultancy firms	Money, knowledge, connections	Adding value, minimalise impact on future, sooner involvement in planning process, broaden expertise, delivering integral products
Land users	Local inhabitants	Connections, materials	Low nuisance during construction and existence of newly arranged area
	Tourists	Money	Aesthetics of newly arranged area
	Local work groups (plausible)	Connections, knowledge, materials	Depends on composition of the work group

Assigning the final scores on a scale from 1 to 5 resulted in the power-interest grid, as shown in Figure 6. In Figure 6, the four different types of stakeholders are also shown. These categories are based on the stake and power scores. However, this diagram is not binding yet. Relations needed to be investigated firstly, as a stakeholder with little influence might still affect the project outcome by means of connections with a more powerful stakeholder. The actor-linkage diagram is shown in Figure 7. As can be seen, the majority of relations is considered to be neutral, thus complementary. It is no surprise that there are this many neutral relations, as it concerns a project with an integral theme. Besides, the region of Twente is a partnership of 14 municipalities, which also contributes to the high number of neutral relationships. In Figure 7, it is also visible that there are a few positive relationships. It can be concluded that the natural and environmental organisations are able to organise and support each other well to push the energy transition into the right direction. Also, the farmers are considered to be affective by means of a positive relation with the local department of the LTO. Besides positive relationships, there are also two negative relations obtainable from the diagram. This estimation is based on several natural organisations leaving the negotiations about the Dutch Climate Agreement, which the LTO regrets (LTO Noord, 2018). This could have harmed the relationship between these stakeholders. That is an aspect that has to be taken into account in a spatial development project with a theme that builds upon this Climate Agreement.

Figure 6. Power-Interest grid, based on the assigned scores only (after: Ackermann & Eden, 2011)

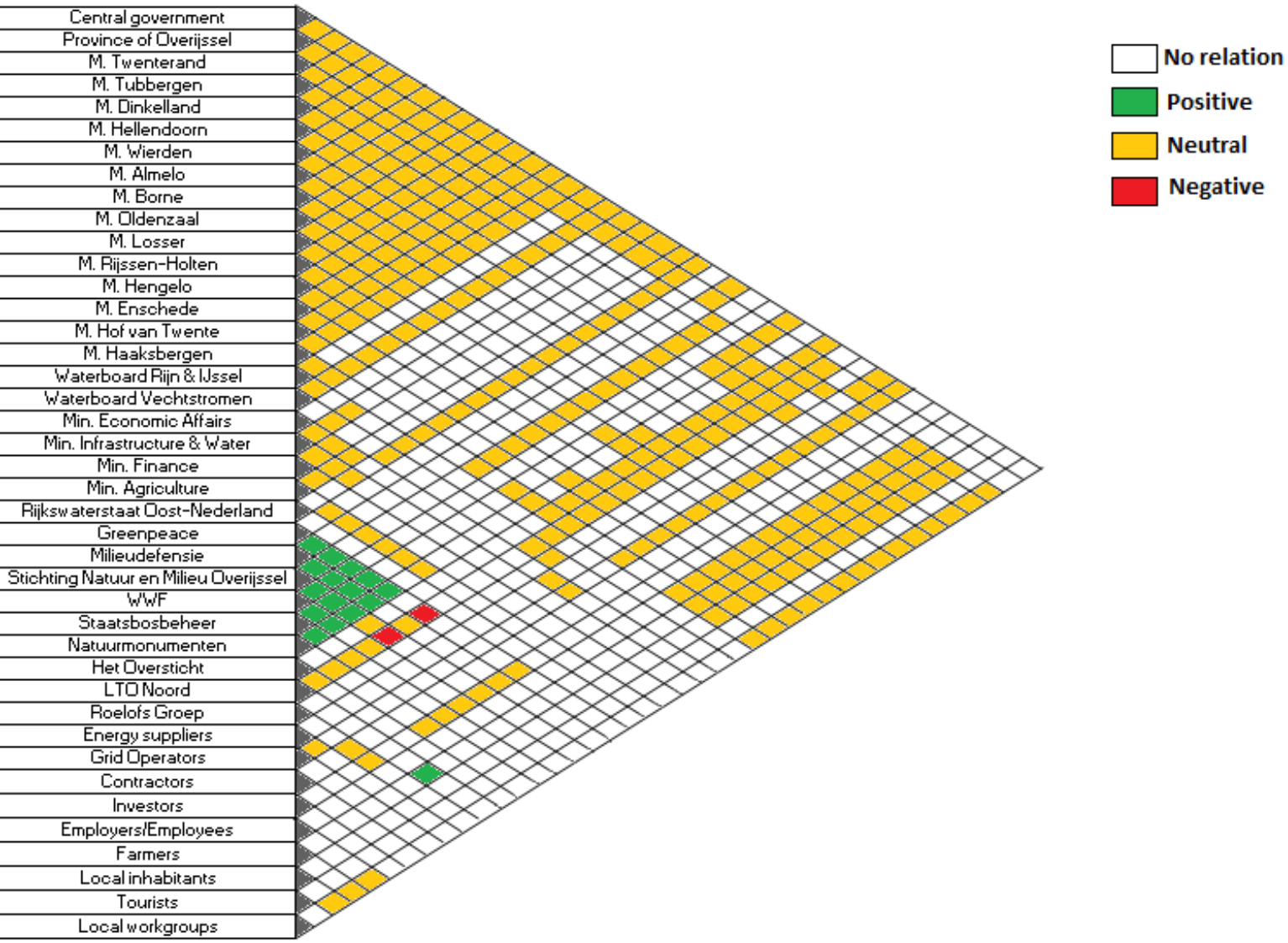

Figure 7. Actor-linkage diagram, mapping the relations between the various identified stakeholders

3.5. Conclusions

From the stakeholder analysis, it can be obtained that especially the authorities are big key players when it comes to involvement in spatial development projects and/or the energy transition. Still, some organisations have been interviewed because of their distinctive stake, which needed to be explained a bit more. From the interviews, it can be concluded that the implementation of the energy transition is widely supported. However, some issues are addressed. This includes:

- Lack of variety in alternatives for renewable energy production
- Imbalance of instruments amongst stakeholders
- Low transparency towards the public regarding the overall energy transition
- Necessity of mobilising the younger generations

These issues should be solved by means of the participation strategy.

In the actor-linkage matrix, it is shown that the relations between stakeholders do not affect the power and/or interest that much. A substantial change in power score should be made at the majority of the environmental organisations, as they do support each other well. Besides these relationships, only a few negative relationships can be derived from the diagram, which is an attention point for the participatory process to keep these stakeholders separated. Finally, a lot of complementary, neutral relations between stakeholders are found. These relations are useful for the participation strategy, but do not affect the power and/or interest of these stakeholders.

4. Participation Strategy

4.1. Introduction

The participation strategy is a protocol for the project process, based on the outcomes of the final stakeholder analysis. In this part of the report, the set-up is described, starting with the final classification of stakeholders and . Secondly, a summary of the literature study into participation and participatory tools is discussed. Afterwards, the participation strategy itself is globally described. Lastly, the validation of the strategy is examined by means of comparison with a business model canvas of a similar scope and subject.

4.2. Start-Up

4.2.1. Final classification of stakeholders

Based on the identified overall position of stakeholders in the power-interest grid, together with their relationships, the participation strategy is set up. The extended version of the start-up is published in Appendix F. Start-Up Participation Strategy. Firstly, the power-interest grid is modified, based on the information visualised in the actor-linkage diagram of Figure 7. This updated power-interest grid, used for the participation strategy, is shown in Figure 8. The quadrants with which the location is paired are a minimum degree of involvement in a phase of a spatial energy transition project.

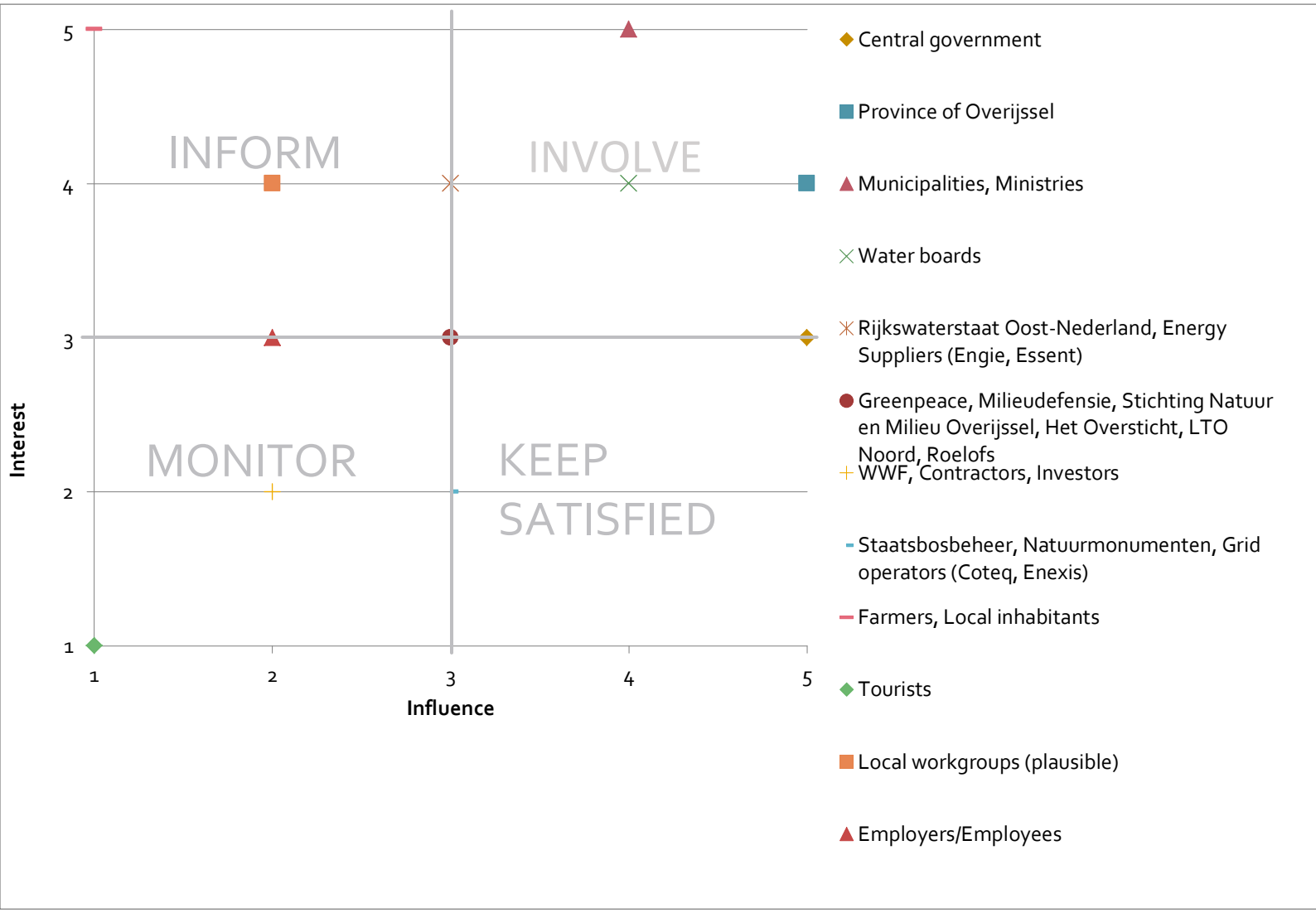

Figure 8. Power-interest grid, used for selecting the participatory method of stakeholders (after: Burford, 2012). In this grid, the relations are also taken into account

As one can see in Figure 8, there are several stakeholders that can be seen as borderline cases. These stakeholders are listed and assigned to a specific participatory method by means of a clear motivation in Appendix F.1. This resulted in a clear list of the participatory methods, linked to the stakeholders. This division is visualised in Table 2. Besides the stakeholders, providers of knowledge are involved in the project as well. These so-called actors do not have a stake, but may contribute by providing knowledge in various aspects of the project. This does not mean that stakeholders are not able to bring in knowledge too.

Table 2. Final classification of stakeholders and actors

Participatory method	Stakeholders
Monitor	Tourists
	WWF
	Contractors
	Investors
	Grid operators
Keep satisfied	Greenpeace
	Staatsbosbeheer
	Natuurmonumenten
	Central government
Inform	Farmers
	Local inhabitants
	Local workgroups
	Employers/Employees
Involve	Province of Overijssel
	Municipalities
	Ministries
	Water boards
	Rijkswaterstaat Oost-Nederland
	Energy suppliers
	Milieudefensie
	Stichting Natuur en Milieu Overijssel
	Het Oversticht
	LTO Noord
	Roelofs (or other main contractor)
Actors	Educational/Research Institutions
	DINOloket
	Natura2000
	(Social) media
	Local monitoring coordinator

4.2.2. Participatory tools

By means of a short literature study, it has been examined which tools are available, and when those tools should be used. Furthermore, it is investigated what principles there are for participation in the energy transition overall. Jörg Krywkow (2009) listed a total of nine different participatory methods, after which he examined for what purposes the methods are useful. However, these nine methods did not correspond with the four which are used in this research. Still, this was no problem, as many methods could be classified under one of the used participatory methods. Krywkow also came up with a diagram, which showed what method should be used when in the participation process. This

also included participatory tools, although this collection of tools was rather limited (Krywkow, 2009). The public participation toolbox of the International Association for Public Participation was more extensive (International Association for Public Participation, 2006), which made it a good addition to the diagrams of Krywkow.

Finally, Opstelten and Vegter (2018) provide tips how to arrange participation in the overall energy transition properly. Firstly, the locals should be taken into account from the early start of the project. In the second place, the smallest details are making the difference. Opstelten and Vegter are hereby referring to small inconvenience problems, like a lack of foliage in the neighbourhood. Furthermore, the public should be able to get financial instruments to take private measures regarding the energy transition. In addition, a community manager should help with forming collective solutions out of these multiple single private measures (Opstelten & Vegter, 2018). These collective initiatives are conform the findings of Sørensen (1991) and Kern and Smith (2008), who already emphasised the importance of facilitating these initiatives on a local level. On a side note, Opstelten and Vegter mention that the energy transition should be approached integrally (Opstelten & Vegter, 2018). The full literature study, including figures and diagrams, can be found in Appendix F.2. Literature study: Participation.

4.2.3. Defining project phases

The last step before the participatory strategy could be set up, was to define the project phases of such a spatial energy transition project. The used phases are the ones that were used on the spatial planning timeline in Figure 9. The extended explanation of each project phase can be found in Appendix G.1. Defining project phases.

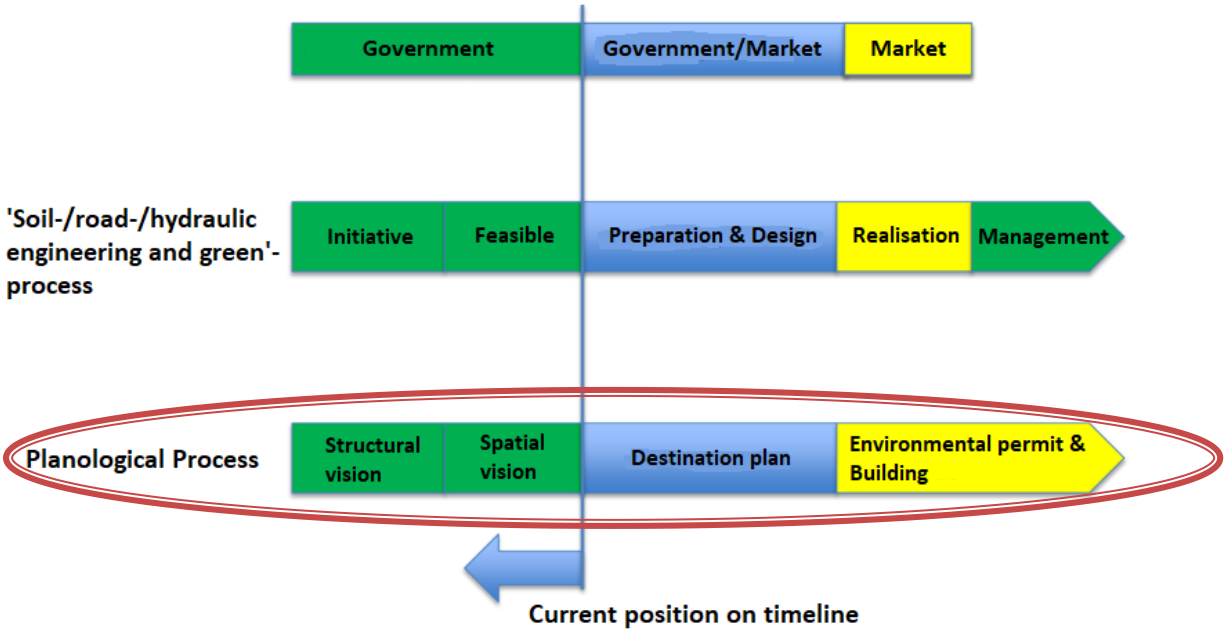

Figure 9. Project process timelines. The planological process, which is linked to spatial development, is circled (after: Roelofs, 2018)

4.3. Participation strategy

Now that all necessary information is collected, all comes together by setting up the participation strategy. The full strategy, including involved stakeholders and participatory methods, can be found in Appendix G.2. Participation strategy. A summary of the participation strategy is shown in Table 3.

Table 3. Participation strategy summarised

Project phase	Participatory method	Stakeholders/Actors	Activities
Structural vision	Involve	Province	1. Mentioning/addressing main attention points 2. Road trip along municipalities to make local attention points visible 3. Setting up first structural vision, feedback & rebuttal afterwards 4. Openly publishing final structural vision; mobilising public and other stakeholders
		Municipalities	
		Water boards	
		Energy suppliers	
		Ministries	
		Milieudefensie	
		Stichting Natuur en Milieu Overijssel	
		Het Oversticht	
	Inform	All stakeholders	
	Keep satisfied	Central government	
	Actors	(Social) media	
Spatial vision	Involve	Municipalities	5. Independent platform collecting data/issues (online and contact persons) 6. Forming issue sets (morphological chart), assessing solvability, solution range and variety of possible conceptual plans EITHER: 7. Initial spatial vision set up and openly published 8. Objection possible within 6 weeks OR: 7. Shortlisting best issue sets, stakeholders voting for final issue set 8. Final spatial vision set up and openly published, based on picked issue set
		Water boards	
		Province	
		Greenpeace	
		Staatsbosbeheer	
		Natuurmonumenten	
		Milieudefensie	
		Stichting Natuur en Milieu Overijssel	
		Het Oversticht	
		Rijkswaterstaat Oost-Nederland	
		LTO Noord	
		Roelofs/main contractor	
	Inform	All stakeholders	
	Keep satisfied	Inhabitants	
		Farmers	
		Employers/Employees	
		Local workgroups	
	Monitor	WWF	
	Actors	Educational/research institutions	
		DINOloket	
		Natura2000	
		(Social) media	

Destination plan	Involve	Municipalities	9. Workshops for creating (sub-)solutions with wide range of (public) stakeholders 10. Integral solutions/solution sets formed. Proposing more detailed destination plans 11. Shortlisting alternatives, voting final alternative by stakeholders 12. Final alternative is chosen, plan openly published
		Water boards	
		Stichting Natuur en Milieu Overijssel	
		Het Oversticht	
		Inhabitants	
		Farmers	
		Employers/Employees	
		Local workgroups	
		Grid operators	
		Rijkswaterstaat Oost-Nederland	
		Roelofs/main contractor	
	Inform	All stakeholders	
	Monitor	Tourists	
		WWF	
	Actors	(Social) media	
Environmental permit & building	Involve	Municipalities	13. Controlling/managing area; Granting permits, negotiating about maintenance, contracting process for realisation, realising/building destination plan 14. Monitoring + report evaluation of achievements
		Water boards	
		Roelofs/main contractor	
		Rijkswaterstaat Oost-Nederland	
		Grid operators	
		Sub-contractor	
	Inform	Investors	
		Farmers	
		Local inhabitants	
		Employers/Employees	
		Local workgroups	
		(Social) media	
	Actors	DINOloket	
		Educational/research institutions	
		Local monitoring coordinator	

A timeline of this participation strategy is visualised in Appendix G.2.5. Participation timeline.

