Stakeholder Involvement in the Energy Transition

A Grid Company's Perspective

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ABSTRACT,

Global warming is threatening the world. Recently, the Dutch government obliged grid companies to phase out fossil fuels. Thus, the structural change in energy provision is needed. This is also known as energy transition. The study aims to accelerate the energy transition, from the perspective of a grid company in collaboration with their stakeholders, by creating stakeholder value using the stakeholder theory. Therefore, the study provides a deeper understanding of the joint purpose between a grid company and its stakeholders. Empirical research methods are used, together with a decision-making tool, to assess the theories used in this study. Results of the study show that a grid company's projects should be aligned with the stakeholder's requirements, in order to establish the joint purpose.

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Keywords

Energy Transition, Grid Company, Stakeholder Theory, Value Creation, AHP-method, Joint Purpose

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1. INTRODUCTION

The world is changing, wherein our climate is changing excessively. The aim of the Paris Agreements to keep global warming below 2 degrees Celsius (Rogelj et al, 2016) leaves the Dutch Government without any choices. Regarding the developments of the Paris Agreements in the European Union, which stated that carbon dioxide emissions should be reduced by 49% by the end of 2030 with respect to the emissions in 1990 (Gerbrandy, 2018), the Dutch Government must adapt to these developments and change their legislation. Therefore, also Dutch grid companies have to adapt to this new legislation, they have to accelerate the energy transition in order to reduce carbon dioxide emissions, because solving the global warming problem is said to be the most important task for humankind in the 21st century (Armaroli & Balzani, 2007, p. 52).

A grid company exists of a regulated side and an unregulated side, as stated in the VET Act (Wet VET – 'Voortgang Energietransitie' or Progress Energy Transition). For the purpose of this research, we focus on the unregulated side of a grid company. The unregulated side of the holding focuses on operations concerning renewable solutions (for an existing or new grid). The regulated side of a grid company is called Distribution Systems Operator, whose role is the provision of a secure and reliable power distribution system. A DSO also enables its system to guarantee continuity of its power delivery (Gungor et al, 2012, P.22). Consequently, stakeholders of the unregulated side of a grid company can be defined differently than the stakeholders of a DSO.

The problem is that grid companies must manage the delta between the goals from the perspective of an excellent grid company and the perspective of their shareholders, to reach the goals which are set in the Paris Agreements. Grid companies are coping with uncertainty and unawareness among their stakeholders. Therefore, these companies must clarify their stakeholder's interests, in order to establish a joint purpose between their stakeholders and themselves. The involvement of stakeholders is, therefore, an important aspect of the process of the energy transition, which is the structural change in energy systems (Hauff et al, 2014). Accordingly, it is important to know the stakeholder's agenda, since stakeholder thinking is a critical factor (Freeman, 1984; Freeman et al, 2010) in order to develop a company's agenda. By combining the stakeholder theory and a business model for sustainability, one can develop a joint purpose between a company and its stakeholders (Freudenreich et al, 2018). To paraphrase Freeman value is created "… by capturing the jointness of the interests [of the stakeholders]. Yes, sometimes the interests are in conflict, but over time they must be shaped in the same direction." (Argandoña, 2011)

In Freudenreich et al (2018) it becomes clear that when a company wants to achieve a joint purpose with their stakeholders, it is important to consider the value that should be created for your stakeholders – Who do you engage in your projects, when do you engage them, and how do you engage them? – are questions which can be raised during the acceleration of the energy transition. Describing it more deeply, working towards a joint purpose also refers to working towards a good strategy (Freudenreich et al, 2018). A successful strategy is enhanced by stakeholder value creation, because it is an essential element in achieving strategic success, as defined in Tantalo & Priem (2014). In order to reach the strategic success that is desired, projects or investments that will be done should be formed in such a way that all stakeholders are satisfied. To arrange the projects to be done to meet the stakeholder's goals and issues, one could use an Analytical Hierarchy Process method (AHP), described in Saaty (1990). The AHP method is a tool that could enhance making (often) complex decisions and could enhance decision-making for grid companies.

The research question of this paper is: What does a grid company need to do, to create a joint purpose between them and their stakeholders in order to accelerate the energy transition?

2. THEORETICAL FRAMEWORK

The most important topics that are related to the research question, will be discussed in the theoretical framework. This section provides a deeper understanding of the theories discussed and form a base of the study and will be used to provide an answer to the research question.

2.1 Energy Transition

In this section of the theoretical framework, inducement to accelerate the energy transition is described, by defining what developments in this area lead to the need for accelerating the energy transition.

2.1.1 Developments on International Level

One of the most important topics nowadays is coping with global warming (Armaroli & Balzani, 2007, p.52), wherein the energy transition is fast becoming a key instrument. Most of our energy sources come from fossil fuels, like lignite and natural gas. However, these fossil fuels are bad for the environment. To paraphrase Barbir et al (1990, p.739) "…technologies for fossil fuel extraction, transportation, processing and particularly their end use (combustion), have harmful impacts on the

Table 1. Climate Table of the Dutch Climate Agreement

The Dutch 'klimaatberaad' distinguished the amount of carbon dioxide, which should be reduced, in several groups.

Group	Involvement	Amount to reduce
Agriculture	All emissions flowing from agriculture (i.e. fertilization, Agri motors, etc.)	3.5
Built environment	All emissions for households, both rent and sold houses (i.e. neighborhoods, cities, towns, etc.)	3.4
Electricity	All emissions for use of electricity in the Netherlands	20.2
Industry	All emissions for big manufacturing companies	14.3
Mobility	All emissions for transport (i.e. cars, trains, airplanes, etc.)	7.3
Klimaatberaad	All of the above	48.7 (Total)

Note. Amount to be reduced is expressed in megatons.

environment…" Because the consumption of these fossils is rising annually, mankind must look for renewable sources of energy. The emissions of carbon dioxide must be reduced because global warming is a threat to mankind. In the Paris Agreements is agreed upon the fact that we must keep global warming below 2 degrees Celsius (Rogelj et al, 2016). The energy sector thus must change its structure on the energy provision. Hauff (et al, 2014) defines this structural change as energy transition. This structural change could be promoting energy efficiency with phasing out the fossils, but also increasing the share of renewable energies, like hydrogen, biomass, and geo-heat.

2.1.2 Developments on National Level

According to the developments on the national level in the Netherlands, a document is set up by the Dutch government called 'the climate agreement'. This agreement takes the Paris Agreements as a foundation for its purpose, which is the reduction of the emissions of carbon dioxide by 49% with respect to 1990 at the end of 2030 (Gerbrandy, 2018). Therefore, the Dutch Climate Agreement is set up by the Dutch 'Klimaatberaad' and proposed to the Dutch national government. The Act states that 48,7 megatons (MT) of carbon dioxide must be reduced (Nijpels, 2018). The klimaatberaad distinguished these megatons in several groups, which can be found in Table 1 on the first page. This table is defined as the 'Climate Table' of the Dutch Climate Agreement.

