

Participation in solar field development

How project managers can enhance the social acceptability of solar fields in the Netherlands



“Whatever you do for me but
without me, you do against me”
- Mahatma Gandhi



Colophon



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 groningen

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Author: R. (Rolf) de Jong

Studentnumber: S2765276

Mail address: rolf.de.jong1996@gmail.com

Education: Environmental and infrastructure Planning
2018-2019
Faculty of Spatial Sciences
University of Groningen

Supervisor: dr. F.M.G. (Ferry) van Kann

Supervisor Solarfields: S. (Sander) Leone, Msc.
J. (Jop) Smit, Msc.

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Abstract

The Dutch landscape has changed and will change in favor of the energy transition. The development of solar fields has already contributed and will further contribute to these changes. Solar field development is not always supported, leading to serious issues of NIMBYism, where people are on the one hand in favor of the energy transition, and on the other hand do not like a solar field to be developed in their own environment. In this study it is aimed to provide an answer to why and how project managers working for solar field developers in the Netherlands involve local residents in the development of solar fields. Participation is considered as a means to enhance the social acceptability. A conceptual model has been developed consisting of four main strategies for enhancing the social acceptability of solar fields among local residents through project managers. The four strategies are: *integration in the local environment*, *create a network of support*, *methods of informing and participating*, and *gaining ownership*. Through conducting a case study among five solar fields in the Netherlands, developed by private developers, insights have been gained in the why and how of involving local residents in solar field development. In-depth information has been gathered through the conduction of semi-structured interviews with project managers, leading to the conclusion that a process of participation is conducted as it is considered as the right thing to do. However, another incentive for participation is the need to receive the necessary permits of the municipality in which the solar field is being developed. Moreover, the careful selection of a location, alongside a network of support that is active during the development process should not be forgotten. Within this supportive network, the municipality has an important role, both in being supportive in terms of active cooperation, as well as having clear policies and guidelines regarding the development of solar fields and the role of participation in this development. Finally, it can be concluded that solar field development is unique, and that the role of project managers should be to involve local residents, alongside the creation of a network of support. This should lead to further progressing the energy transition by the socially accepted development of solar fields.

Key words: participation, project management, solar fields, energy transition, sustainability



Acknowledgements

Dear reader,

Hereby I present you my master thesis on participation by project managers developing solar fields in the Netherlands. Finishing this master thesis does not only mean that I obtain my master's degree in Environmental and Infrastructure Planning, it is also the closing of five years of studying in the city of Groningen.

During my study period I have always been interested in participation of citizens in planning. Often this is regarded from a governance perspective. During my master, I became intrigued by the question why project managers of private solar fields would actually want to involve citizens in the development process. Traveling through the Netherlands, I saw more and more solar fields and this makes me optimistic about a more sustainable planet and also wonder how the development process has been shaped.

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Rolf de Jong

Groningen

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List of abbreviations

CBS	Centraal Bureau voor de Statistiek – Statistics Netherlands
NIMBY	Not In My BackYard
PM	Project manager

1. Introduction

1.1 Background and relevance

More than three decades ago, the World Commission on Environment and Development, set up by the United Nations, expressed their concerns regarding the non-sustainable patterns of consumption and production in the Northern Hemisphere of the world. The commission Brundtland introduced the following definition of sustainable development: *“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”* (United Nations, 1987, p.37). Nowadays, sustainability is increasingly an important issue, also in the Netherlands. In December 2018, the chairman of the Dutch climate consultation group presented the design of the climate agreement (Klimaataakkoord, 2018). This agreement has the main goal of countering climate change. In order to do so, the Netherlands needs to expel 49% less greenhouse gases in 2030 compared to 1990 (Klimaataakkoord, 2019). Besides the reduction of greenhouse gas emission, it is necessary that the Netherlands generates more sustainable energy to meet the current energy demands. According to Schoots et al. (2017), the National Energy Exploration indicates that the Netherlands is on track to reach the goal of 16% sustainable energy of the total energy use by 2023. However, this is not enough to prevent further climate change. In the upcoming years, the Netherlands will thus face two major challenges regarding climate change, with on the one hand the reduction of greenhouse gas emission, and on the other hand the generation of more sustainable energy to keep up with the current demands for energy. These challenges should be supported by the entire Dutch society, including citizens, firms, local governments and the central government (Ministry of Economic Affairs, 2016).

There are multiple ways of generating more sustainable energy. Lund (2007) identifies five different sources, namely solar energy, wind energy, biomass, geothermal energy, and hydropower. Of these five sources, solar energy is becoming a sharply expanding share of sustainable energy (Kremer & Segers, 2018). The capacity of solar panels grew in 2017 with more than 800 megawatt (MW) to nearly 2900 MW in total (CBS, 2018). This rapid growth is part of a wider development trend within the field of photovoltaic solar cells, which have become more efficient in power conversion, making it more interesting to install them (Georgiou & Skarlatos, 2016). According to Perree (2018), especially solar fields, alongside the generation of solar energy in the built environment, are effectively contributing to this sharp growth. Solar fields can be referred to as solar parks or solar farms as well (Jones et al., 2014). The following definition will be used when references are made to solar fields: *“... an area of land on which a large number of solar panels are deployed to generate electricity producing very little noise, having no moving parts and no harmful emissions.”* (Jones et al., 2014, p. 177).



Zon Op Kaart (2019) shows that only 7.5% of the planned solar fields are actually being realized, whilst the other 92.5% is still in the preparation phase. Despite the increased growth (CBS, 2018), there can thus be generated more solar energy through solar fields. This indicates that in the nearby future, the Dutch landscape will be further affected and transformed by solar fields (Sareen & Haarstad, 2018). To cope with these changing landscapes, De Boer and Zuidema (2015) refer to integrated energy landscapes to understand the ongoing processes in the transition towards sustainable energy. Such an integrated energy landscape involves a multifunctional physical and socio-economic landscape, whereby interactions are desired (De Boer & Zuidema, 2015). Interactions are necessary, as Wüstenhagen et al. (2007) argue that investors and authorities overestimate the degree to which citizens are willing to accept sustainable energy projects that affect the landscape. This is confirmed by professor Sinke, specialized in solar energy, in a radio-fragment (NPO Radio 1, 2018). Sinke argues the following: *“If you want to use solar energy on a large-scale, you need support. This means that people need to appraise it and think it fits well in the environment.”* (Sinke, in NPO Radio 1, 2018, freely translated). Careful consideration of citizens’ interests is thus needed, since public acceptability is vital for a successful energy transition (Perlaviciute et al., 2018). Moreover, Perlaviciute et al. (2018) argue that citizens are often too late involved in the planning process, leading to more resistance of renewable energy projects. Gross (2007) found that some citizens might be in favor of the energy project, whilst another group of citizens might be against, causing challenges for renewable energy project developers with communities and even within the communities themselves. Eventually, this will cause difficulties in developing large-scale energy projects, such as solar fields (Devine-Wright, 2011).

The concerns, expressed by Perlaviciute et al. (2018) and Devine-Wright (2011) regarding NIMBYism, stress the importance of carefully involving citizens in the development of solar fields. Involving citizens from the start of the planning process will lead, according to Moore and Hackett (2016), to more support, as citizens will learn about the technologies, and thereby gain insights in possible personal benefits. Since solar fields are mostly developed by private developers, the project manager concerned with the development is responsible for the participation process (RVO, 2016).

Unfortunately, academic research towards citizens’ participation in developing solar fields by private solar field developers remains rather limited. Existing studies focus more on wind energy projects or the role of governments in participation. This emphasizes the relevance of further research towards the role of private developers in participation to enhance the social acceptability.

1.2 Research goal

As solar fields are becoming increasingly visible in the Dutch landscape, careful consideration of citizens’ interest is recommended. Solar Magazine (2019a) indicates



that there are a lot of companies working on the development of solar fields. The development of solar fields is thus partly being done by private developers, besides citizens' initiatives (Van der Veen, 2016), with the main objective of making profits, since solar fields are becoming increasingly profitable (Straver, 2018). Developers are searching for sites to develop solar fields, which is, according to Straver (2018), challenging in a densely populated country such as the Netherlands. New projects often fail because of a lack of societal acceptance (Perlaviciute et al., 2018) and therefore, project managers should not underestimate the power of citizens as this could lead to delays in the development of solar fields, through for example the enforcement of laws. The role of project managers is then to be a boundary spanner, between the solar field project developer and citizens to create trust and stimulate informal spaces of interaction (Meerkerk, 2014; Edelenbos & Meerkerk, 2015).

Therefore, the main research goal here is to gain insight into how project managers of solar field developers can carefully contribute to social acceptance of solar fields affecting the current Dutch landscape, in order to counteract social resistance, as described by Fast (2013) and Devine-Wright (2005). Moreover, it is interesting to find out which incentives project managers actually have to let citizens participate, since their main goal is mostly to produce robust revenue streams (Grimsey & Lewis, 2002). Participation is timely and requires resources in terms of financial capital and manpower. Coming to an overview of practices that can be performed by project managers will contribute to the improvement of the participation of citizens in the development of solar fields, with the objective of enhancing social acceptability and contributing to a successful energy transition.

1.3 Research questions

The following question will be leading for this study and will contribute to finding a substantive answer to the problems defined in the previous sections:

Which factors determine how and when project managers involve citizens in the process of participation to successfully develop solar fields in the Netherlands?

The following four secondary questions will contribute to provide an answer to the primary research question:

1. *Which incentives do project managers have to involve citizens in the development of solar fields?*
2. *At which project development phase can project managers involve citizens in the development of solar fields?*
3. *How can project managers involve citizens in a participation process in the development of solar fields?*
4. *How are citizens currently being engaged in the development of solar fields?*



1.4 Outline

The outline of this study is as follows. First, in chapter 2, a literature review has been conducted to be able to answer the first, second and third secondary research questions. Deriving from this, a conceptual model has been developed, concerning the strategies and methods that can be deployed by project managers to involve citizens in a participation process in the development of solar fields. Chapter 3 discusses the methodology used for the case study. Hereafter, in-depth semi-structured interviews have been conducted with project managers working on the development of solar fields, to be able to answer the fourth secondary research question. Subsequently, the findings of these interviews are presented in chapter 4, followed by a discussion and a reflection on the gathered data in chapter 5. Finally, the conclusion and recommendations based on this study can be found in chapter 6, to answer the primary research question and provide project managers and policymakers with recommendations regarding the participation process in the development of solar fields in the Netherlands.

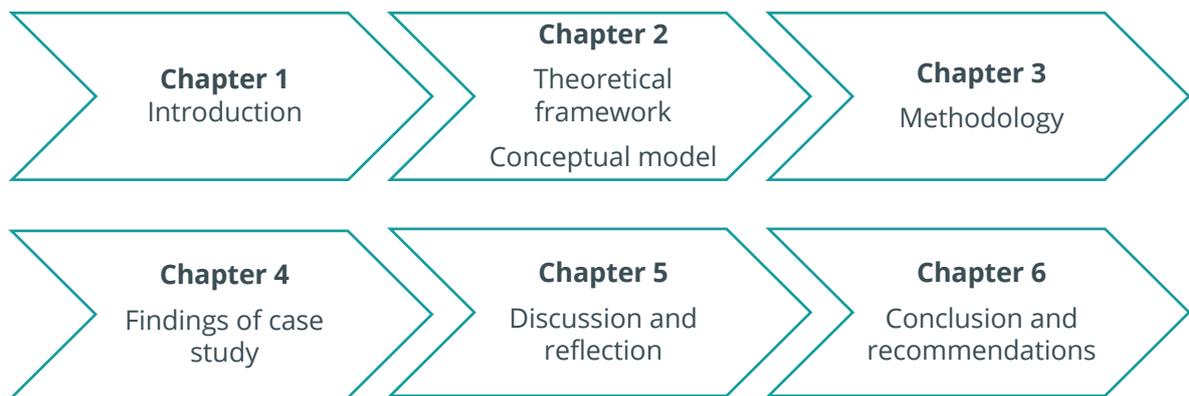


Figure 1: Outline of the research

2. Theoretical framework

In this chapter, an overview of existing literature provides insights in the current position of project management in solar field development, to answer the first three secondary questions, which are the following: *'Which incentives do project managers have to involve citizens in the development of solar fields?', 'At which project development phase can project managers involve citizens in the development of solar fields?', and 'How can project managers involve citizens in a participation process in the development of solar fields?'*

As was shown in chapter 1, studies regarding project management in the development of solar fields remain rather limited in number. Therefore, insights from project management concerning different infrastructural and renewable energy projects are used, alongside literature on wind farm development. Moreover, there are many scholars focusing on participation from a government's perspective, and therefore, these perspectives have served as input as well, to derive at the conceptual model.

2.1 Defining solar fields

Since this study concerns solar fields, it is first needed to indicate how solar fields can be defined. Solar fields are referred to in multiple ways by international scholars. Jones et al. (2014) use the term solar farms and argue that there is no official definition of a solar farm, besides that it is *"... essentially an area of land on which a large number of solar panels are deployed to generate electricity producing very little noise, having no moving parts and no harmful emissions."* (Jones et al. 2014, p.177). Solar fields are thus grounded, and generate electricity through capturing sunlight, which is converted into electricity through the interconnection with power converters (Jones et al., 2014).

The definition of Jones et al. (2014) implies that solar fields produce little noise, have no moving parts and no harmful emissions. However, Armstrong et al. (2013) found that solar fields could affect the ecological dynamics underneath the installed solar panels. Solar fields are thus likely to affect the landscape and transform them into energy landscapes. Pasqualetti and Stremke (2018) describe such landscapes as co-constructions of space and society, where a series of material and social relations meet, which will be further discussed in section 2.1.2. Careful planning is required that focuses on the integration of solar fields in the physical landscape and the embeddedness in the local society (De Boer & Zuidema, 2015; Armstrong et al., 2013). Besides the integration within the physical landscape, solar fields cannot simply be developed everywhere. According to Georgiou and Skarlatos (2016) solar field developers should be aware of the social impact, which is related to issues concerning NIMBYism. In the following, the impact of solar fields on the project environment will be discussed to gain further insight in the importance of citizens' participation, alongside the role of project managers in enhancing the social acceptance.

2.1.1 Solar fields as projects

Developing a specific site into a solar field, can be regarded as a project. Projects are, according to Turner and Müller (2003), unique in nature and therefore, no project will use exactly the same approach. Each project has a beginning and will eventually come to an end (Turner & Müller, 2003), and moreover, there is a pre-determined scope of what the project should comprise of (Maylor et al., 2006). Söderlund (2004) adds to this the complexity of the tasks that need to be executed in projects, alongside the time-limitedness. To be complete Turner and Müller (2003) have proposed the following definition of a project, which will be used for this study:

“A project is a temporary organization to which resources are assigned to undertake a unique, novel and transient endeavor managing the inherent uncertainty and need for integration in order to deliver beneficial objectives of change” (Turner & Müller, 2003, p.7).

From this definition, it becomes apparent that there are uncertainties in the development of a project, that can be experienced in the development phases of a solar field as well. Turner and Müller (2003) identified these uncertainties by arguing that certainty in a project cannot be guaranteed. This might be caused by the social constructions that influence the functioning of a project (Söderlund, 2004). By acknowledging that projects are complex, rather than simple and straightforward organizations, it is also acknowledged that the environment influences the success of a project. Therefore, it is wise to consider the influence the environment can have on the development of solar fields. Busscher et al. (2015) argue that projects concerning transport infrastructure need to focus on the external context, and the different actors with various objectives should be recognized (Ennis, 1997, in Busscher et al., 2015; Cuppen et al., 2016).

Although the projects discussed by Busscher et al. (2015) concern transport infrastructure commissioned by the government, solar fields can also be termed as projects that require an external focus since it meets the definition as given by Turner and Müller (2003). Without such an external focus, solar fields would be developed in splendid isolation (Busscher et al., 2015) and neglect the uncertainties caused by the environment. This could impact the success of the project and therefore, a project manager should adopt an external focus when developing solar fields.