4.4. Validity of strategy – Comparison to CleanTech region Business Model Canvas

To validate the reliability of the participation strategy, the strategy is laid down next to the business model canvas of the energy transition in the built environment within the CleanTech region. This region includes the Dutch cities of Apeldoorn, Deventer and Zutphen and multiple rural municipalities (CleanTech Regio, 2018). The canvas is the outcome of a workshop about the energy transition by the end of October (CleanTech Regio, 2018). The full analysis can be found in Appendix G.3. Similarities with CleanTech Region. Although the scope is rather different – the CleanTech region is focussing on buildings, while this research is more focused on all functions in spatial development – and the documentation is not the same, both strategies are largely similar in terms of content. Examples are the core activities, key partners and customers, value propositions and to some extent the channels.

However, several aspects do not correspond, like the number of customer relations, key resources and the focus on financial instruments. The number of customer relations in the canvas is lower than the relations in the strategy. This is due to the fact that the canvas is focussing on the energy transition as a project for the built environment only (warehouses, houses, apartments, etc.) instead of focussing on more functions of space. The key resources are actually largely shared by the canvas and the strategy, but the materials as a key resource is missing in the canvas. From the canvas, it cannot be clarified until what project phase the model was set up, but for the realisation of these measures, materials really should be included. Lastly, the financial instruments are missing in the strategy. Actually, all concrete instruments for the realisation and development of concrete plans are missing, as this differs per authority and stakeholder. When a new destination plan is developed in the context of the energy transition in e.g. the municipality of Twenterand, it is not necessary to take the instruments of the municipality of Haaksbergen into this project, as they do not border each other. Because of this non-fixed project boundary, the financial instruments are not explicitly mentioned in the participation strategy. Still, these can be put generally in the collecting of instruments of the different stakeholders, which is covered in the structural vision phase of the project.

4.5. Conclusions

In short, the adjusted scores in the power-interest grid are corresponding with the strategy classification. This classification is an indication of the minimum extent of involvement. This classification, identified tools from the literature study, project phases (structural vision, spatial vision, destination plan, environmental permit & building) and the issues identified in Chapter 3, the participation strategy is set up. To investigate if the strategy is a valid solution, the participation strategy is compared with the business model canvas of the energy transition in the built environment. Both strategy and model correspond in topics as core activities, key partners and value propositions. Differences can however be found in the customer relations, key resources and the focus on financial flows. However, these differences can be explained by the fact that the focus is different (spatial development vs. solely built environment) and that resources and financial flows are not explicitly mentioned in the strategy, but will be identified as collected instruments instead. Therefore, the participation strategy is considered to be valid.

5. Discussion

5.1. Introduction

The research of perceptions, stakes and powers of stakeholders contains several limits and insecurities. These insecurities and limits are described in this section of the report.

5.2. Limits

The following limits have mostly been described in the research proposal. These limits are predominantly caused by the limited time that was available to conduct the research.

5.2.1. Defining stakeholders

When defining stakeholders, the group is generalised by giving all individuals in this group the same stake and power. In reality, however, the situation may be different. For instance, one farmer might oppose to the construction of solar panels on his property, because this will affect his yield and revenues. However, another farmer may embrace the placement of solar panels, because the construction will not affect his revenues that much. This difference between individuals in the same stakeholder group is depending on many factors that are varying per person, like ownership of property, revenues, health, tolerance of nuisance, etc. However, it was not possible to contact any individual in the region of Twente within the time available to conduct the research (10 weeks) , as the population of Twente is over half a million people. One could consider a survey, but not every medium will reach to every individual in Twente. Therefore, it is chosen to stay with this generalisation of stakeholders.

5.2.2. Geographical boundaries

The geographical boundary of the research is scoping the region of Twente. In the participation strategy, all authorities within this region are involved. In addition, it is described that each municipality should make appointments with surrounding municipalities about what they can mean for each other in the energy transition with regards to renewable energy production, supply and consumption. However, the behaviour of other Dutch municipalities that are located on the outside of the border of Twente is not taken into account. This includes the municipalities of Twenterand, Hellendoorn, Rijssen-Holten, Hof van Twente and Haaksbergen. Although it is expected that the approach of the municipalities – located just outside the region of Twente – will not differ that much from the approach of the municipalities within the geographical boundaries, this contributes to the reliability of the effectiveness of the participation strategy. Besides, more municipalities bring more stakeholders. It would have been rather challenging to identify the characteristics of more stakeholders in the same time available.

5.2.3. Defining energy transition

As already mentioned in the research proposal, the energy transition is a broad definition, as this not only includes the production of renewable energy, but also making policy and multiple visions upon sustainability and energy use. Because of the limited time, the implementation of renewable energy production as a function in spatial development projects have been kept as the leading subject in this research. However, other issues regarding the energy transition, like writing policies and setting up heat visions, are considered to be inseparable of renewable energy production. Therefore, these issues are also taken into account, but are not focused on as leading subjects in the research. This results in less knowledge on the perception of stakeholders towards these issues, which may result in a less reliable participation strategy.

5.2.4. Validity of results over time

This limit is not related to the research process, but to the extent of which the results are valid. As already was concluded, the participation strategy is quite similar to the business model canvas of the CleanTech region. Therefore, the strategy is globally correct and valid. Previously mentioned in the research proposal, the business strategy was a leading limit for over what timespan the strategy is valid. This was initially put until 2023, which is the year that a new business strategy of Roelofs will come into force. However, there are many more factors in the socio-technical landscape that will affect this 'valid timespan'. Currently, the central government has problems with formulating the national Climate Agreement (NOS, 2019). This resulted in a split between the coalition, which might even have resulted in new elections, which might respectively have resulted in a different approach of the energy transition in all parts of the Netherlands. In fact, new elections will take place anyway in 2021. Therefore, it might be sensible to assume that the participation strategy is at least valid until the year 2021, after which the strategy may be updated with the new characteristics of the central government.

5.3. Insecurities

Besides the already described limits prior to the start of the research, some situations have been experienced, where the reliability of the research and its outcomes have decreased to a certain extent.

5.3.1. Available articles and information

The research commenced with the conduction of a literature study with regards to the history of renewable energy techniques and the energy transition in the Netherlands. However, there was not one article available that filled the existing lack of knowledge at once. Instead, multiple articles have been utilised, each filling a bit of the lack of knowledge and overlapping theories of the other articles in some way. A conclusion has been drawn from the complete set of articles, even though this set of articles was rather small. When errors have been made in linking the articles together, this will also have far-reaching effects on the validity of the conclusion itself. Hence, this will be the attention points in the stakeholder analysis.

5.3.2. Interviewees and interviews

Initially, over 20 stakeholders are selected to be interviewed, as those were considered to be significantly interested and have a substantial influence on the outcomes of spatial energy transition projects. A handful of stakeholders has not responded to the invitation. This means that the characteristics of some of the important stakeholders needed to be estimated. This estimation was based on similarities with other interviewed stakeholders; for instance, municipalities play similar roles, only in different areas. The combination of interviewed stakeholders was assumed to be sufficient to represent all initially selected interviewees. However, other stakeholders are quite distinctive in their stakes and way of acting. Therefore, the characteristics may deviate from the actual situation. Besides the non-interviewed stakeholders, it is also not sure whether the answers of the interviewees are reliable. Stakeholders might provide socially desirable answers to the questions, but in the meantime advocate the opposite of what is answered. Finally, another insecurity might have occurred during processing the outcomes from the interviews. As the interviews were conducted in Dutch, a translation to English was necessary. Though this might seem not that harmful, it might be possible that the English vocabulary may be slightly different than the Dutch texts. This might result in a different interpretation of the outcomes.

5.3.3. Number of survey submissions

In Appendix C.2. Sample size calculation , it has been calculated that a total number of 384 submissions are necessary to let the survey results be relevant for the rest of the research. This number has not been achieved by far; only 11 submissions are received. This was due to the lack of large channels and media. Because of the low number of respondents, the results are considered from a convenience sample approach. This means that the results give a slight insight in the perception of the public, which can be taken into account as an attention point in the rest of research. One clear derived attention point, was the desire of transparency from the authorities, stated by a substantial share of the respondents. However, the question arises whether this is also an attention point when at least 384 respondents have filled in the questionnaire. Especially the transparency of the process is one of the fundamentals in the set up participation strategy. When this fundamental seems to be wrongly obtained from the survey, the reliability of the effectiveness of the participation strategy will decrease.

5.4. Conclusions

In short, multiple limits and insecurities in results can be found during the research. Most of them are due to the short period of time that was available. For the next research that will build upon this research, it is recommended to take more time for the research to interview more stakeholders or multiple individuals from the same stakeholder group; and receive more submissions from the public. With regards to the survey, it is also recommended to find more and other channels to spread the questionnaire and let the results be relevant for the research.

6. Final conclusions

During the last 10 weeks, research is conducted on the possibilities of participation in the energy transition, which is implemented in spatial development projects in the Dutch region of Twente. This is firstly done by investigating what the attention points and developments are within the energy transition and renewable energy techniques. Also, it is explored what the perceptions, powers and interests of possible stakeholders in spatial energy transition projects are. Finally, it is described how these potential stakeholders may be involved in (spatial) energy transition projects. Per research question, an answer can be provided.

When it comes to the history and current development of the energy transition, it can be concluded that multiple aspects have dominated the failure of the energy transition before the signing of the Paris Agreement in 2015. These include the financial costs, the security of the return for investors and the desire of getting short-term results. In addition, fossil-energy suppliers were involved too closely in this energy transition. Currently (2019), the central government is pushing the municipalities to write multiple vision s with concerning lowering the energy consumption and increasing the share of renewable energy production. This will provide a boost for the creation of long-term plans and visions. Collective initiatives help realising the objectives described in those visions by creating more support. This will eventually lead to an acceleration of the energy transition.

During the stakeholder analysis, it was investigated what the perceptions of the stakeholders are upon the energy transition and its possible combination with overall spatial development. It was also examined what specific stakes and instruments they have. From the interviews and survey, it can be concluded that some stakeholders see a low variety of renewable energy production alternatives. Secondly, an imbalance can be noticed between the different authorities. Furthermore, the public noted that they miss transparency in Twente's energy transition process so far. Finally, the mobilisation of the youth should be an attention point for creating support. With regards to the implementation of the energy transition as a function of spatial development, the majority of stakeholders sees possibilities in doing so. However, this will make the project rather complex; as all identified stakeholders will be involved then, many different stakes and instruments will making a clear participation strategy difficult for one specific area within the borders of Twente. Therefore, the collecting of instruments and specific stakes per municipality will happen again in the walkthrough of the participation process.

Furtherly discussing the set up participation strategy, the variety of alternatives is secured by letting consultancy firms submitting conceptual ideas for issue sets and solution sets from the morphological chart. These charts are based on the outcomes of collecting different issues from the specific area, and workshops where the public as well as other stakeholder were able to come up with sub-solutions for sub-issues from the final issue set. This means that Roelofs, being a consultancy firm, may be involved sooner in the project process of a spatial energy transition project. Furthermore, the collecting of instruments of a single municipality and its neighbouring authorities will decrease the grade of imbalance in available instruments. Finally, involving and informing the public in various activities and phases of the project – e.g. milestones – will contribute to the transparency of the project process. The latter is considered to be an important aspect, as the energy transition is more a social arrangement than a purely technical transition.

7. Recommendations

When the participation strategy is implemented in future spatial energy transition projects, as described in this thesis, consultancy firms will be able to get involved sooner in the project process of a spatial energy transition project. During the setting up of the spatial vision, conceptual plans are made for the various issue sets, after which the variety of plans offered to the municipality will determine which specific issue sets will be worked out in the spatial vision. A consultancy firm could steer to a certain direction by submitting several conceptual spatial plans for a variety of issue sets. In addition, they can send in more detailed plans when the final issue set is chosen. However, it should be noted that the municipalities will still facilitate competition between other consultancy firms and contractors. Furthermore, it is the choice of the authority to use this participation strategy. Though, as the consultancy firm will have knowledge of this strategy, they may offer this to the municipality as an indication of their knowledge-based power. This requires broadening the current network of municipalities and other authorities.

Besides recommendations towards consultancy firms, several references can be made in the context of research. Firstly, more reliable research should be conducted to the perceptions, desires, stakes and instruments of the public and the non-interviewed stakeholders. Furthermore, a theoretic case project should be set up to test the effectiveness of the set up participation strategy. Finally, the strategy should also be tested for another consultancy firm.

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Appendices

Appendix A. Literature study: Past, present and future of the energy transition in the Netherlands

A.1. History of renewable energy and the Dutch energy transition policy

To come to a case which can be used to identify the stakeholders, it is useful to investigate which developments are expected to occur in the field of the energy transition within the Netherlands. Therefore, it is important to look at the history of renewable energy sources and energy transition policies and measures to investigate why these techniques and measures have topped or flopped. This includes the period before the sealing of the Paris agreement in 2015.

In the paper *"A history of renewable energy technology"* (Sørensen, 1991), the global history of renewable energy sources from the early beginning until the early 1990s is briefly described. In the past, renewable energy was the common type of energy source. One should think of fuelwood to light up a fire, or draught animals to drive a treadmill. Already more than 2000 years ago, the ancient Greek and Indian civilisations build the first versions of respectively the waterwheel and the windmill. Solar energy applications were also known, as Archimedes describes the usage of mirrors to convert sunlight to thermal energy. It is known that even in the 1st century, people were using primitive steam engines in Alexandria. During the European renaissance, power-requiring devices and advanced energy supplying technologies were developed; all based on the prior described examples of ancient renewable energy sources. These were especially based on muscle power, wind power and hydropower (Sørensen, 1991). From this part of the report, it can already be concluded that the use of fossil and nuclear fuels on a large, global scale had become attractive not earlier than the Industrial Revolution, when steam engines and coal replaced water as a main energy source. Coal, like other fossil fuels, has low production costs, as these fuels are ready to be used directly after depletion. This is in contrast to renewable energy sources. These types of energy often need a device to convert their power to energy, e.g. a waterwheel to convert hydropower to useable energy. Still, developments within the field of renewable energy sources were made. During World War II (and even later during the Suez-crisis), energy generated by wind power was considered to be a strategic emergency power. After the two World Wars, more research was conducted on solar ponds and collectors for generating thermal energy. Based on prior research of scientist Becquerel (the photovoltaic effect), the first solar panels were produced in 1954. Over time, renewable energy sources began to successfully enter the modern energy market; wind turbine industry has developed to a viable market; PV-panels are implemented on a smaller scale and the performance-price ratio has increased. However, in the nineties, nuclear energy was still cheaper to produce (Sørensen, 1991). It can be noted that a large breakthrough of large-scale commissioning of renewable energy sources probably failed to materialise at that time.

From this brief history of renewable energy by Sørensen, one very important aspect has to be discussed. This aspect relates to the transition from primitive hydropower to coal. The sudden switch to coal as a main energy source is remarkable. Of course, this switch is paired with the transition from an agricultural based society to an industrial based society by the massive commissioning of steam engines. However, the most important thing that this switch is showing, is that a paradigm shift can be made quite quick. Especially when this leads to economic advantages; one steam engine was able to do much more work than multiple employees were able to do in one single day. Sørensen confirms this from another observation, as he also states that renewable energy became more attractive for consumers and industrials when the price of fossil fuel increased (Sørensen, 1991). This price was no longer based on production costs only, but also on indirect costs like the environment. Also here, the beginning of a paradigm shift is encouraged because of economic reasons.

The background as described by Sørensen is partly supported by Van Leeuwen et al. (2017), where also the Dutch background of energy consumption is discussed. Indeed, the Dutch history of energy use can be characterised by the usage of a lot of wood as the main energy source until the Industrial Revolution started. Since then, coal was combusted to drive the steam engines until the 1950s, when large sources of natural gas were discovered. This gas became the dominant fuel for households and industries until today. Just like the sudden paradigm shift from water to coal, as described by Sørensen, this energy transition from coal to gas shows that such a transition can be made in a short time, which is also shown by Denmark with its transition from fossil fuels to wind power and solar energy (van Leeuwen et al, 2017). Both transitions were made because of economic reasons (less import costs and a higher degree of energy independence).

On the policy level, one learns that the energy transition has encountered a false start, as a quick look is taken in the article of Kern and Smith (2008). This article shows us that the period before the sealing of the Paris agreement is considered to be somehow problematic for this transition. Analysing this situation could revenue attention points for further stages of the research (important stakeholders/project phases).

Kern and Smith start with describing the enforcement of the energy transition policy by the NMP4-document in 2001. This document marked the beginning of the transition approach, which aims amongst others for energy innovation, as the environmental problems could not be solved by intensifying the current policies. This transition meant big changes in technology, economy, culture and institutions. The overall policy plan was to reduce the emission of carbon dioxide by 40 to 60 percent in the interval from 1990 to 2030. Multiple research studies have examined the difficulties of moving to a sustainable energy system, of which the focuses are varying from the renewable energy sources (wind, biomass) to policies and the ongoing transition in the Dutch electricity system. The socio-technical landscape of the ETP (Energy Transition Project) can be characterised by the ongoing climate change, while the regime-level, at that moment mainly fossil-fuel based, is existing of the technological artefacts, user practices, market practices, regime frameworks, cultural meanings and scientific knowledge. New energy practices and technological innovations are filling the niche-level as the market-niche, which should be able to compete with the dominant regime to guarantee a transition. In policy terms, experimenting is encouraged by means of subsidies. It is chosen to not pick a 'winner' of the collection of experiment results, but for keep a wide range of possibilities, of which the 'winner' should emerge evolutionary (Kern & Smith, 2008). This is partly conform the desires of Sørensen, who already stated that a big variety of options would decrease the energy demand intensity (Sørensen, 1991). On the whole, the policy is concerned to be a

learning process. Already before discussing the NMP4 into depth, Kern and Smith mention that structural change in energy systems is politically difficult. One should think of deployment at energy suppliers and a non-stable political situation. Also, a radical niche such as a non-fossil energy system is difficult to become a dominant factor in the regime-level (Kern & Smith, 2008).