Energy firms are obliged by the Government to follow a certain structure, which is stated in another Act: the VET Act. In 2006, the Independent Network Management Act (also known as the "unbundling act") was adopted, which led to an amendment to the Dutch Electricity Act and the Gas Act. This amendment to the law obliged the integrated energy companies in the Netherlands to separate the DSO (Distribution Systems Operator [Gungor et al, 2012. p. 22]) from the rest of the holding. Under the unbundling law, DSOs active in the energy market (suppliers, producers, traders, etc.) may no longer be part of a single group. In 2015, the Higher Court ruled out that the law requires that within the holding of the energy company only energy-related additional activities may be carried out in terms of ancillary activities (non-DSO tasks), better said energy-related activities must be fully separated from the company, also in terms of ownership. which the network operator is part of. In 2016, the VET Act is proposed that focuses, among other things, on the delimitation between market and network companies. The aim of the VET Act is to stimulate innovation through fair competition and a level playing field (Dutch National Government, 1998-2018). Hence, the DSO is the regulated part of the holding. Next to a DSO and the unregulated part of a grid company, there exist TSOs. The transmission system operator (TSO) is responsible for ensuring system stability in modern energy scheme. To fulfill this duty, the TSO utilizes information on present and expected power generation, the status quo of the appropriate grids, the power that is exchanged internationally and will be transferred via transmission lines, prospective pollution and the flexible possibilities that power plants and big energy consumers can offer (Buchmann, 2017).

In order to meet the Climate goals of the Dutch government, but at the same time the Paris agreements, grid companies should be strict on stakeholder management, since multi-stakeholder collaboration needs the provision of expertise and other resources to solve sustainability-related issues (Freudenreich et al, 2018, p.2).

2.2 Stakeholders

In this section of the theoretical framework, the stakeholder theory and stakeholder value creation will be discussed.

2.2.1 Stakeholder Theory

As a company, there are always individuals or groups of individuals who have a certain interest, or even influence, on the achievements of the operations. Freeman (1984; et al, 2010) defines these individuals and groups of individuals as stakeholders in the wide sense. On the contrary, Eden & Ackermann's definition of stakeholders is slightly different than Freeman's definition. In their paper on strategic stakeholder management (2011, p. 179), they mention that the origin of stakeholders is related to the diverse nature of what they can demand from a company. To put the stakeholder theory into practice, Eden & Ackermann (2011) considered the Power-interest grid. The more stakeholders an organization has, the more complex stakeholder management will be. Freeman recognized the power and interest dimensions as important and suggested using a 'Power-Interest Grid' to help balance the need for a wide stakeholder definition while still yielding manageable figures (Eden & Ackermann, 2011, p.182). The grid describes four dimensions: Subjects which are the stakeholders who have a low degree of power, but a high degree of interest in the company. They feel and want to influence the product, but they cannot veto or alter choices; Players which are the stakeholders who have a high degree of power and a high degree of interest in the company. As the product director or product owner, these people are significant partners for one's organization. Therefore, one should work carefully together with them; Crowd which are the stakeholders who have a low degree of power and a low degree of interest in the company. Since they are not very concerned about a product and have no authority to impact product choices, it is generally enough to keep potential consumers updated; and Context Setters which are the stakeholders who have a high degree of power, but a low degree of interest in the company. They influence the context of the product but take little interest in the product on its own.

This grid is seen as an understanding of a company's environment (Eden & Ackermann, 2011). Eden & Ackermann created an enhanced version of the power-interest grid to also enhance the proactive management of stakeholders (2011, p. 183). The power-interest grid can be found in Figure 1. Since parties labeled as stakeholders might clearly have greater stakes than other stakeholders, we hold on to the power and interest labels to identify those who concern about the strategy of a firm or might be able to influence it.

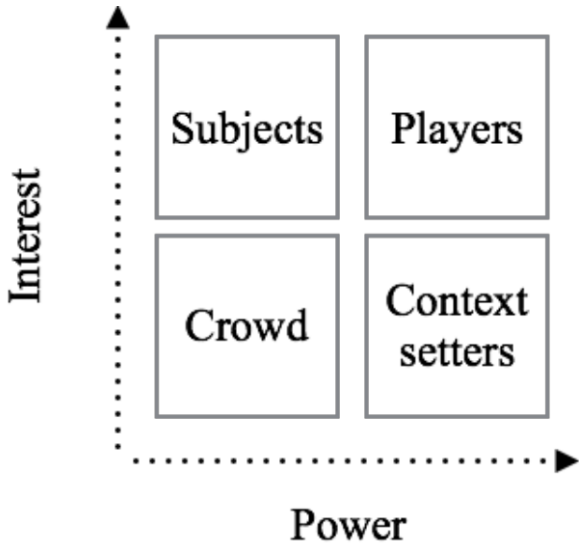

Figure 1. Power-Interest Grid

All stakeholders can also be distinguished between internal and external stakeholders. Internal stakeholders are stakeholders that are involved at a certain degree in the operations of the firm, from the firm itself. External stakeholders are stakeholders that are involved at a certain degree in the operations of the firm, from external parties (Savage et al, 1991). Savage et al (1991, p.62) also described stakeholders as primary or secondary stakeholders, wherein primary stakeholders are those with formal, official, or contractual relationships and the organization has a direct and essential economic effect, and secondary stakeholders are varied and include those not directly involved in the economic operations of the organization but capable of exerting impact or being influenced by the organization.

2.2.2 Stakeholder Value Creation

Freudenreich et al (2018) elaborate on Freeman's stakeholder theory, by stating that it is the jointness of the stakeholders that can lead to a joint purpose and that this purpose is facilitated by stakeholder value creation. Eden & Ackermann (2011) also state that effective stakeholder management and value creation contribute to the achievement of strategic goals and long-term viability. This is confirmed by a study of Tantalo & Priem in 2014, who said that stakeholder value creation can also enhance the success factor of a company's strategy.

In Freudenreich et al (2018), the stakeholder theory defined by Freeman (1984) is combined with Osterwalder's Business Model, wherein value creation for stakeholders is a key process of business (Osterwalder, 2004). In order to establish stakeholder value creation, one must define which stakeholders there are, first. To bring stakeholder value creation to a higher level, Freudenreich et al (2018) developed a framework, which sees a relationship as a core element of a business model, and stakeholder relationship enhances the realization of business models. Business models, therefore, should rely on the relationships of a business and its stakeholders, in order to reach the joint purpose. Understanding the stakeholders' perspectives and expectations is required when it comes to a business model's contribution to solving sustainability issues (Freudenreich et al, 2018). An assessment of a business model also needs an assessment of the various stakeholder opinions of the aim to determine whether it is really a joint goal and thus generates complete and continuous assistance from all stakeholders as described in the framework. The stakeholder value creation framework can be found in Figure 2. The wedges shown in the framework represent the relationships between stakeholder groups and a firm and their exchanged input and output. This framework forms the base of the creation of a joint purpose between stakeholders and a company.

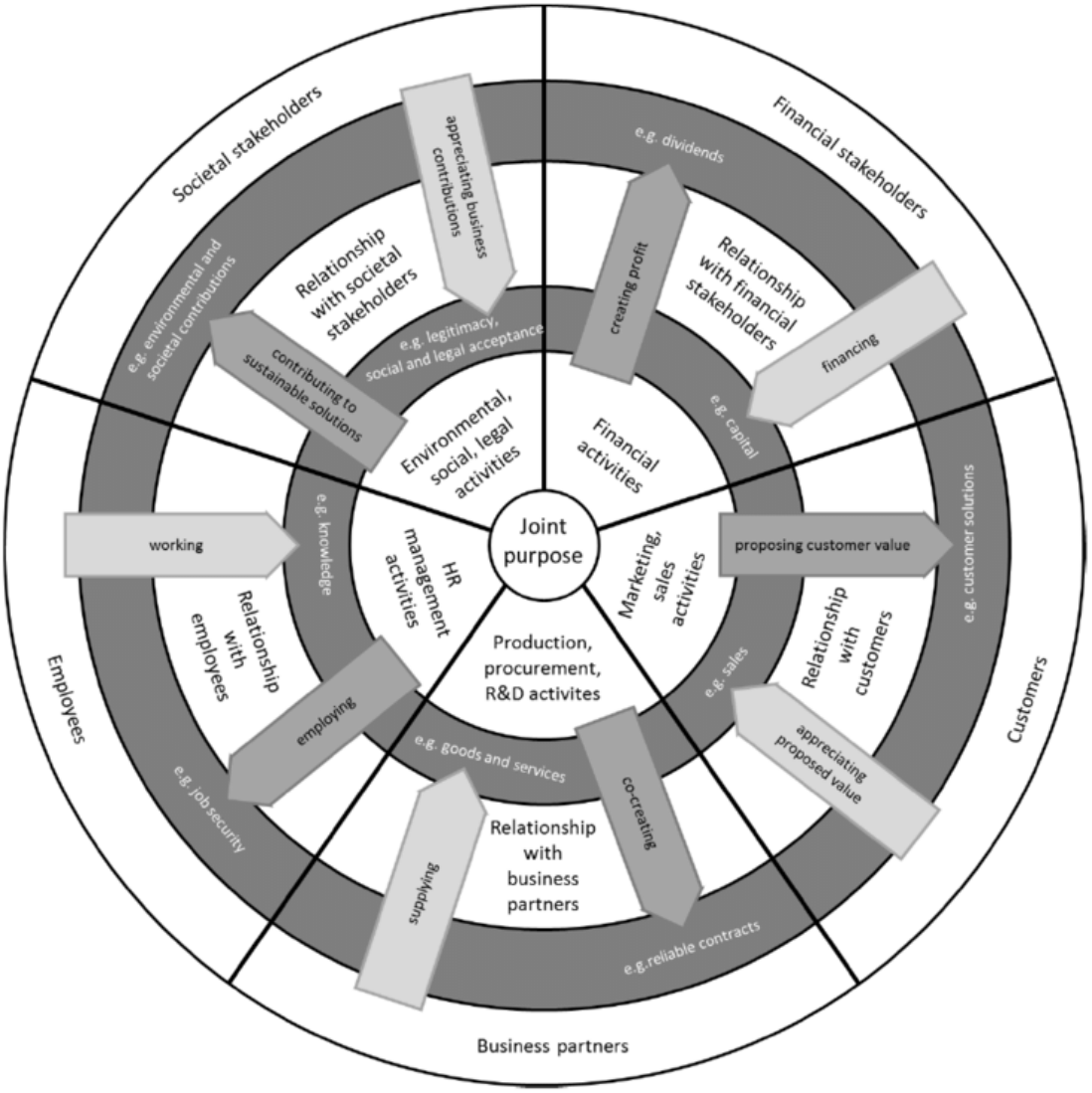

Figure 2. Stakeholder Value Creation Framework

3. METHODOLOGY

The research question of this study is described as: What does a grid company need to do, to create a joint purpose between them and its stakeholders in order to accelerate the energy transition? For the purpose of this study, empirical research is done in the form of both quantitative data collection and qualitative data collection. Quantitative methods are used for generalizing, while qualitative methods are used to gain insight into the existing knowledge about the energy transition. The aim of this study is to address a practical research problem; therefore, a real Dutch grid company is investigated. The approach of answering the research question through this empirical research design is best suitable to gain a deeper knowledge of the topics discussed in the study. Ethical considerations are taken into account since participants of the qualitative data collection must sign before participating. The research scope is defined by both men and women, with participants older than 18 years. Responses of participants falling outside the range of ages are not included in the analysis of the research. The research only includes participants from the Netherlands, participants from outside of the country will not be further researched. Incorrectly completed surveys, where it is unclear which answer is given, are not further investigated, unless insight is subsequently obtained into the correct answer by asking questions to the participants afterward. Since the topic of the energy transition is a very recent topic, it was hard to find appropriate literature.

3.1 Quantitative Data

The quantitative data is collected by making use of a survey. The survey is conducted in the Netherlands, among random people. The questions are designed in order to make generalizations and exist of multiple-choice questions, rating scale questions, and open questions. Participants are selected randomly since the questionnaire is available for everyone. Surveys are conducted via an online survey platform, whereby participants could have used all the time they needed in order to respond to the questions of the survey. The sample size exists of 109 participants that took the time to respond to the questions. The collected information is fully prepared before the assessment. The dataset has been inspected for missing information and outliers. Outliers in the dataset are therefore ignored, and not included in the research. All values outside the determined scope are regarded to be outliers. The information is then evaluated utilizing statistical software, called SPSS. Relevant data is transformed in order to compare data. The survey could be marked as valid since the questions are assessed by an expert in the field of energy transition (i.e. consultant energy transition), and by an expert in the field of communication management (i.e. communications adviser).

3.2 Qualitative Data

To obtain a better understanding of the energy transition demands of distinct stakeholders, semi-structured interviews are performed with 3 distinct stakeholders from the investigated grid company. These stakeholders are described as the most important. Interviews are performed on the participant's preferred place and lasted roughly 45 minutes each. Answers are recorded by notetaking, and interviews are also audio-recorded with consent. Also, desk research is conducted to provide a deeper understanding of the topics discussed in this research. Therefore, scientific papers, academic books, and governmental acts are used to assess the results of the study. This literature is collected via scientific databases for articles, such as Google Scholar and the University of Twente Library Database. Next to the interviews and case study, participant observation is performed. The observations are made during the internship at a grid company. Here, several stakeholders are observed, by participating in advisory, and consultative groups, set up by stakeholders of the relevant company. Data recorded from observations is done through notetaking. Observations are done during a time period of three months. The interviews are audio-recorded and transcribed to classify main topics and recognize trends. Every concept is examined to develop a better understanding of the opinions and motives of the participants. The research is credible since the research is based on an investigation of a Dutch grid company; hence, all findings are based on real activities. Since the study could be applied to similar contexts, i.e. other (local) grid companies, the research is also transferable. The researcher started investigating the topic, without having prior knowledge about the topic, and only by investigating the topic, results are formed. Hence, the results are objective. The research is dependable because when investigated by others, the same results will arise. Participants in this research will not give other answers to researchers investigating the same topic.

3.3 Decision-Making

T. Saaty defined the process of making complex decisions in a model, which is called the Analytic Hierarchy Process (hereinafter referred to as 'AHP') method. The AHP is used to make often complex decisions. The method gives an overall view on the complexity of relationships inherent in the situation and facilitates the assessment of criteria and shows whether these issues are of the same magnitude in each level (Saaty, 1990; Saaty & Vargas, 2012). The AHP method is a process where factors are arranged for goals to alternatives. The AHP can also be used for prioritization. Hereby, one could determine the eminence of projects, instead of choosing one or simply positioning them (Forman & Gass, 2001, p.472). In order to prior projects with respect to each other, it is of importance to define all criteria related to the operations of the business.

Generally speaking, evaluations involve estimations or measurements. While in any event two things must be considered to prioritize projects, assessment can, in principle, be performed in its own right. Practically speaking, however, assessing something with different measurements could be troublesome, if not impossible, unless it is in comparison with other cases or to a standard. Hence, evaluations are frequently executed as a prioritization (Forman & Gass, 2001, p.472).

For the purpose of this research, after we have defined the goals and the criteria, we only use the development of the weights for the criteria. To develop the weights for each criteria, one must follow the next steps: (1) A single pair-wise comparison matrix should be developed, (2) The values in each row have to be

Table 2. Scale for determination of weights

The intensity of importance on an absolute scale	Definition
1	Equal importance
3	Moderate importance of one over another
5	Essential or strong importance
7	Very strong importance
9	Extreme importance
2, 4, 6, 8	Intermediate values between the two adjacent criteria
Reciprocals	If activity *i* has one of the above numbers assigned to it when compared with activity *j*, then *j* has the reciprocal value in comparison with *i*

multiplied and the n^{th} root of the said product must be calculated, (3) the aforementioned n^{th} root should be normalized to get the appropriate weights, and (4) checking whether the outcome is consistent. In the appendix, one can find an explanation and a calculation of the above-mentioned steps.

4. RESULTS

In the first section of the research results [4.1], the data gathered from the survey, the interviews, observations, and data collection from desk research will be explained. A general view of the findings will be provided. In the second section of the research results, we will elaborate more on the investigated company [4.2].

4.1 General Findings

In the Netherlands there exist 7 DSOs: Coteq Netbeheer, Enduris, Enexis, Liander, RENDO Netwerken, Stedin, and Westland Infra, which becomes clear in the interview with a CEO of a Dutch grid company. "Practically, there are 7 DSOs, but Enduris is technically part of Stedin." These DSOs also have an unregulated side for the ancillary activities regarding sustainable alternatives. What also becomes clear in that interview, is that the need for implementing the renewable-energy-related task in the DSO is visible, but that it is not possible, because of the law. At some point, the DSO is limited in their operations due to formalities. We observe that the DSO has slightly different goals than the unregulated part of a grid company, because of the different rules and regulations. The DSO focuses more on 'future-proof' grid management, while the unregulated part focuses more on restructuring the current energy provision to a more sustainable energy provision, also known as the energy transition. The focus of this study is on the unregulated part since this part of a grid company is directly connected to the energy transition. One participant of the interview states that the focus for Dutch grid companies is mainly on the built environment, the industry, and electricity (which can be found in Table 1). This directly refers to a reduction of 37.9 megatons carbon dioxide emissions that all grid companies in the Netherlands together must achieve. What also becomes clear in the results, is that the energy transition is very broad. People are familiar with it, but often don't know what it is, and they don't see the importance. Looking at the climate agreement, we can perceive that of all participants of the survey, 74.31% say they are familiar with the climate agreement. Yet, 34.86% of all participants respond that they also know what is written in the climate agreement, what can be seen as the existence of uncertainty and unawareness of the topic. If we look at the answers to the question: "Can you give a clear definition of the Energy Transition?" We can see that a lot of people do not know what it contains, still they think it is a crucial topic, this too, refers to unawareness and uncertainty. Observations also lead to the fact that grid companies are not only occupied with the energy transition but mainly the pre-activities to the energy transition, how it can be assessed and established. In order to adapt to the energy transition, grid companies are looking to find a way to perform the right projects. Therefore, all interview participants refer to creating 'support' before a project can be started. Support is a very broad concept because it can be perceived as distinct meanings. Yet, in the interview with an alderman of a Dutch municipality, it becomes clear that consensus must be established among stakeholders before projects within a grid company are started. The councilor tells us that support does not only affect the energy transition, but several areas. "If the government tells us to be vegetarian, do you think that will work out well? In that sense, for the energy transition, it will be a difficult task to get support from all areas in society." Moreover, in an interview with a CEO of a grid company it turns out that support is referred to as feasibility. To paraphrase him: "It is important to create support in the society, we cannot say to neighborhood X 'you have to sustain your house' and to neighborhood Y 'you do not have to do anything with your house', because politically seen that is an unsalable message. Therefore, there needs to be coordination/collaboration between us and our stakeholders." He later mentions that when there is no coordination or collaboration, one could ask himself if a project is feasible or not. Next to the importance of the energy transition, the importance of societal acceptance and willingness to collaborate is necessary to take into consideration. From a grid company's perspective, this means that clear stakeholder management is needed. Stakeholders in the general view for a grid company are listed in Table 3. According to an employee of a grid company, the energy transition is one of the most difficult topics at the moment, and that it would have a big impact on their stakeholder management since stakeholders have different interests too. It is not only the energy transition that keeps stakeholders occupied, but also societal aspects. "Why should a residence be isolated, while people living there are more concerned with the health and welfare of (for example) themselves and their children?" or "Why should the municipality take measurements for the establishment of the energy transition?" are examples of questions which arise among different stakeholder groups. For both the DSO and the unregulated part of the grid company dealing with societal concerns is also of great importance. Some of the participants of the survey make clear that they care more about healthcare and their own wealth. What also becomes clear is that people have their questions when it comes to affordability, "…it will cost a lot of money, but it is the government who should take the lead. If they increase taxes, standing charges, et cetera, it would not be interesting to connect to a renewable solution, like heat grids." Of all stakeholders, consumers are the biggest challenge. "A grid company delivers to the consumer, but the policies are created by the governments, how to communicate to your consumers, has to be aligned clearly between the grid company and the lower governments," says the councilor in the interview. The consumers eventually have to pay, and that is directly the biggest challenge for a grid company, but also for the municipality, because out of the results of the interviews we can see the need of creating support among the consumers, although, as aforementioned, the consumers are not really aware of the importance of the energy transition. Besides, they do not want to pay a lot of money for a sustainable solution for their houses/companies, as it becomes clear in the survey answers. On the contrary, affordability is not the most important concept, but sustainability is, according to the results of the survey.

Nevertheless, a good thing is that the national government is focusing on collaboration on a local scale, together with lower governments (i.e. provinces, municipalities, and water authority). They also offer help to people who want to collaborate in sustaining their houses, since we participated in a consultancy group, where a civil servant was helping citizens in the choice whether they would sustain their neighborhood or not. In these consultancy groups can also be perceived that citizens are neutral in the question whether the (lower) government(s) should take measurements for global warming, which also results from the survey. Herein, 44.04% of the participants of the survey answered that they neither disagree nor agree with the statement about the (lower) government(s). Several experiences and observations in these consultancy groups, but also in pilot projects, show that often on local scale powerful statements and agreements can be made, because these activities show that there is shared dependence between (local) grid companies and the government, in other words, both parties need each other. So, collaboration cannot be denied. This can be confirmed by the interviews performed, as mentioned before, every single

Table 3. A Grid Company's Stakeholders

Stakeholder	Input Requirement	Savage et al	Eden & Ackermann
Competitors Unregulated Activities	Acquire a position in a new/existing market	*Primary, External*	*Subject*
Consultants	Consultancy about business models, business cases, techniques, developments in the energy sector, lobbies.	*Secondary, External*	*Crowd*
Consumers (Business)	Affordability, Renewability, Safety, Reliability, provided with energy. Lowest costs as possible. On a larger scale (i.e. the industry).	*Primary, External*	*Subject*
Consumers (Private)	Affordability, Renewability, Safety, Reliability, provided with energy. Lowest costs as possible.	*Primary, External*	*Subject*
Contractors	Provided with services, work, contracts.	*Primary, External*	*Subject*
DSOs	Operational excellence of electrical and gas grids.	*Primary, External*	*Subject*
Employees	Working conditions, knowledge exchange, purpose.	*Primary, Internal*	*Subject*
Energy suppliers	Supply of (sustainable) energy, make a return on investment.	*Primary, External*	*Subject*
Executive Board	Guidance on vision, mission and strategic purposes of the company.	*Primary, Internal*	*Player*
Housing Corporations	Guidance and management on how to make their houses more sustainable. High recoup on their investments.	*Primary, External*	*Subject*
Local Energy Co-operations	Realize renewable energy projects and attract possible consumers.	*Primary, External*	*Subject*
Lower Governments*	Sustainability goals in line with the national government.	*Primary, External*	*Player*
Managers	Facilitating operations, guidance/supervision on operations.	*Primary, Internal*	*Player*
National Government	Climate agreement and compliance with laws (e.g. VET Act).	*Primary, External*	*Context Setter*
Research Institutes	Knowledge creation and project collaborations.	*Secondary, External*	*Crowd*
Shareholders*	Dividends, Assessment Framework	*Primary, External*	*Player*
Supervisory Board	Supervision on vision, mission and strategic purposes of the company.	*Primary, Internal*	*Player*
Trade Associations	Knowledge exchange, research, lobbies.	*Secondary, External*	*Crowd*

Note. These are the general stakeholders in the energy transition. How stakeholders are divided in a company, depends on the company

**Shareholders are equal to the Lower Governments (i.e. Provinces & Municipalities, not the Water Authority).*

participant states that support from society is needed to establish a goal, and that collaboration is necessary to achieve the joint purpose. Working towards a joint purpose enables a grid company to clearly define the requirements which are put in by their distinct stakeholders (Table 3). All stakeholders have different requirements that must be taken into consideration by the company. These requirements follow from the interviews, surveys, and observations performed. We observe that a grid company raises uncertainty among their stakeholders when projects that will be performed within the company are not aligned with the requirements of the stakeholders. Especially for the lower governments (i.e. Provinces, Municipalities, and Water authority), the need for projects is recognizable. This is because every municipality in the Netherlands has to propose a 'Transition Vision on Heat provision' to the national government, which becomes clear from the answers provided by the participants from the interviews. A grid company is therefore affiliated with facilitating municipalities in the energy transition. Interview results also lead to the fact that grid companies are owned by, on the one hand, the provinces, and on the other hand the municipalities, or a combination of both, because that is confirmed by all the participants. This means that the requirements of the lower governments and the requirements of the shareholders can be combined. According to the alderman and the councilor, (especially) the municipalities are seen as a point of contact for other stakeholders towards the grid company. The need for close collaboration between those two is confirmed by the participants of the survey, wherein 77.98% of the participants told us that they think the role of a municipality is to collaborate with the citizens (i.e. private consumers) and companies (i.e. business consumers) to build on initiatives, wherein the grid company takes the facilitating role in that process. Also, the councilor tells us that collaboration is needed more than ever, because of uncertainty of the energy transition.

4.2 Field Study: Local Grid Company

The investigated company is one of the seven companies that possess an energy grid in the Netherlands. The developments of the Dutch climate agreement are clearly visible in the investigated grid company because they are changing their current strategy in order to accelerate the energy transition. Observations within the company lead to the fact that there is uncertainty about what has to be done to meet the climate goals of the Dutch government (and indirectly of the Paris Agreements) since some employees do not know how to continue. Therefore, a program is set up within the company to establish the acceleration of the energy transition. The investigated company is constantly looking at which stakeholders to engage. The main questions raised are: *who* do we engage; *when* do we engage them; and, *how* do we engage them? This is also confirmed by an audit performed at the investigated company. Herein, it becomes clear that stakeholder management is missing. We can say that it is hard to cope with the interests of several stakeholders, regarding the requirements in the general view in combination with the results from the investigated company. The investigated company aims to find a way to meet all the input requirements by the stakeholders. Therefore, we proposed the investigated company to integrate a new project portfolio and thereby making use of a tool in order to prioritize projects, so that all projects are in line with the requirements of both the stakeholders and the company since we observe that the need to do the right projects is high. Hence, a model is made in order to prioritize projects. In that model, the AHP-method is used as a base to decide about the importance of each criterion, in order to prioritize projects. Depending on the interests of the investigated company, and their stakeholders' requirements, we decide upon the following criteria to use in the prioritization model: Finance (All financials regarding a project),

Sustainability Contribution (What does the project contribute to sustainability?), Project Lead Time (PLT; How long does it take to finish a project?; What is therefore needed?), Future-Proof Grid Management (Concerning the right to exist), Social Importance (What does the society think?; stakeholder management), and Image (How does the company behave towards the outside world?). The AHP-method is used to link weights to these criteria. The results which are found for the investigated grid company regarding the criteria, from biggest to lowest contributor, are: [1] Sustainability Contribution & Future-Proof Grid Management with 36.03%, [2] Finance with 13.43%, [3] Social Importance with 7.65%, [4] Project Lead Time with 4.33%, and [5] Image with 2.53%. After defining these values, we developed a model which is related to the investigated company, what is now seen as the base for their prioritization of projects, because the need for the right projects is high at the moment, which can be observed. This is because there still exists uncertainty about where the energy transition leads to.

5. DISCUSSIONS

In this section, the overall interpretations, implications, limitations, and recommendations of the study are discussed. The results indicate that the theory is in line with practical experiences. That what is stated in the theoretical framework, is in relation to that what is observed during the field study. Data analysis also confirms the relationship between theory and practice.

5.1 Interpretations of the study

The study is in line with the assumptions because observations have led to the fact that a grid company is continually looking to find a way to please their stakeholders' requirements. Consequently, the need for the study was clearly visible. The results, therefore, provide new insight into the relationship between stakeholders of a grid company and the energy transition. On the contrary to the assumed association, joint purpose creation was difficult to establish, because grid companies exist of a regulated and an unregulated side, thus the definitions of the stakeholder vary within the holding. The results might suggest that the way used for prioritizing projects is the right way since the data suggests that is important for a grid company to have a guideline in order to meet the requirements of the stakeholders, to achieve a joint purpose. However, this depends on the grid company. The AHP-method is an easy-to-use tool for making decisions, but this does not necessarily mean that the company must use the tool, eventually, that is something decided by the company itself. Because at the investigated grid company, clear stakeholder management was missing, this study is an opportunity for the company to see what could be done in the area of stakeholder management.

5.2 Implications of the study

These results build on existing evidence of the developments of the Dutch Climate Agreement, yet, this agreement has not been signed. However, the national government builds on this agreement in relation to the energy transition. Hence, the agreement cannot be denied and must definitely be taken into consideration when conducting research on the topic of the energy transition. Moreover, they are close to signing the climate agreement. Also, this study is only applicable to the Netherlands. Each country has its own view on the energy transition, and therefore, this study does not say anything about foreign developments on the topic of the energy transition.

The data contributes a clearer understanding of energy transition in a broad sense among the consumers (both private and business) in the Netherlands. The data collected from interviews is also in line with the developments on the climate agreement from the Dutch government because the participants of the interviews keep referring to the laws regarding the energy transition. There is also consistency between the responses of the participants when it comes to challenges in the energy transition. Independent research shows that there are just small differences in the responses of an alderman and a city councilor. They both state that the hardest part of creating a joint purpose is getting support from all stakeholders, especially the end consumer. While previous research on stakeholders described in this study focused on the definition of stakeholders and on value creation, these results demonstrate that there are still implications on the interrelated tasks of each stakeholder, speaking of the tasks carried out by each stakeholder. This must be taken into account when considering how to align the tasks since this study only shows the main joint purpose.

5.3 Limitations of the study

Due to the lack of available data about the energy transition, the results cannot confirm whether stakeholders are satisfied with the joint purpose. Based on the available data, one can combine the input requirements of each stakeholder, but cannot say more about the stakeholder satisfaction. The results of the study can neither tell us more about which actual projects need to be done, establishing the joint purpose, only which criteria are considered to distinguish these projects. This, thus, is required in future research, building deeper on the Value Creation Framework for grid companies. The methodological choices were constrained by the number of participants that completed the survey since more participants were expected. Besides, there was contradiction recognizable in the outcomes of the survey and the outcomes of the interviews, when it came to the question of what people think is most important. The participants of the interview think affordability is most important, while the participants of the survey think sustainability is most important. The generalizability of part of the results is limited by some suggestive answers on the interview question, hence these questions are not used in describing the outcomes.

5.4 Recommendations

Almost no scientific studies on stakeholders in the energy transition within grid companies are done yet. Since the results of this study solely provide a brief explanation of the energy transition and the urgency of the energy transition is rising every day, further research should be done on this topic, because the results cannot predict the future developments of the energy transition and how to cope with it. Consequently, future studies should take into account the development of this ‘rapidly growing topic’, on both the short-term and the long-term and on a global base. Since this study provides grid companies a general view on value creation for their stakeholders, we could recommend grid companies to follow a sequence of steps when it comes to stakeholder management and value creation, to eventually answer the aforementioned questions: Who, when, and how? These steps are described as following: [1] Clearly define each stakeholder, using the explanations of Freeman (1984; et al 2010), Eden & Ackermann (2011), and Savage (et al, 1991); [2] Divide each stakeholder into groups, using the Power-Interest Grid; [3] Make clear what the input requirements are for each stakeholder (group); [4] Fill in the Stakeholder Value Creation Framework, using the first 3 steps; [5] Define the activities needed to create a joint goal; and [6] Define the joint purpose.

All the above-mentioned steps are integrated into the Combined Power-Interest Grid with the Stakeholder Value Creation Framework for sustainable related issues, which can be seen in Figure 3. However, Freudenreich et al (2018) used Osterwalder’s Business Model Ontology as a base for the Stakeholder Value

Creation Framework. We combine Freudenreich's framework (Figure 2) with Eden & Ackermann's power/interest grid (Figure 1), leaving out the business model ontology. The wedges in Figure 2 show stakeholder groups based on the business model, while the wedges in Figure 3 represent the stakeholder groups as defined in this study.

The wedges shown in Figure 3, represent the relationships between the stakeholders, defined by the power-interest dimensions and Savage's dimensions, and a grid company. Besides, their exchanged input requirements (Dark-grey arrows pointing towards the middle of the framework) and output results (Light-grey arrows pointing towards the outside of the circle) are integrated into the framework. As can be noticed, often the crowd only exist of secondary/external stakeholders. This combined framework forms the base of the creation of a joint purpose between stakeholders and a grid company.

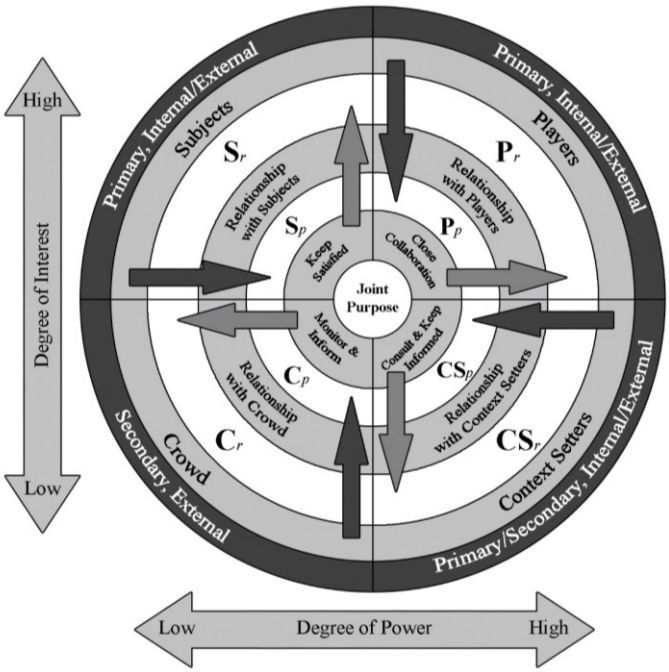

Figure 3. Theoretical Integrated Value Creation Framework for Stakeholders

The inner white circles represent activities, wherein the center represents the joint purpose, the middle white circle [S_p; P_p; C_p; CS_p] represent the activities a grid company has to do in order to manage the input requirements of the stakeholders (i.e. proposed projects), and the outer white circle [S_r; P_r; C_r; CS_r] represent the output from the grid company towards the stakeholders (i.e. realized projects). Herein, *p* stands for proposed requirements, *r* stands for realized requirements, S stands for Subjects, P stands for Players, C stands for Crowd, and CS stands for Context Setters. The joint purpose is a point where the degree of power of the stakeholders meets the degree of interest of the stakeholders. Therefore, the model aims to integrate all requirements put in by the stakeholders, whether they have a low/high degree of power/interest, does not necessarily mean that requirements will be met earlier if you have a high degree of power/interest. This model (Figure 3) can be used in the energy transition since the results say that for the energy transition, stakeholder management is crucial, and we think that implementing this framework will facilitate a grid company's stakeholder management. Also, because collaboration is needed, we recommend the use of this model. After this model is applied, the grid company could introduce the AHP-method in order to give values to the criteria for project-prioritization and make decisions about which projects to do, and which ones not to do. We think the AHP-method is easy to implement, and therefore we recommend the use of this method.

6. CONCLUSIONS

The energy transition is not just in the residents' back garden, but also behind the front gate. City councilors see this and rightly highlight the significance of adequate involvement of consumers, energy co-operations, housing corporations, and all other stakeholders. Grid companies are constantly asking themselves: who do we have to engage? But meanwhile, they forget to ask the follow-up question: when and how do we engage those stakeholders? And with which stakeholders it is necessary to cooperate more equally. By sitting at the table at the correct time or getting into a collaboration in a manner that suits well with the interest, understanding and possible role in the realization, alliances become tighter. For one party that implies a much bigger and longer position, while at the start and the end the other just thinks along with the assumptions and the concrete plan. One grid company cannot achieve carbon dioxide reduction alone. Based on the practice, all Dutch grid companies together have to accelerate the reduction of 77.82% of the total carbon dioxide emissions to be reduced before 2050 in the Netherlands, regarding Table 1 in combination with the results. Regarding the law, grid companies are urged to facilitate the reduction of carbon dioxide emissions with 49% before 2030 with respect to 1990. We also know that although a lot of people are familiar with the climate agreement, it does not necessarily mean they are familiar with what is written in the agreement. So, many people do not yet know much about this recent topic and therefore more knowledge and information will have to be shared about the energy transition and about the positive, but certainly also negative consequences. It is therefore hard for a grid company to realize projects. That is why the requirements of stakeholders play an important role in defining the projects for the acceleration of the energy transition. So, the acceleration of the energy transition is mainly about managing the requirements of all stakeholder groups, and we know that this can be achieved in the joint purpose.

To provide an answer to the question, what can a grid company do in order to establish a joint purpose with their stakeholders, one can say that it is to create clear stakeholder management. This means that the stakeholders must be defined, i.e. who are your stakeholders, but also value must be created for your stakeholders, i.e. when do you create value and how do you engage stakeholders. Since this study provides a general overview of the stakeholders for the unregulated side of the grid company, we can conclude that the activities, i.e. projects which must be performed at the grid company, have to be perfectly aligned with the provinces and municipalities, since these stakeholders are also the shareholders of a grid company. These stakeholders are often seen as a point of contact for other stakeholders towards the grid company. If we look at Table 3, we perceive the following stakeholders distinguished in the dimension of 'Players': Executive Board, Supervisory Board, Shareholders, Lower Governments, and Managers. This implies that a grid company must closely collaborate with those stakeholders and that this collaboration will facilitate the achievement of the joint purpose. Effective collaboration is working on interfaces, which need coherence. This can be learned, and now is the time to begin. The model in Figure 3, together with the general overview of stakeholders for the unregulated side of a grid company (as can be found in Table 3) can be used to establish effective collaboration between stakeholders in the energy transition and will eventually tell us more about the value created regarding sustainability issues for

the stakeholders, i.e. the projects to be put in the project portfolio according to the requirements of the stakeholders. Consequently, the inclusion of all requirements put in by the distinct stakeholders will be met if collaboration between the aforementioned Players is established and well-performed. We can say that due to this effective (close) collaboration, the stakeholder management regarding all other stakeholders (i.e. Subjects, Context Setters, and Crowd) will be facilitated and eventually, requirements are easier to be met. A lot of individuals and organizations want to be heard. That's correct. In future, to meet those expectations and to get them moving, there is one key task: establishing the joint purpose.

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9. APPENDICES

9.1 Quantitative Data Appendix

Survey questionnaire (109 participants):

1. Which age category are you in?
    - ***a.*** 18 to 25 years……***21.10%***
    - b. 26 to 44 years……***27.52%***
    - c. 45 to 64 years……***40.37%***
    - d. 65 years and older……***11.01%***
2. Where do you live?
3. In which municipality is that?
4. And what province?
5. What is your living status?
    - a. I'm living on my own…… ***5.50%***
    - b. I'm living with my partner (and/or family)……***75.23%***
    - c. I'm sharing a house (e.g. with my friends/other students)……***2.75%***
    - d. I'm not living on my own (but with my parents/caregivers) → continue to question 8……***16.51%***
6. With how many people are you living together?
7. Do you live in a rented house or in a purchased house? (91 responses; 18 missing)
    - a. Rented…… ***16.51%***
    - b. Purchased……***66.97%***
8. I find myself sustainable because:
    - a. I'm using sustainable energy
    - b. I'm saving energy by taking fewer showers
    - c. I'm isolating my house
    - d. I'm driving fewer kilometers with my car/motorcycle than previously
    - e. I'm separating my waste
    - f. I'm driving an electric car
    - g. I'm flying less than previously
    - h. I'm using more biologic food supplements
    - i. I'm buying more Fairtrade products
    - j. I'm using solar panels
    - k. I do not describe myself as sustainable…
9. Are you familiar with the Dutch Climate Agreement?
    - a. Yes……..***74.31%***
    - b. No……***25.69%***
10. Do you also know what is said in the Climate Agreement?
    - ***a.*** Yes……..***34.86%***
    - ***b.*** Yes, but I still want the definition……..***42.12%***
    - c. No……***22.02%***
11. Do you know what stakeholders of a company are?
    - a. Yes……***52.29%***
    - b. Yes, but I still need the definition……***28.44%***
    - c. No……***19.27%***
12. What is a grid company according to you?
13. What does the concept 'energy transition' mean, according to you?
14. The energy transition is an important subject which should definitely get attention in my environment!
    - a. Scale 1 to 5: 1 totally disagrees, 3 is neutral, 5 totally agrees.
15. The energy transition doesn't bother me…

a. Scale 1 to 5: 1 totally disagrees, 3 is neutral, 5 totally agrees.

16. The government is the one that should take measurements against global warming, not the citizens of the Netherlands.
    a. Scale 1 to 5: 1 totally disagrees, 3 is neutral, 5 totally agrees.
17. Indicate per concept where you place them (in terms of importance), when it comes to energy transition: Affordability, Reliability, Sustainability, Feasibility, Safety.
    a. 1 is most important ***(= Sustainability 27.36%)***, 5 is least important ***(= Affordability & Feasibility 26.42% each)***.
18. What is the role of the municipality (in the energy transition)? (103 responses; 6 missing)
    a. They don't have a role. The energy companies should take initiative and be the initiators…….***8.26%***
    b. They are leading and should take the initiative……***8.26%***
    c. They should choose collaboration with citizens and companies and build on initiatives together…..***77.98%***
    d. Other…….***5.50%***
19. What do you expect from a grid company (as a stakeholder)?
20. What is for you the most important task in the energy transition?
    a. Sustaining in every way possible.
    b. Making others aware of the importance of the energy transition.
    c. Gaining more knowledge of the topic, so I will know where it leads to.
    d. I don't have a task, it's not up to myself. → Extra question 22.
21. What is the biggest bottleneck that flows from the energy transition?
22. ***Only if 20 = d:*** Which tasks do you perceive as more important (think about healthcare, education, etc.)
23. Any remarks concerning the questions or the energy transition?

Overview of the main answers of the survey:

Question	Answers
12	Supplier of energy; Transports energy; Owner of (energy) grids; Distributes electricity & gas.
13	Green energy; Solar energy; Transition from fossil energies to sustainable energies.
14	4 (*Mode*)
15	1 (*Mode*)
16	3 (*Mode*)
19	Collaboration with consumers; Stimulate use of clean energy; Keep societal costs low.
21	It will cost too much; Other big polluting countries should also consider it; We are already too late.
22	Healthcare; Retirement; Smart Mobility; Family; Education.

Note: Some answers are expressed in percentages of the number of participants (n=109) which can be found behind the questions.

9.2 Qualitative Data Appendix

Interview questions:

1. Are you familiar with the climate agreement and with its common thread?
2. Can you provide a description of the energy transition (in one sentence)?
3. What do you think involves stakeholder management?
    a. Which players are part of this (in the energy transition) and also have a role in it?
4. What is your vision on the energy transition from the perspective of your profession?
5. How important is the energy transition according to you as a person, and from the perspective of your profession?
6. In addition to all the various urgent themes such as elderly care, youth care, etc., I am very curious about how you value the energy transition, if choices must be made, where would the attention go to (with regard to other themes)?
7. Is the Energy Transition in the field of sustainability, therefore, the most important point on the agenda for the municipalities/grid company (depends on the participant's perspective) at the moment? If so, why? If not, what would have to change to make this important?
8. What are the biggest challenges in the energy transition (think of mobility, the built environment, etc.)?
9. What are the biggest obstacles for these challenges?
10. If there are opportunities to realize these challenges, where would those opportunities lie?
    a. To what extent does the affordability of an alternative energy solution contribute to the choice to become more sustainable, according to you?
    b. Why is it important to keep it affordable? Regardless of whether the government says it must happen, and it leaves you no choices.
    c. In view of 2030, how do you see the feasibility of the energy transition in 2030 compared to now (What should change to speed things up)?
11. How do you see the role of the municipality in the energy transition?
12. What does this mean for a network company in the energy transition?
    a. What do you think is the purpose of a network company (in one sentence)?
13. How do you see the role of the citizen (i.e. consumer) in the energy transition and when should citizens be involved in the process?
14. What would cooperation between the municipality, a network company and other stakeholders look like and who is the driving force behind it?
15. What do you think are common interests among stakeholders in the energy transition and are there options for aligning them? And what is therefore needed within now and 2 years?
16. Do you have any comments that I should include in my research on stakeholders in the energy transition?

These questions are asked to 3 participants:

- *CEO of a Dutch Grid Company*
- *Alderman of a Dutch Municipality*
- *A Councilor of a Dutch Municipality*

Overview of the main results of the interviews:

Participant	Stakeholder Requirements	Recommendations on achieving the joint purpose
Alderman of a (Dutch) Municipality (*Anonymous regarding the GDPR*)	- Develop Transition Vision on Heat Provision; - Comply with National Laws/Acts; - Indirectly comply with the International Laws/Acts.	- Close Collaboration with Grid Company; - Creating societal support; - Knowledge-sharing about the energy transition.
(Dutch) City Councilor *H.J. Pape (with consent)*	- Develop Transition Vision on Heat Provision; - Facilitating the municipality's decision making.	- Governments form the base, collaboration is needed; - Communication with consumers is crucial.
CEO of a (Dutch) Grid Company *G.A. De Haan (with consent)*	- Alignment with the strategic purposes of the company; - Coping with the requirements of the (National/Lower) governments.	- Coherence in lower stakeholder segments, to avoid uncertainty; - Develop projects against the lowest possible societal costs.

9.3 Decision-Making Appendix

The calculation for the AHP pair-wise comparison Matrix

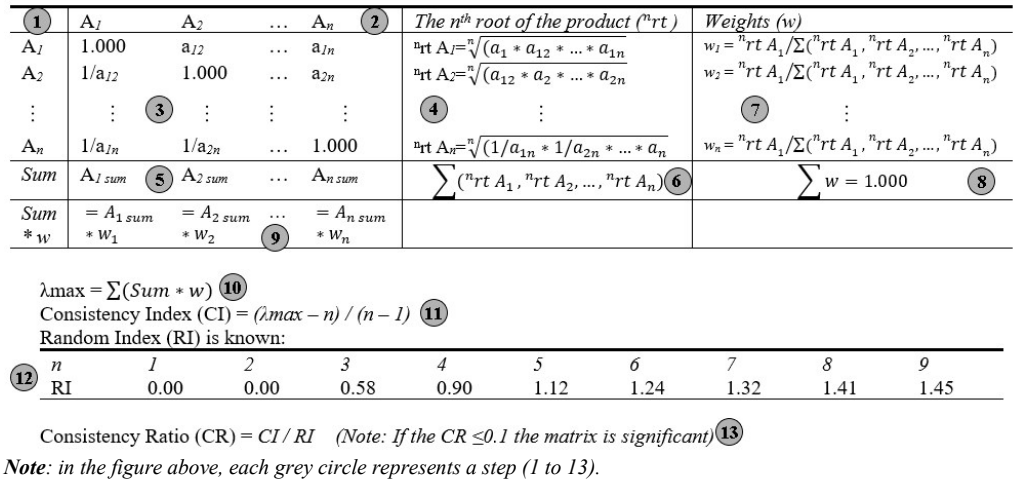
Goal	A_1	A_2	…	A_n	*The n^{th} root of the product (^nrt)*	*Weights (w)*
A_1	1.000	a_{12}	…	a_{1n}	$^n\text{rt } A_1=\sqrt[n]{(a_1 * a_{12} * \dots * a_{1n}}$	$w_1 = {}^nrt\ A_1/\sum({}^nrt\ A_1, {}^nrt\ A_2, \dots, {}^nrt\ A_n)$
A_2	$1/a_{12}$	1.000	…	a_{2n}	$^n\text{rt } A_2=\sqrt[n]{(a_{12} * a_2 * \dots * a_{2n}}$	$w_2 = {}^nrt\ A_1/\sum({}^nrt\ A_1, {}^nrt\ A_2, \dots, {}^nrt\ A_n)$
⋮	⋮	⋮	⋮	⋮	⋮	⋮
A_n	$1/a_{1n}$	$1/a_{2n}$	…	1.000	$^n\text{rt } A_n=\sqrt[n]{(1/a_{1n} * 1/a_{2n} * \dots * a_n}$	$w_n = {}^nrt\ A_1/\sum({}^nrt\ A_1, {}^nrt\ A_2, \dots, {}^nrt\ A_n)$
Sum	$A_{1\ sum}$	$A_{2\ sum}$	…	$A_{n\ sum}$	$\sum({}^nrt\ A_1, {}^nrt\ A_2, \dots, {}^nrt\ A_n)$	$\sum w = 1.000$
Sum w*	$= A_{1\ sum} * w_1$	$= A_{2\ sum} * w_2$	…	$= A_{n\ sum} * w_n$		

$\lambda max = \sum(Sum * w)$
Consistency Index (CI) = *$(\lambda max - n) / (n - 1)$*
Random Index (RI) is known:

n	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45

Consistency Ratio (CR) = *CI / RI* *(Note: If the CR ≤0.1 the matrix is significant)*

1. Define the goal of using an AHP-method;
2. Define which criteria (*A*) lead to the goal (and maybe even sub-criteria), and the number of criteria (*n*);
3. Fill in the matrix (*a*) with the numbers of the intensity of importance on an absolute scale (1,3,5,7,9, intermediates, and reciprocals [see Table 2]);
4. Calculate the n^{th} root ($^nrt\ A$) of the product of each criterion (looking at the rows);
5. Calculate the sum of each criterion (*Asum* – looking at the column);
6. Calculate the sum of the n^{th} roots;
7. Calculate the weights of each criterion (*w*) by dividing the n^{th} root of a criterion by the sum of the n^{th} roots;
8. Please note, the sum of the weights always must be equal to 1!
9. Multiply the sum of a criterion (calculated in step 5) by the weight of that criterion (calculated in step 7);
10. Determine the *λmax* by taking the sum of the outcomes of step 9;
11. Calculate the Consistency Index;
12. Determine the Random Index, based on the number of criteria (*n*);
13. Calculate the Consistency Ratio, the consistency is significant if CR *≤0.1*



***Note**: in the figure above, each grey circle represents a step (1 to 13).*

Results AHP: Criteria

Importance	Finance	Social Importance	Sustainability Contribution	Image	Future-Proof	Project Lead Time (PLT)
Finance	***1.000***	3.000	0.200	7.000	0.200	5.000
Social Importance	0.333	***1.000***	0.143	5.000	0.143	3.000
Sust. Contr.	5.000	7.000	***1.000***	9.000	1.000	8.000
Image	0.143	0.200	0.111	***1.000***	0.111	0.333
Future-proof	5.000	7.000	1.000	9.000	***1.000***	8.000
PLT	0.200	0.333	0.125	3.000	0.125	***1.000***
Total	**11.676**	**18.533**	**2.579**	**34.000**	**2.579**	**25.333**

Normalized	Finance	Social Importance	Sustainability Contribution	Image	Future-Proof	PLT	Weight
Finance	0.09	0.16	0.08	0.21	0.08	0.20	**0.1343**
Social Importance	0.03	0.05	0.06	0.15	0.06	0.12	**0.0765**
Sust. Contr.	0.43	0.38	0.39	0.26	0.39	0.32	**0.3603**
Image	0.01	0.01	0.04	0.03	0.04	0.01	**0.0253**
Future-proof	0.43	0.38	0.39	0.26	0.39	0.32	**0.3603**
PLT	0.02	0.02	0.05	0.09	0.05	0.04	**0.0433**

λmax	6.504		*n* [Criteria]	6
Consistency Index	0.101			
Random Index	1.24	*Based on n=6*		
Consistency Ratio	0.081	*Significant if ≤ 0.1*		