2.1.2 Societal effects of solar fields

Important issues of an external focus when developing solar fields are the social effects of solar fields, besides the physical effects on the landscape (Armstrong et al., 2013; Georgiou & Skarlatos, 2016). Since this study focuses on the participation of citizens in the development of solar fields, especially the social complexities (Busscher et al., 2015) are discussed. Devine-Wright (2011) argues that there are *“... bitter disputes between*

developers and affected communities, leading to projects being delayed and even abandoned...” (Devine-Wright, 2011, p. 19/20).

The tensions between the developer of solar fields and citizens, represent a social dilemma (Wolsink, 2000). For project managers it is not easy to anticipate on resistance, as traditional project management tools do not consider societal resistance (Raven et al., 2009). The tensions that can emerge are referred to as NIMBY, “Not In My Back Yard”. Although people are in common in favor of a certain development, they are not willing to accept changes in the landscape which they will be confronted with in their own living environment (Devine-Wright, 2005). Public engagement mechanisms are, according to Devine-Wright (2011) and Bell et al. (2005), a tool to solve problems deriving from the phenomenon of NIMBYism, and to eventually derive at a successful development process. However, before diving into the methods that can be deployed to solve issues of NIMBYism and to instead create support for solar fields, it is important to gain a better understanding of the role of project managers in engaging citizens in the process of project development, which can be a way to enhance the social acceptability.

2.2 Project management

Developing a solar field can be regarded as a project. Project management is a method to develop solar fields and can according to Söderlund (2004) be defined as an approach to cope with the complex organizational problems faced when developing a project. It helps organizations to deal with two principal problems in project development. First, it is about how to structure and plan project activities to meet the pre-determined objectives and second, project management helps to ensure that the planned activities are being executed according to the stipulated plan (Engwall, 2003). The use of project management has become common in the organizational life in many Western countries (Pellegrinelli, 2011) and is used to undertake myriad changes (Morris, 1994, in Pellegrinelli, 2011). To reach these changes, different tools and techniques can be deployed. *“Traditional tools and techniques, such as work breakdown structures, networks, critical path method and cost and schedule tracking, largely drawn from operations research, have been augmented by topics such as procurement, team development, stakeholder management and project leadership.” (Pellegrinelli, 2010, p.232).*

The use of these instruments in project management is according to Koppenjan et al. (2011) to ensure that the actual outcome is as identical as possible to the predicted outcomes at the start. However, certainty in project development cannot be guaranteed (Turner & Müller, 2003). Uncertainty can derive from stakeholder management, since it cannot be exactly predicted how stakeholders, among which are local residents, will react to a project. In line with this, Koppenjan et al. (2011) argue on the one hand that there is project management that is traditionally focused on a predict-and-control perspective, characterized by a front-end analysis, and designed to overcome uncertainty and complexity. On the other hand, Koppenjan et al. (2011)



identified a prepare-and-commit perspective, characterized by a focus on overcoming uncertainty and complexity, with less focus on the front-end. According to Walker and Devine-Wright (2008) the participatory process, part of the second perspective, can be shaped without having an outcome in mind, and instead have a broader project management focus (Cuppen et al., 2016).

The second approach focuses more on interaction between the actors involved in the developing process. According to Duijn et al. (2016) a more complexity-sensitive management style is desired to deal with the dynamics faced in many projects. Project management should be less standardized, and instead take into account the local singularities (Raven et al., 2009; Engwall, 2003), such as history and culture (Richards et al., 2004). Besides these local dynamics, there is often a high variety of stakes and a strong interconnectedness between issues and interests (Van Meerkerk et al., 2013, in Duijn et al., 2016). The actors influenced by a solar field will put forward their own interests, and when there is an imbalance between the project control and the stakeholder participation, there is a risk of cost overruns, inadequate progress, and poor quality for the project as result (Hertogh & Westerveld, 2010; Rijke et al., 2014). For solar field development this implies the need to enhance social acceptance through participation by project managers.

2.2.1 Towards process management

Process management is able to deal with dynamic project and is, instead of the rigid and narrow view of project management (Koppenjan et al., 2011), a management style that is more able to deal with irrationality, non-transparency and the struggle for resources (Duijn et al., 2016). A comparison of these two styles can be found in table 1. The management of projects like solar fields can be more embedded within the project's context (Engwall, 2003). Developing projects should be seen as integrating mechanisms, that enable cross-functional integration (Engwall, 2003), for example between project managers and citizens to improve the overall acceptance of solar fields. Regarding projects on such an integrated way will have, according to Ford and Randolph (1992), positive effects for the effectiveness, since communication with citizens is enhanced.

	Project management	Process management
Main focus	A well-thought-out substantive solution to the problem	Involvement of stakeholders and their interests
Dealing with dynamics	Through decisiveness and control	Through resilience, responsiveness and being open to other options
	Changing circumstances must not affect the planned course of action	The initiative must be and remain open and attractive for actors



	Focus on separating the process from the environment in order to stay in control	Focusing on interaction with the environment to realize consensus and enrichment
Context	Fits in a stable, predictable environment without conflicting demands	Fits in an unstable, dynamic environment with much controversy

*Table 1: Conceptualization of project management and process management
(Derived from Duijn et al., 2016, p.931)*

The differences between project management and process management are relevant, since simply developing solar fields on a project management basis will lead to issues regarding NIMBYism (Wolsink, 2000). Focusing more on the involvement of stakeholder and their interests enhances the social acceptability, leading eventually to more integrated projects.

2.2.2 From management to manager

Besides the importance of an external focus, it is important that projects have competent project managers (Mitrerev et al., 2016). Mitrerev et al. (2016) consider this as one of the most important factors that influences the success of projects. Project managers can be opposed to planners working for a government, as they are working in the interest of private solar field developers, opting for robust revenue streams for their companies (Grimsey & Lewis, 2002), rather than working for the public interest as civil servants. Turner and Müller (2003) argue that project managers need to be flexible in the delivery of projects. Moreover, in a study on leadership competences Müller and Turner (2010) distinguished between three different organizational qualities, which are engaging, involving, and goal oriented. Especially the first two, engaging and involving, are interesting since a shift towards more interactive, process-oriented management is observed (Glasbergen & Driessen, 2005). Engaging is a style based on the empowerment and involvement of citizens in a context that is highly transformational, whilst involving is suitable for organizations that develop projects that face still significant, yet less radical changes (Müller & Turner, 2010).

Thus, a component manager is able to deal with changes, which is in line with what Turner and Müller (2003) refer to as flexibility. Still, the project manager is considered to be chief executive of the project. However, the role is changing towards a more process steering manager, that has respect for the inclusion of different stakeholders to aim for consensus, which might not be desired by participants (Glasbergen & Driessen, 2005). On the one hand, a project manager working with a process management perspective tries to engage, and involve stakeholders to gain support for the project, whilst on the other hand, it needs to fulfil the organizational goals and expectations. These two different interests seem to be potentially conflicting.

Glasbergen and Driessen (2005) conclude the following: *“To build support and consensus may be the goal of the project management, but the other participants may not necessarily share this goal. It may be more important to try to reach agreement on the nature of the problem and its possible solutions.”* (Glasbergen & Driessen, 2005, p.276). There are cases in which it is not possible to satisfy all the involved stakeholders, and by stressing the importance of, in this case a successful energy transition, there can be an agreement or consensus on the nature of the problem, while partly neglecting the NIMBY issues (Devine-Wright, 2005). However, it does not unconditionally mean that project managers become process managers. They still have to satisfy the organizational goals whilst adopting a more external focus than previously.

2.2.3 A shift in planning paradigm

The changes from an internal focus of project management, to an external focus of process management do not stand alone. The shifting focus can be regarded as part of a broader shift in the overall planning paradigm, involving a shift from government to more governance approaches. Basically, this shift is from a technical rational towards a communicative rational approach (De Roo, 2007) (see figure 2). De Roo (2010) argues that this shift took merely place in the 1990s and involved the defeat of the ideas that certainty can be achieved in planning processes, which relates to the prepare-and-commit perspective introduced by Koppenjan et al. (2011). Furthermore, there is a move from a traditional top-down approach, towards an approach that accepts the existence of various interests and the relations between stakeholders (De Roo, 2007; Healey, 1996). The actors involved exchange their perceptions and interests, making issues more complex, instead of less complex, leading to a situation that each planning issue should be considered based on its own merits (De Roo, 2010). For planners this implies that they can no longer seek to optimize their own planning goals. Instead, planners have become mediators, advocates and guiders. This relates to the shift that was described in the previous section (2.2.2) regarding the role of project managers, adopting a more external focus.

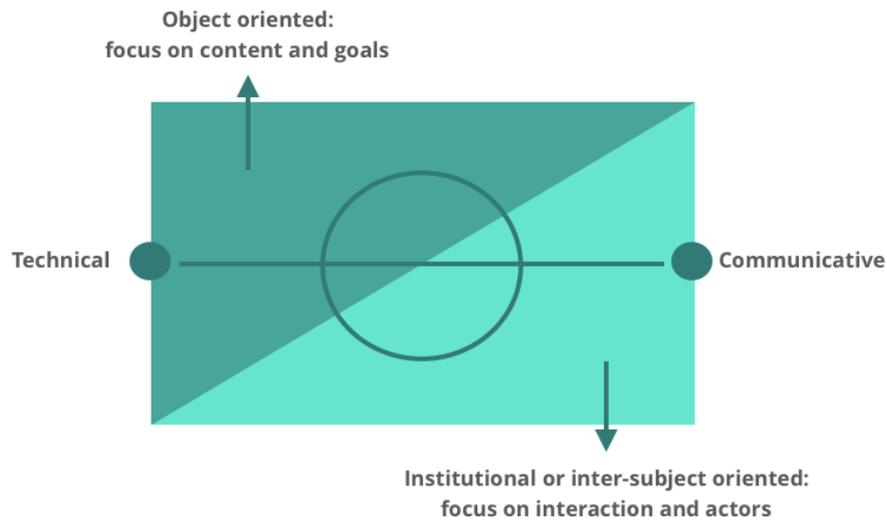


Figure 2: Planning theory: from technical to communicative rational (De Roo, 2010, p.27).

The shift in planning paradigm towards a communicative rational approach was identified in the 1990s (De Roo, 2010; Healey, 1996). However, in 1969, Arnstein already discussed the idea of different levels of citizen participation (Arnstein, 1969). These levels can also be considered by project managers. Since Arnstein (1969) introduced the ladder, the participation of stakeholders has progressed along the planning paradigm, which shifted towards a communicative rational (Reed, 2008). Despite the fact that the ladder of Arnstein (see figure 3) considers citizen participation from a government’s perspective, with the goal of mandating participation in laws, which should be regarded in a historical perspective (Silverman et al., 2008), it can still be useful in analyzing the degrees of citizen participation in a private project environment, such as solar fields. The ladder consists of eight rungs, of which the first two, manipulation and therapy, are about non-participation. Informing, consultation and placations have a more symbolic value, whilst further climbing on the ladder means the citizens gain more power. This can be achieved through partnerships, delegated power and finally, citizens control (Arnstein, 1969).

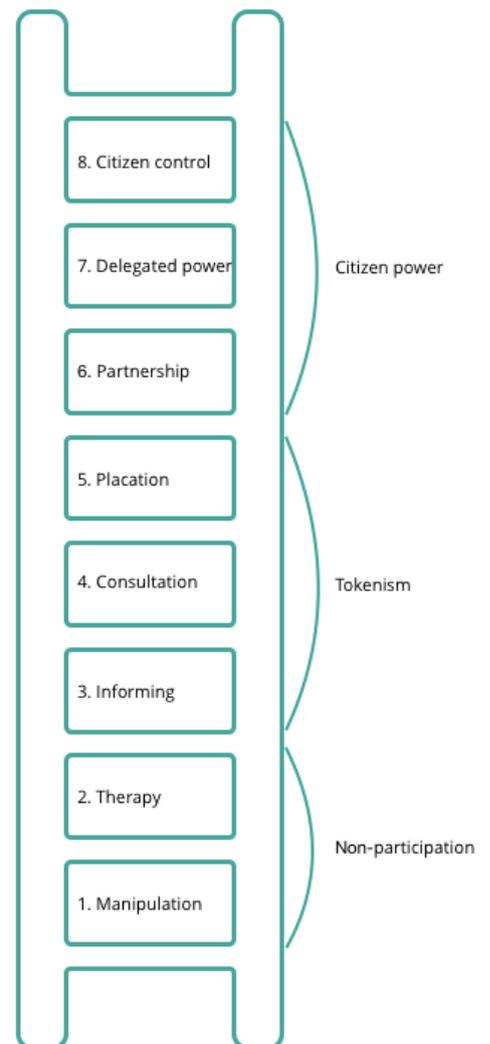


Figure 3: Ladder of citizen participation (Based on Arnstein, 1969, p.217)

The shift towards a communicative rational approach, adds thus to more interaction through citizen participation within the planning of projects. Glasbergen and Driessen (2005) regard interactive planning of infrastructure as a replacement of a more hierarchic mode of planning. Interactive planning acknowledges the existing relationships among stakeholders. The processes that are going on within these interactions should be open, transparent, and symmetrical to facilitate the participation of all stakeholders involved in a project (Glasbergen & Driessen 2005). Participation is thus an important activity within communicative planning, and therefore Allmendinger (2002) refers to the role of planners as a guider of a participative process. For project managers working for a non-governmental organization this implies a broader, external focus when developing solar fields.

2.3 Stakeholder participation in renewable energy projects

Stakeholder involvement has been framed as an important approach to prevent issues of NIMBYism. Obviously, one of the incentives of project managers to involve citizens in the development of solar fields is to enhance social acceptance. Another incentive for citizen participation is given by Reed (2008), arguing that participation in environmental decision-making is increasingly being regarded as a democratic right, and is therefore becoming more and more common in planning practice. Besides that, Spruijt and Terbijhe (2016) found that participation becomes more often a condition in the development of solar fields, as otherwise permits are not assigned. Participation enhances the quality and durability of the decisions that are made (Reed, 2008). Participants in a participation process gain a sense of ownerships over the process and outcomes, since their viewpoints are considered and the process of decision-making is more transparent (Richards et al., 2004). According to Stirling (2005, in Devine-Wright, 2011) and Perlaviciute et al. (2018) participation is just the right thing to do.

Jobert et al. (2007) conducted case studies towards factors of success in the local acceptance of wind energy in France and Germany. In their literature review the scholars found that there are many factors that affect the social acceptance of wind energy. Although wind energy is not exactly the same as solar fields, since it has more visual impact (Wolsink, 2018), it is as well a large-scale renewable energy project. Therefore, the case study is used as inspirational input to determine which strategies can enhance social acceptability. Jobert et al. (2007) summarize the role of project management in creating social acceptance as follows: (1) the developers could integrate in the local environment, (2) could inform and participate with the public, (3) create a network of support, and (4) the public could be given the opportunity to gain ownership of the project. Within these four strategies of creating social acceptance, there can be different approaches to how the strategies can be applied. Additionally, Raven et al. (2009) and Perlaviciute et al. (2018) explicitly refer to financial participation of citizens as a strategy for project managers to create support, which will be shared among the fourth strategy of Jobert et al. (2007) about gaining ownership.



Besides that, it is important to understand at what moment in the development process the participation could take place to be successful. Therefore, each of the four strategies introduced by Jobert et al. (2007) are elaborated upon, where the first and the third strategy are put together, since these are regarded to be overlapping. Furthermore, the incentives for project managers to use the strategy are included. Eventually, this is integrated in the conceptual framework which can be found in section 2.4.

2.3.1 Integrating in the local environment and creating a network of support

The local integration of a project manager provides the developer with contextual knowledge, contacts with relevant authorities and media, and the ability to create a network of local actors around the project (Jobert et al., 2007). Through the local integration of the developer, Jobert et al. (2007) argue that project managers can create networks of support. This strategy can be partly distinguished from the local integration, since this strategy is about the creation of support around a project, opposed to the position of the project manager within the community and its personal skills to enhance this position (Jobert et al., 2007). Here, it is believed that the successful local integration of project managers is critical for the success of the creation of supportive networks and will be a subsequent step.

Integrating locally enables project managers to investigate uncertainties and assumptions to develop a better understanding (Johnson et al., 2004, in Reed, 2008). However, the local knowledge should not be unquestionably accepted, and instead needs to be combined with scientific knowledge, in order to produce more relevant and effective ways to better integrate locally (Reed, 2008). In addition, it is argued that developers coming from within the community, are likely to gain more social acceptance for a project (Wüstenhagen et al., 2007), since they are familiar with the cultural issues, such as attitudes, norms and values (Wolsink, 2007).

Another important effect of integrating in the local environment is the enhancement of trust. Glasbergen and Driessen (2005) argue that because of the ignorance of stakeholders' interests in the past, there is a decreased level of trust among the general public. It is important that project managers express their good intentions and are competent in handling with the local residents (Wüstenhagen et al., 2007). Jobert et al. (2007) found that through permanent contacts and good knowledge of the area, initial opposition could be overcome by the project managers. In addition, Duijn et al. (2016) refer to local knowledge as part of non-formal process dynamics, which are the dynamics that are not guided through the requirements of formal decision-making procedures. Therefore, a project manager needs to have certain skills to be able to align with the local environment. Katz (1974, in Sunindijo, 2015) suggested three basic skills, which are technical, human and conceptual. Especially the human skills are important to effectively integrate with the actors involved in a specific area.

Still, it is worth noting that each project manager uses a different approach, matching their personal identity.

Besides the integration of project managers in the local environment, Hoppe and De Vries (2019) argue that the visions of local stakeholders should be integrated in the design of renewable energy projects. This could lead to more support, especially when local farmers' views are integrated (Hoppe & De Vries, 2019). The view of local farmers is relevant here, since solar fields are especially being developed on agricultural land (Klaassen et al., 2018). Therefore, project managers can create a network of local actors around the owner of the land on which the solar field will be developed, to actively integrate in the local environment. It is important, according to Lowndes et al. (2006) that the networks that are being created to gain support for the solar field consist of people from different backgrounds, sharing a common interest. The role of the project manager is to bring the people together, with the main objective to gain insight in the different visions, expectations and pathways (Kerkhof & Wieczorek, 2005; Perlaviciute et al., 2018).

Furthermore, it is important that in the early project phase, external stakeholders, such as scientists, landscape architects, and local governments, are being involved in order to prevent unforeseen problems later in the project (Cuppen et al., 2016). Cuppen et al. (2016) also show that some scholars argue that early-stage involvement of external stakeholders is not desired, as Reed (2008) found that this is only being done in the implementation phase. However, this seems not to be beneficial for gaining support, since many choices have by then already been made, without broad citizen participation (Cuppen et al., 2016). Therefore, it can be concluded that early stakeholder participation, and thus integration within the local environment and the creation of a network of support, is crucial for idea development and better solutions. This is beneficial for the enhancement of social acceptance.

2.3.2 Methods of informing and participating

Besides the integration of project managers in the local environment and as a result of this the creation of networks, it is important that citizens are being informed and are given the opportunity to actively participate. Applying methods of informing and participating becomes less complicated when project managers are integrated in the local environment and when there is a network of support. However, Jobert et al. (2007) wonder whether when and how the public is informed and integrated into the planning of projects. Back in 1969, Arnstein introduced informing and consultation as 'degrees of tokenism', referring to it as a solely symbolic process. With regard to this, one could agree with the fact that solely informing citizens might not be part of a participatory process, whilst participation includes the more active engagement of citizens, and is thus not merely symbolic. This was also identified by Arnstein (1969), arguing that informing citizens is just a first step toward legitimate citizen participation. Still, there are circumstances that may be appropriate for simply informing citizens (Richards et



al., 2004). Informing can then be regarded as a reduction of the knowledge gap between project managers and citizens (Raven et al., 2009; Perlaviciute et al. 2018). There are multiple ways of bridging such a knowledge gap. Project managers should be aware of the fact that trust is an important issue for citizens to decide whether they accept the information provided (Perlaviciute et al., 2018). Therefore, integrating in the local environment is advised, before informing citizens. The role of project managers is then to be a boundary spanner to create trust and stimulate informal spaces of interaction (Meerkerk, 2014; Edelenbos & Meerkerk, 2015).

According to Bakker et al. (2012), citizens should be recognized as relevant stakeholders that need to be provided with information, for example through different media channels. Methods introduced by Bakker et al. (2012) are about informing through newspapers, letter spreading in the project environment, local television or internet. It is worth noting that this could also lead to activism among citizens, as they become aware of the issues that are going on in their living environment (Bakker et al., 2012; Devine-Wright et al., 2017). The citizens are informed here, rather than actively involved in the development of plans. When there is more social activism, more intensive participation methods are recommendable, in order to prevent further upscaling of social resistance.

Additionally, Richards et al. (2004, p.10) provide an overview of techniques for public involvement, from informing to public control (see figure 4). Olsen (2010) and Jellema and Mulder (2016) argue that it is crucial to inform the public at an early stage in the process of development, to make sure that the public has the ability to actively contribute in the development of ideas, proposals, and design options. Eventually, this leads to more likeliness of successful project results. By actively letting citizens contribute, the involvement process goes beyond informing. Participation is then the next step, which can be interpreted in different ways (figure 4). Olsen (2010) introduces three ways of involvement in a wind farm project. Involvement can take place in the pre-development phase, citizens can participate financially when the project is in development or being developed, and thirdly, citizens can participate through an information disclosure. Especially the second form of participation, which is about financial involvement will be discussed in the next section 2.3.3.



Figure 4: Techniques for public involvement: from informing to participating (Based on Richards et al., 2004, p.10)

2.3.3 Gain ownership in the project

This strategy concerns the ownership of a project. It is found that financial benefits are a way to positively influence the social acceptance among stakeholders (Jobert et al., 2007; Perlaviciute et al., 2018). According to Jobert et al. (2007), financial participation can either be the ownership of a project or ownership of the rented territory. One of the ways to do this is by letting citizens invest in the project (Morthorst, 1999; Raven et al., 2009). Maruyama et al. (2007, in Wüstenhagen et al., 2007) found that financial participation through local investors can increase the social acceptance as well. However, there are also risks of exclusion involved in financial participation, especially for those who do not have the ability to financially participate. Therefore, other financial incentives and financial involvement can help to increase the social acceptance (Olsen, 2010; Yildiz, 2014). By doing so, project managers can turn issues concerning NIMBYism into a positive, financial aspect for citizens.

A practical translation of this is given by Raven et al. (2009). In their study they propose to let citizens financially participate by offering citizens inexpensive electricity. Moreover, De Boer and Zuidema (2015) and Cuppen et al. (2016) argue that offering compensation for the imposed risks of burden might be a solution. However, it is also mentioned that such compensation might be perceived as bribery (Cuppen et al., 2016; Ter Mors et al., 2012). According to Olsen (2010) financial compensation in Denmark is mainly an incentive to prevent the disturbance of the project's process through legal obstructions by citizens. Besides the direct financial compensation, Jobert et al. (2007) argue that the hiring of local employees can be regarded as an indirect financial compensation by project developers.

The timing of financial participation, either through ownership or compensation, is according to Ter Mors et al. (2012) depending on the local situation. It might be that citizens may accept financial compensation once the project is in the initial planning phase, while it might also be that citizens want to be compensated

during the whole life span of the solar field (Ter Mors et al., 2012). The same was found by Curtin et al. (2018) arguing that “... the importance of introducing financial incentives at both the early and later stages of these projects in order to establish a business case for local participation.” (Curtin et al., 2018, p.52/53).

2.4 Conceptualizing participation

In the introduction of this chapter, three sub-questions have been introduced, which are the following: ‘Which incentives do project managers have to involve citizens in the development of solar fields?’, ‘At which project development phase can project managers involve citizens in the development of solar fields?’, and ‘How can project managers involve citizens in a participation process in the development of solar fields?’ In the previous sections it became clear that project managers have different incentives to involve citizens in the development of solar fields. The most explicit reason concerns the creation of social support for the project to enhance the social acceptability. In short, Stirling (2005, in Devine-Wright, 2011) summarized participation as just the right thing to do. However, a main reason might be found in the assignment of permits, which can be delayed because of a lack of participation. Delay means being at risk of cost overruns, and this is not favorable for private developers. Moreover, it is not beneficial for the energy transition.

Secondly, the phase and methods to involve citizens has been reviewed. Here it was found that, depending on the level of participation, from informing to participation, the phase which is most suitable for participation is dependent on the strategy of participation that has been chosen by the project manager. Project managers should bear in mind that citizens should not be neglected in the process of development, since this does not enhance social acceptability for the project, potentially causing delays (Devine-Wright, 2011) and as a consequence cost overrun (Rijke et al., 2014). It can thus be concluded that the phase and methods deployed for participation is context-specific, and project managers should have the right human skills to consider the situation to make the right choices. Perlaviciute et al. (2018) summarize it as follows: “There is not a one-size-fits-all solution. Public acceptability [...] is a complex construct with multidimensional layers of values that need to be considered over time.” (Perlaviciute et al., 2018, p.54).

These premature conclusions, solely based on literature, have led to a conceptual model (see figure 5). This model will be used as tool to conduct the case study. Within this model four strategies of citizen participation are presented. Although the creation of networks of support depends on the integration in the local environment, there are differences to be identified in the methods to deploy the strategy. Therefore, these two strategies are conceptualized separately, to be able to investigate them apart. The length of each bar shows the phases in which the citizens’ participation can take place. For gaining ownership this implies that citizens can still participate financially in the solar field after it has been developed. Still, it needs to be



noted that, as concluded earlier, participation is dependent on more independent variables, such as the personal skills of the project manager. Moreover, it might be the case that there is simply too little social resistance for the development of a solar field, that participation through all four strategies is not even necessary. There might also be cases in which the social acceptability is not enhanced, although project managers apply the four strategies. Consequently, a solar field might not be developed on the selected site.

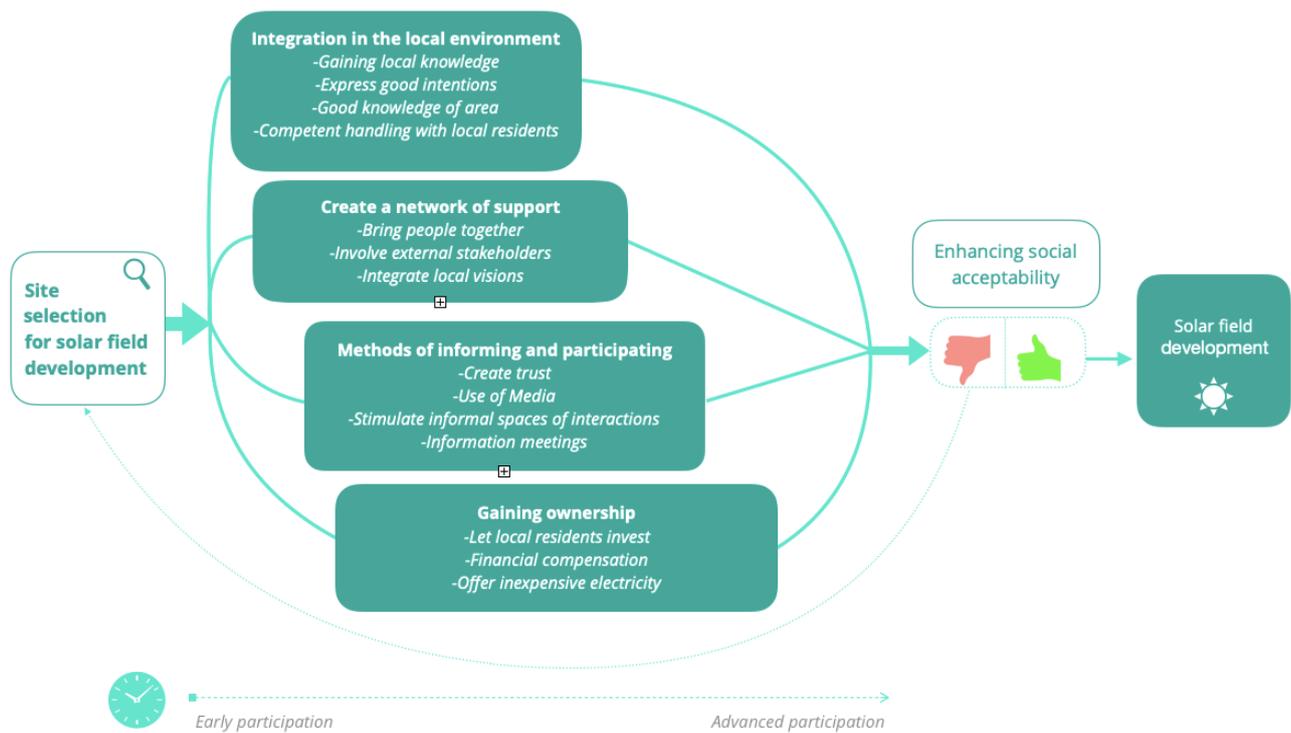


Figure 5: Conceptual model

3. Methodology

This chapter elaborates upon the methodology applied for conducting this study. In the previous chapter, a conceptual model has been developed which will be used as tool to do research. The model includes four strategies that can be deployed by project managers in the development of solar fields. In the following, the research strategy is introduced alongside the chosen research methods. The ethical considerations are followed by an example of the data analysis and an overview of the selected cases.

3.1 Research approach

A case study approach has been chosen to be able to answer the primary research question, which is the following: *'Which factors determine how and when project managers involve citizens in the process of participation to successfully develop solar fields in the Netherlands?'*. The first three sub-questions have already been answered through the use of secondary data, derived from literature.

Additionally, primary data has been gathered through conducting a case study, including semi-structured interviews. These semi-structured interviews have been supplemented through the analysis of project documents. According to Khan (2014), such a qualitative research method is suitable to gain insights into subjects and factors about which little has been known, as described in the introduction. A quantitative research method had been considered. Although such a method provides the opportunity to compare between a multitude of cases, it does not specify on the context-specific narratives of the separate cases (Baxter & Eyles, 1997). Instead, a qualitative method can capture the richness of context-specific sites and situations such as solar fields (Baxter & Eyles, 1997). Therefore, a case study has been conducted, including semi-structured interviews, alongside a document analysis, if available.

In figure 6, the research strategy has been visualized. The theoretical framework served as input for the conceptual model (figure 5). To be able to gain insight to what extent the strategies presented in the conceptual model are actually being applied in practice by project managers, a case study among five cases has been conducted. Finally, this led to a conclusion and lessons learnt for project managers, to gain more specific insights in the current practices in solar field development with regard to citizen participation.

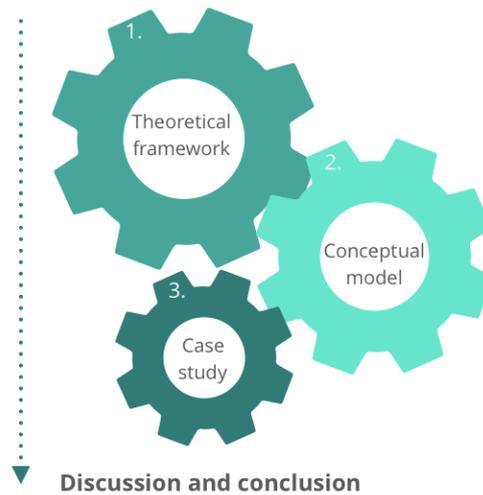


Figure 6: Research strategy applied for this study

3.2 Case study

A study among multiple cases provides a holistic understanding of the different factors that determine the practices of various project managers developing solar fields within different contexts (Baxter & Jack, 2008), and can consist of multiple methods of data collection (Benbasat et al., 1987). For this study, semi-structured interviews have been conducted, as well as the reviewing of project documents among the selected cases. A case can be described according to specific features which distinguishes it from other cases (O'Leary, 2004). On the basis of specific features, the cases have been selected on a theoretical basis (see section 3.5) (O'Leary, 2004).

Restricting attention to small research units allows, according to Rice (2010) for making generalizations which can help answering the primary research question. However, conducting a case study research has some difficulties concerning generalizations (Abercrombie et al., 1984). It provides detailed outcomes that are context-specific and can thus not be directly applied to cases outside the area of interest (Gerring, 2007). However, according to Flyvbjerg (2006), even with single cases such as solar fields, the focus should still be on identifying a general pattern. Due to the limited time span of this study, it was not possible to conduct an in-depth study, involving the multitude of solar fields in the Netherlands. Case studies can provide detailed information about the specific context of several solar fields (Flyvbjerg, 2006), from which theories can be developed (Ragin & Becker, 1992). In section 2.4 it was already concluded on a premature basis that solar fields are projects that are context-specific in which the role of the project manager in the participation of citizens is important.

3.2.1 Document analysis

A document analysis has been performed, before the semi-structured interviews have been conducted, to gain more insight in the planning process of the selected solar

fields. This document analysis served as input for the semi-structured interviews and helped to target the questions towards the specific case under study (O'Leary, 2004). According to Reulink and Lindeman (2005) documents can consist of reports, maps and letters. An advantage of using documents is their non-reactive nature (Reulink & Lindeman, 2005).

Documents are often produced for own purposes and not for research, which is profitable for their quality, since they are then supposed to be reflecting on the truth. This implies that it is important that project managers are willing to share the documents with the researcher. However, the researcher needs to be aware of the confidentiality as well and consider the fact that documents can be produced selectively and sometimes even censored (Reulink & Lindeman, 2005). Therefore, the documents have served merely as input for the semi-structured interviews and have not been leading for the results of this study. These issues are further considered in section 3.3 on ethical considerations.

3.2.2 Semi-structured interviews

Semi-structured interviews have been conducted as a primary source of data. These interviews form the primary basis for this study (see Appendix B). This method has been chosen to gain more insights in the motives and practices of project managers with regard to citizen participation. According to Longhurst (2010), semi-structured interviews are about talking with people. Still, it is self-conscious, ordered, and partially structured (Longhurst, 2010). Although the questions have been formulated beforehand, the semi-structured character of the interview allowed for deviation from these listed questions. This is especially relevant when there were unexpected turns which could not be anticipated for with a structured interview (Flowerdew & Martin, 2005). Moreover, for the interviewees it allowed to add matters which they value as important, which had not been considered by the interviewer beforehand (Longhurst, 2010). Although semi-structured interviews could be held through using electronic devices, such as mobile phones or video-calling, a face-to-face method is to be preferred. This is because it provides a setting in which, according to Khan (2014), the interviewee might feel more comfortable to speak freely. Moreover, it allows for the recognition of expressions and emotions of the interviewee (Khan, 2014).

In addition, Longhurst (2010) argues that it is beneficial for the interview to take place in a neutral place, although it is even more important that the interviewee feels comfortable and familiar on the place. Also, the interviewee should have the ability to speak freely, since then there will be no feeling of constraints in sharing information with the interviewer. For this study, project managers have been interviewed, and in line with the reasoning of Valentine (2005, in Longhurst, 2010) all the interviews have taken place in the offices of the project managers, except for the interview with the project manager of GroenLeven. Moreover, this interview was held via a phone call.

3.2.3 Participatory observation

Besides semi-structured interviews and document analysis, participatory observation has been performed. Reulink and Lindeman (2005) describe participatory observation as “... a method to gather data in qualitative research. The researcher observes in the field and gathers information in this way [...] by participating in daily activities” (Reulink & Lindeman, 2005, p.8). Through an internship at Solarfields Nederland B.V. (hereafter: Solarfields) insights into the planning practice of solar fields in the Netherlands have been gained.

According to Sommerville and Brown-Sica (2011) participatory action research is well-suited when engagement in divers’ organizational beneficiaries and stakeholders is initiated. So, through being present at the work floor of the solar field developer and participating in information meetings, additional data and insights has been gathered to further improve the quality of the study. However, the gathered information has not been used directly in answering the primary research question.

3.3 Ethical considerations

Every research should be conducted with integrity, to make sure the results can be trusted (Walliman, 2011). “Ethical research in geography is characterized by practitioners who behave with integrity and who act in ways that are just, beneficent and respectful.” (Hay, 2010, p.35). Especially, when a researcher is working with human participation, ethical issues about their treatment occur (Walliman, 2011). The participants should be treated with respect, both during and after the research. They should be well informed before taking part. This has been done through the provision of an informed consent (Walliman, 2011) (see Appendix A). Within this informed consent it is addressed what the study is about, and that the results will strictly be used for this study. By adequate communication the participants have been well-informed before the semi-structured interview started (DiCicco-Bloom & Crabtree, 2006). In addition, the anonymity of the participants has been guaranteed by removing their real names in this study (Walliman, 2011; Hennink et al., 2011).

All of the interviews are conducted in Dutch. Since this study is written in English, the researcher has tried to translate the used quotes as appropriate as possible, to adequately reflect on the statements made by the participants. Another concern regarding the ethical consideration is the position of the researcher. Preferably, the researcher is an outsider regarding the participants. In this case, however, an internship has been done at Solarfields, by which a part of the participants is employed. Before the internship started, the issues concerning this have been discussed. It was agreed that no interference from the company in the process of conducting research would be made, and therefore, it can be assumed that the study has been conducted in an ethical manner.

3.4 Data analysis

In order to be able to fully analyze the results from the semi-structured interviews, audio recordings have been made which are transcribed (Walliman, 2011). The transcriptions provide insights in the red line of the interview, without fully transcribing all utterances in great detail. This method has been chosen for time-efficiency. By doing so, the raw data is still available for analysis for this study. With the help of Atlas.TI, which is a software program for coding transcriptions, the data has been further analyzed.

A deductive approach of coding has been combined with an inductive approach. First, deductive codes, originating from the conceptual model, based on the literature review, have been developed. These codes relate to the interview questions, which are structured according to the conceptual model. Four of the main codes are thus directly related to one of the four main strategies, presented in the conceptual model. The conceptual model has thus been used as a tool to do research and to structure the findings accordingly. The fifth code is related to the process of participation and derived from the semi-structured interviews. The deductive codes are thus supplemented by inductive codes, to offer flexibility to the researcher in analyzing the data, and to derive more precise knowledge from it, in case of unexpected answers (Walliman, 2011). The codes and a description can be found in the code tree and the codebook (Appendix C & D). This led to the identification of categories and patterns throughout the different cases (Cope, 2010). In table 2, an example of how the researcher came to the specific codes can be found.

Code	Quotation
A3.2: Invest in getting to know the environment	<i>"So of course, we do research in the environment, otherwise we could not come up with a plan for which they chose us." (PM 5, 2019)</i>
D1.1: Obligation structure	<i>"That is through ZonnepanelenDelen, which is a platform through which you can take obligations in a solar field" (PM 1, 2019)</i>

Table 2: Example of coding

3.5 Case selection

For this study, five cases have been selected. This number has been chosen, since it allows for generalizations, while maintaining in-depth information (Rice, 2010). All of these cases are located within the Netherlands, to prevent having different legal standards to which the solar fields have to comply. However, this geographical area has also been chosen due to time-efficiency and accessibility of data. As indicated in the introduction, Zon op Kaart (2019) showed that still 92.5% of the solar fields are in the pipeline of being developed. This implies that the other 7.5% can be subject to this



study. The cases are selected on several pre-defined indicators, to make sure that each case is suitable for this study.

The first indicator is that there has actually been a process of participation, since the purpose of this study is to gain insights in the factors that determine the participation process of solar field development. Furthermore, the selected solar fields have received an environmental permit (Dutch: Omgevingsvergunning), indicating that the participation process has been completed and that there can be no further legal appeals. This does not necessarily mean that there have not been legal objections from citizens. Moreover, it does not matter whether there are actually solar panels constructed on the site or not. Another indicator is that the solar field has been developed by a private project developer, and is not the result of a citizens' initiative, as described by Van der Veen (2016).

Table 3 provides a comprehensive overview of the selected cases, by which project developer the solar field has been developed, the respondents' function, the documents used for the document analysis, and a preliminary conclusion of the social acceptability of the solar field, based on the analyses boxes in the next chapter. The colors indicate the level of social acceptability after the participation process, with green being positive, orange being moderate and red means that there is still no acceptability of the solar field.

Project name	Project developer	Respondent	Document	Date	
Molenwaard Hoogezand	Solarfields	Project manager Solarfields (PM 1)	-Verslag procesparticipatie -Communicatieplan	April 2019	Green
Noordscheschut Hoogeveen	Solarfields	Project manager Solarfields (PM 2)	-Informatie voorziening & participatieplan -Communication with local residents	April 2019	Orange
Waterlanden Goor	Solarfields	Project manager Solarfields (PM 3)	-Postcoderoos 'Waterlanden'	April 2019	Red
Zonnepark Apeldoorn	OverMorgen & Encon	Project developer OverMorgen (PM 4)	Not available	April 2019	Green
Oranjepoort Emmen	GroenLeven	Project manager GroenLeven (PM 5)	Not available	May 2019	Green

Table 3: Overview of the cases, respondents and documents

4. Findings

This chapter presents the findings of the data collection, without comparing between the cases. This helps to provide an answer to the fourth secondary research question, which is the following: *“How are citizens currently being engaged in the development of solar fields?”*. Moreover, it contributes to the main research question. Each section starts with an introduction of the specific case, followed by a perception of participation in general according to the interviewee. Subsequently, the different sections follow the structure of the four strategies as presented in the conceptual model, based on theoretical insights. In section 4.6 a table provides a clear overview of the methods applied by each project manager in the participation process.

4.1 Zonnepark Molenwaard

Zonnepark Molenwaard, Hoogezand

This solar field is located in the municipality of Midden-Groningen, in the province of Groningen. The project site, of approximately 35 hectares, is enclosed by a railway line, and three inhabited streets. In the municipal spatial development strategy of 2010, the area was appointed for housing construction (Midden-Groningen, 2018). However, no building activities have taken place since then and therefore, the municipality decided to actively cooperate with alternative developments on the site. After a process of nearly three years, Solarfields received an environmental permit. Although the solar field is enclosed by three inhabited streets, there have been no legal objections from citizens (Midden-Groningen, 2018). Intensive participation in the preliminary stage resulted, according to Solarfields (2018), in an environmental permit for the development of a solar field consisting of more than 90.000 solar panels constructed on 30 hectares, providing sustainable energy for around 10.000 households. At the moment, the solar field is in the phase of preparations for construction, after SDE+ subsidy was granted by the Dutch central government. In figure 7, a visualization of the project can be found.

Despite the high number of citizens living in close proximity to the solar field, no legal objections have been submitted, making it an interesting case that might serve as a best practice case in terms of citizen participation. Therefore, it is interesting to gain further insights into the methods deployed in the participation process and the timing of these methods by the project manager.



Figure 7: Solar field Molenwaard (Solarfields, 2018)

Participation in general

As presented, Zonnepark Molenwaard is a sensitive location for the development of a solar field, since it is enclosed by three inhabited streets. This was also acknowledged by the project developer: *“In the beginning, the municipality and Solarfields were a little bit afraid. Look, all the houses around it, which are 250 households, if you count them all, that was of course a concern.”* (PM 1, 2019). However, the location is also recognized as a logic location, since it is directly connected to the built environment, which is a demand of the province of Groningen. A process of participation was organized because of the sensitivity, and to test the reaction of the local residents.

The project manager considers participation as a moral duty: *“But I also think it is a duty towards your profession. Look, you are a project developer, and that means that you not only stand up for your own interest but consider multiple interests. That is the essence of a project developer; bringing a lot of different interests together.”* (PM 1, 2019). Still, it was acknowledged by the project manager that it is also a means to receive the necessary permits, and to ensure a long-term perspective for the project developer.

Integration in the local environment

Besides knowing the environment from passing by, the project manager did not integrate in the local environment to get to know the people before actually starting the development process. The conceptual model already showed that it is more likely to gain support when the project developer comes from the area. Solarfields, located in the city of Groningen, is a relatively local project developer, only 15 kilometers from the project site. To gain more information about the area, the project manager talked a lot with the municipality before announcing the real plans. *“Then you receive of course a few tips: look, there are people that might have worries”* (PM 1, 2019). However, the project manager recognizes the importance of local support, since it is argued that if there would have been a neighborhood association, conversations would have been preferred beforehand, to get an understanding of the local opinions about the development of a solar field. Due to the absence of such an association, a general information meeting was organized, to present the ideas of Solarfields, without the plans being fixed. Moreover, local residents were told that their opinion really mattered, which relates to expressing good intentions.

After this information meeting, the project manager had the idea that the overall opinion regarding the solar field was positive, still, one meeting was not sufficient. *“I had the feeling that there were a number of people that needed more attention”* (PM 1, 2019). Because of this, the project manager decided to organize design sessions for the specific edges of the solar field, which will be discussed hereafter. This shows awareness of the need for proper handling with local residents, to give them the opportunity to voluntarily participate in the development process. Moreover, the project manager indicated that a lot of phone calls have been made to express the good intentions and to provide the local residents with the right information.



Create a network of support

Although the project manager talked a lot with the municipality to gain information about the area, the importance of support from the municipality for the project is acknowledged as well. *"If the municipality is not in favor of the project, well, good luck with your permit!" (PM 1, 2019).* As discussed, the municipality was also a bit scared for the reactions from the local residents. To gain municipal support, the project manager invested a lot of time in calling the municipality each two weeks. Eventually, this led to broad support from the municipality. On the first information meeting, this was only expressed by civil servants out of office, to listen to the plans. However, *"On that last information meeting there were a lot of council members present, which I appreciated immensely" (PM 1, 2019).*

Besides municipal support, support from local residents was needed. Although there was no neighborhood association, an elderly woman, who was really in favor of the solar field, stood up and acted as a sort of project ambassador. She informed the project manager when there were people that had concerns, which resulted in a phone call from the project manager. Moreover, on the information meetings, local residents were brought together and could express their visions on the project. A result of these meetings was that the local residents would like the solar panel constructions to be out of sight. Consequently, space was given to ecology, which is described as follows: *"... we have, I think five, six, seven hectares on 35 hectares given away, as green zone, with waterways, ground walls and plantation. [...] Sometimes the solar field only start at 100, 125 meters distance from the frontage of the houses" (PM 1, 2019).* So, besides the expression of good intentions, the project manager invested time in the integration of local visions in the plan, with the help of two independent landscapers and a civil servant of the municipal spatial planning department. These could visualize the wishes and tips of the local residents, which has, according to the project manager, helped a lot in the process.

Methods of informing and participating

In order to be able to create a network of support, especially of local residents, three information meetings have been organized. According to the project manager an information meeting is the least that can be done. Since there was no neighborhood association around Zonnepark Molenwaard, the information meeting was just organized open-ended, which was experienced as quite exciting. To create trust, it was deemed necessary that the municipal council and the local residents were informed on exactly the same time. *"In this case it was just needed that the municipal council did not know earlier than the local residents about the idea of the solar field. Vice versa, you did not want the local residents to know it earlier than the municipal council. Then the council will feel disadvantaged." (PM 1, 2019).* Moreover, to create trust, all local residents were approached by the project manager himself, rather than just a few. During an



information meeting, all local residents have received the same information and got to see the same information screens. However, it was also believed that one information meeting was not sufficient. Therefore, design sessions were organized per street. Local residents could participate on a voluntary basis. This led to changes in the design of the solar field, which subsequently were listed on an information screen, presented on the third information meeting.

Home visits have not been made, due to the high number of households. Moreover, if a selection of local residents is informed, the project manager believes that rumors will spread. However, informal spaces of interaction have been stimulated with the intention of reducing the spreading of wrong information. To maintain a high speed in the process of development, local residents were informed regularly via mailings. Even when there was not a lot of progress, mailings have been spread. In addition, a reporter from a local newspaper got some scoops from the project manager. In the *'communicatieplan'* this was planned for, and this was being done to create a positive image of the project. *"Of course, we share the positive results, because we are proud!" (PM 1, 2019).* Eventually, the participation process had been finalized by a third information meeting, where local residents could still discuss about the design of the solar field.

Gaining ownership

Solarfields has offered local residents the opportunity to invest in obligations in the solar field. This is being done via an external platform called ZonnepanelenDelen (2019). The investment has an efficiency of 4.5% to 5% on average. In principle everybody could invest in the solar field, whereby local residents had priority. On the information meetings, interested residents could leave their details. However, the investments will be done after the process has been finished. According to the project manager, financial participation is a form of participation, whilst process participation is still regarded as the most important form. Local residents have not been financially compensated in this case. Although this has been requested by some local residents, the project manager sees disadvantages in offering direct compensation via for example free solar panels. *"If you do that, you push the local solar panel deliverer towards bankruptcy. [...] If you offer neighbor number 1 something, then all 250 will approach you. You cannot differentiate, because then you will get trouble. You have to be very careful with such agreements."* (PM 1, 2019).

So, in the case of Zonnepark Molenwaard, financial compensation was not deemed necessary for the development of the solar field. This does not imply that the project manager does not see the benefits of financial participation. However, according to the project manager, this should be done via advantages directly related to the solar field, such as inexpensive electricity, or via an area fund. Solarfields has the ambition to make as much as possible use of the services provided by local companies

in the development, construction and maintenance of the solar field, as a form of indirect financial compensation.

Findings Molenwaard

From the previous sections it has become clear that solar field development is, according to the project manager, a process of the long-term. Moreover, it is costly in terms of time and money. In this case, the project manager has not fully integrated in the local environment before announcing its plans. The four strategies have only partly been applied by the project manager and seem to be very interrelated. Only gaining ownership clearly stands apart from the first three strategies.

The role of the municipality in the development of Zonnepark Molenwaard should be understood, since without municipal support, permits would not have been granted. In addition, participation can be regarded as a means to get the municipal support, and the project manager also clearly considers it a moral duty to listen to, speak with and inform the local residents. *“I think that every project is unique. If you use a standardized procedure for this, then you might end up doing the wrong things. Some projects simply demand a different way of handling, and a different way of communicating.” (PM 1, 2019).*

4.2 Zonnepark Noordscheschut

Zonnepark Noordscheschut, Hoogeveen

This solar field is located in the province of Drenthe. The municipality of Hoogeveen, of which the village of Noordscheschut is part, has the ambition of becoming energy neutral by 2040 (Energievisie Gemeente Hoogeveen, 2017). Within this document, there are some guidelines for developing solar fields. The size of a solar field should be coherent with the environment, and a solar field should always be integrated in the local environment. Moreover, local residents should be engaged in the process and have the opportunity to participate in developing the plans.

Eventually, Solarfields has received the environmental permits to develop a solar field of 12 hectares, consisting of 38.000 solar panels. This will be sufficient to provide approximately 4.000 households with sustainable energy (Solarfields, 2019). The project site is embedded between the national highway A37 and the Coevorderstraatweg (see figure 8), at the east side of the village, where a relatively small amount of people lives (RTV Drenthe, 2017). Originally, the location was meant for the development of housing, nevertheless it has been purchased by Solarfields. Despite the fact that the environmental permit was granted by the municipality in the autumn of 2018, after a participation process, some local residents still had legal objections. Eventually, these legal objections have been withdrawn, causing the solar field to be developed near the end of 2019.

Because of the legal objections, this case is interesting to further investigate the role of the project manager. Despite the participation process, some local residents still did not agree with the project. Although the legal objections have been withdrawn, there have thus been initial objections. This case can serve as an example of how different methods of participation are not sufficient enough to enhance the social acceptability.



Figure 8: Solar field Noordscheschut (Solarfields, 2019)

Participation in general

The project manager considers participation as talking with the people living in the environment. *“To see how you can shape the plan as best as possible, where people feel heard, feel well-informed, have the feeling, well, not just the feeling, but that people really can profit from the solar field.” (PM 2, 2019).*

Moreover, the goal of a participation process is to develop support for the solar field. *“On the one hand you want of course be a good neighbor, on the other hand you want the location to be supported, and that can be done through participation.” (PM 2, 2019).* However, it is also acknowledged that the processes are rather hard and time-consuming. Although the project manager regards it as the way you want to work, it is also the way you are more or less forced to work by the government. *“It is something I want to do, but also something which is being enforced.” (PM 2, 2019).* Besides the fact that this indicates that participation is according to the project manager needed for receiving the environmental permit from the government, it is also regarded as the way the company wants to work.

Integration in the local environment

It is acknowledged by the project manager that Solarfields did not have a lot of local knowledge, since they are located in Groningen. However, it is also indicated that the location, which was meant for housing development, is not well-suited for that specific purpose. To gain more local knowledge and to express good intentions, the project manager visited the director of the local primary school. *“My first step was, well, there is a primary school next to the location, so there I have spoken with the director and explained the plans. The school is right next to it. He [director] had some questions about radiation, and safety and wanted it to be secured. I guaranteed it and sent some documents.” (PM 2, 2019).*

After this conversation with the director of the primary school, an information meeting has been organized. The project manager indicates that this was the way Solarfields used to work, and therefore, he did not visit the local residents living close to the project site. However, good intentions were expressed by mentioning that the plans were not fixed and could still be adjusted. After the first information meeting, extensive conversations have been held with the local residents: *“In the meantime, I know these people quite well, and I have met them five, six times and negotiated. So, the contact is easier. You have to know each other, and then they will find out we have good intentions.” (PM 2, 2019).*

Create a network of support

Municipal support can be regarded as important for the development of solar fields. In the case of Noordscheschut, the project manager did not feel support of the municipality. This was due to an impasse. The private developer, who was the owner of the land, and the municipality had signed an intention document for the



development of housing on the selected location. However, the private developer did not want to give up this intention document, before the municipality guaranteed the development of a solar field, through granting an environmental permit to Solarfields. *"I considered that impasse just stupid and I found the attitude of the municipality simply inappropriate. We were just held hostage. All kind of interests were brought together, and the municipality wanted to use our solar field to solve their own problem. They had signed the intention document themselves without an end date, then it cannot be the case that you are held hostage..."* (PM 2, 2019).

Therefore, there was no support from the municipality, especially not in the beginning. On the first information meeting, which was thus organized without municipal support, there were no landscapers present. However, the local residents have been given the opportunity to actively think along about the landscaping of the solar field. The project manager argues that, because of the difficult attitude of the municipality, concerning the intention document, the participation process was underexposed. Eventually, after more than one year, the municipality started to write a policy, followed by the collaboration with both Solarfields and the project developer. This led to the rapid development of the project, and the granting of an environmental permit.

The local residents have been given the opportunity to express their local visions. They wanted to have an earth wall around the solar field. However, the landscaper of the municipality argued that this was not possible, and that a grove was the only option. After a heavy discussion between the landscaper, local residents, and the project manager, the landscaper eventually yielded, leading to the local vision to be integrated in the plan.

Methods of informing and participating

The lack of municipal support caused the participation process to be different than desired. *"We were actually only dealing with the municipality and the private developer to see if we could find our way out. Which is a pity. For the local residents this has been the worst, that this has happened..."* (PM 2, 2019). As was already mentioned, Solarfields had organized an information meeting without municipal support. First, the project manager had approached the director of the primary school, to both express good intentions and to create trust. On the information meeting, which included a poster market, six employees of Solarfields were present and met people who showed interest in the solar field. People have been invited through a letter. During this evening, interested people could leave their e-mail address. *"... then we send an e-mail with the current status. You try to do that, but cannot estimate what the municipality will do, and how long it will take before we can take another step..."* (PM 2, 2019).

A second information meeting was only organized on request of the municipality, at the last moment. This was only being done to receive the environmental permit. However, the home visits held by the project manager have had



more influence on the support for the solar field, according to the project manager. Still, this could not prevent legal objections.

Gaining ownership

Local residents were given the opportunity to invest in the solar field, however, because of the undesired process, it has never progressed. *“People could express their interests, and that is honestly rather cumbersome. It has never been continued, because of all the other issues.”* (PM 2, 2019). Although the opportunity was given, the investments have thus never been made. Instead, the local residents have been financially compensated. The five households on the westside of the project site appealed together and received for approximately 100.000 euros of financial compensation, either in the form of free solar panels, free electricity or plan damage compensation.

In exchange, the households withdrew their legal objections. *“If you as developer showed the intentions to create support, then the Council of State will not easily destroy a permit granted by the municipality. [...] But we think it is better to make a deal with those people, and that also how they approached it. They did it to make a deal. That is how smart they are...”* (PM 2, 2019). So, although financial compensation was not deemed necessary, Solarfields has compensated the local residents financially near the end of the process. However, it is also believed that an area funds would be better than letting local residents invest or offering financial compensation. *“You can better set up an area funds, just let money flow to a funds with which things can be done.”* (PM 2, 2019).

Findings Noordscheschut

Here, the most important barrier for a solid participation process has been the role of the municipality in the beginning of the development process. *“Now the project will be there, you feel happy and satisfied. But it costed blood, sweat, and tears, and it was just a super bad process. Especially from the municipality, having the wrong interests.”* (PM 2, 2019). This shows that the local circumstances were not favorable for a process of participation according to the four strategies of the conceptual model.

Moreover, integrating in the local environment seems to be related to the creation of support, since here the project manager has experienced difficulties in integrating due to the attitude of the municipality. Also, the uniqueness of solar field development is being stressed by the project manager, who has experience with other projects as well. *“I think it is very unique, so then I would say that we have the duty to inform, to listen, to organize that people can participate and therewith create support.”* (PM 2, 2019).

4.3 Zonnepark Waterlanden

Zonnepark Waterlanden, Goor

This solar field is located in the north-east of the village of Goor and will contribute to the ambition of the municipality of Hof van Twente, province of Overijssel, to be energy neutral by 2035 (Hof van Twente, 2019). The solar field will consist of 37.000 solar panels spread over 9 hectares on a site of 14 hectares, providing sustainable energy for approximately 3.000 households (Solarfields, 2019). From the start of the planning phase local residents have opposed to the development of the solar field, since it will affect their living environment (RTV Oost, 2018). Especially the north-south position of the solar panels is not appreciated, alongside the loss of cultural-historical landscape values (see figure 9). Therefore, some local residents went to court to object the building permit (RTV Oost, 2018). Eventually, in January 2019 the Council of State declared the appeal of the local residents ungrounded and argued that the solar field is in line with proper spatial planning (Hof van Twente, 2019). Furthermore, the Council of State, which is deployed when there is disagreement from citizens regarding governmental decisions, stated that there was enough support since the local residents have been given the opportunity to participate and contribute to the design process (Solarfields, 2019; RTV Oost, 2019). This allows Solarfields to continue with the preparations of the development of the solar field.

This case shows that, despite a participation process, local residents might be willing to go to the Council of State to object municipal decisions. Therefore, it is interesting to further dive into the methods and the timing of the participation deployed by the project managers, and to investigate whether this is substantially different compared to the other selected cases.



Figure 9: Solar field Waterlanden (Solarfields, 2019)

Participation in general

According to the project manager, participation is important to do. It is considered as informing local residents, because they do not know what they can expect. Moreover,



participation is about taking local residents along in the process of landscaping. The goal of participation is then to reduce the nuisance, rather than enhancing social acceptability, because *"... in my experience, there is always sufficient support [...] There were sometimes when people were against it, although they primarily disagreed with the location."* (PM 3, 2019). However, not all local residents can be satisfied: *"If you want a clear view, then you should live in Canada [...] Do not live in the Netherlands, just another place."* (PM 3, 2019).

In the case of Zonnepark Waterlanden, there have been protests against the location, which was tendered by the municipality. Therefore, the project manager acknowledges that Solarfields knew that the participation process should be extensive. *"We knew beforehand that it would turn into an appeal, because there were people that are well-educated [...] So, we also knew we had to do it very precise, and we build a file, a paper trail, so that you can show: okay judge, we acted properly."* (PM 3, 2019). So, besides that having a process of participation can reduce nuisance, which is described as the right thing to do, the project manager also indicates that it contributes to having a strong legal case. This was needed to be able to develop this solar field.

Integration in the local environment

The municipality Hof van Twente appointed Solarfields as the winner of the tender to develop a solar field in Goor. This has also made the process of integration in the local environment different than Solarfields would normally work. Normally, Solarfields informs local residents with an information letter, in which they express their intention to develop a solar field, whereby it is also indicated that the plans are not yet fixed. According to the project manager, the municipality simply announced that the specific site would be developed into a solar field, without conversations with the local residents. *"I have not been involved, but what I understood from the local residents, with who we have good contacts, is that it has just been put through. Yes, that is a totally different procedure than we apply."* (PM 3, 2019).

The local residents indicated that other locations would have been more suitable for a solar field. However, the project manager acknowledges that this was not up to Solarfields, since they simply had won the tender of the municipality. What the project manager subsequently did, was fairly informing the local residents about the outline of the process and also explaining the process of appealing against the plans.

Create a network of support

It has become clear that the municipality is supportive for the location of the solar field. Although there was municipal support for the solar field, this did not lead to support from local residents and eventually resulted in protests against the location. *"Then you are behind with two-zero."* (PM 3, 2019). Solarfields has, according to the project manager, tried to reduce the damage caused by the municipality. Initially, there was a group that was against the solar field. *"In the beginning, there were a lot of people against,*



I think around thirty or so. Eventually, it was okay. There were even some people that withdrew from the protest group, or whatever you call it. Still, there were two people left.” (PM 3, 2019). The first information meeting was attended by civil servants. They were supportive at these meetings in the beginning: *“Well, the first time, yes. But what can you do differently if you are so much behind? You can try to repair it, but it does not help. The choice has been made by the municipality and the municipal council.” (PM 3, 2019).*

Besides municipal support, the project manager has tried to create a network of support by the local residents. Despite the fact that the process has not been the way Solarfields normally wants to work, the local residents have indicated that they appreciate Solarfields as a company, and that their protests were simply against the location. The final plans of the solar field have been adjusted by integrating local visions. *“Now we have an improved plan, that we will build lower and some additional improvements in favor of the local residents. They really like that, but it is simply the choice of the location they disagree with.” (PM 3, 2019).*

Furthermore, a local landscaper was present at the information meetings, to provide local residents with information about the landscaping. Due to additional demands from the municipality, more space has been created for ecology, as a kind of buffer zone. This was not the result of wishes from the local residents. Also, preferably, Solarfields would not have created this buffer zone, because it is valuable ground, for which they have to pay without receiving revenues.

Methods of informing and participating

As indicated, the process of participation was not as Solarfields normally prefers to develop. However, they have tried to repair the damage, created by the municipality. This is being done by the organization of three information meetings. On these meetings, the plans were presented as being not fixed. *“That is a totally different starting point than when the municipality says: here, a solar field will be developed. Point.” (PM 3, 2019).* The information meetings were thus open, and the invited local residents have been given the opportunity to give their opinion. On the first meeting, a landscaper was present. A map was laid out and discussions about the landscaping were started. The project manager refers to this as design sessions. The developed plans were subsequently presented on the second meeting. The most important step is informing, according to the project manager. *“What participation also is, is well-informing people. That they know: we do not have nuisance or that kind of stuff. If you meet the side conditions, and have integrated the plan in the environment, on a way they have been thinking along, then there is simply no nuisance.” (PM 3, 2019).*

The project manager has not stimulated informal spaces of interaction in the planning phase of the project by performing home visits. This was because the protest was against the location, and not against Solarfields. As indicated earlier, Solarfields was well-aware of the probability that the local residents would go to court. Therefore, the participation process had been very well-structured, and documented. Currently



the development is reaching the construction phase and the project manager is planning to do some home visits to discuss options to reduce the nuisance during the construction phase.

Gaining ownership

The project manager indicates that he does not really know how local residents can gain ownership in the solar field. Normally, an obligation structure will be offered to the local residents. It is indicated that local residents have not been financially compensated. *“Well, people were just against that location. Look, if you have a solar field with one house next to it, then you can consider it.” (PM 3, 2019).* The project manager also mentions a point of critique on an obligation structure, arguing that people are not really interested in investing in a solar field and rather invest in their own house or solar panels.

Financial participation will be organized after the process of development, and the local residents can be informed about it during the participation process. If then it turns out that only one or two people are actually interested, then it is better to let them participate in another solar field. Organizing an obligation structure is, according to the project manager very costly and not really appreciated: *“I think that it stands really low” (PM 3, 2019).*

Findings Waterlanden

It has become clear that the participation process has not been in accordance with the way Solarfields prefers to work. This has been the consequence of the role of the municipality by appointing a location via a public tender, without properly informing and listening to the local residents. The municipal role is thus an important external determinant to enhance the social acceptability. Since the project manager was aware of the possible difficulties caused by the unfavorable starting position, the participation process has been precisely executed and documented to have a strong legal case.

Still, it is stressed that the participation process is not simply done with this purpose. *“No, most certainly not. I think participation is just needed. Also, for their [local residents] state of mind.” (PM 3, 2019).* It is about informing and involving in the planning phase. The role of the project manager is then to personally inform them, rather than informing them via videos or images, with the purpose of actually developing the solar field.

4.4 Zonnepark Apeldoorn

Zonnepark Apeldoorn

This solar field is developed in the municipality of Apeldoorn, in the province of Gelderland. The solar field is located between a local neighborhood and the national highway A50 and is operational since April 2018 (see figure 10). Generating more sustainable energy fits in the municipal ambitions of Apeldoorn, and therefore all requests for solar fields were marked as pilots to investigate and discover how solar fields can be integrated in the landscape (Gemeente Apeldoorn, 2018). The solar field is relatively small, since it covers a size of 4.5 hectares, consisting of 11.000 solar panels, providing energy for approximately 1.100 households (Leeflang, 2018).

To make the solar field possible, the municipality of Apeldoorn reduced the obligatory fees from 117.000 euros to 10.000 euros. The solar field has been developed by consultancy firm Over Morgen and Encon (hereafter: OverMorgen), who gave citizens the opportunity to invest in the solar field through a crowdfunding campaign (Solar Magazine, 2018). With the development, OverMorgen wanted to take their responsibility for the energy transition and set the right example for others (Solar Magazine, 2017). This solar field is the only one developed by the companies.

This case seems to have met no legal objections, despite the close proximity of a trailer camp. However, besides the crowdfunding campaign to purchase a part of the solar panels, no further information is available about the participation process (Zonnepark Apeldoorn, 2019). Therefore, it is interesting to find out whether there has actually been an extensive process of participation, and if so, how and when this has been applied by the project manager working on the development.

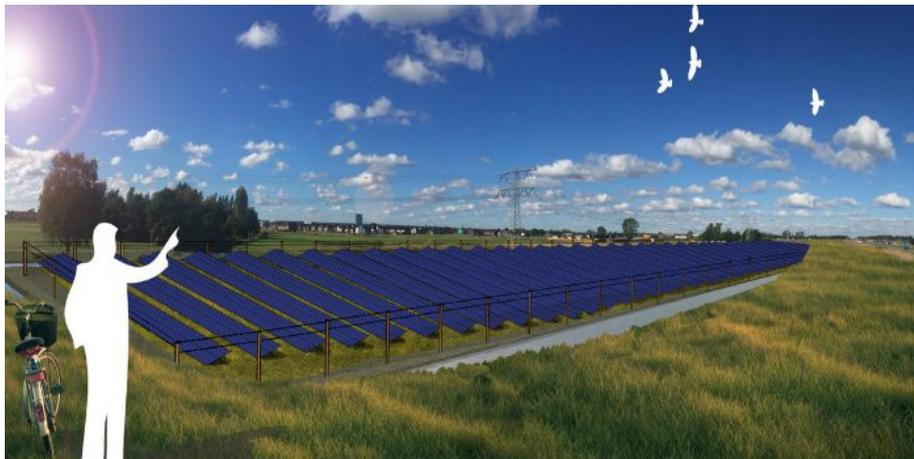


Figure 10: Solar field Apeldoorn (OverMorgen, 2018)

Participation in general

According to the project manager (working for OverMorgen), participation consists of two parts. *“It has to do with process participation, so how do you organize the planning phase from the early start of site selection, the design and plugging in the solar field? [...] And you have the component of financial participation, that is of course about giving parties*

a stake or not, and can they take advantage of it? Those two go together and are also separate themes.” (PM 4, 2019).

The project manager, who has also worked as consultant for other solar field developers, believes that participation is needed for permits. Besides the fact that it is not yet legally obligatory, the project manager is convinced that participation is the right thing to do since it is common good. *“Participation is just discussing properly and has become common good. In the environmental law it will be obligatory. But it is of course a bit strange that what is logic needs to be obligated.” (PM 4, 2019).* Participation is regarded as the willingness to share money and control over the solar field, and ownership is then a means to reach that. Still, it is acknowledged that without participation a solar field becomes harder to develop in terms of receiving the necessary permits from the municipality.

Integration in the local environment

First, it is important to notice that the solar field has been developed on municipal ground, and the location was thus appointed by the municipality. Therefore, the municipality was willing to actively contribute to developing the location into a solar field. Once OverMorgen was assigned the development site, the company actively expressed their cooperative intentions to the local residents. *“We asked all parties; what do you think of it? How do you see your own role?” (PM 4, 2019).* These parties are for example neighborhood committees. This will be further discussed in the following section.

From these conversations it appeared that there were no people that had objections against the location. Although OverMorgen did not choose the location themselves, the project manager argues that it can be a good example of choosing the right location for the development of a solar field, expressing good knowledge of the area. The integration to get in touch with the local residents has taken some time: *“Well, two or three months. You drink some coffee, and you see that works for Piet and Henk, and you start talking and make an appointment, and then another week has passed. In principle, that could be faster.” (PM 4, 2019).*

Create a network of support

The municipality was very supportive in developing the location into a solar field, especially in the beginning of the project. Hereafter, neighborhood committees had been consulted to be able to integrate their opinions into the development of the solar field. The outcome of these conversations was as follows: *“Let’s have a look at the integration and if we can make some decisions together about how the solar field will look like.” (PM 4, 2019).* However, this did not lead to big changes in the plan, which has not been adjusted apart from some technical improvements. These conversations were more about minor details, such as the type of fences around the solar field. The project



manager argues that it is important to start these conversations without have a picture in mind.

"I think that a supporting network, well I consider it nothing more than good decency as neighbors. So, it has nothing to do with that we said that it is needed, to develop the solar field. No, we are going to build a solar field there and then it is obvious that you discuss with your neighbors." (PM 4, 2019). The direct neighbors of the solar field, living at the trailer park, did not disagree, because the municipality had well-communicated the plans, before OverMorgen stepped in.

Methods of informing and participating

Although it was not needed to develop the solar field in Apeldoorn, the project manager is convinced that when a project developer tries to convince everyone, the project will not be developed. Still, as project manager you can guide a little bit, and then people should find their own way. To guide this process, informal spaces of interaction have been stimulated through carrying out home visits, where support was created for the solar field. Due to the investment of time in creating a network of support, the project manager knew that there was a local newspaper. *"Because we invested in the environment, we knew about the newspaper that was being spread in the neighborhood, and we used that for it [financial participation]." (PM 4, 2019).*

Moreover, the project manager argues that it is important to discuss with the local residents. *"And if that is 100 hours, then it is 100 hours, and if it is 1.000 hours, you should invest 1.000 hours, that is just common decency. That does not indicate that you should convince them." (PM 4, 2019).* Extensive participation was not needed, due to the social acceptability of the solar field, which is, according to the project manager, a consequence of the well-selected location by the municipality.

Gaining ownership

For the development of Zonnepark Apeldoorn, 250.000 euros has been collected through crowdfunding. Although it was announced in the beginning of the process that crowdfunding would be organized, the actual collection of money was being done at the end of the process. *"You must be able to say to the people: the project will actually come. You cannot say: the project will maybe be developed: do you want to participate? That is weird." (PM 4, 2019).* For receiving the necessary permit, financial participation was not needed. Instead, it has costed OverMorgen money. *"We thought it was logic to do it. And if that costed money, because the revenues are lower now, it has been a choice." (PM 4, 2019).* In order to show the local residents that the developer was confident about the investment, OverMorgen and Encon has collected money among its employees, resulting in 30.000 euros. By doing so, they could show the local residents that the investment could be trusted. Subsequently, people that actively expressed interest in investing in the solar field had been approached by the project manager. Hereafter, 50.000 euros had been collected in the neighborhood, which was announced through



the local newspaper, as described previously. The supporting role of the municipality becomes once again apparent, because of the spreading of information on their own publication channels about the possibility of financial participation in the solar field. Eventually, the 250.000 euros have been reached after the opening up of the crowdfunding for the rest of the Netherlands. No local residents have been financially compensated. According to the project manager this is because no one felt really disadvantaged by the solar field.

Another strategy to let local residents financially participate in the solar field was through a collaboration with the local energy cooperation deA. *“It is something individual, and there are not a lot of advantages.”* (PM 4, 2019). For the local residents this means that they can make use of the locally generated electricity, without having any financial advantages.

Findings Apeldoorn

For Zonnepark Apeldoorn, it can be concluded that it was not really needed to enhance the social acceptability through an extensive participation process. According to the project manager it is needed that the project developer wants to carry out a sincere participation process, to share in terms of money and control, resulting in a shared ownership. Participation can then be seen as the right thing to do. However, it is also argued that for this solar field it was actually not really needed, to share the ownership.

“If you see participation as a must, then it becomes complicated. But if you see it as an opportunity, and you do it early in the process, on a sincere way, then I think that you reach the finish line faster. Then you probably have a small piece of the cake, but the cake is bigger and nicer. And otherwise, you are running the risk of having no cake at all, if you do it alone.” (PM 4, 2019).

4.5 Zonnepark Oranjepoort

Zonnepark Oranjepoort, Emmen

This solar field is located in the municipality of Emmen, in the province of Drenthe, in the north of the Netherlands. The solar field has been developed by GroenLeven and is located on an industrial area, bordered by a provincial road. The 88.000 solar panels are placed on an area of 35 hectares, generating enough electricity for approximately 8.500 households (GroenLeven, 2019a) (see figure 11).

The initiative for the solar field has been taken by the Union of Park Management Companies (VPB) of Emmen, comprising of 300 members, to become more sustainable (VPB, 2019). Furthermore, an energy cooperation has been established, 'Nieuw Oranjepoort', which fits the vision of the municipality of Emmen to develop sustainable energy projects in such a way that the revenues flow back to the local residents (Gemeente Emmen, 2017). The solar field has been presented as the most local solar field in the Netherlands and has been developed in cooperation with local companies. In addition, local residents can profit, and for local education institutes and entrepreneurs a Solar Innovation and Experience Center has been realized (Solar Magazine, 2019b).

This case is interesting because it has been announced as the most local solar field in the Netherlands, suggesting that local residents, and in this case local companies, have been involved to develop the solar field. The CEO of GroenLeven argues the following: *“Zonnepark Oranjepoort is a beautiful example of the vision of GroenLeven: develop solar fields as much as possible with regional partners. [...] This really makes the solar field an example for the energy transition.”* (GroenLeven, 2019b, freely translated). This process led to no legal objections, despite the fact that the solar field comprises quite a big area, bordered by housing on the westside of the project location.



Figure 11: Solar field Oranjepoort (GroenLeven, 2019a)

Participation in general

Since solar field Oranjepoort has been announced as the most local solar field in the Netherlands, participation is expected to have been a part of the development process. This is confirmed by the project manager, arguing the following about participation: *“I think that is the right way to continue the growth of sustainable energy in the Netherlands. It is two-sided. We live in a small country, so we have to deal with neighbors. If you start to initiate large-scale energy projects in the Netherlands, then it is, according to me, logic to let local residents and environment benefit from it. So, carrying the benefits and burdens together”* (PM 5, 2019).

Not only is it about providing local residents with benefits from the solar field, it is also about participation in the sense of developing ideas on the outlook of the solar field. On the one hand, participation is the way GroenLeven wants to develop, on the other hand it is acknowledged that participation is in some cases a demand of the municipality and needed to receive an environmental permit. *“It is our philosophy, but you see it also from the municipalities, they increasingly have that, they develop more and more policies on participation, and there you see that it is an important issue.”* (PM 5, 2019)

Integration in the local environment

The project manager stresses the importance of gaining local knowledge. This has especially been gathered because it is acknowledged that the solar field will have an impact on the local environment. *“So of course, we have deepened our knowledge of the environment, otherwise we could not have come up with such a plan that they have chosen us.”* (PM 5, 2019). Since the initiative for the solar field lies with the union of companies of Emmen and the municipality, GroenLeven had to come up with a solid plan, to get the preference to develop Oranjepoort. This would not have been possible, according to the project manager, without seriously gaining local knowledge before handing in the plans.

Once the choice had been made for GroenLeven to develop the project site, the company has shown competent handling with the local residents. This has been done by visiting them and expressing good intentions. *“So, we just knocked on their doors and sat at the kitchen table and said; we are your neighbors for the coming years, and this will happen and we want to give substance to it as good as possible. How can we solve this together?”* (PM 5, 2019). These orientating conversations led to some issues that should, according to local residents, be involved in the plans.

Create a network of support

To create support for the plan, the project manager has visited local residents at home, to be able to integrate their visions on the solar field. This resulted in a couple of issues that were added to the plan, like the landscaping. Local residents could indicate whether they were in favor of a grove to hide the solar park from view. In addition, the project manager agreed to place a row of solar panels on the northside of the solar



field. *“Actually, for us, this is not really interesting, because they do not generate a lot of electricity. By placing the solar panels there, the local residents did not look at the back of the other solar panels. By doing so, we try to give substance to the landscaping.”* (PM 5, 2019). Undertaking such a process with local residents takes time, and it is therefore important to coordinate properly, according to the project manager, resulting in social acceptability: *“Because we did this in an early stage, and that we have listened to what they actually want.”* (PM 5, 2019).

The project manager felt a lot of support of the VPB. *“The municipality of Emmen is in general very active in sustainability, and they really take the lead, you feel that. [...] So yes, they take the lead.”* (PM 5, 2019). To increase the support from the local environment, GroenLeven has involved as much as possible local companies in developing the solar field, resulting in the nomination of the most local solar field of the Netherlands.

Methods of informing and participating

The project manager held some kitchen table conversations with local residents, which are considered as essential: *“Certainly with direct neighbors it is simply very important.”* (PM 5, 2019). On the one hand this was done to inform them about the plans, and on the other hand to gather information about their opinions. This led to some changes in the plans, such as solar panels located on the northside of the solar field and the addition of groves. Furthermore, information meetings have been organized, which is standard practice for GroenLeven when developing solar fields.

The project manager considers it important that local companies can participate and profit from the development of the solar field. This form of participation will be discussed in the next section on gaining ownership. The use of local media and the organization of design sessions has not been specifically mentioned by the project manager as a method to inform or to let local residents participate.

Gaining ownership

As the most local solar field in the Netherlands, the local residents have been given the opportunity to invest in the solar field. This has been organized through the Postcoderoosregeling, which is concerned with letting local residents benefit from for example a solar field, through an energy cooperation. GroenLeven has established an energy cooperation for and with local residents. They have donated this energy cooperation a half megawatt of electricity. *“They [local residents] can just become a member, and then they can make use of the Postcoderoosregeling.”* (PM 5, 2019). At the beginning of the development process it was announced that the energy cooperation would be established. It was not needed to compensate local residents financially: *“No, that was not needed. They can of course benefit financially via the Postcoderoosregeling and then they have tax benefits.”* (PM 5, 2019).

In addition, to enhance the social acceptability, local companies have been involved in constructing the solar field. Besides that, the companies vested on the



industrial area have been given the opportunity to use the energy generated by the solar field. *“That has been an option, but not all companies have applied for that. [...] But companies have constructed the fencing, groundwork, connecting cables, and so on. By doing so, they have contributed and also benefited from it.”* (PM 5, 2019). Moreover, GroenLeven has constructed a Solar Innovation Experience Center. Here, local companies and local education institutes can perform tests related to sustainable energy. This does not necessarily have to be solar energy.

Findings Oranjepoort

Solar field Oranjepoort is presented as being the most local solar field of the Netherlands. The project manager has indicated that this solar field can be regarded as a textbook example for developing solar fields. *“This is one were everything melts together, that is how you can see it.”* (PM 5, 2019). A process of participation has been set up, leading to the creation of employability, the thinking along of local residents in the landscaping and the involvement of education.

However, it is also acknowledged that not every project is suited for participation. *“In some places we do not have local residents or something like that. I think that the basis is always something like; how can we make sure the environment also benefits?”* (PM 5, 2019). This suggests that solar field developments are unique, and participation should, according to the project manager of GroenLeven, always be considered as part of the development process.

4.6 Overview of the findings

In table 4, an overview of the methods that have been deployed by the interviewed project managers working for private solar field developers can be found. Here for, the methods in consecutive order according to the conceptual model (see figure 5) have been leading. This means that only the deductive codes as presented in the conceptual model are revised, to find out to what extent the conceptual model can actually be used as a tool for investigating participation. The colors indicate whether a method has been applied, where green means that the method has been clearly used to enhance the social acceptability. The color red indicates that the method has not been deployed according to the description given in the theoretical framework. If the method has partly been applied by the project manager, this is indicated by the color orange.

Furthermore, the solar fields are indicated with numbers in table 4. This has been done in the order in which the cases are presented in this chapter. So, 1 is Zonnepark Molenwaard, 2 is Zonnepark Noordscheschut and so on.

	1	2	3	4	5
Gaining local knowledge	Green	Green	Orange	Green	Green
Express good intentions	Green	Green	Green	Green	Green
Good knowledge of area	Orange	Orange	Red	Orange	Orange
Competent handling with local residents	Green	Green	Orange	Green	Green
Bring people together	Orange	Orange	Orange	Green	Green
Involve external stakeholders	Green	Orange	Green	Green	Green
Integrate local visions	Green	Green	Green	Green	Green
Create trust	Orange	Orange	Orange	Green	Green
Use of media	Green	Orange	Orange	Green	Green
Stimulate informal spaces of interaction	Green	Green	Orange	Green	Green
Information meetings	Green	Green	Green	Green	Green
Let local residents invest	Green	Orange	Orange	Green	Green
Financial compensation	Red	Green	Red	Red	Red
Offer inexpensive electricity	Red	Red	Red	Red	Orange

Table 4: Overview of the methods applied by the project managers

5. Discussion

This chapter critically discusses the findings of each separate strategy, rather than solely describing as in the previous chapter, to provide an answer to the main research question. Therefore, linkages are made between the conceptual model and the findings, which are derived from the document analysis and the semi-structured interviews.

In the previous chapter preliminary findings have been presented, showing that each case is unique. Still, in order to be able to find out whether the conceptual model can be used as a tool to give substance to the participation process, generalizations of the findings will be made. Subsequently, a reflection on the gathered data, alongside a reflection on the research process will be given.

5.1 Integration in the local environment

The first strategy that was presented is the integration in the local environment, providing project managers with knowledge of the local context and relevant contacts. It is acknowledged by the project managers that they do not have full knowledge of the local environment themselves. However, this knowledge can be acquired by interacting with local residents and municipalities. Sometimes, as was the case with solar field Waterlanden, the project manager did not have the chance of integrating in the local environment to enhance the social acceptability, since the municipality had selected the location and had therewith influenced the possibilities to integrate.

This stresses the relevance of contacts with other stakeholders than merely local residents. Besides the fact that local knowledge can be gained through interacting with local residents, it can also be gained through interaction with municipalities. This was not found in the literature review and is therefore not part of the conceptual model. However, municipalities play a major part in developing solar fields. In some cases, the municipality had selected the site of the development, as with Waterlanden and Apeldoorn, and in some cases their attitude towards the project developer is rather negative, causing uncertainty and delays for both the project developer and local residents. This has been the case with solar field Noordscheschut. For project managers this means that it becomes difficult to carefully handle with local residents.

Therefore, it can be argued that integrating in the local environment is important. In addition, the location that will be developed is also a crucial component that influences the interaction with local residents. If the location is not well-selected, this strategy cannot be applied to the fullest. Here it is argued that integrating in the local environment is part of a well-considered site selection. The project manager should strive towards integrating within the local environment in an early development phase. However, it can also be argued that this strategy is closely related to the second strategy, which is about the creation of a network of support.

5.2 Create a network of support

Municipal support is more important for solar field development than has been recognized in the theoretical framework. In fact, it can be argued that integrating in the local environment and the creation of a network of support around the solar field development are interrelated and are equally important in the early development phase. In order to be able to integrate locally, a project manager should recognize the relevant stakeholders, who can be distinguished through having contacts with municipalities. In addition, integrating in the local environment leads to support for the project, and helps therewith to create a network of support.

The role of municipalities is thus crucial. Without municipal support it becomes difficult to develop a solar field, as was clearly demonstrated by the project manager of Noordscheschut. Participation is often a requirement by municipalities to receive an environmental permit, and still project managers experience difficulties understanding to what extent participation is demanded from a specific municipality.

Bringing people from different backgrounds together is not explicitly being used as method for participation by Solarfields. Still, the role of professionals, such as landscapers and ecologists can be important to create support. However, since this is being done by integrating local visions in the development of the plans, this method can also be considered as part of the third, and thus in a more progressed development phase. The strategy of creating a network of support is best to be applied in an early development phase, where it cannot be regarded as completely separated from the previous strategy. Instead it should be considered as integrated and interacting and therefore, this strategy is combined with the previous in the revised conceptual model (see figure 12).

5.3 Methods of informing and participating

Informing local residents can be regarded as the first step in the actual development phase, whereas the former two strategies are part of the pre-development phase. It is deemed important that local residents are informed fairly about what is going to happen in their environment. This was also acknowledged by the project managers. A method that was used to inform local residents is the organization of information meetings. Here, the local residents get to hear the plans directly from the developer, rather than through rumors in the neighborhood. Therefore, it is important that project managers actively inform local residents in the beginning of the process, and that every person who is interested in the plans is given the opportunity to participate in these meetings, for example through the use of local media.

It is useful that there is support from different people for the solar field, such as the landowner and the municipality on the information meetings. This should be enhanced by the creation of a network of support, which is operational during the whole development span. During information meetings, project managers should also gain an understanding of the level of social acceptance of the solar field. If local



residents are concerned, project managers can decide to carry out home visits or make personal calls. In addition, design sessions have been used often by Solarfields to let local residents think along in the design of the solar field. This can enhance the social acceptability, since local residents get the feeling they have actively contributed to the outlook of the solar field. Such design sessions should not be just an appearance of participation, and instead local residents should be really heard, which can be strengthened by the presence of professional and independent landscapers.

From a theoretical perspective, the phase of informing and participating follows the former two strategies. However, it can be argued that the method of creating trust through informing local residents can also be part of integrating in the local environment and the creation of networks. Again, the created networks are important, as was already argued, since without municipal support the informing and participating process would be less profitable to organize, as was specifically shown by the project manager of Noordscheschut. Also, it can be concluded that on locations where there is not a lot of disagreement with the solar field, as was the case in Apeldoorn, an extensive process of informing and participation is not needed and might even not be desired by local residents.

5.4 Gaining ownership

Local residents can gain ownership in a project through among others a form of financial participation. However, it is also argued that this is a form of participation that is not unquestionable popular among local residents. Although the project managers of all five solar fields have given local residents the opportunity to invest in the solar field, and thereby gain ownership, this option is not used often as a method of participation. On the one hand it is expensive to organize such a form of participation, and on the other hand it is argued that people prefer to receive direct benefits, in the form of compensation, inexpensive electricity, or offering free solar panels. However, only in the case of Noordscheschut local residents have been financially compensated. This has been done because of the legal objections against the solar field that were filed and can thus be partly regarded as a form of bribery. The project managers argue that they prefer to give local residents another advantage, which is directly related to the solar field.

Another form of financial participation that was brought forward, is the investment in an area funds. However, it must also be mentioned that the project managers have not deposited money in such a funds. Instead, OverMorgen and GroenLeven have supported or founded a local energy cooperation, to let local residents benefit from the solar field and create ownership. Moreover, through involving local companies in the construction phase, revenues flow back to the local environment as well.

In fact, this strategy is the only one that clearly stands apart from the former three. Gaining ownership can only be applied when the solar field is actually being



developed. Still, during the informing and participation process it can be mentioned as a means of participation in order to enhance the social acceptability of the solar field.

5.5 Site selection

It has become clear that each location of a solar field is unique, and that the location is a very important determinant for the level of social acceptability. Solar field development is a sensitive subject in the Netherlands, and local residents should not be forgotten in the development process. The site selection should be carried out precisely, implying that local residents are not lost out of sight. Moreover, project managers should acknowledge the strong role of municipalities, being the responsible institute for granting the necessary permits and also part of a supportive network around the solar field. If local residents' support is missing, municipalities will be less likely to grant these permits. In addition, it is beneficial if municipalities have clear policies for solar field development or have strong ambitions to actively work on the energy transition.

Therefore, the first step in solar field development is the careful selection of a development site, which should regard the attitude of the municipality, as well as the attitude of local residents. Although this might take time to investigate, it will eventually be beneficial for the social acceptability. Based on the theoretical review, this important role of municipalities had not been expected and was only considered as a minor party in the creation of a network of support, rather than being implemented as strategy in the conceptual model. Further recommendations regarding solar field development will be given in chapter 6.

5.6 Conceptual model revised

In figure 12, the revised conceptual model can be found. Within this model there is more focus on the strategies and their timing, and less focus on the specific methods that can be deployed. This has been done because it was found that project managers can deploy a wide range of methods to involve local residents, which strongly relates to the needs of a specific location. Within this revised model, the first important step is to well-consider the site selection for solar field development. This indicates that integration in the local environment is needed to investigate to what extent the location is suitable for solar field development, with regard to social acceptability and landscape values. In addition, it should comprise of an investigation towards the presence of clear policies and the attitude of the municipality.

Subsequently, the creation of a network of support is recommended, involving the municipality, local residents, landowners, landscapers, and ecologists. This network of support should be active during the whole development phase. After the establishment of such a network of support, the informing and participating process can actually start. Here, local residents can actively participate in the process of development, through for example design sessions. It is important that project

managers indicate that the plans are not yet fixed and can instead still be changed according to the wishes and preferences of local residents.

If the process of informing and participating is finished, the phase of gaining ownership can be started. Local residents should have the opportunity to invest in the solar field, although it might also be the case that project managers provide them with the sustainably generated energy or invests in an area funds.

Ideally, all these steps lead to the enhancement of social acceptability. However, it is not unthinkable that there are situations in which this will not be case. For this study, only solar fields that are or will actually be developed have been regarded. Therefore, such a situation is not considered here. Solar field development seems thus to be very context-specific, which was already concluded. Still, generalizations could be made based on the case study among five solar fields in the Netherlands. It became clear that careful consideration of the location and its environment is needed for the successful development of solar fields, and therewith speed-up the energy transition.

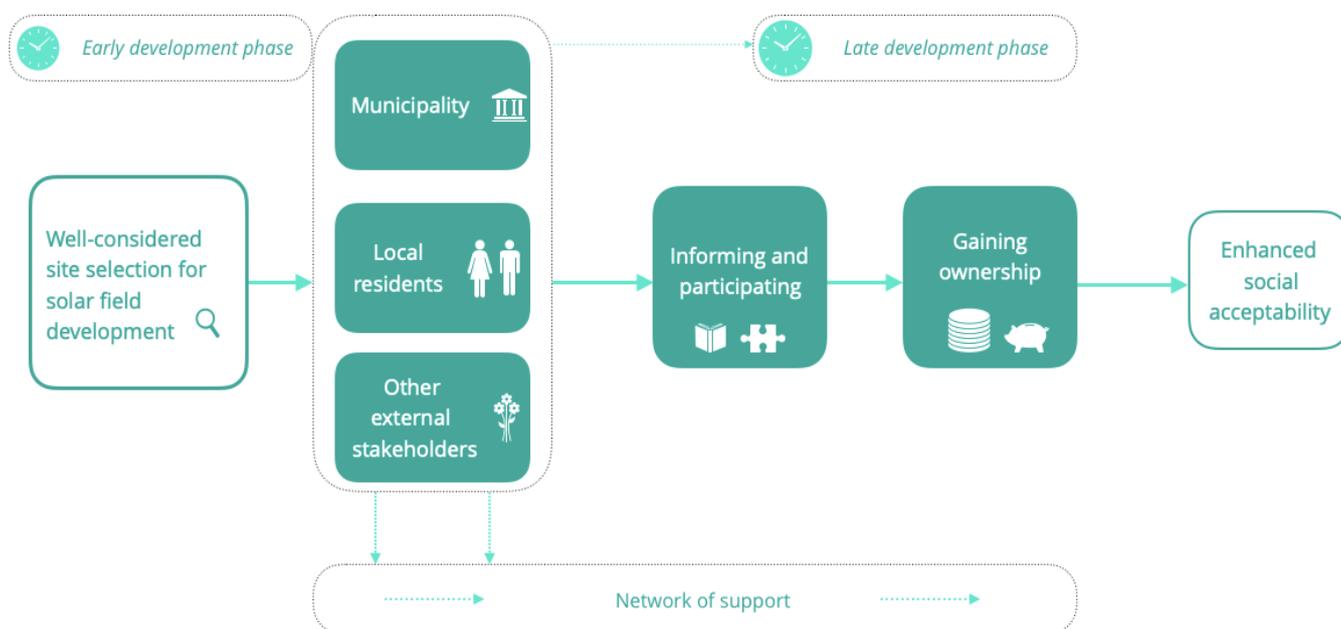


Figure 12: Revised conceptual model

5.7 Theoretical reflection

The conceptual model that was developed based on a literature review has been used as a tool to do research. After the analysis of the gathered data, it was found that the four strategies that were distinguished are in practice not directly applied by project managers. Moreover, the distinction between the strategies has been framed too strong, leaving little room for considering them to be possibly overlapping. It can be argued that the original conceptual model, as presented in figure 5, has been too idealistic. It has been largely based on research by Jobert et al., conducted in 2007, in a different context than the Netherlands, regarding a different form of renewable energy. Still, the strategies as proposed by Jobert et al. (2007) have served as

inspirational tool to conduct this study and attributed to develop a new conceptual model, as presented in figure 12.

Due to the context-specific nature of solar fields, the specific methods that were assigned to the four strategies are not applied one-by-one. This might also be caused by the international character of the reviewed literature. Additionally, most of the existing literature focuses on participation in wind farm development or uses a governmental perspective on participation. Issues concerning the absence of adequate literature will be further discussed in section 6.2.

5.8 Methodological reflection

Besides the theoretical reflection, some critical remarks can be made regarding the methodology used. The first main topic that deserves reflection concerns the selection of cases. For this study, only the participation process among solar fields has been investigated that have actually received the necessary permits. This indicates that the participation process has been considered as being sufficient to receive the permits. Although, other cases could have been selected that did not receive the necessary permits, this would not have been necessarily beneficial for this study towards participation. Moreover, project managers might be less willing to discuss their less successful projects.

In addition, the researcher had some difficulties finding respondents other than working for Solarfields. Initially, other cases had been selected and preferred to be investigated more in-depth. Zonnepark Oranjepoort, which serves as a best practice for participation had not been selected. Another solar field developed by GroenLeven that had met more resistance among local residents was selected. Unfortunately, GroenLeven was not prepared to cooperate by engaging in a semi-structured interview for that specific case and suggested to conduct a study towards Oranjepoort. This has been a solar field that did not meet resistance and was therefore not preferred. However, to be able to integrate the vision of GroenLeven on participation it has been agreed to involve this case for this study, as otherwise the study would be limited to the perspective of two companies, spread over four cases.

Besides that, a lot of solar fields in the Netherlands are developed on locations which did not need an intensive process of participation, since they are developed on for example former landfills or industrial areas. Although this relates to the well-considered site selection (figure 12), it also caused that a lot of solar fields were not suitable for this study. However, the cases that have been selected turned out to be diverse in terms of the development process. Therefore, extensive insights in the motives and methods deployed by project managers have been gained.

The second main topic of reflection concerns the data collection method. Although a different research method could have been applied here as well, semi-structured interviews are still favored. Although the number of cases is limited to five, sufficient insights into the practices of participation by project managers in solar field

development have been gained, also because of the internship, and therewith participatory observation. However, the semi-structured interviews with project managers could have been supplemented through interviews with policymakers. Moreover, it would have been interesting to interview local residents that have actually participated in the development. Unfortunately, this would have been very time-consuming, and moreover, would have caused this study to be limited to only one or two cases. Now, the researcher has had the opportunity to compare between a multitude of projects executed by different private developers, while still remaining precise, gaining in-depth knowledge and understanding of the participation process.

6. Conclusion and recommendations

This study has aimed to provide an answer to the question: *“Which factors determine how and when project managers involve citizens in the process of participation to successfully develop solar fields in the Netherlands?”*. In the following section this question will be answered. Hereafter, recommendations are given for planning practice and further research.

6.1 Conclusion

It is unavoidable that the Dutch landscape will change in the coming years in favor of renewable energy projects. Solar fields are contributing to these changes. Therefore, project developers need to involve local residents in the development of solar fields. In the previous chapter it was already discussed which methods can be deployed by project managers in the participation of local residents when developing solar fields. Based on the case study, it was concluded that the role of a supportive network, after careful site selection is more important in the successful development of solar fields than had been considered in the theoretical framework. Project managers working for private solar field developers should actively integrate in the local environment to figure out whether a specific location is suitable for a solar field, considering both the physical and the social environment. Moreover, it should be kept in mind that the role and a positive attitude of municipalities is an important condition in being able to succeed. The creation of a network of support, as introduced by Jobert et al. (2007) as a second strategy, should be operational in the pre-development phase, as well as during the whole development process.

For this study it was also wondered why project managers would actually be willing to involve local residents in the development of solar fields. Based on the case study, it can be concluded that project managers are convinced that it is the right thing to do, which was also concluded by Stirling (2005, in Devine-Wright, 2011) and Perlaviciute et al. (2018). Besides that, a process of participation is often a requirement to receive the necessary permits, which has not been discussed in international research. Without a process of participation, solar field developments are less easily accepted, both by local residents and authorities. Moreover, when there are a lot of protests against a project developer, the project developer will be negatively reflected upon by for example media, causing difficulties in developing other solar fields in the future. This was lively described by the project manager of OverMorgen: *“I think that the commercial developers that do not adapt, are distinctive. The party is over. The first three or four years they had some nice results, made money, striking hits, but that time is over. The developers that are not willing to share, not only in money, but also in control, have had the longest time.”* (PM 4, 2019).

Participation has thus become part of the business model of solar field developers, since otherwise future projects become harder to develop. Therefore,



participation is needed to ensure robust revenue streams, which can then be considered as a win-win situation, for both developers as local residents. Local residents should sincerely be taken seriously by project managers, and further considerations of methods that should be deployed by project managers is needed. In the first conceptual model (figure 5), an overview of possibilities has been provided of what can be done by project managers to enhance the social acceptability. The most important issue is to create a broad network of support around the solar field in the early development phase, varying from government officials, elected politicians, and most importantly, those local residents that are most affected by the solar field development in their environment, as was also concluded by Cuppen et al. (2016).

6.2 Recommendations

Recommendations for both project managers as well as policymakers are provided to improve the participation process of developing solar fields and other renewable energy projects. Moreover, recommendations for further research are given.

First of all, project managers need to be aware of the fact that participation is an important aspect to successfully develop solar fields, and therewith contribute to the energy transition. Planning solar fields demands from private developers a willingness to collaborate with local residents and authorities to select sites that are suitable for solar field development, and not only consider revenue streams. Therefore, a process could be started in which solar field developers actively approach local communities to find a location for a solar field, rather than solely looking for a location themselves and then discuss with local residents. Such an approach will be time-consuming. However, it also leads to an integrated energy transition in which the opinions of the local residents really matter. Such an approach fits the shift in planning paradigm that was described in chapter 2. Developing plans should not happen from an ivory tower. Instead, developments should be planned for through co-creation. From local residents this demands a willingness to participate and the ability to accept that changes in the landscape are necessary for the energy transition. From project developers this would demand the acceptance of losing control over the development process, and therewith, the acceptance of sharing ownership of the project, leading to less revenue streams, which is compensated by a broader acceptance of the solar field, alongside a positive reflection on the company.

Second, municipalities should clearly indicate what is expected from solar field developers in terms of participation. For project developers, clarity is needed, alongside the feeling of support. Without support from municipalities, solar field developers can feel uncertainty regarding their project. Moreover, it costs a lot of time and energy to invest in getting to know the attitude of municipalities, and this time and energy cannot be invested in developing solar fields, leading to delays in progressing the energy transition. Unfortunately, municipalities are currently putting project developers on hold, to wait for developments of the so-called RES (Regional Energy



Strategies). This means delays in the formulation of policies, since multiple municipalities have to cooperate and align.

Third, Dutch citizens should accept the fact that the landscape changes in favor of the energy transition. Rather than protesting against the changes, local residents should seize the opportunity to participate in the process of development. If local residents participate, there can be a lot to gain, not only in terms of the outlook of the solar field, also in terms of financial gains through participation in the solar field. NIMBYism is not beneficial for the energy transition and leads to increasing frictions between solar field developers and municipalities on the one side, and local residents on the other. In addition, such frictions are not beneficial for the mutual understanding in other domains of renewable energy projects, such as wind farms.

Finally, further research on participation in the development of renewable energy projects is needed. Although the Netherlands has a very specific context with its own rules and regulations regarding renewable energy projects, scholars could pay more attention to this topic, since it can provide insights for Dutch project managers, and also be an inspiration for international developers. Moreover, renewable energy projects in the Netherlands are not all developed by companies coming from within the Netherlands. Research on participation by private developers in the Netherlands can improve their development processes, leading to the enhancement of social acceptability. Additionally, a perspective other than a governance perspective should be adopted more by scholars, since private developers are the ones actually developing renewable energy projects, having to meet the standards set by governments without having a theoretical foundation to rely on.

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Appendices

Appendix A: Informed consent

Toestemmingsverklaringformulier

“Which factors determine when and how project managers can let citizens participate in the successful development of solar fields in the Netherlands?”

Beste X,

Allereerst hartelijk dank voor de bereidheid om deel te nemen aan het onderzoek ter afsluiting van de Master Environmental & Infrastructure Planning aan de Rijksuniversiteit Groningen. In dit onderzoek wordt onderzocht hoe uw bedrijf het participatieproces omtrent de ontwikkeling van zonneparken vormgeeft. Ik probeer hierbij uw beweegredenen te achterhalen om zo, op basis van meerdere cases, generalisaties te maken. Dit interview zal semigestructureerd zijn. De vragen zijn al opgesteld, maar indien daartoe aanleiding is zal er kunnen worden afgeweken. Het interview zal ongeveer 40 tot 60 minuten in beslag nemen.

Door onderaan het formulier te tekenen, tekent u voor de volgende zaken:

- Uw antwoorden zullen alleen voor dit onderzoek worden gebruikt.
- U heeft de mogelijkheid gehad de vragen alvorens het interview in te zien.
- U kunt te allen tijde besluiten te stoppen met het interview of aangeven dat u een moment pauze wilt inlassen.
- U gaat akkoord dat het interview wordt opgenomen.

Voor meer informatie kunt u contact opnemen met onderstaand persoon.

Hopende u hiermee voldoende te hebben geïnformeerd,

Rolf de Jong Telefoonnummer/E-mailadres

Handtekening:

Functie X Zonnepark ontwikkelaar X



Appendix B: Interview guide

Introductie

1. Kunt u zichzelf kort introduceren?
2. Wat is uw rol binnen uw organisatie en kunt u uw organisatie toelichten?
3. Bent u bij meer projecten betrokken (geweest) dan degene die hier wordt behandeld?

Participatie

4. Wat houdt voor u participatie in en hoe zou u het omschrijven?
5. In hoeverre vindt u participatie van bewoners belangrijk bij de ontwikkeling van zonneparken?
6. Wat is de voornaamste reden dat u een proces van participatie heeft toegepast?

Voor dit onderzoek heb ik vier centrale strategieën van participatie onderscheiden. Graag zou ik deze stappen en de daarbij behorende acties langslopen.

7. Hoe is uw organisatie tot de specifieke locatie gekomen?
8. In hoeverre bent u voor de ontwikkeling van het zonnepark geïntegreerd in de lokale omgeving?
-In hoeverre heeft u zich hierbij eerst verdiept in de lokale omgeving? Waarom wel, niet?
-Op welke manier(en) heeft u kenbaar gemaakt aan de omwonenden dat u goede bedoelingen had?
-Hoe bent u bij het integreren omgegaan met de opinies van omwonenden? En zou dit toeschrijven aan uw persoonlijke competenties?
-Hoe lang heeft u voor dit integratieproces uitgetrokken?
9. In hoeverre heeft u een ondersteunend netwerk gecreëerd voor de ontwikkeling van het zonnepark? Op welk moment was dit?
-Heeft u mensen met verschillende ideeën samengebracht? Waarom?
-In hoeverre heeft u externe belanghebbenden betrokken bij het ontwikkelen? Denk hierbij bijvoorbeeld aan landschapsarchitecten of gemeentelijke ambtenaren.
-In hoeverre heeft u de ontwikkelende lokale visies op het zonnepark geïntegreerd in het plan ontwerp?
-Tot op welk moment in de ontwikkeling van het zonnepark heeft dit netwerk gefunctioneerd?



10. Hoe is het informatieproces en het participatieproces vormgegeven?
- Hoe heeft u vertrouwen gecreëerd met de omwonenden?*
 - In hoeverre heeft u mensen geïnformeerd via diverse (lokale) media?*
 - Heeft u, en zo ja waarom en hoe, mensen samengebracht om op een informele manier interactie te hebben? (Denk aan keukentafelgesprekken e.d.)*
 - Heeft u informatieavonden georganiseerd en zo ja, hoe werden deze vorm gegeven? Was dit puur informerend of konden mensen ook onderwerpen toevoegen?*
11. In hoeverre heeft u de omwonenden op financiële wijze laten participeren?
- In hoeverre heeft u omwonenden de mogelijkheid geboden om te investeren in het zonnepark?*
 - Heeft u de bewoners (of de gemeenschap) financieel gecompenseerd? En zo ja, waarom en hoe?*
 - In hoeverre heeft u omwonenden goedkopere energie aangeboden?*
 - In welk stadium heeft u financiële participatie laten plaatsvinden?*

Conclusies

12. Wat zijn volgens u de meest belangrijke stappen en belemmeringen binnen participatie?
13. In hoeverre hadden andere keuzes in het participatieproces andere resultaten op geleverd?
14. Zou u dit proces toepassen op andere zonnepark projecten of zou u hierin andere keuzes hebben gemaakt?
15. Wilt u nog iets toevoegen wat niet is besproken?

Appendix C: Code tree

Participation in solar field development	A: Integration in the local environment	A1: Gaining local knowledge	A1.1: Via municipality
			A1.2: Acknowledging uniqueness of the solar field location
		A2: Express good intentions	A2.1: Plans are not fixed
			A2.2: Extensive conversations
		A3: Good knowledge of area	A3.1: Knowing the environment
			A3.2: Invest in getting to know the environment
		A4: Competent handling with local residents	A4.1: Attention for the people
			A4.2: Fairly providing information
	B: Create networks of support	B1: Bring people together	B1.1: Organize process of participation
			B1.2: Talk with people
		B2: Involve external stakeholders	B2.1: Municipal support
			B2.2: Landscapers
		B3: Integrate local visions	B3.1: Integrate local input
			B3.2: Space for ecology
		B3.3: No changed plans	
	C: Informing and participating	C1: Create trust	C1.1: Provide room for participation
			C1.2: Invest time in the process
		C2: Use of media	C2.1: Newsletter or mailing
			C2.2: Local newspapers
		C3: Stimulate informal spaces of interaction	C3.1: Home visits
		C3.2: No home visits due to number of actors	
C4: Information meetings		C4.1: Organizing general information meetings	
		C4.2: Information meetings for invitees only	
	C5: <i>Design sessions</i>	C5.1: Yes	
		C5.2: No	
D: Gaining ownership	D1: Let local residents invest	D1.1: Obligation structure	
		D1.2: Crowdfunding	
		D1.3: Little local interest	
		D2.1: Offering free solar panels	

		D2: Financial compensation	D2.2: Compensation for plan damage
		D3: Offer inexpensive electricity	D3.1: Compensation for energy bill
		<i>D4: Area funds</i>	D4.1: Area funds as possible solution
		<i>D5: Work with local cooperation</i>	D5.1: Cooperate with an existing energy cooperation
			D5.2: Actively cooperate with the foundation of an energy cooperation
		<i>D6: Involve local organizations</i>	D6.1: Local companies
			D6.2: Actively cooperate with the foundation of an energy cooperation
	E: Other	<i>E1: Needed/obligatory</i>	E1.1: Participation as mean to get permit
			E1.2: Having strong legal case
		<i>E2: Right thing to do</i>	E2.1: Participation as common good
			E2.2: Moral duty

Appendix D: Code book

Code book			
Codes	Type	Definition	Source
Participation in solar field development			
Integration in the local environment	Integration provides a project manager with knowledge of the context and relevant contacts		
Gaining local knowledge	Deductive	To investigate uncertainties and to develop a better understanding	Reed (2008)
Express good intentions	Deductive	To enhance trust among the general public	Glasbergen and Driessen (2005) Wüstenhagen et al. (2007)
Good knowledge of area	Deductive	Knowing the environment and understanding its specific characteristics	Jobert et al. (2007) Wüstenhagen et al. (2007) Wolsink (2007)
Competent handling with local residents	Deductive	Personal skills to align with the local residents	Wüstenhagen et al. (2007) Jobert et al. (2007)
Create a network of support	Creation of a network around a project that is willing to support the project		
Bring people together	Deductive	Bring people together from different backgrounds, sharing a common interest to gain insight in the different visions and expectations	Lowndes et al. (2006) Perlaviciute et al. (2018) Kerkhof and Wieczorek (2005)
Involve external stakeholders	Deductive	Scientists, landscapers and local governments are involved to prevent unforeseen problems	Cuppen et al. (2016)
Integrate local visions	Deductive	Local visions integrated in the design of the solar fields	Klaassen et al. (2018) Hoppe and De Vries (2019)

Informing and participating	Local residents need to be informed and be given the opportunity to actively participate		
Create trust	Deductive	Trust as important issue to decide whether information provided is accepted	Perlaviciute et al. (2018)
Use of media	Deductive	Provide citizens with information through media channels	Bakker et al. (2012)
Stimulate informal spaces of interactions	Deductive	The creation of informal spaces of interaction to create trust	Meerkerk (2014)
			Edelenbos and Meerkerk (2015)
Information meetings	Deductive	Providing citizens with information through organized meetings	Richards et al. (2004)
<i>Design sessions</i>	Inductive	Citizens are given the opportunity to actively help design the outlook of the solar field	
Gain ownership in the project	Citizens are given the opportunity to gain ownership in the project, making them benefit from the solar field		
D1: Let local residents invest	Deductive	Through investments local resident can participate	Morthorst (1999)
			Raven et al. (2009)
D2: Financial compensation	Deductive	Financial compensation for those affected by the solar field	Olsen (2010)
			Yildiz (2014)
			De Boer and Zuidema (2015)
			Cuppen et al. (2016)
			Ter Mors et al. (2012)
D3: Offer inexpensive electricity	Deductive	Offering inexpensive electricity as financial participation	Raven et al. (2009)
<i>D4: Area funds</i>	Inductive	Depositing money which can be used to develop the area around the solar field	
<i>D5: Work with local energy cooperation</i>	Inductive	Developer works together with an existing energy cooperation or helps in the foundation	

<i>D6: Involve local organizations</i>	Inductive	Developer tries to involve local organizations for the activities, such as companies or schools	
Other	These codes are inductive and did not specifically appear in the literature review. Still, these are important for understanding the reasons for participation in solar field project by project developers		
<i>E1: Participation obligatory</i>	Inductive	A process of participation has mainly been designed to receive the necessary permits	
<i>E2: Right thing to do</i>	Inductive	Participation is considered as the right thing to do in the development of solar fields	

Solarfields

Leonard Springerlaan 19

9727 KB Groningen

The Netherlands

+31 (0)85 30 30 850

info@solarfields.nl

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