On the niche-level, it can be seen that some concepts are adopted, but others are neglected by the traditional notions of efficiency and effectiveness. It happens to be that the market remains the dominant selection method, and the selection criteria are quite narrow. Therefore, new forms of energy business and social change are neglected. This situation reduces the options for a long-term change. More diverse selection criteria would help broadening the niche portfolio.
On the regime-level, the influence of the ETP on the energy regime is limited. This is mainly due to its low-level political status. In the meantime, social interests are limitedly represented, as the TFP (Taskforce Energy Transition) is mainly consisting of important institutions and business who are considered to be dominant actors in the transition process. The result is an elite-driven process of regime incumbents with vested interests. This has its implications, as wider social engagement and support is needed to let the energy transition be a success.
In the landscape-level, it can be noticed that liberalisation is more dominant than the concerns of sustainability. This expresses itself in the fact that not enough pressure is exerted. Also, investments in peak capacities and R&D budgets (budgets to develop new ways of generating renewable energy) have decreased. Moreover, the long-term planning of future power plants is jeopardised, because of the preference for short-term returns of investments. In 2007, two other researchers expressed their pessimism about the current situation and their expectations (Kern & Smith, 2008). In 2015, however, the Paris agreement was set up and eventually signed by the Dutch government and many others in 2016, enforcing the way to the energy transition as a dominant regime (UNFCCC, 2015).

Kern and Smith conclude with several dilemmas which need to be carefully solved, the firstly discussed one being long-term versus short-term policies and experiments. Although long-term is desired, short-term results are needed to keep momentum behind the transition process in the current liberal situation. The risk might however be that this results into a risk-averse strategy, so that long-term goals will be undermined.
Another dilemma is the choice between the level playing field and the certainty for investors. The level playing field is creating uncertainty for companies, which have a specific structure of the energy system for decades, thus based on tradition. Keeping all options open prevents a definite lock-in, but some stakeholders do rely on the certainty of specific options.
A third dilemma occurs between the focus on incumbents or focus on frontrunners. At the moment of writing, 2008, the incumbents were the dominant group in the regime-level, which is mainly due to the Ministry's emphasis on 'finding new opportunities for energy businesses'. However, these incumbents might also be innovative if their engagement in the process helps them to redefine their interests and to think more on a long-term scale.
The next dilemma is discussing the balance between nurturing niches and control policies. The nurturing niches can be characterised as the creation of space and momentum for innovations in the field of energy technologies. Control policies are the policies which have to push the regime towards the embrace of these nurturing niches. These policies are however missing and are considered to be politically challenging to set them up. Therefore, a transition cannot be achieved on the short term (Kern & Smith, 2008).

Overall, it can be concluded that the power and legitimacy base for sustainable change is absent and that it is a difficult way to implement new institutional routines. Also, the existing socio-technological structures and organisational routines are considered to be obstacles. "Its analysis *for* policy needs to be complemented by analysis *of* transition policies and their politics" (Kern & Smith, 2008).

In short, Kern and Smith state that a lot of problems on the policy level have occurred in the first years of the energy transition. Especially a lack of commitment could be traced. Yet, the Dutch government signed the Paris agreement, against all odds of Kern and Smith at the time of publishing their article. Still, it is important to have a good look at the energy suppliers, central government and investors as stakeholders in future energy transition projects. Also, it is necessary to keep in mind the demand of short-term returns. It might be an idea to split the project in multiple phases, of which each gives a substantial result. Moreover, traditional solutions are attractive to investors, but it is possible to implement an innovative system into the project.

A.2. Current situation and visions

Now the overall history of renewable energy sources is known, it is important to focus on the current situation and several visions of different researchers concerning a shift towards a non-fossil energy grid. This section of the literature study will mainly discuss the situation a few years after the sealing of the Paris agreement.

When is focused on the period after the sealing of the Paris agreement, it can be noticed that the Netherlands is in the middle of a paradigm shift. On the one hand, several Dutch policies have been formed in the context of the energy transition, which have been described by Van Leeuwen et al (2017). This includes:

- Setting up stricter norms for the EPC-levels and labels (indicators for the sustainability of various products)
- Large-scale renovating dwellings and buildings to comply to the new norms
- Providing subsidies for heat generation and distribution from renewable resources by means of heat pumps or district heating
- Stimulating investment in PV/solar panels
- Increasing consumption of 'self-generated' energy (e.g. PV panels on the roof) by making it less profitable to 'import' energy
- Increasing public awareness of renewable energy systems (supporting a legal playing field for local energy corporations)
- Increasing electrification of domestic energy consumption

On the other hand, 94% of the Dutch total energy supply is fossil and 96% is non-renewable. It can be noted that, at the moment, the Netherlands energy supply is still highly contributing to the greenhouse effect (van Leeuwen et al, 2017). To tackle this problem, a conceptual model has been designed by Van Leeuwen and his research team, which is able to replace the entire fossil-based energy grid in the Netherlands. A schematic visualisation of such a non-fossil grid is shown in Figure 10.

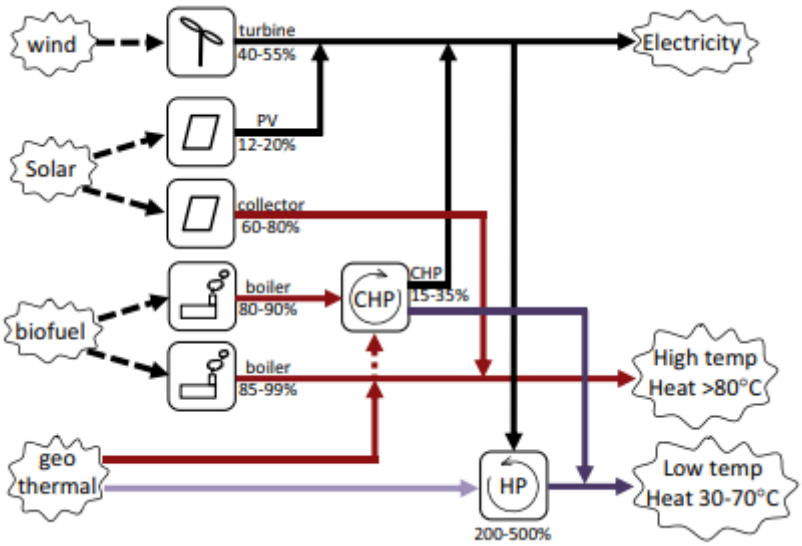

Figure 10. Conversion of renewable energy sources to useful energy (van Leeuwen et al , 2017)

The most suitable renewable energy sources within the Netherlands are wind turbines, PV panels, solar collectors, biomass and geothermal energy. This is mostly due to the Dutch flat landscape and shallow coasts. Still, many options are needed to entirely opt out fossil fuels. The non-fossil energy grid as shown in Figure 10 is based on the mentioned most suitable energy sources. The various aspects in the system will complement each other when one source will not generate as much energy as is needed. This system still needs a few implementations, such as a large interconnected grid as an artificial buffer; the implementation of local and/or regional energy storages; and demand-side management, like smart-control of flexible energy consuming devices.

However, Friso de Zeeuw is mentioning in his book *"Zo Werkt Gebiedsontwikkeling"* ("This is how spatial development works") (2018) that e.g. improving the sustainability of existing buildings cannot be classified as spatial development. A good definition of energy transition within spatial development is the combination of durable energy generation and distribution, and a multifunctional plan of arranging public space. Therefore, only implementing the non-fossil energy grid as shown in Figure 10 cannot be classified as a spatial development project. A good example of a spatial development project, with regards to the energy transition, is a project on the Dutch isle of Goeree-Overflakkee. In this project, a windmill park will be constructed which yields 78MW of energy. Together with this park, new nature and living areas will be built. Furthermore, farmland will be assigned to farmers and recreational links, e.g. bicycle paths and walkways, will be constructed in the project area (de Zeeuw, 2018). This shows that a lot of different functions can be combined to a specific area, which is a very useful factor to take into account for energy transition projects. A motivation for making these project areas multifunctional, can be derived from the research paper by Maarten Wolsink (2007). When taking a quick look, decreasing environmental issues by the construction of windmill parks (or windmill farms) is considered to be a very significant factor in the consideration of scoping a windmill project. However, windmills are often considered to be annoying and a threat for the scenery of the area (Wolsink, 2007). Compensation in the forms of newly built nature could 'ease the pain' of the lost nature by the construction of a windmill farm. Furthermore, nature and other functions in the project area are able to camouflage the sudden presence of windmills in a natural environment.

The choice between a multifunctional energy transition project or a single energy transition project relates directly towards the position of Roelofs in the participation strategy. When a multifunctional dimension is given towards an energy transition project, it is desired to involve Roelofs as soon as possible in the project. By this means, Roelofs is able to synchronise the structural vision of the project with their own vision ("More quality to space"). However, when one prefers to solve only the energy transition problem, it is no use for Roelofs to be involved sooner, as the vision is in fact already fixed in that case. Therefore, it is important to examine whether there is a specific preference for a spatial development project or a single-function project.

Appendix B. Quick Scan Stakeholder Analysis

B.1. Identifying stakeholders

To come to a participation strategy, it is important to know which stakeholders are concerned with an energy transition project. The stakeholders and their behaviour are initially identified on the basis of this research's system boundaries and the attention points, derived from the previously conducted literature study. The stakeholders will be identified in specific groups, being: Authorities, Non-governmental/Non-profit Organisations, Business/Enterprises, and (Remaining) Land Users.

B.1.1. Authorities

The majority of stakeholders in the authority group can be identified by looking at the geographical system boundaries (the political geography). The location of the region of Twente in the Netherlands and the different authorities within the Netherlands are shown in Figure 11. By looking at the location of Twente on the different maps, the different authorities involved in this research can be identified.

The municipalities in Twente all have their own stakes. One could not easily say that an urban municipality like Enschede has the same demands and desires as a more rural municipality like Tubbergen. Therefore, distinction is made between all municipalities of Twente.

The political geography also includes the water boards of Twente. For the biggest part of the region, the water board Vechtstromen is active. An exception is a part within the municipality of Haaksbergen, in which the water board Rijn & IJssel is active.

Furthermore, there are a few overarching governmental instances and organisations. One is, obviously, the Dutch central government, as this instance is able to stop a project if it is believed to be 'harmful' to the public space. The central government is also the one who is coordinating the project process between the local and regional authorities. Furthermore, the province of Overijssel is an authority with power and stake in the project. Finally, there is also Rijkswaterstaat, a governmental organisation which is concerned with the "design, construction, management and maintenance of the main infrastructure facilities (...). This includes the main road network, the main waterway network and water systems" (Rijkswaterstaat, 2018). Rijkswaterstaat is split up in ten different regions. The provinces of Overijssel and Gelderland have merged to the region 'Rijkswaterstaat Oost-Nederland'. Therefore, this working area of Rijkswaterstaat will be noted in the list of stakeholders.

Figure 11. Centre: Location of Twente in the Netherlands (Mechielsen, 2009). Upper-left: Municipalities in Twente (Regio Twente, 2018). Upper-right: Waterboards in the Netherlands (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2016). Lower-left: Provinces in the Netherlands (Baas, 2004). Lower-right: Working areas of Rijkswaterstaat (Christiaens, 2017).

Ministries

To select the concerned ministries, one should consider their working fields instead of their geographical boundaries (because there are no geographical boundaries within the Netherlands for the ministries). Considering the energy transition itself, the ministry of Economic Affairs and Climate Policy is directly concerned, as it is responsible for the energy policy, nuclear energy policy, renewable energy policy, environmental policy and climate change policy (Rijksoverheid, 2018).

Also, the Ministry of Infrastructure and Water Management should be concerned, because this covers the construction and maintenance of infrastructure and water works. Infrastructure and water are two of the five fundamental principles of spatial development, together with living, nature and energy (Rijksoverheid, 2018).

Moreover, the Ministry of Finance is mostly concerned with regulations in the form of taxes and subsidies (Rijksoverheid, 2018), with regards to i.e. the energy transition policies. This is considered to be an important ministry, as it is concluded from the previously conducted literature study that finances are the biggest motivation to (not) make the transition to non-fossil energy. The activities of this ministry are complementing the policies made by the Ministry of Economic Affairs and Climate Policy.

Finally, the Ministry of Agriculture, Nature and Food is concerned with the natural aspect of spatial development, e.g. preservation and maintenance of natural areas (Rijksoverheid, 2018).

B.1.2. NGO's and non-profit organisations

Non-governmental organisations are mostly non-profit organisations that are not overarched by any authorities. Most of the times, these organisations are making themselves strong for one specific objective in particular. Considering the environment, Greenpeace, Milieudefensie (Environmental defence), Stichting Natuur en Milieu Overijssel (Natural and Environmental Foundation Overijssel) and the WWF are NGOs or non-profit organisations that should be concerned in the stakeholder analysis. Staatsbosbeheer and Natuurmonumenten should be considered as the local players defending the natural status in the area. Also, cultural organisations, which have to be specified yet at the moment of conducting the quick scan, should probably be taken into account, as they want to preserve the cultural values of the area. This was also one of the attention points that were described by Oudes and Stremke (2018), although it was initially chosen to not research this stake in-depth in this thesis. When looking at the region of Twente by using the GIS-application Google Earth (see Figure 12), it can be seen that besides nature, a significant part of Twente's land surface is used for agricultural purposes (a patchwork of different shades of green). The LTO is a non-governmental organisation making themselves strong for the stakes of farmers. As the land use share of agriculture is relatively high, this organisation is considered to be a stakeholder in the project. Especially the sector LTO Noord, which is active in the whole province of Overijssel and thus in Twente (Figure 13), should be considered as a stakeholder.

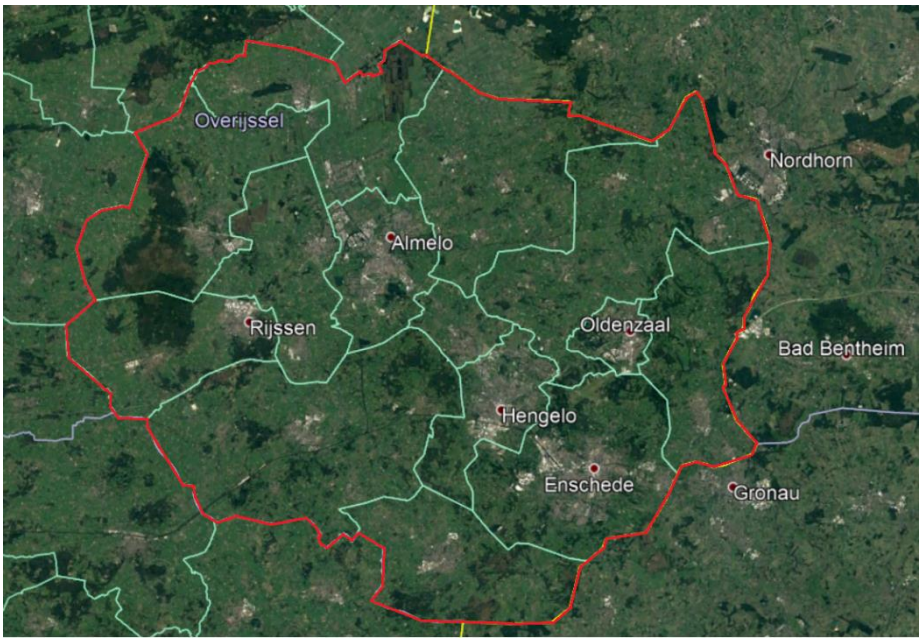

Figure 12. Land use in the region of Twente (after: Google Earth, 2018)

Figure 13. Distribution of LTO-sectors in the Netherlands (after: LTO Nederland, 2018)

B.1.3. Enterprises

When considering enterprises, one should look for businesses, firms and organisations of which profit is an objective. With regards to the research aim and questions, Roelofs should be considered as an important stakeholder that wants to get involved as early as possible to implement their vision into the project. Besides Roelofs, energy suppliers should be concerned as stakeholders in the energy transition projects. In Figure 14, it can be seen that the biggest energy suppliers in Twente are Engie and Essent (Gaslicht.com, 2017).

Figure 14. Gas regions in the Netherlands. Engie (8) is indicated with purple and Essent (4) is indicated with orange (Gaslicht.com, 2017)

Although Roelofs might be able to construct parts of the project, other contractors should be taken into account, too. Those contractors are able to complement the rest of the parts Roelofs is not able to realise. Investors are important to consider in the project, as they are able to provide money. Still, these investors want to have financial security, which is difficult to guarantee when new, innovative systems are being implemented. Finally, the current grid operators are important to take into account, as they desire employment and a well-executed transition from the current energy grid to the non-fossil energy grid, likewise the energy suppliers. The operators in Twente are Coteq and Enexis, which can be derived from Figure 15 .

Figure 15. Map of energy grid operators in the Netherlands (Energieleveranciers.nl, 2018)

B.1.4. Land users

To complement the initial list of stakeholders, based on the quick scan, it is necessary to look at the land owners and users of land. As already mentioned before, a substantial part of Twente is used for agricultural purposes. It can logically be deduced that farmers are having a stake in spatial development projects, as they desire to preserve their property. Tourists are important for the local economies, so to keep them coming, the newly arranged public space must be attractive. Therefore, tourists are an important stakeholder group. Also, the overall inhabitants of Twente should be considered as a stakeholder, as they will probably be the primary users of the newly arranged public space. Finally, it is important to take the occurrence of work groups into account. These work groups consist of different local stakeholders, who may have more knowledge and power together than a single regular inhabitant of the area. The differences between stakeholder also means a generalisation of stakes. This means that the level of power and interest is different than the ones from a single stakeholder.

B.1.5. Overview of initially identified stakeholders

The stakeholders are separated into four groups: Authorities (governmental institutions and organisations), NGOs/Non-Profit, Business and Land users. In Table 4, an overview of the first identified stakeholders is shown. Per stakeholder, the possible ways of influencing a spatial energy transition project is described. Also, the stake of stakeholders in such a project is described. Note that this is an overall estimation on how these stakeholders could influence the spatial energy transition project and how important they are to involve in the process. Surveys and interviews complemented or replaced the initial estimation of influence and stakes per stakeholder afterwards.

Table 4. List of stakeholders, paired with their influence and stakes on an energy transition and/or a spatial development project – Quick estimation

Group	Stakeholder	Influence	Stake
Authorities	Central government	Money, authority	Fluent project process, 'good' quality of space, compliance with legislation
	Province of Overijssel	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Twenterand	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Tubbergen	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Dinkelland	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Hellendoorn	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Wierden	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Almelo	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Borne	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Oldenzaal	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Losser	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Rijssen-Holten	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Hengelo	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Enschede	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Hof van Twente	Money, authority	'good' quality of space, compliance with legislation
	Municipality of Haaksbergen	Money, authority	'good' quality of space, compliance with legislation
	Water board Rijn & IJssel	Money, knowledge, materials	Preservation of water quantity, quality and resilience
	Water board Vechtstromen	Money, knowledge, materials	Preservation of water quantity, quality and resilience
	Ministry of Economic Affairs and Climate Policy	Money, authority	Compliance with economic, energy and climate policies
	Ministry of Infrastructure and Water Management	Money, authority	Good quality of infrastructure and proper water management
	Ministry of Finance	Money, authority	Compliance with economic, energy and climate policies
	Ministry of Agriculture, Nature and Food Quality	Money, authority	Preservation of agriculture values and nature

	Rijkswaterstaat Oost-Nederland	Money, knowledge, materials	Good quality of infrastructure and water management
NGOs/NPOs	Greenpeace	Connections, knowledge	Quality of environment
	Milieudefensie	Money, connections, knowledge	Quality of environment
	Stichting Natuur en Milieu Overijssel	Money, connections, knowledge	Quality of environment
	WWF	Money, connections, knowledge	Quality of environment
	Staatsbosbeheer	Connections, knowledge	Preservation of nature
	Natuurmonumenten	Connections, knowledge	Preservation of nature
	Local cultural organisation(s)	Connections	Preservation of local culture
	LTO Noord	Money, connections	Preservation of agricultural values
Business	Consultancy firms	Money, knowledge, materials	'Good' quality of space
	Energy suppliers	Money, knowledge, materials	Guarantee of employment and revenues in transition to non-fossil energy
	Grid operators	Money, knowledge, materials	Well-exploited transition in terms of the energy grid
	Contractors	Money, knowledge, materials	Clear and viable plans
	Investors	Money, knowledge	Guarantee of revenues
Land users	Farmers	Connections	Preservation of property
	Local inhabitants	Connections	Low nuisance during construction and existence of newly arranged area
	Tourists	Money	Aesthetics of newly arranged area
	Local work groups (plausible)	Connections, knowledge	Depends on composition of the work group
	(Future) Employers/Employees	Money, connections	Accessibility/Supply of utilities (mobility, electricity, heat)

B.2. Power and interest of stakeholders

Now the global powers and interests are estimated, scores are assigned to indicate the degree of power and interest per stakeholder. The scores are assigned on a scale from 1 to 5. The meaning of the scores are shown in Table 5.

