Citizen participation in road construction: a strategy based on an evaluation of three planning processes

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(Arnstein, 1969)

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CITIZEN PARTICIPATION IN ROAD CONSTRUCTION: A STRATEGY BASED ON AN EVALUATION OF THREE PLANNING PROCESSES

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Abstract
In the Netherlands a *new Environment and Planning Act* is currently being developed. From 2021 onwards, this Act will obligate organisations to involve citizens in an early stage of the planning phase. This research evaluates citizen participation in three road construction planning processes. Pattern matching has been used to compare the method that was applied in practice with the method that is recommended in literature on public participation and problem solving. Based on a comparative analysis of the case study results, the basis for a citizen participation strategy is developed. The research focuses on citizen participation in planning phases of the upgrading of three provincial roads: N233 Veenendaal Rondweg-Oost, N33 Appingdam-Zuidbroek, and N241 A.C. de Graafweg. Our analysis shows that the consultant involved in the cases generally applied suitable methods for participation, which fit the problem context. If deviations were observed, this was for understandable reasons, such as money and time constraints. Sweco is recommended to use the problem context-participatory process matrix as a base for citizen participation strategy. This matrix recommends participatory process methods that fits the problem context of a project.

Keywords: citizen participation, environment and planning act, interactive policy making, planning phase & provincial roads.

1. Introduction
In the infrastructure sector, an excellent construction manager strives to avoid and resolve conflicts and promotes harmony among all project stakeholders to survive the continuous change and challenges in today's globalised and boundless world (Karim, Rahman, Berawi, & Jaapar, 2007). This stems from the transition from product-oriented to process-oriented construction management (Morssinkhof, 2007). The common thread in process management is the cooperation between stakeholders in the project and the project managers. Process managers should identify, analyse and manage their stakeholders (Karim, Rahman, Berawi, & Jaapar, 2007).

Involving stakeholders in a process is described as 'participation' or 'interactive policy making' (Arnstein, 1969; Edelenbos, 2000). When interactive policy making targets citizens, this is referred to 'citizen participation' (Luyet, Schleapfer, Parlange, & Buttler, 2012). Citizens participation involves that citizens are actively involved in the initiation, design and realization phase of a construction project (Muir, 2005). When participation solely takes place in a later stage of a project, problems can occur during the process or when implementing the outcome (Davidson, Johnson, Lizarralde, Dikmen, & Sliwinski, 2007). Citizens could coalesce into a well-organised movement and can be able to mobilise the press and other media behind them. This can result in severe disruption or even cancellation of the project (Winch, 2010).

For a long time, it was acceptable to only inform citizens after important decisions were made (Coenen, Peppel, & Woltjer, 2001). The focus was on the practical feasibility of a decision during the project. Therefore, participatory processes were unwanted in some situations. The use of participatory processes in the Dutch infrastructure sector was seen as a constraint (Woltjer, 2010). As a result of these developments, the Elverding committee in 2008 developed the action plan "faster and better" to speed up and improve current decision making on the approach to major infrastructure projects in alignment with citizens. This plan requested intensive and early involvement of citizens (Commissie Elverding, 2008). Following this, the Ministry of Infrastructure and Environment announced the *new Environmental and Planning Act (nieuwe Omgevingswet)* in 2016. This act will integrate area-oriented components of existing laws into one single act containing one coherent system of planning, decision-making, and procedures. The *new Environmental and Planning Act* will offer improved possibilities for drafting an integrated policy, as well as an improved usability and substantial simplification in environmental and planning act (Raad van State, 2014). Under this act, it is mandatory to involve citizens in an early stage of the decision-making process of construction projects (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties,

2018). Early cooperation is said to improve the quality of a solution and guarantees direct visibility of different perspectives, knowledge, and creativity (Aan de slag met de Omgevingswet, 2017).

Engineering consultancy company Sweco Nederland encourages the realization of a strong commitment to society. The company tries to offer solutions and ideas that benefit their stakeholders and the society. In this way, they hope to create support for a project. This is also the reason that Sweco wants to carry out citizen participation in the best possible way. Based on three cases, the citizen participatory process of Sweco will be analysed. *The goal of this research is to develop the base for a citizen participation strategy*. This will be done based on the evaluation and explanation of three planning processes. Thus, Sweco will gain better insight into their current method of citizen participation, to be able to organise their future approach more strategically. This will contribute to the creation of a greater support in the environment for a feature project and reduces the chance of disruptions or even cancellation of projects in the planning phase. This research uses scientific literature from civil engineering and public administration. For this literature, this research will be an addition to the little-researched link between problem context and the participatory process method. Besides, the previously not researched link between problem context and the participatory method will be examined (Hurlbert & Gupta, 2015).

The paper is structured in different sections. Firstly, theoretical backgrounds about describing and evaluating a participatory process will be given (Section 2). Secondly, the methodology describes how the research has been designed (Section 3). Then the results of the research are presented (Section 4). Based on the results, an analysis is conducted (Section 5). In addition, the discussion and limitations of this research will be presented (Section 6). Lastly, conclusions of this study will be drawn (Section 7).

2. Theoretical framework: citizen participation

This section describes the citizen participatory process based on theoretical concepts. Citizen participation has a long history in the Netherlands. The trend from client participation and enforcement of interests, to citizen and government participation, to interactive participation and citizens' initiatives is changing the public domain in the Netherlands (Ossewaarde, et al., 2008). Infrastructure projects in the Netherlands are often characterised by social and substantive complexity (Edelenbos, Klok, & van Tatenhove, 2009; Koppenjan & Klijn, 2004; Metze & Turnhout, 2014; Reed, 2008). Uncertainties about behaviour and relationships are enormous because of the complex context. Effects can be unpredictable and emergent behaviour can appear (Roovers & Buuren, 2016; Teisman, van Buuren, Edelenbos, & Warner, 2013). Projects in this context often have to be implemented through interactive policy making. The interdisciplinary approach of interactive policy making and the early involvement of stakeholders should help tackle complex problems (Edelenbos, 2000; Reed 2008). This section examines how a citizen participatory process based on the problem context can be described and evaluated according to the scientific literature.

2.1. PROBLEM CONTEXT

Infrastructure projects always have a certain problematic context. These problems are of a largely subjective and social nature. Based on various sources, Hommes (2008) describes two dimensions to distinguish types of problems. The first dimension concerns the certainty of the knowledge base. The second dimension is about the consensus on norms and values. Four types of problems can be distinguished: structured (certain-consensus), moderately structured (certain-disagreement), moderately structured (uncertain-consensus) and unstructured (uncertain-disagreement). An overview is given in table 1.

Norms and values > Knowledgebase V	**Consensus**	**Disagreement**
Certain	1. Structured problems	3. Moderately structured problem
Uncertain	2. Moderately structured problem	4. Unstructured problem

Table 1: Type of problems (Hommes, 2008)

Structured problems (type 1) are characterised by a certain knowledge base and a consensus on norms and values (Hommes, 2008). In advance, rules and boundaries are clear. Winch (2010) describes this as a *tame* problem. Consensus can quickly be reached and the stakeholders have little interest in the problem (Korsten, 2016). The

problem can be addressed by a technocrat or bureaucrat who makes decisions about public interests (Hisschemöller & Hoppe, 1998; Hommes, 2008; Hurlbert & Gupta, 2015). Hurlbert & Gupta (2015) describe that a non-interactive approach suits best with this type of problem. Hommes (2008) indicates that an analytical process fits with a non-interactive approach. Decisions are based on rationality and objectivity, and one guiding decision factor is assumed. Occasionally, there are contacts with the environment to provide information or to retrieve information. A limited participatory process and low degree of participation are sufficient for solving this type of problems (Hurlbert & Gupta, 2015).

Moderately structured problems (type 2) are characterised by an uncertain knowledge base and a consensus on norms and values (Hommes, 2008). Those in power want to see the problem as structured. They try to manipulate the position and view of stakeholders on how to solve the problem (Hurlbert & Gupta, 2015). Knowledge voluntary or involuntary becomes part of the discussion (Hommes, 2008). This discussion is about the choice of resources: the quality of the policy instruments and the distribution of costs and benefits among the stakeholders (Korsten, 2016). Within a certain assessment framework, solutions can be sought within the process (Hisschemöller & Hoppe, 1998). A non-interactive approach suits this type of problem best. Therefore, a low degree of participation can be applied (Hurlbert & Gupta, 2015).

Moderately structured problems (type 3) are characterised by a certain knowledge base and disagreed upon norms and values (Hommes, 2008). There are many different opinions at a political and social level on what to do (Korsten, 2016). Various actors must, therefore, contribute to problem structuring by applying different degrees of participation (Hisschemöller & Hoppe, 1998; Hommes, 2008; Hurlbert & Gupta, 2015). This requires an interactive approach during the process (Hurlbert & Gupta, 2015). An analytical process does not sufficiently take the different perceptions into account. A participatory process must be applied where knowledge can bring the needs of the actors closer together (Hurlbert & Gupta, 2015). This leads to a joint solution to the problem (Hommes, 2008).

Unstructured problems (type 4) are characterised by an uncertain knowledge base and disagreement on norms and values (Hommes, 2008). These problems are also called *wicked* problems (Metze & Turnhout, 2014). It is not clear what the boundaries and the rules are, because they can change over time (Winch, 2010). An interactive approach is essential when dealing with *wicked* problems (Korsten, 2016). Insights can be created by organising meetings between knowledge providers and policy makers (Hommes, 2008; In ‘t Veld, 2010). Consultation between the involved actors concerning an issue can provide an opportunity to combine the objectives and resources (Korsten, 2016). A participatory process with a high degree of participation fits best with this type of problem (Hurlbert & Gupta, 2015). This contributes to the knowledge base, and the support of different perspectives (Hommes, 2008).

2.2. PARTICIPATORY PROCESS

A participatory process can be described based on 1) the degree of participation and the corresponding participatory method (Edelenbos & Monnikhof, 2001), and 2) the intensity of participation (Krywkow, 2009).

Degree of participation

For an effective process, the degree of participation is the driving force behind the design of a participatory process (Krywkow, 2009). When the degree of participation is taken into account on beforehand, a higher acceptance of the participatory process by citizens could be reached (Barreteau, Bots, & Daniell, 2010). The degree of participation is determining the level of influence that citizens have on project outcomes (Michels, 2011).

An instrument to measure the degree of participation is the ladder of participation. The ladder of participation is developed by Arnstein in 1969 and measures the level of influence citizens can have on the policy of the government. Different authors have updated the ladder of participation based on new insights. The ladder of participation from Edelenbos and Monnikhof (1998) emphasises the collaboration between citizens and government. They assume on the policy-influencing, rather than a self-reliant citizen. The ladder of Edelenbos and Monnikhof (1998) consists of five levels. The higher the level, the more intense a citizen is involved within policy making (Edelenbos & Monnikhof, 1998). Pröpper and Steenbeek (1999) combine the stages of the ladder of participation with different management styles. The ladder of Pröpper en Steenbeek (1999) consists of seven levels. The higher the level of management style, the more intense the citizen is involved with policy making (Pröpper & Steenbeek, 1999). Edelenbos et al. (2006) combine the ladder of participation and the management styles in their book ‘Citizens as policy advisor’. “*The combination of the ladder of participation and management styles produce a continuum of interactive policy formation*” (Edelenbos, Domingo, Klok, & van Tatenhove, 2006,

p. 4). Appendix A gives an extended overview of the combination ladder of participation and management styles. Table 2 gives a concise view of this combination.

With exception of the closed authoritarian style (A), all management styles have more of less interaction between management and citizens (Edelenbos, Domingo, Klok, & van Tatenhove, 2006). The levels informing (1) and consult (2) does not fall under interactive policy making and have a low degree of participation. The levels advise (3) and co-produce (4) fall under interactive policy making and have a high degree of participation (Hommes, 2008; Hurlbert & Gupta, 2008).

Form of policy	Ladder of participation Edelenbos & Monnikhof (1998)	Management styles Pröpper & Steenbeek (1999)
Not interactive	0. Participant is not involved	A. Closed authoritarian style
	1. Informing	B. Open authoritarian style
	2. Consult	C. Consultative style
Interactive	3. Advise	D. Participative style
	4. Co-produce	E. Delegating style
		F. Collaborative style
	5. Co-deciding	G. Facilitating style

Table 2: Combination of the ladder of participation and the management styles (Edelenbos, Domingo, Klok, & van Tatenhove, 2006)

Participatory methods

An appropriate participatory method is important for the acceptance of the participatory process by citizens (Barreteau, Bots, & Daniell, 2010; Edelenbos & Monnikhof, 2001). Citizens will experience benefits when the useful and effective channels for citizen participation, matching the degree of participation, are applied (Denters, 2014; Pröpper, Litjens, & Weststeijn, 2006). Krywkow (2009) describes nine different classes of participatory methods. The described classes, ranked from low to high interaction with citizens, are fora, public information provision, education, interviews, events, surveys, meetings, workshops, and popular involvement campaigns. These are connected to the ladder of participation and management styles in appendix A.

Intensity of participation

In addition to the degree of participation and the associated participatory method, a participatory process can be described by the intensity of participation. The degree of participation describes the level of citizen influence. The intensity of participation describes the application of dimensions which shapes the participatory process. The *constrains, objectives, process, intensities and reporting (COPIR)* method described by Krywkow (2009) can be applied to map this intensity. This method measures the intensity of the participatory process through six dimensions: power sharing, activity, equality, transparency, flexibility and reach. Table 3 gives a description of the different dimensions. The intensity is measured on the basis of a 'low', 'average' and 'high' level. A 'high' intensity does not mean that this gives the most positive result on the process. It concerns the coherence between the levels of the six dimensions and the context of a project.

Dimensions of intensity	Description
Activity	Degree in which participants are involved in the planning process. This is overlapping with the degree of participation.
Transparency	Degree in which participants have access to relevant information.
Equality	Degree in which participants have the same opportunity to participate in the participatory process.
Power Sharing	Degree of formal influence on the planning process.
Flexibility	Degree of the opportunity to have an influence while the project is still open for discussion.
Reach	Degree of reach of participation, in terms of a limited group or a bigger public.

Table 3: Description of dimensions (Krywkow, 2009)

Six types of the intensity of participation can be described based on the level of the six dimensions: horizontal participation, vertical participation, focussed consultation, decide-announce-defend, symbolic participation and intense participation. The different types can be seen in figure 1.

Krywkow (2009) indicates that the dimensions of activity and power-sharing are complementary to each other. He also indicates that these dimensions are derived from the degree of participation. When there is a higher degree of participation, there is a higher level of power sharing between citizens and policymakers. As a result, a higher level of activity takes place. A link can be made between these factors because of the relationship between the degree of participation, and the level of power-sharing and activity in the intensity. As a result, the intensity of

participation can be recommended based on the degree of participation. In Appendix A, the types of participation are linked to the degree of participation.

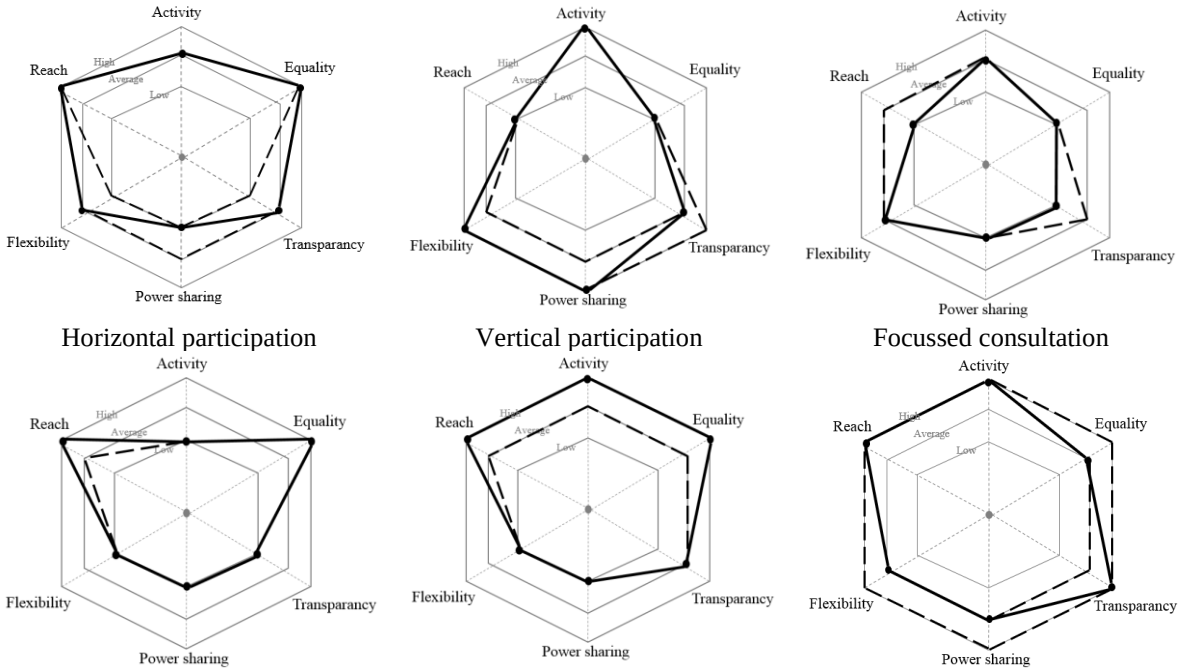


Figure 1: Types of participation based on intensity dimensions (Krywkow, 2009, pp. 76)

2.3. EVALUATION OF PARTICIPATION

Evaluating a participatory process through knowledge, expertise, and resources can contribute to a complete picture of the project, achieving a higher sense of shared responsibility and inclusiveness. It focuses on the diverse interests of those involved and ethics because it concerns those who are most directly influenced by the outcomes (Campilan, 2000). For the evaluation of an participatory process, two types of evaluation can be used: 1) An evaluation based on a comparison between the applied method in practice and the method recommended by theory in the literature considering the problem type of the case (De Graaf & Dewulf, 2010). 2) An evaluation can be based on the satisfaction of participants considering the process and the product (Chess & Purcell, 1999).

The participatory process can be evaluated based on a comparison between theory and practice. Hereby, patterns of the applied method in the cases are compared with recommend patterns from theory (De Graaf & Dewulf, 2010). The recommended patterns are derived from the prescribed relationship in literature between problem context, the degree of participation and intensity of participation.

Citizen participation influences the way in which participants assess the process and product of a project (Blackstock, Kelly, & Horsey, 2007). When the appropriate participatory process has been applied for the type of problem, it can lead to process satisfaction. Besides process satisfaction, there is also product satisfaction (Chess & Purcell, 1999). In view of previous studies, it can be concluded that a good participatory process not necessary will lead to a good product or that a bad process not necessary will lead to a bad product (De Graaf, 2005). When measuring these factors, the subjectivity of the various stakeholders must be taken into account, because they have different ideas of when a project is successful (De Graaf, 2005). The product and process satisfaction of different actors must, therefore, be asked (Chess & Purcell, 1999).

2.4. ANALYSIS FRAMEWORK

In summary, the recommended degree and intensity of participation depends on the type of problem. Based on the explanation in previous paragraphs, the problem context, the degree of participation and intensity of participation are linked to each other in this study. This resulted in an analysis framework for a comparison between theory and empiricism. When the participatory process is applied as recommended, it is expected to lead to a successful participatory process (Denters, 2014). Table 4 provides an overview that shows how the concepts relate to each other. Appendix A provides a more elaborate overview.

	Non interactive	Interactive
	Consensus norms and values	Disagreement norms and values
Certain knowledge	**1. Structured problem** Level: *inform.* Methods: *public information provision, fora, interviews, surveys, events*. Intensity: *decide-announce-defend, horizontal participation*	**3. Moderately structured problem** Level: *advise.* Methods: *surveys, meetings, workshops.* Intensity: *focussed consultation, vertical participation.*
Uncertain knowledge base	**2. Moderately structured problem** Level: *consult.* Methods: *education, interviews, surveys, events, meetings, workshops.* Intensity: *horizontal participation, symbolic participation.*	**4. Unstructured problem** Level: *co-produce.* Methods: *surveys, popular involvement campaigns, meetings, workshops.* Intensity: *vertical participation, intensive participation.*

Table 4: Problem context - participatory process matrix (Edelenbos, Domingo, Klok, & van Tatenhove, 2006; Hommes, 2008; Hurlbert & Gupta, 2015; Krywkow, 2009)

3. Methodology

This section describes the methodology of the research based on Verschuren & Doorewaard (2015). The goal of the research was to contribute to the prevention of severe disruption or even cancellation of projects. This is a problem from practice, thus the research was practice oriented. Within this research the context of the cases were an important part of the evaluation. To get an complete picture of all the characteristics of the context, the research was discussed in depth. Because of this, the research was less generalisable, but more detailed, complex, and stronger substantiated. This is in line with qualitative research, which focuses on the possibility to research in depth and subjective. To collect subjective data about the cases empirical research was done, desk research would be not sufficient enough.

The basis of the research was a case study strategy. Case studies matches the criteria for the research described above, where surveys neglected the context of a project, desk research is not empirical, experiments make use of a manipulated setting, and grounded theory is theory oriented. Case studies are able to keep track of processes, are able to check what significance is assigned to behaviour by others, are able to collect detailed information, focuses on the whole context of a case, and provide directly involved and other interested parties a broader awareness by offering detailed information about aspects of the case.

3.1. CASE SELECTION

To evaluate participation in the planning phase in road construction projects, three cases have been studied. These cases were respectively located in the Provinces of Groningen, Utrecht, and Noord-Holland. The amount of cases was based on the time scope of the study. Although it concerned three projects with different historical, cultural and political backgrounds, the cases were selected based on relatively close circumstances. Firstly, all three cases needed to involve a road which would be upgraded. Secondly, the cases must all took place on a provincial level. These criteria were chosen because, this represented the average project of the department, wherefore this research was conducted. Thirdly, citizen participation must have been applied during the projects. Lastly, the participation needed to take place during the exploration/planning phase. These criteria are chosen because, these were needed to be able to compare the cases with the analysis framework. Table 5 provides an overview and summary of the selected cases for this study based on project documentation of Sweco.

3.2. DATA COLLECTION AND ANALYSIS

Case data were collected using qualitative methods: document and media analysis (eg. tender documents, action plan, and minutes) and interviews with the project team of Sweco, and residents. Based on data triangulation of these methods, the citizen participatory process of the project was described. The interviews were conducted within a maximum of six months after completion of the exploratory phase in order to get an, as accurately as possible, picture. For each case, semi-structured interviews were conducted with the project manager and the stakeholder

manager from Sweco, and three residents of the project. This led to insight from different perspectives on the case. The local residents were randomly selected during an open public meeting of the project. During the interviews with a duration of 60 to 120 minutes, the following topics were discussed: 1) the problem type, 2) the degree of participation and participatory method, (3) intensity of participation and (4) satisfaction.

Each case was analysed separately. In this study, the steps 'data reduction', 'showing data' by means of tables, and 'concluding' based on regularities and patterns have been applied (Cruzes, Dyba, & Runeson, 2014). The results were based on logical inference by the researcher. These results show how Sweco implemented the citizen participatory process in these specific cases and how this was perceived by the project team and the three residents.

Pattern matching (Yin, 2009) makes a comparison between the applied method of Sweco and the recommended method by literature in every single case. This involves the comparison between 'pragmatic reality' with the 'theoretical ideals', which leads to insights and knowledge about a participatory process (De Graaf & Dewulf, 2010).

	Case A: N233	**Case B: N33**	**Case C: N241**
Who?	Project team: Province of Utrecht, Sweco, and municipality Veenendaal. Participants: regional and local attendees.	Project team: Province of Groningen, Rijkswaterstaat, and Sweco Participants: regional and local attendees.	Project team: Province of Noord-Holland and Sweco. Participants: regional and local attendees.
What?	The development of a preferred alternative for a larger capacity/intensity Veenendaal Oost.	The development of a preferred alternative for a widening N33.	The development of a preferred alternative for a safer A.C. de Graafweg.
Why?	Improving the livability and the accessibility for residents and companies on the east side of Veenendaal and limiting the travel time loss for Veenendaal Rondweg-Oost.	Improving the accessibility of the Eemsdelta-area. Improving safety and traffic flow on the N33 between Zuidbroek and Appingedam.	The reconstruction of the N241 A.C. de Graafweg based on current standards for provincial roads and improving the road safety.
When?	’15: Pre-exploration Sep. ’15: Start decision ’16: ‘Nota Reikwijdte en detailniveau’ ’17: Exploration Jan. ’18: Definitive preferred alternative	’13: ‘Nota Reikwijdte en detailniveau’ ’15: Exploration Apr. ’17: Restart exploration Jan. ’18: Definitive preferred alternative	’16: Exploration Jan ’17: Restart exploration Apr ’18: Definitive preferred alternative
Where?	Rondweg-Oost (5km) runs through the eastern part of Veenendaal and is part of the N233 which is a connection between the A15 and A12. Veenendaal is located in the Province of Utrecht.	N33 Midden is located between the places Zuidbroek and Appingedam (15km). These places are located in the Province of Groningen.	N241 is located between A7 at Wogum and Schagen (13 km), the A.C. de Graafweg. Located in the Province of Noord-Holland.
How?	Conducting technical studies, organizing stakeholder meetings and communicating with the advisory group.	Conducting technical studies, organizing stakeholder meetings and communicating with residents.	Conducting technical studies, organizing stakeholder meetings and communicating with residents.

Table 5: Abstract of selected cases based on project documentation of Sweco.

The findings of all cases were compared in a cross-case analysis (Eisenhardt, 1989). This can lead to three different types of relationships: inconsistent relationships, possible relationships and consistent relationships (De Graaf, 2005). A consistent relationship describes a relationship between a applied method and explanation which occurred in two or more cases. The consistent relationships were the basis of the citizen participation strategy of this research and answered the main question of this research.

4. Case study results

This section describes the problem context, degree of participation and intensity of participation in each case. Table 6 gives an overview of the results.

4.1. CASE A: N233 Veenendaal Rondweg-Oost

Problem context
In the project N233 Veenendaal Rondweg-Oost, the Province of Utrecht wanted to improve the accessibility and liveability on the east side of Veenendaal by means of road widening. In the context of the project, there was a lot of disagreement on norms and values. The project manager described the trust, between Municipality Veenendaal and Province of Utrecht at the start of the project, as 'sub-zero'. The goal of the project, making the area more accessible, was not agreed upon by all respondents. The advisory group consisted of entrepreneurs and residents. Because of conflicting interests within the group, they split up into entrepreneurs and residents. Yet, there were conflicts within the advisory group of residents about the best solution.

At the start of the project, the knowledge base was uncertain. A second opinion had to be conducted to evaluate the assumptions made in previous research. According to the project manager, assumptions shifted during the project. The assignment was not clearly communicated to the advisory group. The project needed to be realised under pressure time. This was a bottleneck for the planning. Concluding, based on the described context variables, the project had an *unstructured context (disagreement-uncertain).*

Degree of participation
In the process, the project team asked the advisory group for their perspective. The advisory group was allowed to suggest alternatives. The project team also examined additional wishes from the advisory group. Even so, the respondents felt that the project team had a biased position and their input was not included. Even though, reports on the project show that their wishes have been included. Input was also tested without judgment in advance. The advisory group did not had the decision making authority. Considering these aspects it can be concluded that the advisory group had an *advisory* role; the project team determined the outcome but was open to other ideas and solutions.

Participatory methods
The advisory group participated during the entire process. Additionally, open public meetings were organised, with a plenary setup. Besides, there was the opportunity to ask questions. The invitation was communicated through letters, website, and advertisement in a newspaper. The classes of participatory methods that have been applied were public information provision, events, and workshops.

Intensity of participation
During the process, different alternatives were discussed by the advisory group. It had happened both internally, and, with the municipality and the Province. Before an alternative was published, the alternative was discussed with the advisory group. The active involvement of the advisory group resulted in a *high level of activity*.

At the start of the project, anyone could join the advisory group. During the process, the advisory group involved their neighbours in the process. Besides the advisory group, other residents were *informed* during the process. With different degrees of influence, all residents were involved or represented. This resulted in an *average level of equality*.

During the process, all information was shared with the advisory group, and all questions have been answered. However, it was not allowed to share this information outside the advisory group. Citizens who were only *informed* in the project had less information at their disposal. Respondents state that they were well informed, despite some shortcomings. This resulted in an *average level of transparency*.

The solutions given during the process by the advisory group were 'dropped like a hot cake'. The project team indicates the solutions were unrealistic. The reason why decisions deviated from suggestions done by citizens has been explained. This resulted in an *average level of power sharing*.

Citizens were involved from the moment the Province thought about 'getting the project started'. There were opportunities in the process to provide input, but ultimately this input did not resulted in any influence on the plans. Because of early involvement and the opportunity to think and talk about the plans, the *level of flexibility was average*.

Many citizens were reached during the participatory process. Everyone had the opportunity to join the open public meeting and to gather information through a digital newsletter. Members of the advisory group handed out flyers in their neighborhood by their own to inform people. This resulted in a *high level of reach*. According to the principles of Krywkow (2009), it can be concluded that an 'intensive participation' process occurred.

4.2. CASE B: N33 Zuidbroek-Appingedam

Problem context
In the project, N33 Zuidbroek-Appingedam, the Province of Groningen wanted to stimulate the social-economic growth of the area by widening the road. In the context of the project, there was a disagreement on norms and values. A part of the environment understood the choice of widening the road, but not everyone agreed on this. By some residents, the widening did not have to take place at all. Because of the different perspectives on the project, several camps among residents arose. Between the villages were also different opinions about the most suitable preferred alternative.

At the start of the project, the knowledge base was certain. It was easy to predict how the project would proceed. Besides, there was no tight administrative deadline. There was enough available information for both the project team and the residents. The plans were announced in time and there were 'no unexpected events'. Concluding, based on the described context variables, the project had a moderately *structured context (disagreement-certain)*.

Degree of participation
The project team had indicated that they were open to the other ideas and solutions. The respondents got the feeling they had the opportunity to think along. The respondents indicated that everyone had the opportunity to 'let it all out'. Looking at the reports of the project, all requirements were included in the client requirement inventory process. Thus, requirements were reviewed, and when accepted, included in the preferred alternative. Considering these aspects it can be concluded that the role of the residents has been *advising*; the project team determined the policy but was open to other ideas and solutions.

Participatory method
During the participatory process, informal meetings were held with direct residents of the project. Also, design sessions with farmers were organised. There was an interactive website used, called 'In My Back Yard'. On this website, residents could see on a map how the different preferred alternatives were planned. Residents were able to give comments on the project which were visible for everyone, on an anonymous base. The project team gave feedback on these comments. Residents were notified through digital newsletters and articles. Open public meetings were organised with a plenary presentation and the opportunity to ask questions per subject. The classes of participatory methods that have been applied were surveys, meetings, workshops, public information provision, events, and fora.

Intensity of participation
During the participatory process, the aim was to create support. On the one hand, by including residents in the process, and on the other, to give residents influence within predefined frameworks. Within the design sessions, a variety of different interests were discussed. All residents had the opportunity of the project team to think along. This resulted in a *high level of activity*.

All residents had the equal opportunity to participate during the process, had identical access to the same information, and had the same influence level on the plans. Residents whose input was still missing have been actively sought. The manner in which residents were involved could differ. Individual conversations were held with those directly affected. The influence, however, stayed the same. This resulted in an *average level of equality*.

Information shared was relevant, the reports describing the considerations for the alternatives were shared, and a summary was available. In this way, considerations were transparent. There was the opportunity to ask questions, which were answered on the website on an anonymous base. This resulted in a *high level of transparency*.

Residents indicated that their contribution was taken seriously. The input was included and feedback was given on all inputs. Arguments have been given a place in the process. The project team was the decision-making authorisation. This resulted in an *average level of power sharing*.

An alternative initiated by residents had the preference from the project team. Thus, an entire new route was created. This had happened within the preconditions of the project team. Many important questions, except usefulness and necessity of the widening, were open for discussion. This resulted in an *average level of flexibility*.

By means of a website and news item, residents were noticed up to date about the developments of the project. Residents whose input were still missing have been actively sought. Everyone had the opportunity to join the process. This resulted in a *high level of reach*. According to the principles of Krywkow (2009), it can be concluded that an 'intensive participation' process occurred.

4.3. CASE C: N241 A.C. de Graafweg

Problem context
In the project, N241 A.C. de Graafweg, the Province of Noord-Holland wanted to improve the safety of the road by reconstruction. In the context of the project, there was a consensus on norms and values. The experience of the route by the users was dangerous and negative. Accidents which took place affected a lot of residents because the victims were often acquaintances. All residents, therefore, felt improving the situation was necessary. As a result, there was a strong support for the project.

At the start of the project, the knowledge base was certain. There was a high degree of predictability and there were 'no surprises'. The project team did not experienced the project as complex. Concluding, based on the described context variables, the project had a *structured context (consensus-certain).*

Degree of participation
The project team and respondents declared that all client requirements from direct residents were collected, and at the end of the project other residents were *informed*. The project documents confirmed this method. The project manager stated that it is up to the project team if client requirements were actually included in the preferred alternative. Considering these aspects it can be concluded that the role of the residents has been *consulting*; information was not solely provided but also retrieved. The project team gave the opportunity to comment but did not have to connect consequences from this.

Participatory method
During the participatory process, face-to-face conversations were held with direct residents of the project. Direct residents discussed the plans together. There was an open public meeting for general residents. During the meeting, residents were informed by means of technical drawings. There was also the possibility to ask project members questions. Invitations for the open public meeting were sent by letters and news items. The classes of participatory methods which have applied were interviews, events, and workshops.

Intensity of participation
During the participatory process, the goal was to create support, by collecting requirements of direct residents and *inform* the general residents. The project team was open for requirements of direct residents. Residents were asked to give their opinions on the project plans. There was no further deliberation about the opinions between the project team and the residents. This resulted in an *average level of activity*.

Based on a stakeholder analysis was decided which stakeholders were involved and how they were involved. All residents were involved, with different levels of influence. This resulted in an *average level of equality*.

The project team shared a limited amount of information with residents because of the 'information was in development during the process'. The research behind the preferred alternative was not shared with residents.

Residents did not received all available information, because the information was hidden behind on purpose. This resulted in a *low level of transparency*.

Meetings with residents were organised after the route was chosen. General residents did not had an influence on the project plan. The project team was the decision-making authorisation. The opinions of residents potentially could be ignored by the project team. This resulted in a *low level of power sharing*.

The preferred alternative was shown for the first time at the open public meeting. Before this meeting, all relevant decisions on the preferred alternative were made. The framework of the project was set. Direct residents only could have an influence on small decisions of the plan. This resulted in a low level of flexibility.

During the process, letters were sent to residents and an announcement made in a local newspaper. An announcement of the open public meeting was given on the website of the Province. All residents got the letter and had access to the website. All known residents had the opportunity to participate in the process. This resulted in a *high level of reach*. According to the principles of Krywkow (2009), it can be concluded that, except for the average level of equality instead of the high level, a 'horizontal participation' process occurred.

	Noninteractive	Interactive
	Consensus norms and values	Disagreement norms and values
Certain knowledge base	**Case C: N241** Type: *structured problem.* Level: *consult.* Methods: *interviews, events, workshops.* Intensity: *horizontal participation.*	**Case B: N33** Type: *moderately structured problem.* Level: *advise.* Methods: *public information provision, surveys, events, fora, meetings, workshops.* Intensity of participation: *intensive participation.*
Uncertain knowledge base	**Moderately structured problem**	**Case A: N233** Type: *unstructured problem.* Level: *advise.* Methods: *public information provision, events, workshops.* Intensity: *intensive participation.*

Table 6: Results of cases

5. Analysis and explanation

This section describes the results of the within-case and cross-case analysis. In the within-case analysis, pattern matching was used to compare theoretical patterns, described in paragraph 2.4, and empirical patterns. Constant relations that were found in the cross-case analysis form the basis for the citizen participation strategy.

5.1. ANALYSIS CASE A

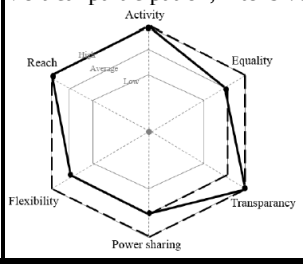
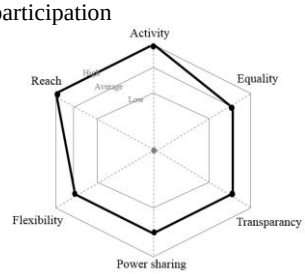
	Theoretical pattern (T)	**Empirical pattern (E)**	**Match**
Level	Co-produce: the advisory board co-decides within a predetermined framework.	Advise: the advisory group is involved in the whole process. All input is included and reviewed. The project team is the decision authorization.	T>E
Methods	4. Surveys 6. Popular involvement campaigns 8. Meetings 9. Workshops	1. Public information provision 5. Events 9. Workshops	T≈E
Intensity	Vertical participation, intensive participation 	Intensive participation 	T=E

Table 7: Theoretical and empirical patterns case A (=)-done as recommended, (<)-less done as recommended, (>)-more done as recommended, (≈)-done as recommended with a small deviation.

Degree of participation

In case A *advising* was applied (level 3). However, *co-producing* (level 4) is recommended by literature. A lower degree of participation has been applied than recommended. The project team opted advice because of limited financial resources and time pressure. The cause of this was an earlier unsuccessful attempt by another engineering company to come up with a preferred alternative for this project. In the case study, the project team reviewed and considered the alternative options from the advisory group. The advisory group expected their proposed alternatives to influence the planning process. However, it was not feasible because of financial constraints and legislation.

Participatory method
The applied participatory methods were public information provision (1), events (5) and workshops (9). The recommended participatory methods are surveys (4), popular involvement campaigns (6), meetings (8) and workshops (9). Due the intensive collaboration between the project team and the advisory group, there was no need for other participatory methods. