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THE REALISATION OF FAST CHARGING INFRASTRUCTURE

*Public private partnerships and fast charging
infrastructure in the Netherlands: governmental roles
and responsibilities.*

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Abstract

As the number of electric vehicles in the Netherlands is expected to rise to 1.8 million in 2030 sufficient charging infrastructure needs to be realised so as not to hinder this growth. Recently it has become clear that fast charging plays an important role in the realisation of sufficient charging infrastructure. One of the ways in which fast charging infrastructure projects for EVs can be realised is by establishing a public private partnership (hereafter PPP). In such a partnership the private and public sector work together towards a shared objective, in this case the realisation of fast charging infrastructure. Considering that both the weakness of a government to manage a PPP project or lack of involvement of the government may eventually lead to the failure of a project, it is important that both the roles and responsibilities of the governmental party in a PPP project are well-defined. Therefore it is researched how PPPs for public fast charging infrastructure can be improved based on the roles and responsibilities of the governmental party. In order to execute this research comparing research methods have been applied. First the governmental roles and responsibilities have been established based on literature research. Through eight interviews with Dutch municipalities it has been investigated how municipalities currently fill in these roles. This has then been compared to the theoretical framework in order to propose improvements. For municipalities the recommendation is to take on a stimulating, facilitating and coordinating role. For provinces it could be beneficial to act as a facilitating regional actor which can bring municipalities together. Lastly, it is advisable that the national government takes on a facilitating role as well but in a different manner than municipalities and provinces. It may be useful if the national government would develop a set of guidelines, tools and formats which the municipalities could benefit from. As this research has been executed from the point of view of municipalities, it may also be interesting to research how private parties would prefer that governments fulfil their roles.

Keywords: Public private partnerships, fast charging infrastructure, governmental roles and responsibilities, municipalities.

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1| Introduction

Background

The Paris Climate Agreement brings nations together in order to fight climate change and to adapt to the effects of climate change. 195 countries have agreed upon the goal that global warming should be limited to 1.5 degrees Celsius (United Nations, 2015). In order to contribute to this ambitious goal, the European Union has set its target to reduce all of its greenhouse-gas (GHG) emissions by 40% as compared to the levels measured in 1990. In order to reach this target the European Commission (2017) explains that among others, the decarbonisation of the transport sector needs to be stimulated. Especially since the transport sector was responsible for 23% of the European GHG emissions in 2015 (Moraga & Mulder, 2018; Deinum et al., 2020).

In the Netherlands, the intention was laid down to reach a 49% decrease of GHG emissions by 2030 in the current coalition agreement (VVD et al., 2017). Although there are various sectors that significantly impact the climate goals, transportation remains one of the main contributors of GHG emissions (Moraga & Mulder, 2018; Held & Gerrits, 2019). Therefore, in order to reach the targets proposed by the Paris Climate Agreement and in the coalition agreement, adapting the transport sector in line with the energy transition to reduce GHG emissions, is considered fundamental (Zhang et al., 2019; Deinum et al., 2020). This is also highlighted in the National Climate Agreement. Here it is mentioned that electric mobility is an important topic when discussing the necessary measures to achieve the set targets (National Climate Agreement, 2019). One of the central aims within the topic of electric mobility in the Netherlands is that 100% of all new cars be emission-free by 2030 (Stuurgroep NAL, 2019). Therefore, the assumption is that there will be 1.8 million electric vehicles (EVs) in The Netherlands in 2030 (NKL, n.d.).

It is acknowledged in the National Agenda for Charging Infrastructure, which is part of the National Climate Agreement, that sufficient charging infrastructure needs to be available for the expected growth of the amount of EV's (2019). As the range of EV's is relatively small compared to conventional vehicles, users are heavily dependent on a well-developed charging infrastructure (Verbeet, 2018; Held & Gerrits, 2019). Despite the fact that The Netherlands currently has the highest density of EV charging points worldwide, the expected large growth of the EV market will trigger the need for increasing charging infrastructure development so as not to become a barrier to further the market (RVO, 2019a; Deinum et al, 2020). The development of sufficient charging infrastructure is crucial for EV development as a lack of charging infrastructure restricts the mobility of EV users. This forms a barrier for large scale EV adoption (Wiederer & Philip, 2010; European Commission, 2013; Verbeet, 2018). However, charging points need not only to be located at home, but also in work and public spaces, such as highways and cities (European Commission, 2013; Deinum et al., 2020). Recently, it has become clear that fast charging plays an important role in the realisation of sufficient charging infrastructure (NKL, n.d.).

One of the ways in which fast charging infrastructure projects for EVs can be realised is by establishing a public private partnership (hereafter PPP) (Zhang et al., 2019). In such a partnership the private and public sector work together towards a shared objective, in this case the realisation of fast charging infrastructure. By making use of a PPP approach the strengths of both parties can be integrated (Kwak et al. 2009; Zhang, et al. 2019). In both the development and the management of a PPP project, the responsibility of the government plays a critical role (Europese Rekenkamer, 2019; Osei-Kyei & Chan, 2015; Kwak et al., 2009). Considering that both the

weakness of a government to manage a PPP project or lack of involvement of the government may eventually lead to the failure of a project, it is important that both the roles and responsibilities of the governmental party in a PPP project are well-defined (Kwak et al., 2009).

Societal relevance

Private parties, provinces, the national government and municipalities together are responsible for the roll-out of charging infrastructure. The national government for example has contracted Fastned to realise fast charging stations along Dutch motorways (RVO, 2019). However, in the realisation of fast charging infrastructure in public spaces municipalities play an important role. Municipalities are still working on their vision to implement both fast and regular charging infrastructure into the physical environment as these documents are obliged to be finished by the end of 2020 (NKL, 2019b). More insight into the roles they can take in a PPP project may be beneficial for the outcome of such a project (Kwak et al., 2009).

Scientific relevance

The PPP model is considered a promising way to prompt the development of both regular and fast charging infrastructure (Zhang et al., 2019). While research is being done on regular charging infrastructure for EV's, research specifically aimed at fast charging infrastructure and how PPPs can contribute to the roll-out of the required public fast charging infrastructure is still lacking (Moraga & Mulder, 2018; Zhang et al. 2019; Wang & Ke, 2018). Furthermore, many governments are continuing to view PPPs as a key strategy for the delivery of infrastructure. Nonetheless, one of the obstacles of PPPs for infrastructure development is that not all required knowledge and skills to engage in these long-term projects have been required by both the private and public party (Kwak et al. 2009; Wang & Ke, 2018). The present study may contribute to bridge the gap for the involved public parties.

Research statement

As mentioned above, it is important for the success of a PPP that the governmental party is aware of its roles and responsibilities, and applies these in satisfactory manner during the project. This research aspires to advise on improvements on the roles and responsibilities governments should take on in the context of the realisation of fast charging infrastructure, on a municipal, provincial and national level. In this research the focus will be on the roles and responsibilities of the governmental party in such a partnership. Considering this, the following research question has been formulated:

How can Public Private Partnerships for public fast charging infrastructure be improved based on the roles and responsibilities of the governmental party?

In order to be able to answer this main research question the following sub-questions have been formulated.

1. What are, according to literature, the roles and responsibilities of the governmental party in a public private partnership for infrastructure development?
2. How do Dutch municipalities currently act upon these roles and responsibilities concerning the realisation of public fast charging infrastructure?
3. To what extent do Dutch municipalities fulfil these roles, as defined by literature, at the moment?

Reading guide

Chapter two consists of a theoretical framework containing the three most relevant concepts for this research will be discussed. These are: public private partnerships, fast charging infrastructure and governmental roles and responsibilities. In the third chapter the applied methods will be explained. In the fourth chapter the results will be discussed followed by chapter five, where final conclusions will be drawn and a brief reflection upon this research will be discussed.

2| Theoretical framework

Public Private Partnerships

A PPP is a risk sharing relationship between the public sector and one or more partners from the private sector which is laid down in a contract between these parties. Such a relationship is based on a shared aspiration between the involved sectors and has as its goal to deliver an agreed upon outcome and/or a specific public service (Grimsey & Lewis, 2004; Europese Rekenkamer, 2019). The public sector refers to the involved governmental party, for example a municipality. The private party concerns an entity from the private sector which is contracted by the governmental party in a PPP (Grimsey & Lewis, 2004). PPPs make use of both the private and the public sector to deliver goods and services which would usually be delivered by the public sector (Europese Rekenkamer, 2019).

A PPP can provide multiple benefits to the governmental party, e.g. by providing lower-cost, more-efficient and reliable public facilities (Kwak et al., 2009). Through PPPs the expertise, finance and skills of the private sector can be part of the provision of public infrastructure (Carbonara et al. 2015; Osei-Kyei & Chan, 2015; Hueskes et al., 2019). PPPs may also lead to a better performance considering the higher quality of infrastructure for at a lower price (Hueskes et al., 2019). Furthermore, by making use of a PPP, the public party can transfer risks related to finance, construction, and operation of the projects onto the private party. Whilst, additionally avoiding up-front capital costs (Kwak et al., 2009).

There are various categories of PPPs. One of the most important categories is the concession (Europese Rekenkamer, 2019). The concessional approach is one of the oldest forms of PPP and ownership of the facility may be transferred to the involved governmental party during various phases of the partnership (Grimsey & Lewis, 2004). A partner is selected through a bidding process for a concession to design, build, finance, maintain and operate a specific infrastructure facility for a set period of time (Flyvbjerg et al., 2003). Under a concession, the private partner has the rights to use infrastructure assets to provide consumers directly and to earn proceeds from the sales. Within this approach more active participation from the private partner is usually implied, often as a designer and constructor of the facilities and as a provider of the services. Additionally, the private partner is usually responsible for maintenance, upgrades and capital extensions (Grimsey & Lewis, 2004). In a concession the final consumer usually pays the private partner directly without a compensation from the public party (Europese Rekenkamer, 2019).

Osei-Kyei & Chan (2015) argue that the PPP-method of procurement can provide an effective method of delivering value for money public infrastructure, while combining the advantages of tendering and the allocation of risk between the various involved parties. However, an enduring and stable relationship between the involved public and private parties is often required for an effective operation since PPPs often contain a long term partnership between the public entity and private consortium (Osei-Kyei & Chan, 2015; Kwak et al., 2009).

Fast charging infrastructure

The aspiration of the Dutch government states that as of 2030 all new cars will be EVs (Stuurgroep NAL, 2019). In order to reach this goal a sufficient charging infrastructure should be in place since the lack of charging infrastructure is likely to inhibit large scale adoption of EVs (Wiederer & Philip,

2010; Wang & Ke, 2018). Zhang et al. (2019) explain that EV users usually prefer to charge at home at the end of the day, even though this may not be economic and practical. This is especially the case in urban areas as 70 percent of Dutch households do not own a private parking lot. And thus will be dependent on available public charging points (Verbeet, 2018).

Charging infrastructure for EVs, both regular and fast, has various characteristics which distinguish it from other infrastructure (Wang & Ke, 2018). Charging infrastructure for example requires a large initial and maintenance investment, as well as a long-term operation period. Furthermore cooperation with city planning is necessary as charging infrastructure is related to power grids, multiple stakeholders and transportation layout. Lastly, there are technical risks, market uncertainty and the influence of technological advances, for example in electricity storage possibilities (Wang & Ke, 2018).

PPP models have already been introduced to achieve the realisation of electric vehicle charging infrastructure projects (Wang & Ke, 2018; Zhang et al., 2019). An example of such a PPP is the public fast charging points in Utrecht. This partnership is set-up according to the DBFMO-phases. The private partner is responsible for the design, built, finance, maintain and operation of the fast charging point (Grimsey & Lewis, 2004). The municipality set a framework for the strategic implementation of charging infrastructure in the public environment. Within the set framework fast charging can play a part in relieving pressure of regular public charging points. The municipality does not realise these charging points themselves but grants concession rights to an concessionaire. This concessionaire then has the right to both place and exploit charging infrastructure for a certain period of time but has to comply to the requirements set in the framework of the municipality (Municipality of Utrecht, 2019).

The use of PPPs to operate the charging infrastructure combines the advantages and resources of both the private sector and the government (Zhang et al., 2019). One of the main success criteria for infrastructure development such as the realisation of fast charging infrastructure is a long-term relationship (Zhang et al., 2019). Therefore, one of the main challenges of realising charging infrastructure for EVs through PPPs is the selection of the right partner since the involved private-partner is required to maintain a stable relationship and to provide charging services (Zhang et al., 2019).

Governmental roles

According to Kwak et al. (2009), the success or failure of a PPP project is dependent on a number of factors, one of which focusses on the competence of the government. Within both the development and management of a PPP project, the government plays a critical role (Osei-Kyei & Chan, 2015; Kwak et al., 2009). Due to the importance of the role governments play in successfully facilitating a PPP project, Kwak et al. (2009) have identified five main roles of the government in a PPP project for infrastructure development. It is relevant to identify these roles as the inadequacy of a government to manage a PPP or inappropriate involvement of a government may lead to project failure.

1. Creating a favourable investment environment

The government should create a favourable investment environment including stable social, economic, legal and financial conditions. This is crucial as the willingness of private investigators to take part in PPP infrastructure projects is dependent on the environment in which these projects take place (Kwak et al., 2009). Kwak et al. (2009) explain that, in

order to increase the allure of participating in a PPP project for private investors, governments can provide project specific guarantees and/or benefits. Examples of these supportive measures include a guaranteed minimum revenue.

2. Establishing adequate legal/regulatory framework

A prerequisite for a PPP is the establishment of a reliable regulatory framework (Europese Rekenkamer, 2019; Kwak et al., 2009). Having a reliable regulatory framework has two benefits. Firstly, it increases the willingness of the private sector to participate in the development of infrastructure. Secondly, a sound regulatory framework can increase benefits to the government as it ensures that projects operate more efficiently. An adequate regulatory framework is also fundamental to avoid potential corruption in the PPP implementation process and in securing a proper risk allocation between the involved parties (Abdel Aziz, 2007; Kwak et al., 2009).

3. Establishing a coordinating and supportive authority

It is desirable to establish a central authority that can coordinate and reconcile conflicts between different involved parties as objectives of the participating parties may vary (Kwak et al., 2009). This can be organised on different governmental levels with different intentions. A central authority may also function as a point where experiences and skills of various PPP infrastructure projects may be stored and shared between parties. Moreover, it can be used to develop a set of guidelines, standard contracts and useful tools (Koch & Buser, 2006).

4. Selecting a suitable concessionaire

The government should establish a realistic procurement framework to ensure that a suitable concessionaire is selected (Kumaraswamy & Zhang, 2001; Kwak et al., 2009). It is important to select a suitable concessionaire as the consequences of an unsuited concessionaire will have to be tolerated for many years (Hueskes et al. 2019). A procurement framework for infrastructure projects should be based on fundamental elements, which include a client-defined scope, transparency, fair treatment of the competitors, head-to-head competition and a thorough financial analysis over the life cycle of the project (Miller, 2000). Beside the tendering process, an appropriate tender evaluation method and evaluation criteria should also be appointed according to Kwak et al. (2009). These evaluation criteria should reflect the objectives set by the government.

5. Being actively involved in the project life-cycle phases

Despite the fact that the concessionaire is mainly accountable for the implementation of a PPP project, the government is nonetheless actively concerned in the phases of a project life-cycle (Kumaraswamy & Zhang, 2001). This is in order to ensure that the project's matches its objectives related to the delivery and quality of the PPP project (Kwak et al., 2009). The government can achieve this involvement by establishing an interdisciplinary team which monitors the projects process, maintains timely and productive team communications and discussions of quality control, both assesses and improves critical aspects and lastly, discusses quality control and quality assurance measures.

Conceptual model

Based on the presented literature in the theoretical framework a conceptual model (figure 1) has been designed to create an overview of the relevant concepts. The model shows how the different concepts interrelate. It shows that the different governmental roles and responsibilities have an influence on the PPP which leads to the realisation of public fast charging infrastructure.

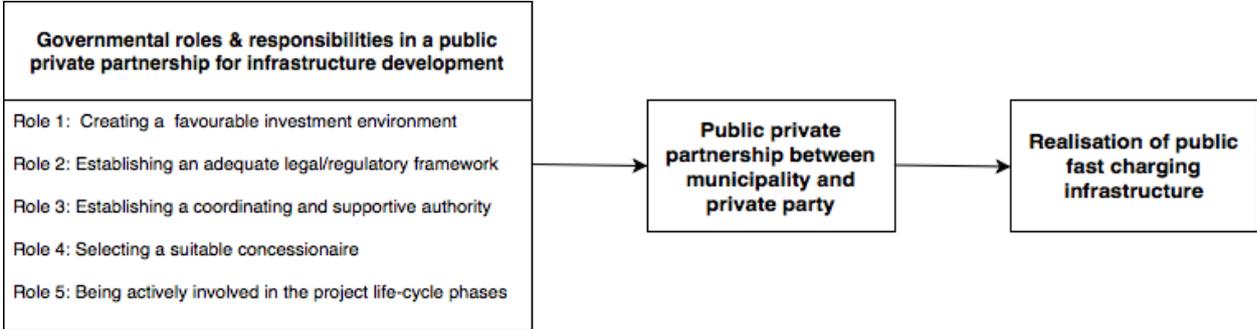


Figure 1: Conceptual model (Author, 2020).

3| Methodology

In this chapter the methodological choices regarding the executed research will be clarified. In order to formulate answers to the research questions a comparing research method has been applied. By comparing the literature-based governmental roles and responsibilities in a PPP for infrastructure development to how Dutch municipalities currently fill these roles, recommendations can be given on improvements. Both primary and secondary data is used. The primary data is gathered through interviews. Due to the current circumstances concerning the COVID-19 crisis these interviews were conducted digitally. The secondary data that is used are peer-reviewed research papers which have been published in academic journals and policy documents which have been recommended by respondents.

Literature research

First, by using secondary data, the roles and responsibilities of the government in a PPP were determined. This literature research has been used to elaborate on relevant concepts. Additionally, relevant policy documents have been used. Based on literature research, the roles and responsibilities of the governmental party in a PPP for infrastructure development have been defined. Both the interview guide and the codebook which is used for analysing the interview transcripts, are based on the theoretical framework.

Case selection

For the case selection three datasets were combined. The first dataset is provided by CBS contains the number of inhabitants per municipality. The second dataset, which contains the amount of public fast charging points per municipality, is provided by CROW (2020). CROW is a Dutch independent research institute. It is not an academic institution nor peer-reviewed. By combining the data from CROW and CBS, the number of public fast charging points per 100.000 inhabitants has been calculated. And thirdly, a ranking of 32 municipalities in which the demand for public fast charging infrastructure is expected to increase most, provided by TNO (2019). Subsequently, the 32 municipalities where the demand is expected to increase the most according to TNO were ranked based on their current number of public fast charging points per 100.000 inhabitants. From this ranking the twenty municipalities who have the highest number of public fast charging points per 100.000 inhabitants were contacted for an interview.

By interviewing municipalities which have a relatively high amount of public fast charging points lessons can be learned. This may be beneficial for the municipalities with relatively few public fast charging points.

| Municipality | Participant | Date | Function (in Dutch) | Reference abbreviation |
|---------------------|--------------------|-------------------------------|---|-------------------------------|
| 's Hertogenbosch | Kevin Ottenheim | 29 th of May, 2020 | Adviseur elektrische voertuigen en laadinfrastructuur | Respondent 1 (R-1) |
| Amsterdam | Jaap Burger | 2 nd of June, 2020 | Strategy advisor charging infrastructure | Respondent 1 (R-2) |

| | | | | |
|----------|--------------------|--------------------------------|---|--------------------|
| Arnhem | Peter Swart | 12 th of June, 2020 | Bestuursadviseur | Respondent 3 (R-3) |
| Den Haag | Michiel van Esch | 11 th of June, 2020 | Projectleider elektrisch vervoer | Respondent 4 (R-4) |
| Deventer | Lisette de Haan | 4 th of June, 2020 | Milieuadviseur | Respondent 5 (R-5) |
| Ede | Rikkert Snitselaar | 16 th of June, 2020 | Beleidsadviseur infrastructuur en milieu | Respondent 6 (R-6) |
| Utrecht | Matthijs Kok | 27 th of May, 2020 | Ontwikkelaar elektrisch Vervoer en nieuwe energie | Respondent 7 (R-7) |
| Venlo | Ward Stevens | 5 th of June, 2020 | Beleidsadviseur duurzame ontwikkeling | Respondent 8 (R-8) |

TABLE 1: CONCEPTUAL MODEL

Interviews

The interviews were conducted in a semi-structured manner. This method offers the opportunity to ask each participant the same questions, which makes it possible to compare answers (Clifford et al., 2016). However, it also enables the researcher to ask follow-up questions based on the answers given by the participants and thus provides more room for discussion and more in-depth answers (Longhurst, 2016). The interviews are structured along an interview guide of which the discussed questions are based on the theoretical framework. The interview guide can be found in Appendix 1.

The interviews are analysed according to the codebook which can be found in Appendix 2. The codebook consists of both deductive codes, which are based on the concepts discussed in the theoretical framework, and inductive codes. The use of inductive codes provided the author to take knowledge into account that was not discussed in the theoretical framework (Cope & Kurtz, 2016). By making use of both deductive and inductive codes the results of the interviews can be analysed better by linking the theory with the primary data (Cope & Kurtz, 2016).

As the interviews were conducted by a native Dutch author with Dutch participants who work for municipalities in the Netherlands, the interviews will be held in Dutch. The coding of the transcripts will be done in Dutch as well. Only the results will be given in English.

Policy analysis

Besides the interviews, a policy documents will be analysed that has been suggested by the interviewed participants. This document is not from a specific municipality but is aimed at all Dutch municipalities. This document is coded according to the same codebook as the conducted interviews.

Validity and reliability

By basing the case selection on secondary data, the cases have been selected in a rational manner. However participants, especially those who were contacted first, had an significant influence of the selection of other participants within the selected municipalities who were contacted. Additionally, the participants had a large influence on the policy documents that were used in this research. Therefore, it is possible that there is a possible bias in the documents they proposed to read. However, by coding these document according to the codebook based on the theoretical framework this bias in minimalised in the analysis of collected data. Nonetheless a certain margin of uncertainty remains present due to possible misinterpretations of the interview questions by the interviewee or misinterpretations of the researcher in the data analysis.

Ethical considerations

The participants of the interviews will be asked to sign a form of consent, a template of which can be found in appendix 3. Through this form the participants get the chance to mention whether or not they would prefer to stay anonymous in this research. And if so, they would prefer that only their first name or a pseudonym. Participants had the opportunity to stay anonymous after they had the opportunity to read the transcript of the interview. However, none of the participants preferred to be anonymous.

In the communication before the interview took place and at the beginning of the interview it was asked whether or not they agreed to the audio of the interview being taped. It was stressed that this was being done only for the purpose of transcribing the interview. The information shared in the interviews will not be used for any other purpose than this research and will not be shared with third parties.

4| Results

In the following chapter the results of this research are discussed. The results are structured according to the previously mentioned governmental roles and responsibilities in a PPP for infrastructure development. For each role a table is provided which shows how the various municipalities and the policy document act upon a specific governmental role. This table is then followed with a more elaborate discussion and comparison of the results. These results are based on the conducted interviews and the gathered policy documents, all of which have been analysed with the same codebook.

Creating a favourable investment environment

| Theoretical Framework | 's Hertogenbosch | Amsterdam | Arnhem | Den Haag |
|--|--|--|--|--|
| Stable conditions Increase attractiveness Project specific guarantees/benefits | Reactive approach Stimulating to include fast charging at gas station Researching attractive locations | Stimulating EV's; creating demand Offer attractive and strategic locations Fixed contribution to initial costs | Facilitating approach Offer attractive locations | Facilitating approach Offer attractive and strategic locations No subsidies |
| Deventer | Ede | Utrecht | Venlo | Policy document |
| Facilitating approach Stimulating to include fast charging | Facilitating approach Researching attractive locations | Facilitating and pro-active approach Offer attractive and strategic locations No subsidies | Facilitating and pro-active approach Researching attractive and strategic locations | Municipality takes on pro-active, facilitating or passive role Municipalities should select attractive, strategic locations |

TABLE 2: OVERVIEW RESULTS CONCERNING GOVERNMENTAL ROLE 1: CREATING A FAVOURABLE INVESTMENT ENVIRONMENT.

When it comes to creating a favourable investment environment for public fast charging, various municipalities take a facilitating pro-active role, as can be seen in table 2. In the implementation in the municipality of Utrecht, this means selecting suitable locations, aimed at specific target audiences, for charging points in a strategic plan (R-7, 2020).

Overall, the municipalities try, or are planning on trying, to create a favourable investment environment by offering attractive locations within their municipal boundaries. This is the case for the municipalities of Amsterdam, Arnhem, Ede, The Hague, Utrecht, Venlo and 's Hertogenbosch. The chain of thought behind this is, as explained by R-3, that by establishing a plan that is approved by the municipal executive you show willingness to cooperate with private parties to realise the fast charging points. Furthermore, suitable attractive locations are more likely to lead to a profitable businesscase, which is the ultimate goal (R-8, 2020).

Whilst municipalities are willing to facilitate locations for fast charging points a large majority of the participants mention that they as a municipality are not prepared to invest in realising fast charging points themselves. This is due to various reasons such as lack of available finances for this

purpose and because municipalities simply do not want to invest in fast charging infrastructure (R-8, 2020). However, there are two exceptions.

The first exception can be found in The Hague, which is the only municipality which developed fast charging points itself. Just the exploitation rights have been given to Fastned. R-4 explained that the rationale behind realising these points themselves is not economical but psychological: “The idea behind this is that as a city we found it important to give the sign that it is always possible to charge your car in The Hague.” (R-4, 2020). The second exception is the municipality of Amsterdam. This is the only municipality that acknowledged that they offered a contribution to the concessionaires in contracts which are currently valid (R-2, 2020).

Another aspect in which the municipality of Amsterdam stands out is that that they do not only try to create a favourable investment environment by offering suitable attractive locations. R-2 indicates that this is also being done by actively stimulating the usage of EV’s as this creates demand for the fast charging points.

Most of the fast charging locations were allocated to concessionaires by way of a tendering process, which will be discussed below. R-7 of the municipality of Utrecht pointed out that the attractiveness of a tender may be increased by offering an exploitation period of around ten years in which the private party can recover the cost of their investments. In addition, the municipality of Utrecht examines how to make an attractive offer for the market by making it possible to register only for some of the selected locations for fast charging points. In this way, possible concessionaires will only compete for locations with a satisfactory business-plan. As a consequence of this possibility, the municipality expects that no surplus fast charging infrastructure will be realised.

Establishing adequate legal/regulatory framework

| Theoretical Framework | ’s Hertogenbosch | Amsterdam | Arnhem | Den Haag |
|--|--|--|--|---|
| Reliable regulatory framework Risk allocation Contract | Not applicable at the moment | Ability to regulate public space via concessions /permits National regulatory framework | Ability to grant concessional rights | European and national regulatory framework Influence by lobbying Exploitation-only contacts |
| Deventer | Ede | Utrecht | Venlo | Policy document |
| Private party exploits | Ability to regulate public space via permits | European and national regulatory framework Ability to regulate public space via concessions/permits DBFMO-contract | European and national regulatory framework Ability to regulate public space via concessions/permits | Establishing requirements |

| | | | | |
|--|--|----------------------|--|--|
| | | Performance contract | | |
|--|--|----------------------|--|--|

TABLE 3: OVERVIEW RESULTS CONCERNING GOVERNMENTAL ROLE 2: ESTABLISHING ADEQUATE LEGAL/REGULATORY FRAMEWORK.

Due to the size of the costs and benefits of PPPs to realize fast charging infrastructure, European tendering will be required (R-2, 2020). As R-8 pointed out, this also means that when a private party approaches a municipality with the request to realise public fast charging points the municipality cannot comply with this request.

On a national scale R-4 highlights the legal framework concerning electricity connections as currently most relevant as this concerns the taxation of power. This is an important aspect as the energy taxes were temporarily lowered, however it needs to be discussed who will pay the increase of the tax. Whether this will be done by the concessionaire or the consumer. However, as R-4 states, this is a national concern which cannot be influenced directly by the municipalities. However, municipalities can cooperate and lobby together.

It is explained that as a municipality you own public space which can be regulated through permits and concessions. *“If we issue a concession and grant it, we can forgive an exclusive right, depending on the procedure followed”* (R-2, 2020). Hence, as a municipality you can forgive the right to exploit something at their own expense at their own risk in public space to a private party. In this case, fast charging infrastructure. However, as a municipality it is possible to set some conditions such as availability of the points and the usage of renewable energy. When discussing the DBFMO-phases, R-2 mentions that the responsibilities for these phases and the exploitation of the fast charging infrastructure are allocated with the private party. This private party is also responsible for the exploitation, and in return the private party earns all the generated revenue (R-7).

As a municipality it is also necessary that you give out an planning permission and a rental contract when it concerns the ownership of the land. Hence, as a municipality you have a role concerning administrative law, which focusses on the extension of the relevant permits and one concerning private law, which focusses on a rental agreement. As R-3 mentions, the extension of the planning permission per location offers the municipality the opportunity to influence the aesthetics of the charging points to make sure that it fits into its surroundings. Municipalities who do not select a concessionaire via a tender process, such as the municipality of Arnhem, have the ability to grant rental contracts similar to the contracts that are currently used for gas stations (R-3).

Establishing a coordinating and supportive authority

| Theoretical Framework | ‘s Hertogenbosch | Amsterdam | Arnhem | Den Haag |
|---|--|---|---|-----------------|
| Central actor Knowledge sharing Facilitate knowledge and skills | Not applicable at the moment, but view a central actor as beneficial | Municipality as central actor Conflicts mostly within municipality Cooperative with private parties | Municipality as central actor Data sharing | Supporting role |

| Deventer | Ede | Utrecht | Venlo | Policy document |
|---------------------------|---------------------------|---|--|---|
| Province as central actor | Province as central actor | Municipality as central actor Data sharing | Municipality as central actor if there is a need | National government takes coordinating role concerning locations near highway and knowledge sharing Province can play coordinating role concerning regional strategies |

TABLE 4: OVERVIEW RESULTS CONCERNING GOVERNMENTAL ROLE 3: ESTABLISHING A COORDINATING AND SUPPORTIVE AUTHORITY.

Various municipalities (Arnhem, Amsterdam, Deventer, The Hague, Utrecht and Venlo) point out that they take on the role of central authority concerning fast charging infrastructure within their municipality. R-5 mentions that is partly the case as it concerns public areas, which are managed by the municipality. R-7 of the municipality of Utrecht elaborates this by clarifying that the implementation remains a collaboration as they work in public areas where many aspects are intertwined. However, because of these intertwined aspects, conflicts within a municipality can arise during the internal process that leads to the planning permission. These conflicts may arise due to the various interests different departments of the municipalities have for public space. R-3 clarifies that the conflicts are usually about whether a location is suitable or not and how it will fit into its physical surroundings.

R-8 indicates that as a municipality they would take this role of coordinating actor upon themselves, but only when this is necessary. He believes that as a municipality you do not always need to interfere if this is not necessary. Nonetheless, he clarifies this by explaining that when parties approach the municipality with a request for collaboration or coordination that this would not be an issue.

Both the municipalities of Deventer and Ede mention that they see a more central role for their provinces, Gelderland and Overijssel. Both municipalities are part of a large concession, 43 municipalities in the provinces of Gelderland and Overijssel in total, for regular charging infrastructure. R-6 mentioned that they were satisfied with this collaboration and mentioned that they would like to have a similar collaborative approach for the development of fast charging infrastructure.

There are no conflicts of interests between of public and private parties. The reason for this is that Utrecht for example proposes a concession in such a way that private parties can earn money out of it and that the public interests are being served (R-7, 2020). If this would not be the case, hence if the interests of the involved parties would not both be served, then a different method should need to be applied. The absence of conflicts may be explained by the fact that usually both the public and private party have a coordinator who have a mutual coordination and both coordinate with their organization themselves.

Overall, it is agreed upon that a central coordinating actor within a municipality would be of added value. Through these central coordinating actors knowledge and data about the usage of fast charging points may be shared between the municipality and its private parties. Various municipalities receive data about fast charging points which provide insights into the usage of these points and help to select suitable new locations.

The analysed policy document, concept *Handreiking snelladen*, provides insights into the knowledge and advice governmental organisations such as municipalities and provinces can benefit from. One of these insights concerns the sharing of knowledge and experiences between municipalities and provinces so that they can learn from each other. This may be beneficial for the development of suitable fast charging infrastructure. Additionally, it is advised in this policy document that municipalities select one project leader who acts as a central actor within a municipality itself. This project leader can then function as a person of contact for both private parties and the different departments within a municipality.

Selecting a suitable concessionaire

| Theoretical Framework | 's Hertogenbosch | Amsterdam | Arnhem | Den Haag |
|--|--|---|---|--|
| Realistic procurement framework Tender evaluation method | Not applicable at the moment | European tendering Economically most advantageous tender | Selection does not go via a tendering process at the moment | Private tendering Evaluation when new tender starts |
| Deventer | Ede | Utrecht | Venlo | Policy document |
| Concession via auction Preferably in cooperation with other municipalities or provinces | Preferably in cooperation with other municipalities or provinces Conflicting motivations between urban and rural municipalities | European tendering Evaluation when new tender starts | Not applicable at the moment | Separate concession, or include in gas station concessions Initiative from either market or municipality Various methods of selecting a concessionaire |

TABLE 5: OVERVIEW OF RESULTS CONCERNING GOVERNMENTAL ROLE 4: SELECTING A SUITABLE CONCESSIONAIRE.

Not all municipalities hitherto appoint concessionaire for the realization of fast charging infrastructure, as can be seen in table 5. R-3 for instance points out that he thinks that the market is not quite ready for the selection of a concessionaire via a tender. R-3 dedicates this to the select number of providers who do not actively approach the municipality with the request to develop fast charging infrastructure in Arnhem. Instead of working with a concessionaire, the municipality of Arnhem works with rental contracts for locations which offer private parties the

opportunity to develop. However, if these circumstances and the market change, the approach taken by the municipality of Arnhem is also likely to change.

The rationale of selecting a suitable concessionaire is that the realisation of fast charging infrastructure then is chargeless for the public party. A suitable concessionaire may be selected through various procedures. A common method of selecting a concessionaire is through a European tender. The party which wins the tender gets concessional rights, and therefore gains the right to develop fast charging infrastructure within the agreed upon framework. Usually the responsibilities for the concessionaires include the whole project cycle; from design to operation and exploitation.

In The Hague the future concessionaires will be selected via private tendering. R-4 explains that through this method a number of private parties will be approached instead of opening a tender for the whole of Europe. The advantage of this approach is that it is cheaper and usually faster than a European tender. However, the revenue needs to be below a certain amount for this approach to be applicable.

A third manner of selecting a suitable concessionaire that has been mentioned is an auction. This method has been applied by the municipality of Deventer. For the location of a new gas station which also included a fast charging point an auction was held in order to select a concessionaire (R-5, 2020).

The selection of a suitable concessionaire is based upon various criteria. One of these is the economically most advantageous tender, which translates into a value for money assessment based on the set requirements. R-2 indicates that the quality of a plan is also assessed, this relates for example to how the quality and service towards the consumer is safeguarded.

The concessional methods are evaluated near the end of the concession. This process starts when the preparation for the following concession begins. During this evaluation attention is paid to the set requirements by the governmental party, for example the use of renewable energy. However, as can be seen in table 5, not all municipalities actively evaluate their selection procedures for a suitable concessionaire.

Being actively involved in the project life-cycle phases

| Theoretical Framework | 's Hertogenbosch | Amsterdam | Arnhem | Den Haag |
|------------------------------|---|-------------------------------------|---|--|
| Involvement during phases | Involved in location due to permits | Involved in location due to permits | Due to adjustment zoning plan, permits and possible rental contracts involved in location | Differs between phases |
| Monitoring | Not subsidizing, hence little to say about the project, hence little to monitor | Up-time monitoring Data sharing | | Involved in location due to permits Not their project hence not monitoring but keeping in touch |
| Deventer | Ede | Utrecht | Venlo | Policy document |

| | | | | |
|--|--|--|--|----------------------------|
| Involvement in location due to permits | Involvement in location due to permits | Monitoring progress and occupancy-rate Involvement in location due to permits | Monitoring progress and realisation of demands | Involvement due to permits |
|--|--|--|--|----------------------------|

TABLE 6: OVERVIEW OF RESULTS CONCERNING GOVERNMENTAL ROLE 5: BEING ACTIVELY INVOLVED IN THE PROJECT LIFE-CYCLE PHASES.

Municipalities find themselves involved in various project phases when it comes to the realization of fast charging infrastructure. A municipality begins by considering the matter of fast charging which is eventually rendered into collecting information about the needs of target audiences. This results in a plan of action and finally the selection of a concessionaire. Through contract management, a municipality stays involved until the project is completed. Municipalities also stay involved to make sure that the project does not come to a standstill in the various departments of a municipality.

During the project phases the private party is obliged to involve the municipality due to the need of a parking decree and an environmental permit.

Some municipalities, such as Utrecht, work with performance contracts. In effect, this means that when the occupation of certain fast charging points is at a certain percentage, an extra charging point needs to be realized. Via the monitoring of the usage data this can be checked. Other municipalities also monitor the usage data of fast charging points. This data is used to determine how many fast charging points are needed to be realised and which locations could be suitable, keeping the different target audiences in mind.

Besides the sharing of data the monitoring comes in different forms. R-1 for example points out that if there are no subsidies and no financial connection between the parties, there is relatively little authoritative influence and therefore little to monitor. In other municipalities management reports are exchanged (R-3), informal monitoring in the form of an occasional email (R-4) or regular monthly meetings take place (R-2).

5| Conclusion and discussion

In this chapter conclusions will be drawn based on the results as discussed in chapter four. Furthermore a reflection on the executed research will be discussed and suggestions for further research will be offered.

In order to provide an answer to the research question ‘How can Public Private Partnerships for public fast charging infrastructure be improved based on the roles and responsibilities of the governmental party?’ the results as discussed in chapter four are compared to the governmental roles and responsibilities as discussed in chapter two. This has been done to set a benchmark of the current situation and to be able to provide useful advice to municipalities, provinces and the national government. In this comparison attention has been paid to the alignment between the governmental roles and responsibilities in a PPP for infrastructure development and to what extent municipalities currently act upon these roles. A distinction is made between no/little alignment, some alignment and a lot of alignment. This benchmark can be seen below in table seven.

| | Role 1: Creating a favourable investment environment | Role 2: Establishing an adequate legal / regulatory framework | Role 3: Establishing a coordinating and supportive authority | Role 4: Selecting a suitable concessionaire | Role 5: Being actively involved in the project life-cycle phases |
|-------------------------|---|--|---|--|---|
| ’s Hertogenbosch | ○ | – | – | – | ● |
| Amsterdam | ● | ● | ● | ● | ● |
| Arnhem | ● | ● | ● | – | ● |
| Den Haag | ● | ● | ● | ● | ● |
| Deventer | ● | ● | ○ | ● | ● |
| Ede | ● | ● | ○ | ● | ● |
| Utrecht | ● | ● | ● | ● | ● |
| Venlo | ● | ● | ○ | – | ● |

TABLE 7: ALIGNMENT BETWEEN THEORETICAL FRAMEWORK AND MUNICIPALITIES

- NO/LITTLE ALIGNMENT
- SOME ALIGNMENT
- A LOT OF ALIGNMENT
- NOT APPLICABLE

Municipalities

As mentioned in by the NKL (n.d.), it is advisable for municipalities to take on a stimulating, facilitating and coordinating role concerning the realisation of public fast charging infrastructure. The stimulating role may be realised by actively stimulating the use of EV’s within a municipality by establishing zero-emission zones in cities and thus stimulating demand for public fast charging points. This is also beneficial for the attractiveness of to invest in this infrastructure R-2, 2020). A facilitating approach can be realised by for example selecting strategic suitable locations for fast

charging infrastructure. This is beneficial as it shows willingness to cooperate with private parties (R-3). It is important to keep the various target audiences in mind when selecting locations (R-7; R-8). The monitoring of data of existing fast charging points may be of added value when selecting locations as this shows the usage of the existing infrastructure and which locations are preferred by consumers. Furthermore, a municipality can take on a coordinating role by establishing a central coordinator of fast charging infrastructure within a municipality. This coordinator can function as a contact person both within the municipality as for private organisations. This may be beneficial as there are conflicting and intertwined demands of the available public space, within and outside the municipal organisation (R-2, R-7).

Provinces

It is advisable for provinces to act as a regional central actor. During the interviews it became clear that municipalities are not always aware of what other municipalities are doing (R-1) while sharing these experiences and knowledge would be beneficial. Furthermore it became clear that some municipalities would prefer to grant concessional rights to private parties in cooperation with multiple municipalities on a regional or provincial level (R-5; R-6). A connecting role can be seen here for provinces.

National government

Concerning the realisation of fast charging infrastructure it is advisable that the national government takes on a facilitating role. Municipalities do not always know what they can expect and how to act concerning these uncertainties (R-2). Additionally municipalities usually have limited time and funds to spend on public fast-charging infrastructure (R-8). The national government can facilitate municipalities in this case by for example developing guidelines and useful tools (Koch & Buser, 2006). Furthermore the national government may consider to develop a format for both a tender and the evaluation which contributes to the selecting of a suitable concessionaire (Kumaraswamy & Zhang, 2001; Kwak et al. 2009).

Reflection

During some of the interviews it became clear that municipalities did not have as many fast charging points as the data provided by CROW indicated. This may have had an influence on which municipalities have been selected to participate in this research and thus on the results. Furthermore, the use of semi-structured interviews instead of structured or open interviews proved to be beneficial as the possibility to ask follow-up questions proved to be useful. Additionally, by having a structure in the interviews it stayed possible to compare the results between municipalities. In retrospect it would also have been of added value to this research to contact provinces and the national government. It may be useful to research the realisation of fast charging infrastructure from their point of view in the future. Additionally, it would also be valuable to research the private parties who realise the fast charging infrastructure and what roles they would prefer the governmental parties would take upon themselves.

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Appendix

Appendix 1, Interview guide

Inleiding:

1. Korte toelichting onderzoek
2. Vindt u het goed dat het interview wordt opgenomen, vragen of wil controleren op feitelijke onjuistheden?

Algemene vragen:

1. Wat is uw rol binnen uw gemeente?
2. En met betrekking tot (snel)laadinfrastructuur?
3. Via wat voor type contracten wordt de snellaadinfrastructuur gegund?

Rollen overheid:

Het creëren van een gunstige investeerdersomgeving

1. Zijn jullie actief bezig als gemeente om een dergelijke omgeving te creëren?
2. Proberen jullie als gemeente de aantrekkelijkheid van deze concessies te vergroten?
 - a. Bijvoorbeeld op wettelijk, economisch of sociaal vlak?
3. Krijgen sommige projecten project-specifieke steun of garanties? Bijvoorbeeld een minimaal gegarandeerde omzet?

Een passend wettelijk kader realiseren

1. Hoe ziet deze er globaal uit?
2. Wat voor rol kun je hier in uw optiek als gemeente in spelen?

Een coördinerende/ondersteunende autoriteit

1. Is er een partij met een centrale rol binnen jullie samenwerkingen?
2. Hoe gaan jullie om met conflicterende belangen tussen partijen?
 - a. Verschillende machtsverhoudingen/kennis niveaus?
3. Zou een dergelijke centrale actor via welke kennis tussen verschillende partijen gedeeld zou kunnen worden van toegevoegde waarde zijn?

De selectie van een geschikte concessiehouder

1. Hoe ziet dit proces eruit?
2. Waar is dit proces op gebaseerd? Bijvoorbeeld op specifieke elementen zoals transparantie?
3. Hebben jullie ook een evaluatiemethode?
4. Sluit deze aan bij de doelen van de gemeente? Zoals duurzaamheid?

Actief betrokken zijn bij de verschillende fasen van de levenscyclus van de projecten.

1. Hoe betrokken is de gemeente bij de verschillende projectfasen?
2. Monitort de gemeente ook aspecten zoals de voortgang van een project, bijvoorbeeld voor het waarborgen van kwaliteit?

Afsluiting:

1. Wilt u nog iets toevoegen aan dit interview?
2. Bedanken voor het interview

Appendix 2, Codebook

| Concept | Category | Code | Reference |
|---|---|-------------------------------|------------------------------------|
| Governmental role 1: Creating favourable investment environment | Location | Strategic map | |
| | | Selected beforehand | |
| | | Selected during PPP | |
| | | Attractiveness | |
| | Role | Facilitating | Kwak et al. 2009 |
| | | Stimulating | |
| | Approach | Pro-active | |
| | | Reactive | |
| | Project specific assistances/guarantees | Guaranteed minimal revenue | Kwak et al. 2009 |
| | | Subsidy | |
| | | (temporary) tax reduction | |
| | Environment | Stable politics | Kwak et al. 2009 |
| | | Economic/financial conditions | |
| | | Social conditions | |
| | Investments | Private party | |
| Public party | | | |
| Shared | | | |
| Governmental role 2: Establishing adequate legal/regulatory framework | Regulation framework | Permits | Kwak et al. 2009 |
| | | Stability | |
| | | Present | |
| | | Overregulation | |
| | | Legal framework | |
| | Risk allocation | Shared | Abdel Aziz, 2007; Kwak et al. 2009 |
| | | Private party | |
| | | Public party | |
| | Contract | Concession | |

| | | | |
|---|-----------------------|---------------------------|---|
| | | Other contract | |
| | Governmental layer | Municipality | |
| | | Province | |
| | | National | |
| Governmental role 3: Establishing a coordinating and supportive authority | Central actor | Necessity | |
| | | If necessary | |
| | Conflict | Within governmental party | Kwak et al. 2009 |
| | | Within private party | |
| | | Between public/private | |
| | Interests | Profit | |
| | | Public service | |
| | Support | Pro-active | |
| | | Reactive | |
| | | Collaboration | |
| | Knowledge sharing | Between public-private | Koch & Buser, 2006; Kwak et al. 2009 |
| | | Between private parties | |
| | | Between public parties | |
| Data sharing | | | |
| Governmental role 4: selecting a suitable concessionaire | Procurement framework | Concession | Kumaraswamy & Zhang, 2001 |
| | Evaluation | Present | Miller, 2000 |
| | | Not present | |
| | Business case | Profitable | |
| | | Not yet profitable | |
| | Concession | Tendering | |
| | | 'onderhands aanbesteden' | |

| | | | |
|---|------------------------|---------------------|---------------------------|
| | Elements | Transparency | |
| | | Level playing field | |
| Governmental role 5: being actively involved in the project life-cycle phases | Monitoring | Quality | Kwak et al. 2009 |
| | | Usage | |
| | | Progress | |
| | Communication | Communication | Kwak et al. 2009 |
| | | Knowledge sharing | |
| | Involvement | Phases | Kumaraswamy & Zhang, 2001 |
| | | Involvement | |
| | Responsibility | Private party | |
| | | Public party | |
| Risks | | | |
| Current situation | Policy documents | Policy document | |
| | Implementation process | Phases | |

Appendix 3, Informed consent

Overeenkomst van deelname

Onderzoeksproject: Bachelor scriptie Technische Planologie Sacha Verhulst

Universiteit: Rijksuniversiteit Groningen

Titel: "Public private partnerships and fast charging infrastructure in the Netherlands: governmental roles and responsibilities"

Het doel van het onderzoek is om inzicht te krijgen in de rollen en verantwoordelijkheden van de publieke partijen in een publiek private samenwerking met betrekking tot de realisatie snellaadinfrastructuur.

Geachte heer / mevrouw,

Bedankt dat u mij wilt helpen met mijn onderzoek naar snellaadinfrastructuur en de rollen van de overheden hierbij. Met deze brief informeer ik u over het verloop van het interview.

Vanwege de huidige ontwikkelingen omtrent het coronavirus, zal het interview online plaatsvinden. Het gesprek zal circa 45 minuten duren. U kunt op ieder moment aangeven te willen stoppen, of een vraag niet te willen beantwoorden. Het interview kan door de open structuur ook uitlopen wanneer u extra toelichting wenst te geven.

Het interview zal worden opgenomen met een audiorecorder en vervolgens worden getranscribeerd. U heeft de mogelijkheid het transcript te controleren en waar nodig aan te passen op feitelijke onjuistheden. Het transcript zal worden gebruikt om de informatie uit het interview nader te analyseren, om zo de onderzoeksvraag te kunnen beantwoorden. Het audiobestand zal verwijderd worden wanneer het onderzoek is afgerond. De gegevens die tijdens het interview worden verzameld zullen vertrouwelijk worden behandeld. De gegevens, evenals het transcript, zullen worden gedeeld met mijn begeleider dr. Stefan Verweij. Daarnaast zal de scriptie worden opgenomen in het archief van de Rijksuniversiteit Groningen. Het transcript zal niet in de scriptie worden opgenomen. U heeft de mogelijkheid anoniem te blijven indien u dit wenselijk acht.

Met het ondertekenen van deze overeenkomst verklaar ik dat:

- Het mij duidelijk is waar dit onderzoek over gaat.
- Ik begrijp dat deelname aan dit onderzoek vrijwillig is en ik het recht heb om individuele vragen niet te beantwoorden.
- Ik begrijp dat mijn deelname aan het onderzoek vertrouwelijk is en dat, zonder mijn schriftelijk bezwaar hiertegen, materiaal (algemeen of in de vorm van quotes) in de rapportage kan worden gebruikt.
- Ik begrijp dat alle informatie die wordt verkregen vertrouwelijk zal worden bewaard, zij het op een met wachtwoord beveiligde computer of bestand.
- Ik begrijp dat de data die voortkomt uit het interview gebruikt kan worden in artikelen, hoofdstukken van boeken, gepubliceerd en ongepubliceerd werk en in presentaties.
- Ik begrijp dat ik na afloop van het interview mijn antwoorden slechts kan aanpassen op feitelijke onjuistheden.

Voor verdere vragen kunt u contact opnemen met:

Sacha Verhulst (student)

en

dr. Stefan Verweij (begeleider)

s.m.e.verhulst@student.rug.nl

s.verweij@rug.nl

Wanneer u akkoord gaat met bovenstaande, graag invullen:

Ik geef toestemming tot het opnemen van het interview

JA / NEE

voor verwerkings- en coderingsdoeleinden

Ik wens anoniem te blijven binnen dit onderzoek

JA / NEE

Wanneer NEE:

Mijn voornaam kan worden gebruikt binnen dit onderzoek JA / NEE

Wanneer JA:

Er kan een pseudoniem naar mijn keuze worden gebruikt JA/NEE
(Bijvoorbeeld: 'respondent *nummer*')

Naam deelnemer interview.....

Datum.....

Email.....

(indien u wenst een transcript van dit interview te ontvangen om te checken op feitelijke onjuistheden)

Handtekening.....