Table 5. Description of scores on a scale from 1 to 5

Score	Power	Interest
1	Effect barely noticeable in project process, stakeholders needs lots of connections to affect the project outcomes	Barely influenced by project outcomes; Stake has barely connections to project
2	Effect is noticeable, might affect project process when stakeholders has connections with powerful stakeholders	To some extent influenced by project outcomes; Stake has indirect connections to project
3	Effect is substantial, in theory no relations needed to affect the project process	To some extent influenced by project outcomes; Stake has direct connections to the project
4	Project outcomes are definitely affected	Stakeholder is directly influenced by project outcomes
5	Stakeholder is able to stop the whole project	Severely influenced by project outcomes; power is used when available to change project outcomes

In Table 6, the assigned scores per stakeholder are shown.

Table 6. Assigned scores (1-5) of power and interest per stakeholder

Group	Stakeholder	Influence	Stake
Authorities	Central government	5	3
	Province of Overijssel	5	4
	Municipalities	4	5
	Water boards	3	4
	Ministry of Economic Affairs and Climate Policy	5	4
	Ministry of Infrastructure and Water Management	5	4
	Ministry of Finance	5	4
	Ministry of Agriculture, Nature and Food Quality	5	4
	Rijkswaterstaat Oost-Nederland	4	4
NGOs/NPOs	Greenpeace	2	3
	Milieudefensie	3	3
	Stichting Natuur en Milieu Overijssel	3	3
	WWF	3	3
	Staatsbosbeheer	2	3
	Natuurmonumenten	2	3
	Local cultural organisations	2	2
	LTO Noord	2	4
Business	Consultancy firms	3	5
	Energy suppliers	3	4
	Grid operators	4	4
	Contractors	2	2
	Investors	3	2
Land users	Farmers	1	5
	Local inhabitants	1	5
	Tourists	1	1
	Local workgroups (plausible)	2	4
	(Future) Employers/Employees	2	3

In Table 6, it can be noticed that the authorities have significantly higher scores in power than other stakeholders. The central government, for instance, are controlling and managing the whole project process between the local and regional authorities. The local and regional authorities are responsible for giving permits and thus for providing green light for the project to be executed. However, it can also be noticed that higher scores on the stake-level can be found in the lower regions of the scores on power-level (inhabitants, farmers, etc.). These groups are directly

influenced by the outcomes of a spatial development project. Still, a lot of authorities have high stakes in a spatial energy development project, as the majority is aiming for a 'good' quality of space, which is directly referring to the spatial aspect of the project.

When green-coloured, the stakeholder is concerned to be important to be interviewed for further stages of the research. This is based on the power and distinctive stakes of the different stakeholders. Therefore, the ministries and central government are not approached for an interview. However, a few other choices have been made that have to be explained.

No Water board Rijn & IJssel

It is chosen not to interview the waterboard Rijn & IJssel. This is mainly due to the fact that they cover only a fraction of the municipality of Haaksbergen. Of course, it is depending on the location of the spatial energy transition project whether this board is actively concerned or not. Though, over the whole scope of Twente, their working area is negligible.

Milieudefensie vs. Stichting Natuur en Milieu

Both are assessed to be affective in the project and having a direct stake. Still, Stichting Natuur en Milieu is chosen to be interviewed over Milieudefensie. This is done, because of the approach of Stichting Natuur en Milieu. This can be characterised by providing support to businesses who want to switch to a more sustainable approach, which might come in handy for good relations with involved businesses.

Staatsbosbeheer vs. Natuurmonumenten

Both have been assigned the same scores on power and interest. Also, both own property and have globally the same stake (protection and preservation of nature). Still, Staatsbosbeheer is chosen over Natuurmonumenten. This is due to the tight connection between Staatsbosbeheer and the Ministry of Agriculture, Nature and Food Quality, which is not the case with Natuurmonumenten. Because of the tight connection, Staatsbosbeheer has indirectly more power than Natuurmonumenten and is therefore considered to be important to be interviewed.

Local cultural organisations

Finally, it is also chosen to interview a local cultural organisation within Twente. Although they do not have a substantially visible power, they have a specific stake which cannot directly be found at other stakeholders. This regards to the preservation of the local culture by a civil initiative. Oudes and Stremke (2008), who have researched the potential of the energy transition in the agglomeration of Parkstad Limburg (comparable to the region of Twente), also drawed the conclusion that the protection and preservation of culture in the region would be highly appreciated by stakeholders. Therefore, it is worth investigating in-depth the stake and power of a local cultural organisation.

B.3. Interview set-ups

The interviewees, who are selected by means of the quick scan stakeholder analysis, are:

- Province of Overijssel
- All municipalities in the region of Twente
- Water board Vechtstromen
- Stichting Natuur en Milieu Overijssel
- Staatsbosbeheer
- LTO
- A local cultural organisation (which still has to be determined, probably by means of applying the snowball-method in interviews per municipality)
- Energy supplier(s) and an energy grid operator
- Roelofs

Per (category of) interviewee(s), it is important to write down what information is important to obtain and to verify. This is described in the next section of the stakeholder analysis. Questions regarding actions with regards to the energy transition, use of power and connections with Roelofs are identified with use of 'shadows of the context'. This means that answers are given about the past, present and future situation.

B.3.1. Province of Overijssel, municipalities and water board Vechtstromen

The authorities are all interviewed separately. This includes actions within the context of the energy transition, the global vision of spatial development, use of power and their relation with consultancy firm Roelofs. Moreover, stakes should be identified, too. These stakes are however not structured in 'shadows of the context', as the historic stakes are not important for future projects. Also, the opinion is asked about the combination of spatial development and the energy transition. Finally, it is important for the rest of the interviews to ask if a local cultural organisation is active in a specific municipality. When the interview is completed, it has also been asked whether the municipality is willing/able to spread the survey amongst the municipality by means of e.g. social media. This should increase the number of respondents with a direct link to Twente. However, due to the preservation of objectivity, the majority of municipalities could not help spreading the survey.

B.3.2. Stichting Natuur en Milieu Overijssel, Staatsbosbeheer, LTO and a local cultural organisation

These organisations are asked about their opinions on the energy transition and overall spatial development in the region of Twente, together with their power and relation with Roelofs. Their current stake in energy transition projects is asked. Finally, the opinion of these NGOs and NPOs towards the combination of the energy transition and spatial development is identified.

B.3.3. Energy supplier and grid operator

Also, an energy supplier and the biggest grid operator should have been interviewed. The energy supplier is considered to be large in the region of Twente. As Engie and Essent cover approximately the same size of land area, it is chosen to interview Essent, which is considered to be the standard supplier of energy. It is assumed that the stakes and power of Essent do not deviate that much from Engie's. It is expected that the big grid operator (Enexis) has the same desires as the smaller grid operator (Coteq). To start the interview, it is asked what actions already have been made by the supplier/grid operator in the context of the energy transition. After that, the stakes and power of the energy supplier and grid operator are identified. The case of the non-fossil energy grid, as described by van Leeuwen et al. (2017), is presented, about which the supplier and grid operator is able to give their opinion. Finally, it is asked whether the energy transition should be combined with spatial development projects or not.

B.3.4. Roelofs Groep

Finally, as Roelofs is also a stakeholder in the project as a consultancy firm, they are also interviewed. The interviewees will be a representative from the Spatial Development group, a representative from the Energy & Environment group, and an environmental manager. This group of people should have been interviewed all in the same interview session. During this interview, the overall approach of spatial planning and the participation of other stakeholders in these spatial development projects are identified. Also, the actions within the context of the energy transition are obtained. Besides that, the use of power and stakes of Roelofs are discussed. Finally, problems with stakeholders in the past, present and future are identified.

B.4. Survey set-ups

For the remaining stakeholders, who will not be interviewed, a survey was available. This survey will identify the nature, stake and power of the stakeholder. In addition, it is asked what their opinions are about the current actions in the context of the energy transition. Furthermore, the survey will identify the opinions on the non-fossil energy grid case and the combination of the energy transition with spatial development projects. As the number of channels for spreading the survey was limited, the results of the survey are approached as a convenience sample. This means that no minimum number of respondents has to be reached. However, this results in a low relevance of the outcomes. (Saunders et al., 2012)

Appendix C. Survey

C.1. Survey questionnaire

1. What is your connection with the region of Twente? (Inhabitant, Employed, Tourist, None, Other:…)*
2. Are you aware of your own sustainability? (On a scale from 1 to 5)*
3. Are you consuming renewable energy? (Yes/No)*
4. What is the main reason you did not choose for consuming renewable energy? Multiple answers may be checked. (Financial motivations; the current environment did (not) make me think about sustainability (yet); aesthetics of renewable energy installations; (Lack of) space; other:…)*
5. Could you explain your answer at Question 4 a bit more?
6. Do you think that Twente does a lot in the field of renewable energy? (On a scale from 1 to 10)*
7. {Referring to Question 6} Why do you think that?*

Some of Twente's actions in the field of renewable energy are discussed, including setting up a regional energy strategy (RES) in the long run.

8. After reading the text, do you still think that Twente does a lot in the field of renewable energy? (On a scale from 1 to 10)*
9. {Referring to Question 8} Why do you think that?*

Globally explaining the conceptual non-fossil energy grid, as described by Van Leeuwen et al.

10. How realistic do you think this conceptual model is? (On a scale from 1 to 10)*
11. {Referring to Question 10} Why do you think that?*
12. In how many years do you think that building such a system would be realistic? (<1 yr., 1-5 yrs., 5-10 yrs., 10-20 yrs., >20 yrs.)*

Explaining the Dutch National Spatial Vision, which includes the energy transition, but also the desire to build 75.000 residences and realising 'circular agriculture'. There is not enough space to realise everything at the same time. Therefore, one sees a possibility in combining functions of space.

13. Do you think that it is a good idea to combine renewable energy generation with other functions of space (living, working, nature, water, etc.)? (Yes/No)*
14. Why do you think that it is (not) a good idea?*

C.2. Sample size calculation

To get a relevant result from the survey, it is important to determine the sample size. This sample size is based on the confidence level z, the sample proportion p, the margin of error e, and the effect size N. The formula to calculate the needed sample size is defined as:

$$Sample\ size = \frac{\frac{z^2 * p(1-p)}{e^2}}{1+\frac{z^2 * p(1-p)}{e^2 * N}}$$ (Select statistical services, 2018).

The values of the variables are shown in Table 7.

Table 7. Values of variables in the calculation of the needed amount of samples

Variable	Value	Notes
z	1,96	Paired with a confidence margin of 95%
z^2	3,84	
p	0,50	No hypothesis H_0 is formulated
1-p	0,50	
e	0,05	Paired with an error margin of 5%
e^2	0,0025	
N	626.856	Population of the whole region of Twente, as the survey resamples this group

Now, the sample size can be calculated: $Sample\ size = \frac{\frac{z^2 * p(1-p)}{e^2}}{1+\frac{z^2 * p(1-p)}{e^2 * N}} = \frac{\frac{3,84*0,5*0,5}{0.0025}}{1+\frac{3,84*0,5*0,5}{0,0025*626586}} = \frac{384}{1,001} \approx 384$

So, it can be concluded that 384 responds are needed to let the results of this survey be relevant for further research. As this amount of respondents will clearly not be reached, the chosen approach of the results is the one of convenience sampling. The group of people responding found the survey by means of connections on social media and real-life. The only requirement of this approach, is that people are willing to participate (Saunders et al., 2012). This is already guaranteed, as the respondents themselves need to fill in the answers on the questions. Also, they are able to quit the survey anytime.

Appendix D. Outcomes interviews

D.1. Interviews

It has to be noted that not every interviewee has responded to the question whether they were able or willing to give an interview. Because time was finite during this research, it is decided to stop after having made three weeks for the interviews.

This means that the other stakeholders will be analysed based on own observations and findings, which makes their results less reliable. Still, the interviewed municipalities approach the overall composition of the region of Twente quite well (urban-rural ratio). It can also be noticed that the visions and instruments of municipalities differ only slightly from each other in most cases. Besides that, most of the diverging stakes are covered by the remaining (non-governmental/non-profit) organisations. However, the information necessary from remaining distinguishing instances and organisations cannot easily be found. Therefore, assumptions have to be made, which makes the outcome of the research less reliable.

The summaries of the interviews can be found in Appendix D.3.

D.2. Survey Results

A total number of 384 submissions were needed to provide relevant results for further research. However, only 11 submissions were received. Still, the submissions will be discussed to find similarities at several aspects. In the following part of this paragraph, charts will show the outcomes per survey question. For the survey and the result analytics, the online software of Survio is used (Survio, 2012).

1. "What is your connection with the region of Twente?"

In Figure 16, the pie chart of the relations of the submitters with Twente is visualised. It can be seen that the majority of the submitters are inhabitants of the region. This fact might be useful in upcoming results of this survey.

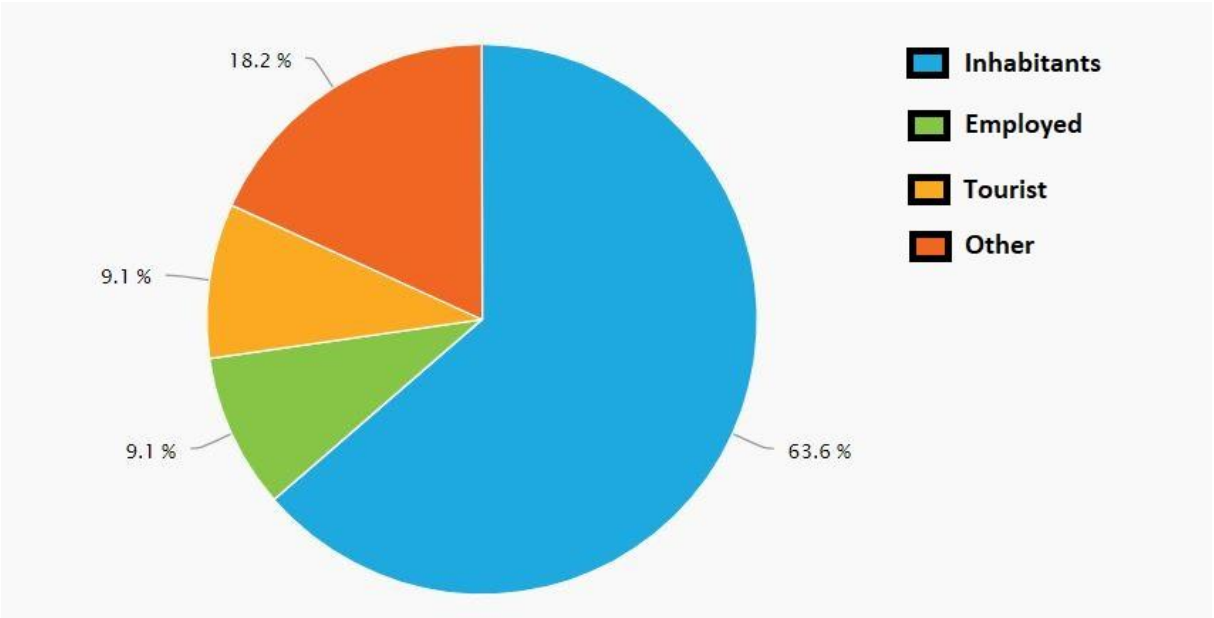

Figure 16. Pie chart of the relationship of submitters with the region of Twente (after: Survio, 2012)

2. "Are you aware of your own sustainability?"

In Figure 17, the self-assessment of awareness of sustainability of the submitters is shown. It can be seen that they consider themselves being rather aware of how to live sustainable with regards to the use of energy.

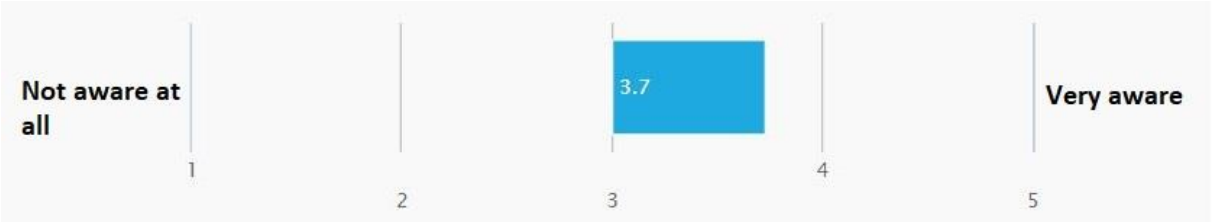

Figure 17. Box plot of the awareness of sustainability in the daily life of submitters (after: Survio, 2012)

3. "Are you consuming renewable energy?"

In Figure 18, a pie chart shows the share of renewable energy users amongst the total number of submitters. It can be seen that almost half of the submitters is consuming sustainable and/or renewable energy.

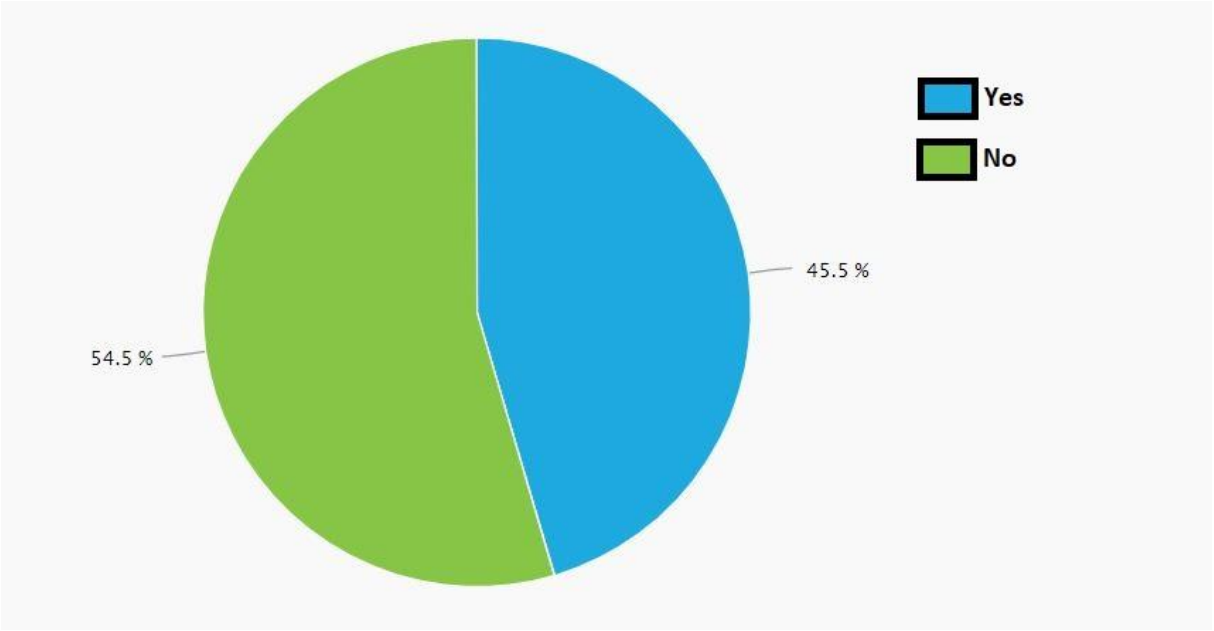

Figure 18. Share of renewable energy users in the total amount of submitters (after: Survio, 2012)

4. "What is the main reason you did not choose for consuming renewable energy?"

Continuing on Question 3, the reasons why people did (not) choose for the use of renewable energy is visualised in Figure 19. Remarkable is the fact that finances seem to be the most important motivation in the submitters' choice to use renewable energy or not. Even more remarkable, though not visible in this chart, is that a few submitters got finances as one of their main motivation to actually choose for consuming renewable energy.

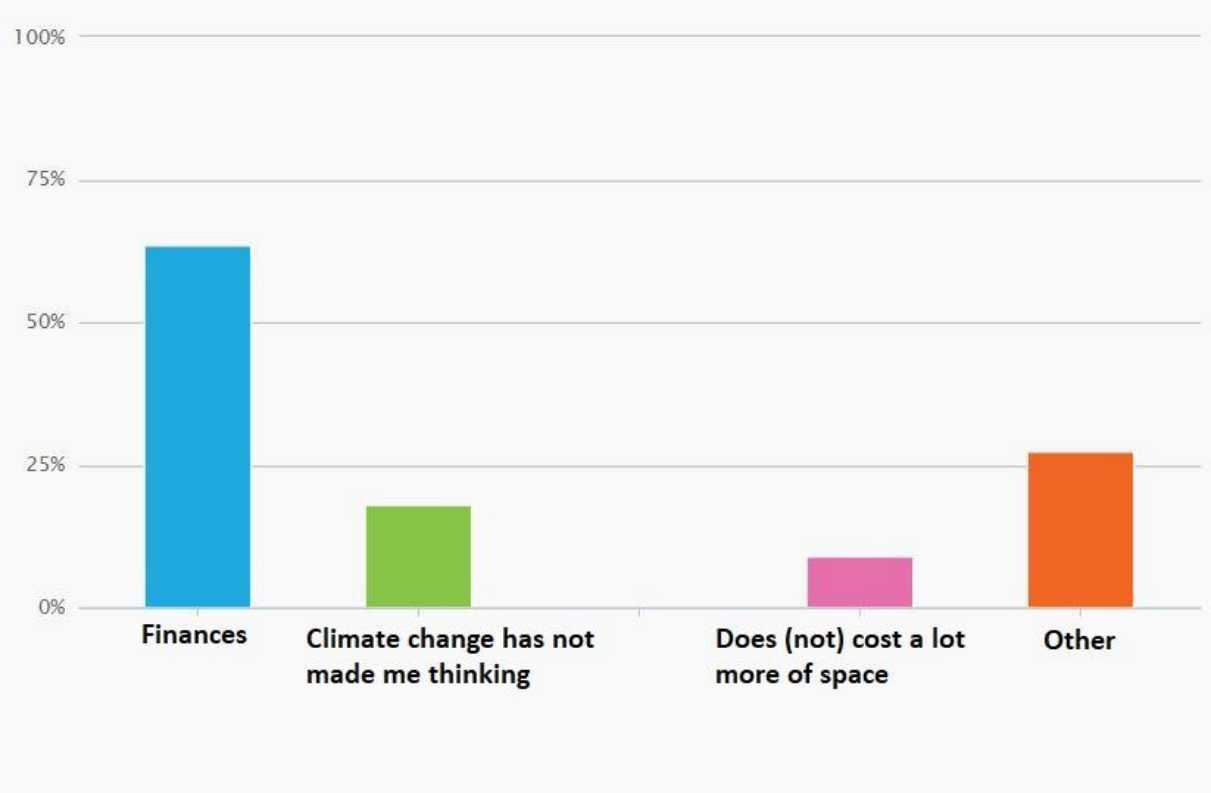

Figure 19. Main motivations of (not) choosing/using renewable or sustainable energy (after: Survio, 2012)

5. "Could you explain your answer at Question 4 a bit more?"

This was not a mandatory question to answer. From the extra explanations, it can be concluded that some did not have the financial instruments to afford renewable energy consumption. However, one explanation made clear why one submitter made the choice for renewable energy because of financial motivations. He/she states: *"I picked the cheapest one, which also turned out to be the most sustainable energy supplier. Two birds with one stone."* Also, one states that the financial efficiency of solar panels was not good enough (12 to 15 years).

6. "Do you think that Twente does a lot in the field of renewable energy?"

In Figure 20, the score of the perception towards the actions regarding sustainability, by and in the region of Twente, is visualised. This score is rather mediocre. In Question 7, this will be explained.

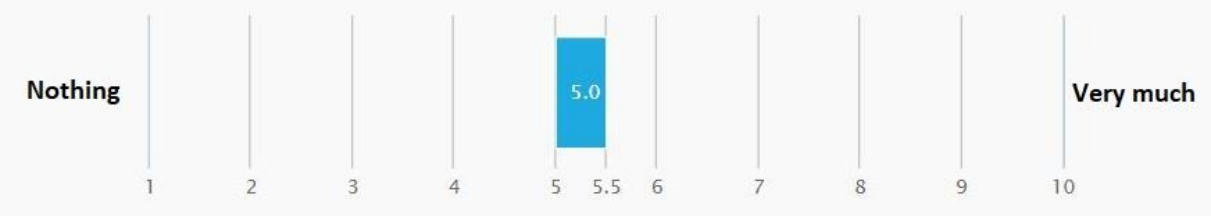

Figure 20. Box plot of the perception of submitters to sustainability initiatives in the region of Twente (after: Survio, 2012)

7. "Why do you think that?"

In the explanations, there are several reasons why the submitters think that the region of Twente is not that active with regards to sustainability and renewable energy production/consumption. One states that Twente might be active, but that this is not visible from the outside. There is not a lot of information given by the authorities about projects or initiatives with regards to sustaining the municipality or region of Twente. However, one submitter sees potential because of the information, which is provided by the university. This information states that Twente is actually quite a modern region.

8. "After reading the text, do you still think that Twente does a lot in the field of renewable energy?"

After explaining the Regional Energy Strategy of Twente, the perception has only changed a little, as can be seen in Figure 21.

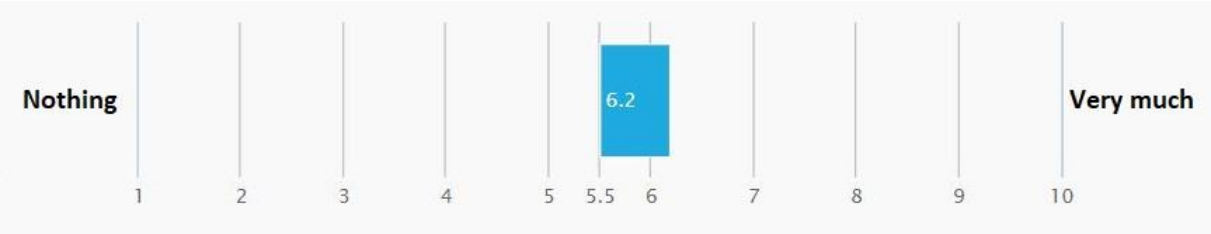

Figure 21. Box plot of the perception of submitters to sustainability initiatives in the region of Twente, after explaining the RES Twente (after: Survio, 2012)

9. "Why do you think that?"

There are a few reactions that state that the submitters actually expected a little bit more from the region of Twente. One literally states: *"Well, at least they are thinking about it!"* Furthermore, it is stated that the term is too long and that only a few concrete plans will come out of this strategy. Also, there is little communication with the 'outsiders' about the current and future actions in the context of sustainability. However, there are a few positive reactions. One states the commitment of the region by setting up the RES as the first region in the Netherlands. Also, it is stated that one sees a substantial motivation for innovative ideas.

10. "How realistic do you think this conceptual model is?"

After the global explanation of the conceptual model as described by Van Leeuwen et al (van Leeuwen et al., 2017), it was asked how realistic one found this model. The results of this question can be found in Figure 22.

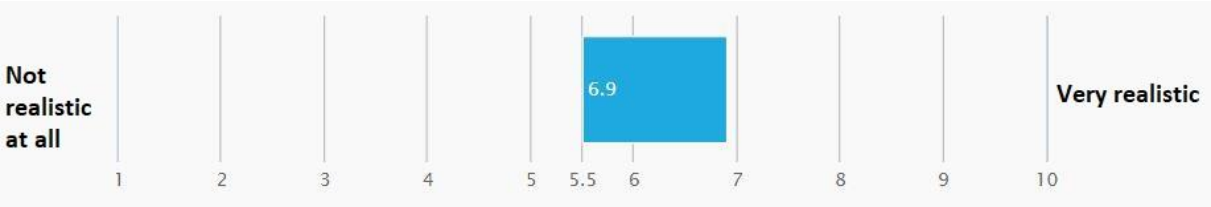

Figure 22. Box plot of perception towards realism of conceptual model of Van Leeuwen et al.(2017) (after: Survio, 2012)

11. "Why do you think that?"

Multiple statements are motivating the reasons why the submitters find the conceptual model rather realistic, but not quite yet. Finances are seen as one of the main difficulties of the realisation of the renewable energy grid. Also, more details should be worked out to assess this model whether it is implementable in the current space. Some of these details include policy, nuisance and support.

12. "In how many years do you think that building such a system would be realistic?"

In Figure 23, a chart shows the timespan in which the submitters find the model from Van Leeuwen and his research team realisable. As can be seen, the submitters find that the model can be built in 5 to 10 years or even more. This means that I can drop this model in the rest of the research, as the results are valid until the year 2023, which is considered to be the earliest moment in which the model is considered to be realisable.

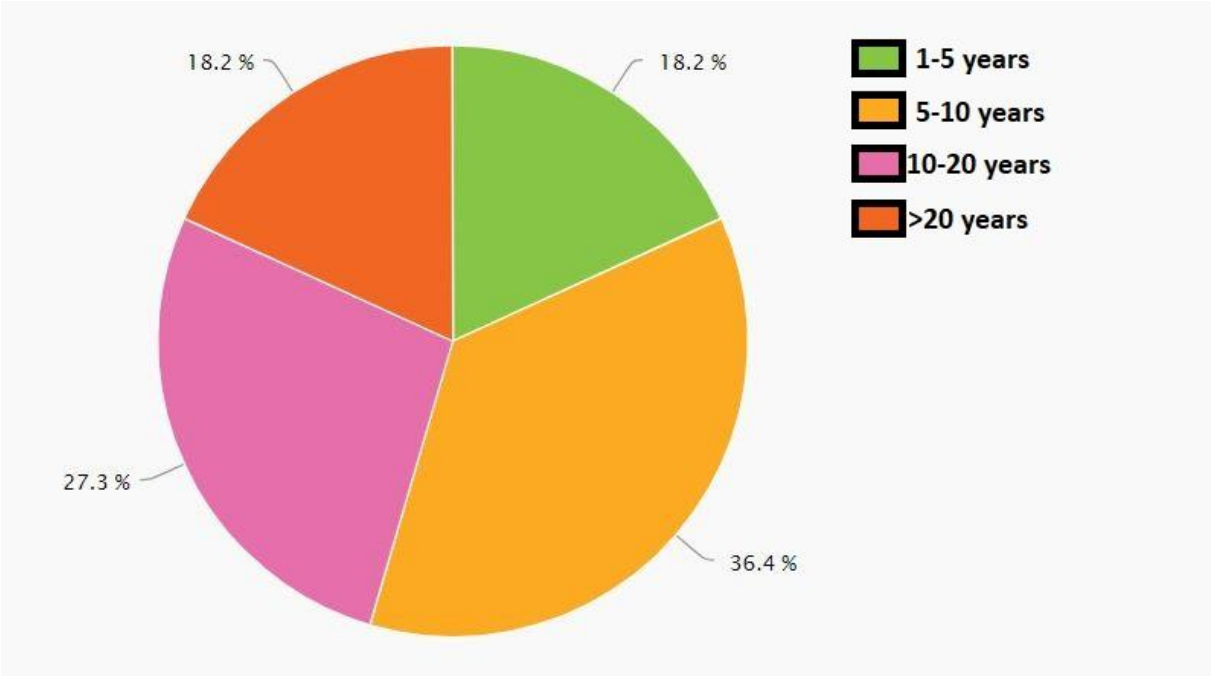

Figure 23. Pie chart of in which timespan submitters see to find the conceptual model realisable (after: Survio, 2012)

13. "Do you think that it is a good idea to combine renewable energy generation with other functions of space (living, working, nature, water, etc.)?"

From Figure 24, it can be deduced that a large majority of the submitters is pro-implementation of the energy transition in spatial development projects.

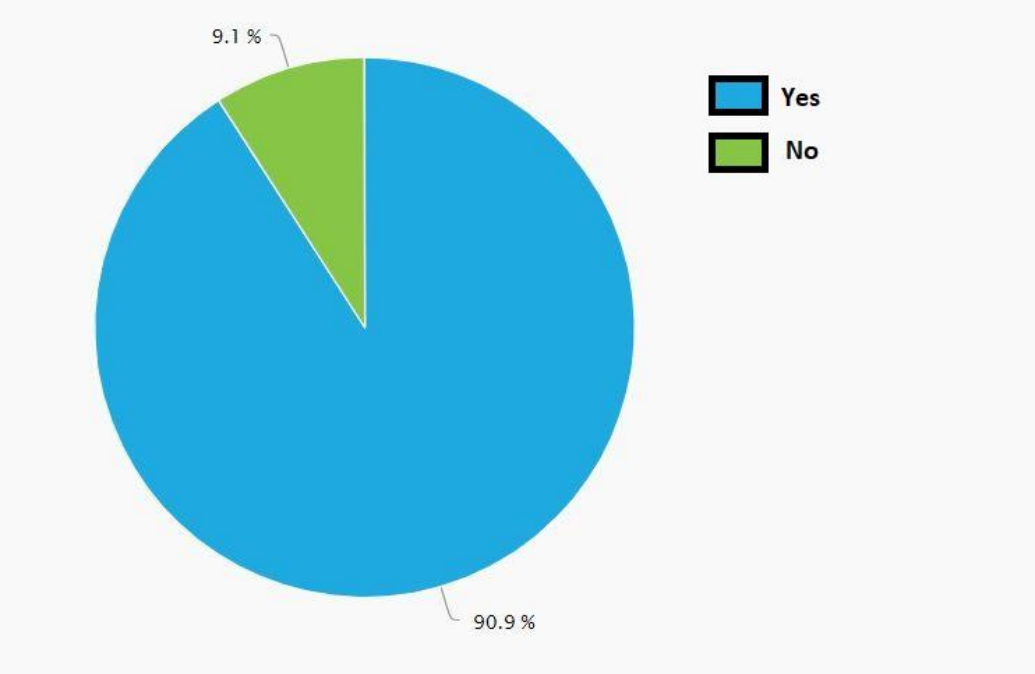

Figure 24. Pie chart of whether the submitters find it a good idea to combine energy transition projects with spatial development projects (after: Survio, 2012)

14. "Why do you think that it is (not) a good idea?"

There are several motivation for why energy transition projects should be implemented in spatial development project. Firstly, making space multifunctional is a stated motivation, as the Netherlands is coping with a lack of space for the desired long-term developments in public space. Also, combining is considered to be more efficient and to be the key to collaboration with others. The motivation why this combination should not be made, is the risk of nuisance in the environment.

D.3. Conclusions and summaries

D.3.1. Authorities

There are several similarities and differences that can be obtained from reading the interview reports. Let us firstly discuss the similarities. In the first place, it looks like every interviewed municipality is in the same stage of the energy transition: Making policy and implementing this in their framework. Secondly, realising a windmill park seems to be an issue in the region of Twente. In some cases, the options are kept open, but only as the only alternative when no other option is left. Even, in some municipalities, this alternative is non-existent. On the one hand, this is due to the lack of support of – and even a substantial resistance against – the realisation of large windmills. On the other hand, several municipalities are considered to be a national landscape, where no scenically-harming constructions are allowed to be realised. Furthermore, the approach in regular spatial development is quite the same. It is looked for investments in quality of space and participation is seen as a requirement during the project process. This is very likely enforced by the Spatial Law, which explicitly states the obligation of facilitating participation. Finally, all interviewed municipalities find the implementation of the energy transition in spatial development projects a good idea. Their motivations are different, but it mostly comes down to creating support by means of integrally themed projects.

Also, a few differences can be noticed. Firstly, the approach of the energy transition and the facilitation of sustainability initiatives differs per municipality. While some might already approach the energy transition issue integrally and provide multiple and sufficient means to facilitate initiatives, others still need to get grip on the theme of the energy transition. In one of the interviews, it was stated that the possibilities for facilitating alternatives in that specific municipality was linked to the current council period. However, this also partly resembles the perception of the inhabitants towards the theme of sustainability, as the council is chosen democratically by means of elections. This can be seen at multiple interviewed municipalities, where raising awareness is still the highest point of attention. Second, the differences between municipalities in the integrality of the approach is noticeable. This is mostly influenced by the local awareness of (the need of) sustainability. It can also be observed that the more integral the approach, the wider the range of alternatives. This is conform the vision of Sørensen (1991).

In short, first steps are made towards the energy transition, but there is still a long way to go for multiple municipalities in the region of Twente. The RES Twente will probably let the transition accelerate, but this strategy is expected to be final by the year 2019. Another possibility is seen by acting on a local and regional scale, as this will widen the range of alternatives.

When one looks at the water board, it can be seen that they can be considered as a useful partner in spatial energy transition projects. In the first place, they have experience with energy production as a function of space – fermenting sewerage sludge, combining the functions of water purification and energy production – but also have knowledge of water and water management. These themes can be seen as a realistic candidate for being an integral theme, as the function of water is suitable for being combined with another crucial issue for the future, like climate change and resilience.

D.3.2. NGOs/NPOs

When looking at the interviewed non-governmental and non-profit organisations, it is actually noticeable that they are all on a par with regards to the energy transition or regular spatial development so far. All think that something is lacking or is done wrong. Some reasons mentioned are the lack of direction since the decentralisation of the spatial development process – too many different and contradictory stakes are resulting in compromises only –, the narrowed perspective in the range of renewable energy alternatives – a dominant overall preference for solar panels – and the lack of focus on the energy transition process in spatial development projects – the most resistance comes from the spatial component of the whole issue.

Although these problems are addressed during the interviews, all interviewees have a positive perception towards the implementation of the energy transition in spatial development project. Some problems might be solved by doing this, like the creation of support and thus the reduction of resistance against the energy transition. Also, this implementation may result in a wider range of alternatives by making combinations with other functions.

With this implementation, participation is indispensable. One NGO mentions the current strange relation between extern project developers, who are thus not familiar with the local environment, and the local initiatives that have no foothold. Besides that, it has also been mentioned that a distance has occurred between the farmers and the authorities on each separate level. The farmers are, however, a rich source of knowledge, as they have experience in producing renewable energy. Besides, placing fermenters on the yard is a good combination of a small-scale spatial energy transition project, where a combination is made with the functions of agriculture and energy production.

D.3.3. Energy suppliers and grid operators

From the interviews, it can be noted that the network operator is not involved in energy transition projects in itself. However, they are prepared on the energy transition in the form of policy, by which investments in the current network are made possible, to facilitate connections to sustainability initiatives. Still, the grid operator has a large landholding in the form of underground infrastructure. Also, they have knowledge about energy transport. Moreover, they have connections with municipalities and educational institutions.

D.3.4. Consultancy firms and contractors

It can be deduced from the interviews at Roelofs that the majority of projects is already approached integrally. Therefore, the step to handle energy transition issues integrally is not difficult to make. Moreover, Roelofs has taken actions in the context of the energy transition external as well as internal. They do this on the basis of the so-called "Roelofs Compas", which includes seven different aspects of how to guarantee sustainability in the project process and management.

When looking at the stakes, one should make distinction between the goals Roelofs want to achieve with their projects and the stakes of Roelofs themselves. In the projects, they want to achieve an increase in value of public space and the minimisation of the impact on the future. Also, they want to establish a smooth project process by means of participation. Regarding Roelofs itself, they want to be involved earlier in the overall project process. Also, they want to broaden their knowledge and expertise to be able to complement the knowledge of the client. Moreover, they aim to expand their network. However, the most important aim overall is to deliver an integral product with all knowledge groups together and to set up initiatives with new partners.

Roelofs has a variety of instruments and means to achieve their stakes. Firstly, they have knowledge on technical, social, financial and legislatorial level. An already mentioned example of this, is the Roelofs Compas, which is applicable in the technical, social and financial fields. Besides knowledge, Roelofs may partly finance initiatives. Also, they try to be as transparent as possible by means of communication. Mostly, a combination of multiple aspects are used to achieve the stakes.

Also, it was asked about the perception towards the conceptual model of Van Leeuwen et al (2017). A single energy consultant stated that the model looks realistic, but this will not deliver the desired situation, mostly due to the use of biomass. This is considered to be a low-grade application; a lot of useful materials will get lost by combustion and still a lot of CO_2 will be produced. Besides, this model would not be realisable by Roelofs itself. This is mainly due to because of the lack of knowledge of different sustainable techniques, like solar panels and windmill parks. This means that Roelofs should work together with other groups who do have this knowledge. This is an important aspect to take into account during the rest of the research.

D.3.5. Survey

As already mentioned, the survey did not gain the necessary number of responds to be relevant for the rest of the research. Therefore, it is difficult to conclude concrete facts from the results. However, a few aspects are noticeable. Firstly, finances are considered to be an important point on which people consider the consumption of renewable energy. This is conform the early findings in the literature study in Appendix A. Literature study: Past, present and future of the energy transition in the Netherlands. Secondly, the submitters experience a lack of communication between the authorities and the inhabitants. They think that this should be solved, as they think the actions are a step in the right direction, though a lot still needs to be done. In the third place, the conceptual model of Van Leeuwen et al(2017) is considered to be a good conceptual model, but only realistic for the long-term. Because the majority thinks that the model is only realisable after 2023, the model will not be taken in the rest of the research because of the limited validity of the research outcomes (until 2023). Finally, the big majority would advocate the implementation of the energy transition into spatial development project.

Appendix E. Final Stakeholder Analysis

E.1. Lists of stakeholders and actors

E.1.1. Identifying stakeholders

Before starting with conducting the final stakeholder analysis, it is necessary to list all stakeholders identified in the quick scan and the later identified stakeholders. The completed list of stakeholders is described in Table 8.

Table 8. List of involved stakeholders

Group	Stakeholder	Influence	Stake
Authorities	Central government	Money, authority	Fluent project process, 'good' quality of space, compliance with legislation
	Province of Overijssel	Money, authority	'good' quality of space, compliance with legislation
	Municipalities	Authority, connections, money, knowledge	Sustainable/Durable energy consumption, 'good' quality of space, integral solutions, market balance, preservation of talent and opportunities, participation
	Water boards	Authority, connections, money, knowledge, materials	Sufficient, clean and safe water. Contributing to energy transition with knowledge of water
	Ministry of Economic Affairs and Climate Policy	Money, authority	Compliance with economic, energy and climate policies
	Ministry of Infrastructure and Water Management	Money, authority	Good quality of infrastructure and proper water management
	Ministry of Finance	Money, authority	Compliance with economic, energy and climate policies
	Ministry of Agriculture, Nature and Food Quality	Money, authority	Preservation of agriculture values and nature
	Rijkswaterstaat Oost-Nederland	Money, knowledge, materials	Good quality of infrastructure and water management
NGOs/NPOs	Natural organisations (incl. Greenpeace, Staatsbosbeheer, Natuurmonumenten, Milieudefensie, Natuur & Milieu Overijssel, WWF)	Connections, knowledge, materials, money	Developing, preserve and manage forest, nature and landscape
	Het Oversticht	Knowledge, connections	Create a better environment and society by finding a balance between new and existing space

	LTO Noord (Land- en Tuinbouw Organisatie Noord, Agri/Horticulture Organisation North-Netherlands)	Connections, knowledge, money	Looking for opportunities for agriculture/agricultural members
Business	Energy suppliers	Money, knowledge, materials	Guarantee of employment and revenues in transition to non-fossil energy
	Grid operators	Money, knowledge, materials	Sustainable energy always available, return of self-produced sustainable energy possible
	Contractors	Money, knowledge, materials	Clear and viable plans
	Investors	Money, knowledge	Guarantee of revenues
	(Future) Employers/Employees	Money, connections	Accessibility/Supply of utilities (mobility, electricity, heat)
	Farmers	Connections, materials	Preservation of property
	Consultancy firms	Money, knowledge, connections	Adding value, minimalise impact on future, sooner involvement in planning process, broaden expertise, delivering integral products
Land users	Local inhabitants	Connections, materials	Low nuisance during construction and existence of newly arranged area
	Tourists	Money	Aesthetics of newly arranged area
	Local work groups (plausible)	Connections, knowledge, materials	Depends on composition of the work group

E.1.2. Actors

Besides the involved groups who have a stake in any extent in the spatial energy transition project, there is also a set of groups who do not have a stake at all. Though, these so-called actors do have knowledge of several aspects in the project. The list of actors is put down in Table 9, together with the knowledge they have to offer.

Table 9. List of actors involved in the spatial energy transition project

Actor	Knowledge
Educational/Research Institutions	Collecting and processing data from interviews/surveys to useful output; independence
DINOloket	Underground infrastructure, soil layers in project area
Natura2000	Locations of protected natural areas
(Social) media	Perceptions of public and organisations
Local monitoring coordinator	Own experience being a local; collecting issues in neighbourhood after implementing new destination plan

E.2. Power and interest of stakeholders

E.2.1. Assignment of scores

Based on the described stakes and powers, scores are assigned to help categorising the stakeholders. The definitions of the various scores, on a scale from 1 to 5, are described in Table 10.

Table 10. Description of scores on a scale from 1 to 5

Score	Power	Interest
1	Effect barely noticeable in project process, stakeholders needs lots of connections to affect the project outcomes	Barely influenced by project outcomes; Stake has barely connections to project
2	Effect is noticeable, might affect project process when stakeholders has connections with powerful stakeholders	To some extent influenced by project outcomes; Stake has indirect connections to project
3	Effect is substantial, in theory no relations needed to affect the project process	To some extent influenced by project outcomes; Stake has direct connections to the project
4	Project outcomes are definitely affected	Stakeholder is directly influenced by project outcomes
5	Stakeholder is able to stop the whole project	Severely influenced by project outcomes; power is used when available to change project outcomes

In Table 11, the final scores are assigned per stakeholder.

Table 11. Influence and interest of stakeholders on a scale from 1 to 5

Group	Stakeholder	Influence	Stake
Authorities	Central government	5	3
	Province of Overijssel	5	4
	Municipalities	4	5
	Water boards	4	4
	Ministry of Economic Affairs and Climate Policy	5	4
	Ministry of Infrastructure and Water Management	5	4
	Ministry of Finance	5	4
	Ministry of Agriculture, Nature and Food Quality	5	4
	Rijkswaterstaat Oost-Nederland	3	4
NGOs/NPOs	Greenpeace	2	3
	Milieudefensie	2	3
	Stichting Natuur en Milieu Overijssel	2	3
	WWF	2	2
	Staatsbosbeheer	3	2
	Natuurmonumenten	3	2
	Het Oversticht	2	3
	LTO Noord	2	3
Business	Consultancy firms	3	3
	Energy suppliers	3	4
	Grid operators	3	2
	Contractors	2	2
	Investors	2	2
	(Future) Employers/Employees	2	3
Land users	Farmers	1	5
	Local inhabitants	1	5
	Tourists	1	1
	Local workgroups (plausible)	2	4

E.2.2. Power-Interest Grid

Based on the final scores, the power-interest grid is made. In this grid, the influence is plotted against the stakes, as can be seen in Figure 25. As multiple stakeholders have been assigned the same scores, one symbol may resemble multiple stakeholders, as one can see in the legenda. In addition, the four different types of stakeholders are also shown in Figure 25. The division in these four categories will be used in the assignment of the participatory method to these stakeholders.

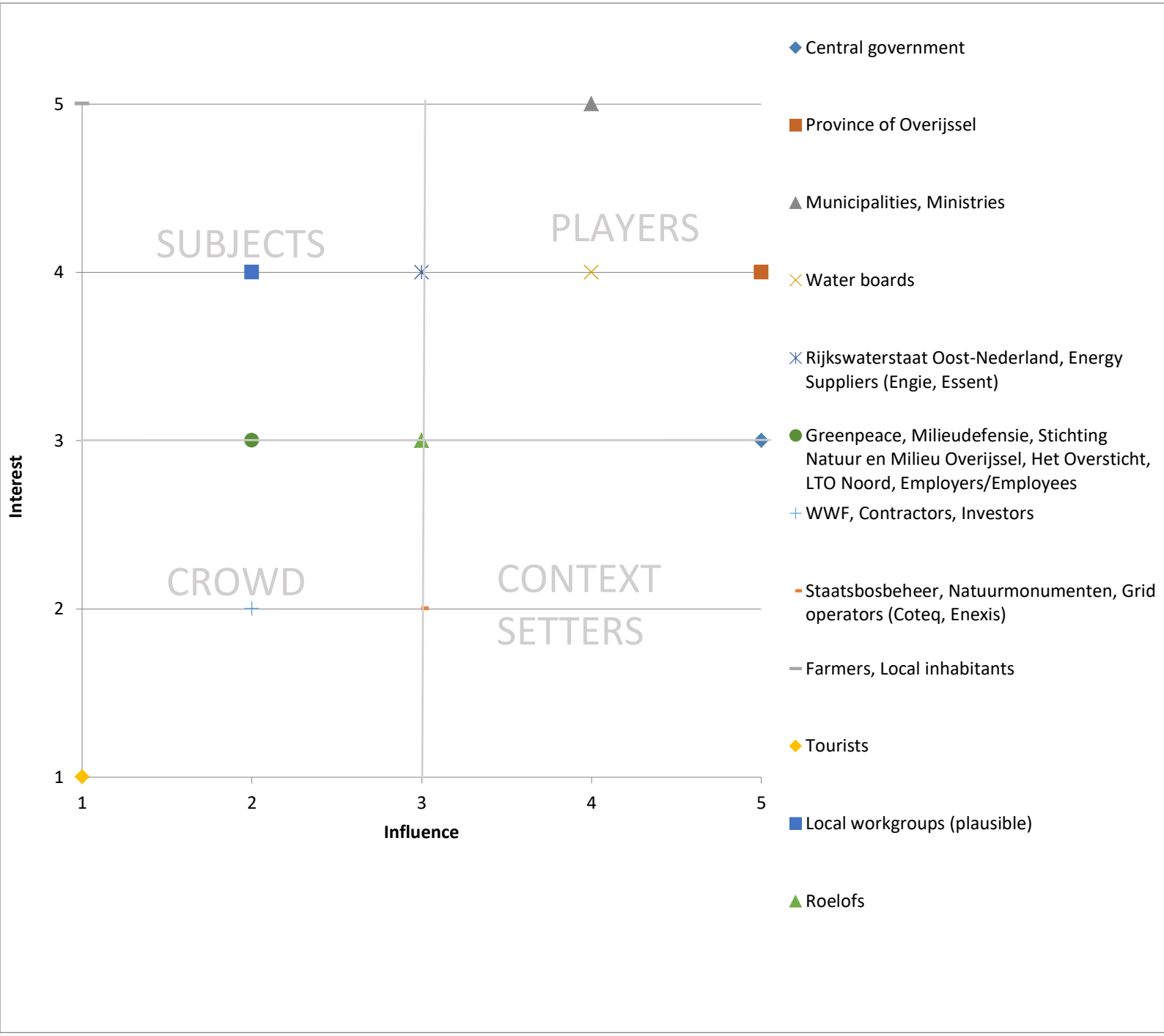

Figure 25. Power-Interest grid, based on the assigned scores only (after: Ackermann & Eden, 2011)

E.3. Relations between stakeholders

As can be seen in Figure 25, multiple stakeholders are considered to be part of the 'monitor' group. However, with the right connections, these stakeholders might still be able to affect the project outcomes. Therefore, it was important to investigate the relations between stakeholders. In Figure 26, these relations are schematically visualised. Distinction is made between a positive, neutral and negative relation. A positive relationship is characterised by collaboration between two or more stakeholders, by which all stakeholders benefit from this collaboration, mainly due to sharing the same stake or interest. A neutral relationship characterises itself by a collaboration between stakeholders, but the one's stake is not necessarily in line with the other's. In fact, they complement each other more instead of working together on the same issue. A negative relationship is a connection between stakeholders, of which the stakes are contradictory to each other. Also, problems between these stakeholders might have occurred in the past.

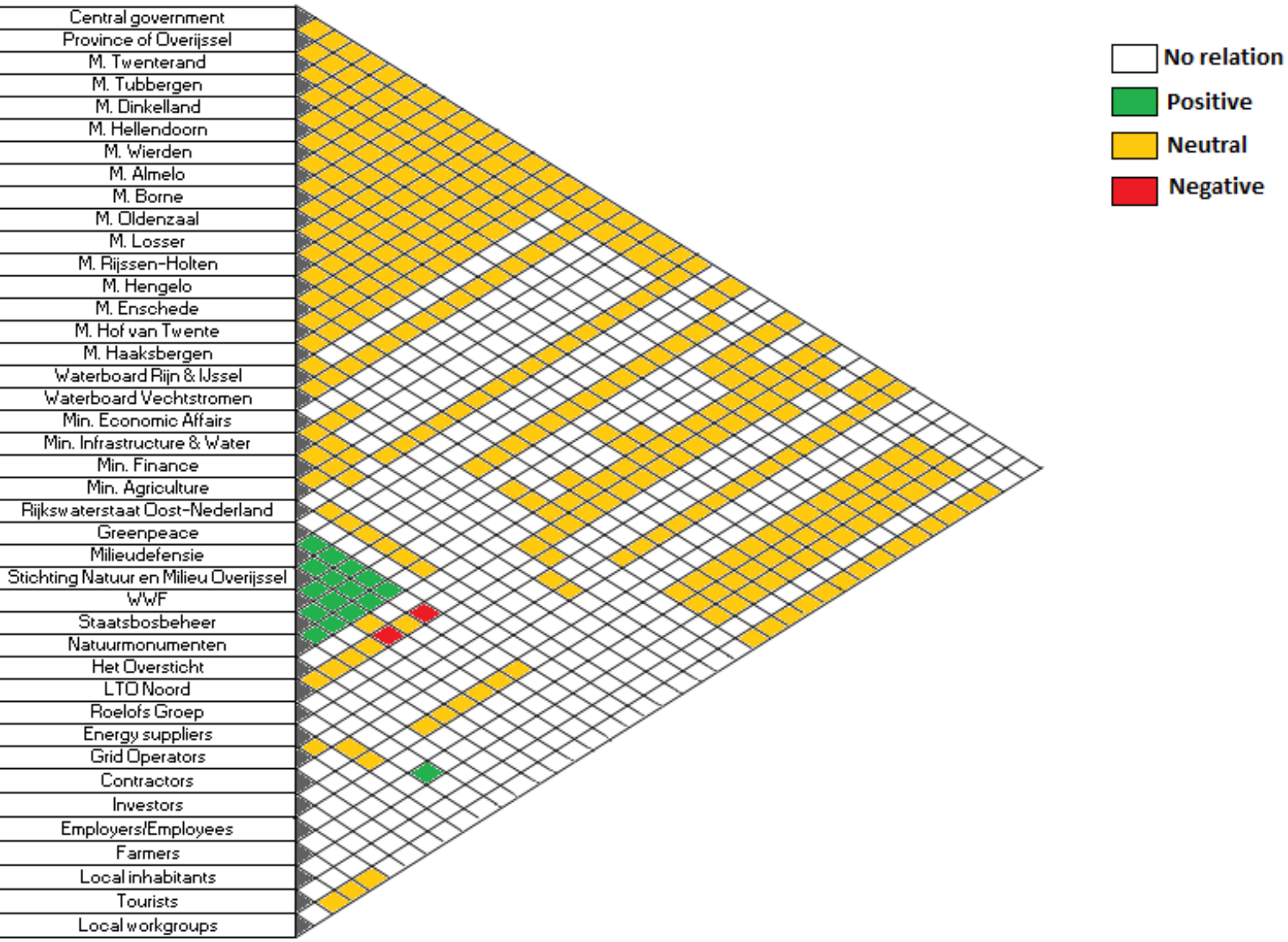

Figure 26. Actor-linkage diagram, mapping the relations between the various identified stakeholders

As can be seen in the diagram in Figure 26, the majority of relations are of a complementary kind. This can especially be seen at the triangle of neutral relations between the majority of the authorities, of which the biggest part is involved in the partnership of the region of Twente. The dominance of these relationships can also be explained by the fact that it concerns a spatial development project that is approached integrally. This means that various functions come together in one major project, which results in the collaboration of and complementation by many different authorities, organisations, enterprises and public groups.

Besides the many neutral relationships, a few positive and negative relationships can be found in the diagram. LTO Noord is an organisation which is advocating the stakes for its members, of which the majority is a farmer. Therefore, this relationship is positive. Also, the positive triangle between the six different natural and environmental organisations has to do with sharing the same stake. Finally, two plausibly negative relationships are identified. Recently, the conceptual Dutch Climate Agreement was presented, where the LTO regretted the fact that Greenpeace and the various Natuur en Milieu organisations left the negotiations regarding this agreement (LTO Noord, 2018). The relationships between these parties may be harmed because of this event. Especially with the energy transition as the main topic of these projects, it is important to keep this situation in mind.

Appendix F. Start-Up Participation Strategy

F.1. Classification of stakeholders

Based on the power-interest grid and the actor-linkage diagram, the stakeholders are classified in the four categories of participatory methods according to Burford (2012): Monitor, inform, keep satisfied, and involve. This division corresponds with the four types of stakeholders. Firstly, the input of the power-interest grid is modified based on the newly obtained knowledge of the relations between stakeholders. The classification can be seen in Figure 27. As can be seen, barely anything has changed. The only thing that has changed is the influence of several NGOs.

Figure 27. Power-interest grid, used for the classification of stakeholders (after: Burford, 2012)

Although the majority of stakeholders are clearly assigned, it can be obtained from Figure 27 that some stakeholders are borderline cases. In Table 12, the choices of classification of these borderline cases are made and explained.

Table 12. Classification of borderline cases

Stakeholder	Border	Final classification	Motivation for final classification
Employers/Employees	Monitor/Inform	Inform	Likewise inhabitants, a guarantee of consumable energy
Rijkswaterstaat Oost-Nederland	Inform/Involve	Involve	Technical knowledge of infrastructure
Energy suppliers	Inform/Involve	Involve	Energy transition will affect them in multiple ways
Greenpeace	Inform/Involve/Monitor/Keep Satisfied	Keep satisfied	Stakes are also represented by other stakeholders; active organisation regarding protesting
Milieudefensie	Inform/Involve/Monitor/Keep Satisfied	Involve	Connection with central government
Stichting Natuur en Milieu Overijssel	Inform/Involve/Monitor/Keep Satisfied	Involve	Connection with province Overijssel
Het Oversticht	Inform/Involve/Monitor/Keep Satisfied	Involve	Connection with province Overijssel and municipalities in Twente; knowledge of balancing culture with newly arranged space
LTO Noord	Inform/Involve/Monitor/Keep Satisfied	Involve	Active organisation; knowledge of various renewable energy techniques; integral theme together with circular agriculture; Ownership of large land areas
Roelofs (or other main contractor)	Inform/Involve/Monitor/Keep Satisfied	Involve	Knowledge of various aspects in the integral project
Staatsbosbeheer	Monitor/Keep Satisfied	Keep satisfied	Connection with central government; Ownership of large land areas
Natuurmonumenten	Monitor/Keep Satisfied	Keep satisfied	Ownership of large land areas
Grid Operators	Monitor/Keep Satisfied	Monitor	Not an active participant in these projects
Central Government	Involve/Keep Satisfied	Keep satisfied	Mainly focused on smooth project process

In Table 13, an overview shows all final classes and the stakeholders which are included.

Table 13. Final classification of stakeholders

Participatory method	Stakeholders
Monitor	Tourists
	WWF
	Contractors
	Investors
	Grid operators
Keep satisfied	Greenpeace
	Staatsbosbeheer
	Natuurmonumenten
	Central government
Inform	Farmers
	Local inhabitants
	Local workgroups
	Employers/Employees
Involve	Province of Overijssel
	Municipalities
	Ministries
	Water boards
	Rijkswaterstaat Oost-Nederland
	Energy suppliers
	Milieudefensie
	Stichting Natuur en Milieu Overijssel
	Het Oversticht
	LTO Noord
	Roelofs (or other main contractor)
Actors	Educational/Research Institutions
	DINOloket
	Natura2000
	(Social) media
	Local monitoring coordinator

F.2. Literature study: Participation

Before the participation strategy was set up, a literature study has been conducted to the principles of participation. Which tools are available? Which tools seem to be appropriate to implement in this participation strategy in particular? What are additional attention points for specifically the participation strategy in energy transition projects?

As already mentioned before, the stakeholders are divided in four groups: Monitor, inform, keep satisfied and involve. However, this division differs per approach. Jörg Krywkow (2009) describes nine different participatory methods, including public information provision, education, interviews, surveys, events, popular involvement campaigns, forums, meetings and workshops. Per division, a set of specific tools is linked (Krywkow, 2009). This does not necessarily mean that these tool sets cannot be applied on the division used in this research. For instance, Public Information Provision, Education, Forums and Meetings (especially briefings) can be classified under Inform.

Per participatory method, Krywkow visualised whether these were useful to achieve general normative goals. This resulted in a table, which is shown in Figure 28.

	Pop. Involvem. Campaigns	Publ. Info. Provision	Education	Interviews	Surveys	Events	Fora	Meetings	Workshops
(1) General normative goals from legal or declarative documents:									
public information		√	√				√	√	
public consultation			√	√	√	√	√	√	√
transparency	√	√					√	√	√
identifying constraints				√	√		√	√	√
sharing knowledge and experience	√	√	√			√	√	√	√
creativity	√		√			√			√
acceptance of perspectives	√		√				√	√	√
(2) Goals from case study documents:									
identifying all relevant stakeholders				√	√		√	√	
knowledge elicitation				√	√		√	√	√
conflict resolution	√		√			√	√	√	√
social learning	√					√		√	√
finding consensus								√	√

Figure 28. Matching goals to classes of participatory methods (Krywkow, 2009)

Also, Krykow mentions the different levels of participation. Several approaches are discussed, but Krykow finally comes up with a timeline, as visualised in Figure 29 (Krywkow, 2009). This overview is a convenient tool to pick out the right participation tool at the right moment. Though, this timeline seems to be mainly applicable in the designing process of a specific area.

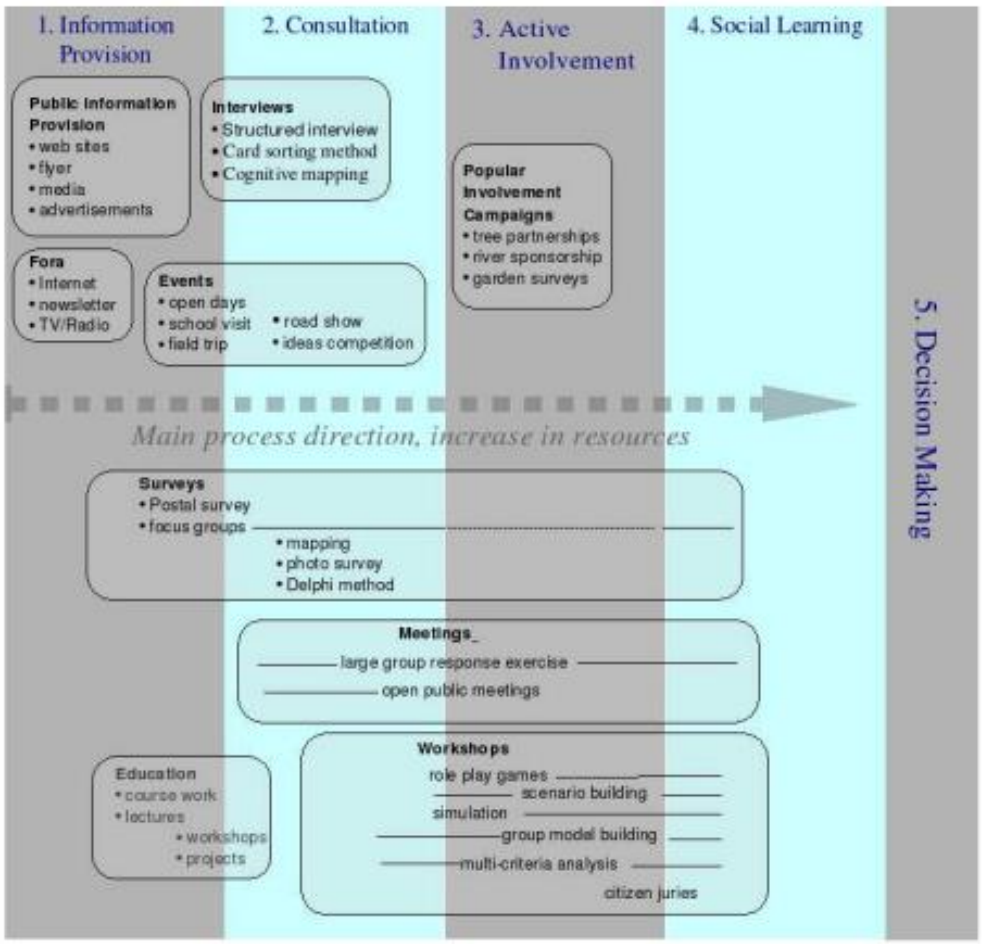

Figure 29. Levels and classes of participation according to Krywkow (Hare & Krywkow, 2005)

All in all, Krywkow lists several participation tools, but these are not described into detail. However, the public participation toolbox of the International Association for Public Participation does. This toolbox lists all different types and techniques of informing, consulting and involving. Per tool, tips and possible advancements and dangers are described (International Association for Public Participation, 2006). Therefore, the toolbox is a useful addition to the scheme of Krywkow as shown in Figure 29.

With this information available, the participation strategy is set up. However, are there any specific attention points to the assignment of phases and participation tools to stakeholders in (spatial) energy transition projects? Ivo Opstelten and Klaas Vegter (2018), both members of Stroomversnelling – an organisation which is focused on the Dutch energy transition in the built environment –, wrote an article with five tips of how to let the overall energy transition be a success. The first tip is to take the inhabitants into account from the early start of the project, as the energy transition gets real substance on a local level, e.g. in neighbourhoods. Inhabitants of the district should be able to co-decide about how and when the transition will take place. In past projects, it was noticed that the inhabitants were considered to be helpful when they were involved since day 1, and were resistant to the plans when they were not involved. Secondly, the smallest details in the plan are making the biggest differences in perception. People noted that they find it a positive thing when the plan will also solve small daily annoyances, like a lack of lighting, green, water, etc. Also, homeowners should have an opportunity to receive financial compensations, e.g. in the form of subsidies or grants. Many homeowners do not have enough money to take sustainability measures,

which mostly costs tens of thousands of euros. Finally, a community manager should help with finding and setting up collective solutions (Opstelten & Vegter, 2018). This is conform Sørensen (Sørensen, 1991) and Kern & Smith (Kern & Smith, 2008), who are advocating that the energy transition should be initiated as a collective project. By this means, costs per inhabitant will also decrease. The fifth tip is more a confirmation of the need of an integral approach in energy transition projects than an attention point (Opstelten & Vegter, 2018).

Appendix G. Participation Strategy

G.1. Defining project phases

Before setting up the participation strategy, it is crucial to define the different stages of the spatial development project. The timeline, as already determined at the start of the research, is shown in Figure 30.

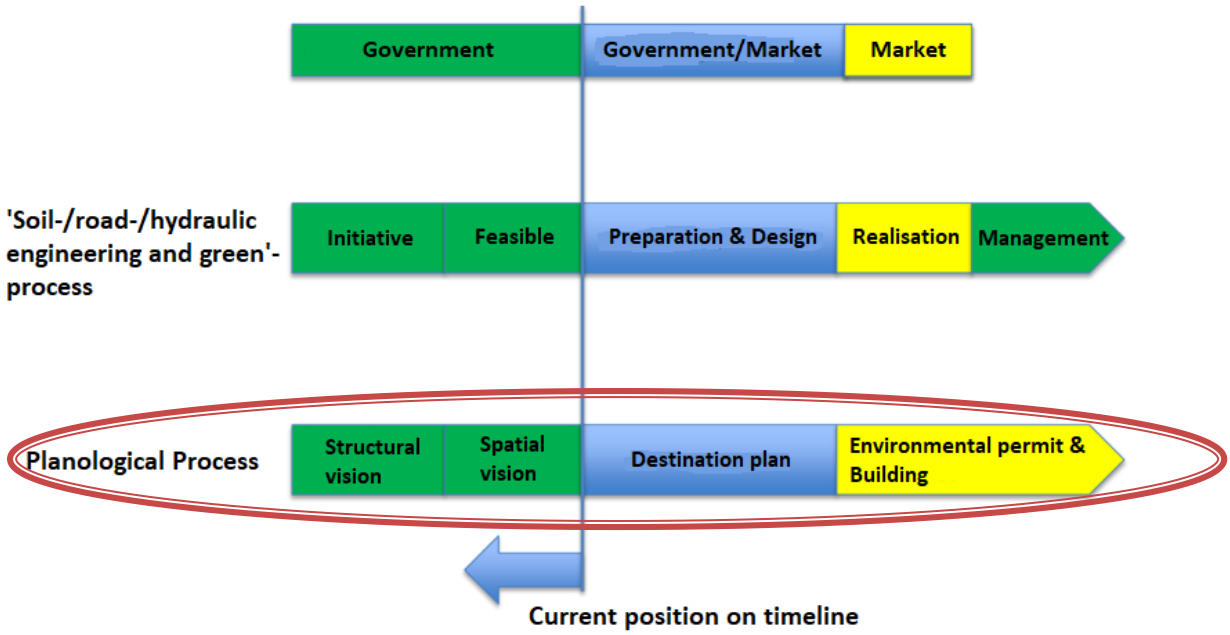

Figure 30. Position of Roelofs on project process timelines. The planological process, which is linked to spatial development, is circled (after: Roelofs, 2018)

The structural vision is the phase where the overall vision upon spatial development is formed in a municipality. This is traditionally done by the local authorities. However, environmental and natural organisations should be able to contribute to this structural vision by providing knowledge about the different aspects in spatial development, like housing, water, nature, energy and social aspects.
The spatial vision is more focused on the overall vision of one specific area. In this vision, no specific functions are fixed yet. This should be the point on the timeline where the stacking of functions in the area should be advocated. This can be done by letting different stakeholders indicate issues in the specific area. Also, conceptual plans prior to the destination plan may be submitted. In this way, the stakeholders provide knowledge and contribute to the formation of a fitting spatial vision for that specific area.
In the destination plan phase, functions of an area are assigned and fixed, based on the spatial vision. Firstly, there is searched for possible solutions and motivation for collective initiatives. Together with the spatial vision, these solutions and initiatives can be translated to a destination plan. This should largely happen through public participation.
The environmental permit and the building are considered to be the phase where the destination plan is realised and exploited. By means of granting environmental permits, the destination plan is managed. By building, the area itself is managed conform the destination plan. After a period of time, it should be examined whether the destination plan is achieving the aims as described in the spatial vision.

G.2. Participation strategy

G.2.1. Structural vision

Participatory method	Stakeholder
Involve	Province
	Municipalities
	Water boards
	Energy suppliers
	Ministries
	Milieudefensie
	Stichting Natuur en Milieu Overijssel
	Het Oversticht
Inform	All stakeholders
Keep satisfied	Central government
Actors	(Social) media

Overall: The structural vision will predominantly be formed by the authorities active in a specific municipality. The province and ministries will address attention points for the municipalities, who will separately set up the structural vision. However, each municipality should concern its neighbouring municipalities too in this structural vision. This should enlarge the range of instruments and alternatives for the energy transition. The active water board in the specific area, and environmental and social organisations will help with explaining and giving substance to the more technical aspects of the energy transition. It should be noted that the currently set up Regional Energy Strategy Twente (RES Twente) is globally a good example of this first step in this particular participation strategy, though it is not specifically focused on the implementation of the energy transition in spatial development projects. To gauge the perceptions and opinions of the public or organisations, thus monitoring, social media could be used. However, these perceptions should only be used when permission is granted to use the data for the project. This situation applies to all phases of the project, where the same actor is working on keeping the perceptions of the public and organisations, as used in the project, up-to-date.

Step 1: The attention points are addressed by means of briefings organised by political, social and technical experts, who are employed by the central government and provincial council. To prevent that the whole story gets too technical for the municipality, which is a noted risk by the toolbox (International Association for Public Participation, 2006), several environmental and social organisations are invited to attend these briefings.

Step 2: After this briefing, each municipality will set up their structural vision for their own municipality. This is initially done without the involvement of the NGOs and NPOs. As already mentioned, each municipality should also align plans with the structural visions of the surrounding municipalities. They should include a paragraph in how they can contribute to the sustaining of each other's areas. An original type of arranging this alignment, is by organising a road trip (by sustainable vehicles) for representatives of the different municipalities to the surrounding municipalities to observe the current situation and explaining at the location itself how the situation actually should be and/or could be. The municipalities and water board will be an active stakeholder in the debate, while the NGOs and NPOs will also attend this road trip as observers of the project areas and the debate. Based on the outcomes of the road trip and the debate, the structural vision will be formulated. Social media will identify the current perceptions of the public, which may be used as input. These perceptions should however be used only when permission is granted to use the data for the project.

Step 3: Before the vision gets final and openly published, the water board, NGOs and NPOs get a first look at the conceptual version. When needed, the organisations will provide feedback in the form of a presentation, where also additional information is provided. The municipality should process this feedback and write a rebuttal on this feedback what they will and will not modify and why they choose to do it that way. This rebuttal should be approved by these organisations, but note that this should always be approved when the rebuttal is well-reasoned. This, instead of the approval based on the stakes of the NGOs and NPOs. Of course, the province and the central government are able to stop the enforcement of this structural vision when this vision results in 'bad' spatial development.

Step 4: The structural vision will be openly published, so also towards the local inhabitants, farmers and enterprises. This is done via the internet, e.g. social media and websites of the municipalities. The internet is an important medium for the younger generation, which is considered to be an important group for letting the energy transition be a success. For the ones who have difficulties with using the internet or computers, printed public information materials will be spread amongst the whole municipality. This vision is spread in easy language, so that everyone understands what the aims and global plans of the municipality are. In this letter, also the rest of the project process will be explained. With a nod to sustainability, this information is printed on a special type of paper, which includes flower seeds. When the paper is buried in some soil and watered, flowers will grow out of the paper sheet.

Note: In the conducted interviews, the set-up of the Regional Energy Strategy Twente (or RES Twente) is mentioned multiple times by several authorities and organisations. This strategy includes a regional approach, adapted with inhabitants, educational institutions, authorities and business, which fits the future objectives in Twente (Agenda voor Twente, 2019). This set-up fits rather well in this part of the participation strategy. Though, it should also be noted that the RES Twente is an overarching strategy, which is not focused on the integration of energy transition in spatial development projects in particular. Also, the RES Twente already includes concretely described projects, which cannot be classified under the set-up phase of the structural vision. Nonetheless, the RES is a good way to collect all instruments of the various authorities, which can also be used in this particular participation strategy.

G.2.2. Spatial vision

Participatory method	Stakeholder
Involve	Municipalities
	Water boards
	Province
	Greenpeace
	Staatsbosbeheer
	Natuurmonumenten
	Milieudefensie
	Stichting Natuur en Milieu Overijssel
	Het Oversticht
	Rijkswaterstaat Oost-Nederland
	LTO Noord
	Roelofs/consultancy firm
Inform	All stakeholders
Keep satisfied	Inhabitants
	Farmers
	Employers/Employees
	Local workgroups
Monitor	WWF
Actors	Educational/research institutions
	DINOloket
	Natura2000
	(Social) media

Overall: The spatial vision is the vision of a specific area, which is based on the structural vision and additional knowledge of other stakeholders. Because the structural vision is openly published, everyone is able to submit issues, which can be linked with the various points in this structural vision. In fact, this phase could be approached as a kind of problem designing process. Forming combinations of all these various sub-issues will result in many alternative main problems, which should be solved with the formulation of a new destination plan. This phase will involve many parties and stakeholders, which have all different kinds of knowledge and issues, e.g. technical, experience (as inhabitant, farmer or employer/employee), political, etc., to bring in. In this part of the project, actors like the DINOloket and Natura2000 may provide insight into the current functions of the area with regards to nature and the underground infrastructure besides the existing energy grid. One should note that the input in here should mainly consist of problems occurring, and not of possible solutions to these problems. Social media identifies the current perceptions of the public and stakeholders to monitor.

Step 5: Firstly, a platform is set up for collecting problems. This platform is set up by an independent party, which is collecting and analysing the data. This platform is mentioned in the same social media post and at the flower sheet in step 4, so that people are aware of the existence of the platform. The platform might exist of a research group of several educational and/or research institutions. The data will be collected by means of online surveys and by central information contacts, delivered by this party. It is important to mention that these surveys should be semi-structured, as one should be open to any kind of issue, though with a link to spatial development. Social media will also identify the current issues of the public.

The mentioned contacts are people, who can be approached for a physical meeting, where issues, related to renewable energy or overall spatial development, can be denounced. In this way, the less technically advanced individuals as well as the younger generation are able and stimulated to provide input. This platform is available to any kind of local, e.g. inhabitants, farmers, businesses. For the remaining organisations (Greenpeace, Staatsbosbeheer, Natuurmonumenten, Milieudefensie, Stichting Natuur en Milieu Overijssel, Het Oversticht, local workgroups, Rijkswaterstaat Oost-Nederland and the LTO Noord), workshops are organised for finding linkable issues, which will also be taken into account, together with the issues collected by the platform. One should keep in mind that in this phase of the project, clashes may occur between the stakeholders with negative relationships.

Step 6: All input, collected in step 5, is analysed, after which sets of several issues are formed. These combinations are formed by making a morphological chart, where all issues in specific categories are listed. These sets may vary in size and variety of issues. After the sets have been made, an issue set is picked, which will be used for setting up the spatial vision for the specific area. This step is entirely done by the platform, by which independency is largely guaranteed. The selection is based on the possibilities of linking issues and the feasibility of solving the issue set. To investigate the latter, Roelofs, or another consultancy firm, is able to submit conceptual plans for the area for several sets. The more different plans are made for one specific issue set, the more feasible this set is in comparison with other issue sets.

Step 7: Based on the selected issue set and the structural vision, the spatial vision is formulated. This step is initially made by the municipality only. Afterwards, the spatial vision will be published for feedback (Step 8).

Step 8: After the spatial vision is written, this vision is published likewise the structural vision. A nice twist may be that this time, different types of flower seeds are put into the sheet. Additionally, the participants of the workshops – predominantly organisations and authorities – in this overall project will receive the spatial vision by e-mail. After publication, there are 6 weeks available for any party and stakeholder to object to the spatial vision with good argumentations why this first spatial vision is not appropriate. Depending on the number of opposing stakeholders and singularity of opposition (only a few points which are considered to be wrong), meetings will be held. During this meetings, the municipality will first explain the choices they made, after which the stakeholders are able to ask questions and propose other solutions for the same issues. Again, one needs to keep in mind that multiple stakeholders may not get along well with each other. Therefore, these three will be separated in two meetings. After this meeting, a new spatial vision will be set up.

Note: The risk of this cycle is that this might take a rather long time before every party will be satisfied with the spatial vision. Another possibility to avoid this risk in step 8, is to shortlist a few possible issue sets, which are then published. After that, every stakeholder group is able to vote for the most appealing issue set to be tackled. The final chosen spatial vision is not only depending on the number of voters, but also on the identity of the voters. For instance, organisations mostly have more power in the project than a single inhabitant. The results are anonymously published afterwards. This alternative process will replace the now described steps 7 and 8.

G.2.3. Destination plan

Participatory method	Stakeholder
Involve	Municipalities
	Water boards
	Stichting Natuur en Milieu Overijssel
	Het Oversticht
	Inhabitants
	Farmers
	Employers/Employees
	Local workgroups
	Grid operators
	Rijkswaterstaat Oost-Nederland
	Roelofs/consultancy firm/main contractor
Inform	All stakeholders
Monitor	Tourists
	WWF
Actors	(Social) media

Overall: This part of the process is actually similar to steps 5 to 8. In this case, not the issues are identified, but the solutions to the selected issue set. This solution consists of a destination plan, which should tackle these problems when it is managed and built. This is the part of the process, where the extent of involvement is the highest. Many workshops will be organised to come to sub-solutions and integral solutions, together with the public and organisations. Social media will identify the current perceptions of the public.

Step 9: This phase of the participation process starts with inviting stakeholders to different workshops. During this workshops, the spatial vision is explained again, after which different stakeholders are mixed amongst each other in various groups. Per group, a specific theme is assigned. These themes are based on the issues described in this spatial vision. Also, locals may initiate several solutions to the problems individually. These individual initiatives are then later combined to a collective initiative. All of these separate plans are presented and taken as input in step 10. Social media will identify the current perceptions of the public upon the project and its process.

Step 10: During this step, integral solutions are formed out of the various sub-solutions. This is, just like in step 6, done by the means of making a morphological chart of all different sub-solutions per issue. After completing the chart, multiple alternative destination plans are designed out of combinations of solutions. This is done, because the combination of solutions already form parts of a destination plan itself. Roelofs and other main contractors and consultancy firms may co-create and propose destination plan alternatives, based on the spatial vision and solutions proposed by the stakeholders. Because the issues are not all present at the same time, providing 4-dimensional designs of alternatives is desired (width, depth, height, time).

Step 11: A few integral alternatives are shortlisted, based on a multi-criteria analysis, executed by the independent platform. The public is able to vote for the plan, which they consider to be the most appealing. The result of this poll will count as one single vote with a specific load from the locals. The directly involved stakeholders may also vote on the destination plan they prefer the most. By this means, the design with the biggest support is chosen. Transparency is, in this shortlisting process,

an issue, as questions may rise whether 'better' alternatives have not been shortlisted for whatever reason. However, this information should be provided by the independent platform when there is asked for it.

Step 12: When the final destination plan for the specific area is chosen, the locals are informed about this new destination plan, just like when the spatial vision was set up. Also now, different types of flowers will grow out of the information sheet.

G.2.4. Environmental permit & Building

Participatory method	Stakeholder
Involve	Municipalities
	Water boards
	Roelofs/main contractor
	Rijkswaterstaat Oost-Nederland
	Grid operators
Inform	Sub-contractor
	Investors
	Farmers
	Local inhabitants
	Employers/Employees
	Local workgroups
Actors	(Social) media
	DINOloket
	Educational/research institutions
	Local monitoring coordinator

Overall: In this part of the process, the newly designed destination plan is enforced, managed and maintained. This is not the most complicated phase of the project, though it should be decided which stakeholders should manage and maintain which part of the project. Also, the destination plan should be kept up to date, so an assessment should be conducted regularly. Social media will identify the current perceptions of the public.

Step 13: Firstly, the management and physical maintenance of the concerned area is arranged. This includes making the decision who will manage the permitting and who will exploit and maintain the area. Probably, the municipalities will be about the environmental permits, while some other stakeholders are linked with functions in an area. The municipalities will grant the construction project to a contractor, who is also able to hire sub-contractors. Grid operators should inform the involved contractor and municipality in prior to this process about the underground infrastructure and the possibilities of connecting the projects to the energy grid. After the permitting and the realisation, agreements are made about the maintenance of the area with Rijkswaterstaat and the local authorities.

Step 14: Lastly, it should be regularly investigated whether the destination plan is indeed achieving results with regards to the issue set. This research will be conducted by the independent platform. In the research report, which will be published, it is discussed if the current destination plan is still accurate conform the issues at that point of time. The local monitoring coordinator will contribute to collecting data by monitoring the perceptions of (other) inhabitants, being a local him/herself. Also, it is discussed which changes are needed to be prepared for newly emerged issues, when this is the case. If changes are needed, the destination plan should probably be changed again, which means

that the whole process should be walked through again. However, when it concerns a small issue, only the stakeholders, concerned with that specific issue, can be involved, which will make the adjustment in the destination plan less complex and the project process less long. Social media will identify the current perceptions of the public upon the outcomes of the project, which can be used as input for the evaluation report.

G.2.5. Participation timeline

On the pages 136-138, a timeline of the participation strategy is visualised. This timeline is paired with the estimated time the actions will take.

Structural Vision

T=0

What?: Identifying attention points overarching authorities
How?: Briefings
Who?: Ministries, Province, Municipality, Energy Supplier, Milieudefensie, Natuur en Milieu Overijssel, Het Oversticht

T > 0

What?: Identifying own objectives and objectives across the municipal border
How?: Road trip across the bordering municipalities
Who?: Municipality, Water Board, Energy supplier, Milieudefensie, Natuur en Milieu Overijssel, Het Oversticht

T=2-3 months

What?: Setting up initial structural vision & submitting to NGOs/NPOs for feedback
How?: Documentation, e-mailing, uploading in the cloud
Who?: Municipality

What?: Providing feedback on initial structural vision
How?: Documentation, briefings
Who?: Ministries, Province, Water board, Milieudefensie, Natuur en Milieu Overijssel, Het Oversticht.
When briefings: also Municipality

T=3-4 months

What?: Processing feedback & writing rebuttal
How?: Documentation
Who?: Municipality

What?: Approval of rebuttal & final structural vision
How?: Documentation
Who?: Ministries, Province, Water board, Milieudefensie, Natuur en Milieu Overijssel, Het Oversticht

T=5 months

What?: Publishing final structural vision openly
How?: Flower sheeds, social media, official websites of municipality
Who?: Municipality. All stakeholders identified are informed

Spatial Vision

What?: Collecting issues in a pre-determined area
How?: Surveys, central information contacts, workshops
Who?: Process: independent platform. Respondents: Inhabitants, Farmers, Employers/Employees, Local workgroups. Workshops: Municipality, Water Board, Province, Greenpeace, Staatsbosbeheer, Natuurmonumenten, Natuur en Milieu Overijssel, Het Oversticht, RWS Oost-Nederland, LTO Noord, Roelofs/consultancy firm

What?: Setting up independent platform
How?: Approaching educational/research institutions, job applications
Who?: Municipality takes initiative, but is not involved in this platform

Note: Conflict may occur between the LTO Noord and Greenpeace; and between LTO Noord and Natuur en Milieu Overijssel

What?: Creating issue sets with variety in size and versatility of issues, based on collected information
How?: Morphological chart
Who?: Independent platform

T=7 months

What?: Designing and submitting conceptual ideas for pre-determined area and various issue sets
How?:
Who?: Consultancy firms, including Roelofs

What?: Selecting final issue set OR shortlisting issue sets + voting
How?: MCA, with diversity of plans and number of issues solved amongst criteria. In case of shortlisting: Shortlisting by MCA, final issue set by voting with different weights of votes
Who?: Independent platform. In case of shortlisting, all stakeholders

T=8 months

What?: Setting up spatial vision + first publication
How?: Documentation, flower sheeds, social media, official websites of municipality
Who?: Municipality

T≤ 10 months

What?: Objecting against spatial vision
How?: Documentation, meetings, submissions on websites/social media
Who?: All stakeholders

What?: Publishing final structural vision openly
How?: Flower sheeds, social media, official websites of municipality
Who?: Municipality. All stakeholders identified are informed

T=10 months

Destination Plan

What?: Creating solution sets with variety in size and versatility of solutions, based on collected sub-solutions
How?: Morphological chart, documentation and briefings of 4-dimensional destination plans
Who?: Independent platform (chart), consultancy firms

T=12 months

What?: Creating and collecting sub-solutions
How?: Briefings, workshops
Who?: Municipality, Water Board, Natuur en Milieu Overijssel, Het Oversticht, Inhabitants, Farmers (depending on location), Employers/Employees, local workgroups, grid operators, RWS Oost-Nederland, consultancy firm (incl. Roelofs)

Note: These plans may be more detailed than the plans submitted in the Spatial Vision-phase

What?: Shortlisting solution sets + selecting final solution set
How?: Shortlisting by MCA, final issue set by voting with different weights of votes. Voting by social media or forms at e.g. the local supermarket
Who?: Independent platform (MCA), all stakeholders (voting)

T=14 months

What?: Forming destination plan according to selected solution set
How?: Documentation, updating destination plan instantly
Who?: Municipality

What?: Publishing destination plan + providing information regarding the voting
How?: Flower sheeds, social media, official website municipality
Who?: Municipality (publication), independent platform (voting information)

T=15 months

T≤17 months

What?: Objecting against destination plan + reconsidering plan when necessary
How?: Documentation, meetings, submissions on websites/social media
Who?: All stakeholders (objecting), municipality (explaining decisions, when necessary reconsidering choices)

Environmental Permit & Building

T=17 months

What?: Applying for sub-projects to be built according to the destination plan
How?: Submitting plans, applying for contracting
Who?: Contractors (incl. Roelofs)

What?: Awarding a building project
How?: Granting project and environmental permits
Who?: Municipality, contractors (incl. Roelofs)

T=19 months

What?: Preparing for construction + hiring sub-contractors
How?: Advertising in newspapers, social media, collecting instruments
Who?: Contractors (Roelofs?), sub-contractors

What?: Negotiating about maintenance
How?: Meetings, comparing/collecting instruments
Who?: Municipality, water board, grid operator, Rijkswaterstaat Oost-Nederland

T=20 months

What?: Construction/realisation of project (x = duration of construction)
How?: Collected instruments
Who?: Contractors (Roelofs?), sub-contractors

What?: Maintaining area
How?: Collected instruments
Who?: Stakeholders who have been assigned during the negotiations to do so

T=20+x months

T=24+x months

What?: Assessing achievements adjustment destination plan + openly publishing report to municipality and by (social) media
How?: Interviews, surveys, technical data of e.g. emission, traffic, heat loss
Who?: Independent platform & local monitoring coordinator

G.3. Similarities with CleanTech Region

On the 30th of October 2018, the region located in between the Dutch towns of Apeldoorn, Zutphen and Deventer – also known as the CleanTech region – organised a workshop about the built environment without the use of any natural gas. In this specific workshop session, a business model canvas with regards to the energy transition in buildings was filled in (CleanTech Regio, 2018). This relates to the desires and stakes of stakeholders, but also to the participation in the energy transition. In this section of the appendix, the outcomes of this business canvas model are compared to the set up participation strategy. Note that this business model canvas is referring to the built environment more than to spatial development.

G.3.1. Key partners

The key partners in the energy transition in the CleanTech region includes municipalities, the central government, contractors, installers, banks, financial institutes, educational institutes, corporations and grid operators (CleanTech Regio, 2018). This list looks more complete than the list of stakeholders in this particular research, which is focused on the region of Twente. However, contractors may be able to do some of the work that installers do. Also, banks and financial institutions may be classified as investors. The educational institution is not taken into account as a stakeholder, but more as an actor who is present in the participation process as an independent party. However, it can be seen that involving a local corporation is overlooked. The corporation is an organisation that is focused on the building, maintenance and renting out of houses and apartments. Living is considered to be a big function in the field of spatial development, so the chance is big that the energy transition also affects the corporation and vice versa. The local corporation should be involved at the early beginnings of the projects, in a similar way like Het Oversticht. All in all, the overall identification in this particular research, compared to the workshop, looks complete.

G.3.2. Core activities

As core activities, multiple tasks are mentioned in the business model canvas, including marketing communication, request funding, project and knowledge development, building, coordination, adapt policies and legislation, and setting up a district team (CleanTech Regio, 2018). Step 1 in the participation strategy in Appendix G.2. Participation strategy can be seen as a type of marketing communication, as by this means, the locals are made aware of the transition that is being prepared. Requesting funds is not taken into account, though the investors do play a part in the participation process during the collection of instruments. Project and knowledge development are both big steps towards the final product – the destination plan and its management – after which the product is implemented in the legislation and the realisation of projects within the concerned area is coordinated. Setting up a district team was, however, not directly a core activity that came up during the research. However, the inclusion of work groups, which are seen as an opposing party, can be compared to those district teams. In addition, a local monitoring coordinator is able to observe the results of the new destination plan in his/her own district. This has globally the same effect as setting up district teams. In short, the core activities correspond with each other.

G.3.3. Key resources

Key resources described by the CleanTech region include ambassadors, volunteers, specialists, knowledge, own capital, legislation and the interest of tenants (CleanTech Regio, 2018). The latter is not specifically interesting for the overall spatial development. Environmental organisations can be seen as ambassadors for the energy transition. Volunteers have not been identified, but by this means, the worst-case scenario in a spatial energy transition project is maintained. This is not an odd choice; from the interviews, it was deduced that awareness is considered to be low amongst the public in some of the municipalities. Specialists and knowledge may be delivered by different stakeholder groups. For instance, the authorities are ably in the field of legislation and contractors and consultancy firms are able to deliver technical knowledge. Own capital is seen as an important instrument of the stakeholders, as money has played an important role in the failure of the first attempt of a paradigm shift in the past. Financial resources are not explicitly mentioned in the strategy, but are collected together with the other resources during the formation of the structural vision to nullify the imbalance in instruments. Thus, financial resources are controlled.

G.3.4. Value propositions

The terms mentioned in this field of the business model canvas are similar to the stakes in this particular research. Many terms are written down, but some can be included in the other propositions. The value propositions include a fair price and costs, social cohesion and cooperation, locality, total and integral concept, transparency, expertise, security, upgrades (also in house value), quality and lifecycle resilient, and mobilising investments (CleanTech Regio, 2018). From this list, the social cooperation, locality, integral approach of design, transparency, upgrading of an area and quality and lifecycle resilience are also mentioned in this research, though formulated in another way. Fair prices and costs are a point of attention too, as there is looked to a product of which all can benefit. Also, expertise is included in a certain way, as various specialised stakeholders and actors take part in the process. The security of the design is actually a factor which one should get rid of, as already could be concluded in Appendix A.1. History of renewable energy and the Dutch energy transition policy This security is restraining the possibilities of implementing energy transition measures in spatial development, though it has also been concluded that there is a wide support for this implementation. Therefore, this point of attention is not explicitly mentioned. Mobilising investments has not been taken into account, but this is an aspect that should be taken into account during the inter-municipal 'stocktaking' of instruments.

G.3.5. Customer relations

CleanTech mentions customer relations with the city district, volunteers, exploiter, contractors and anonymously by internet (CleanTech Regio, 2018). This group seems rather small in comparison with the participation strategy, but this is not strange. The business model canvas is focused on the housing of people; not on a specific land area where multiple, sometimes contradictory, functions with multiple stakeholders come together. This is also the case in this participation strategy, although the public is also seen as a key partner and key resource to some extent.

G.3.6. Channels

Amongst the channels, a district app group, district meetings, a district coach and the inhabitants are listed (CleanTech Regio, 2018). An app was not taken into account in this research, although it is a sophisticated way of collecting information. This would probably have appealed the younger generations. Meetings have the same effect, but are rather outdated compared to the usage of an application on smartphones. Still, the information is collected with the locals being a direct source of information, which is also largely the case in the canvas. Appointing a district coordinator may contribute to a fluent communication with the locals. However, the risk of appointing such a coordinator might be that the direct connection between the public and the project gets lost. In the case of the participation strategy in the research, the coordinator acts as a point of contact in the district.

G.3.7. Customer segments

The customer segments exist of several groups within a group of stakeholders. In the canvas, the inhabitants, companies, institutions, house buyers and tenants, the elderly, Owners Association and the rich and poor are the different listed classes of customers (CleanTech Regio, 2018). By making this distinction, one may easily identify the stakes per customer segment, which can be put together afterwards in the same stakeholder group (predominantly inhabitants). This distinction is not explicitly made in the stakeholder analysis, but the different groups of people are able to bring their input in the project themselves by means of surveys and contact persons of the independent platform. Hereby, the nature of a single stakeholder is also linked to single submissions.

G.3.8. Costs and income flows

The canvas also lists the money flows that will occur when buildings get disconnected from the natural gas grid (CleanTech Regio, 2018). Although it is known that there are municipal grants available, these money flows have not been extensively used while setting up the participation strategy. Instead, the money flows should be listed during the participation process itself, when the instruments of municipalities and stakeholders are gathered for measures on a local or even regional level.

G.3.9. Conclusion

All in all, it looks like the participation strategy for spatial energy transition projects has many similarities with the business model canvas for the energy transition in the built environment of the CleanTech region. Several aspects do not correspond or are even missing, but these can be clarified or put generally in the collecting of instruments of the different stakeholders.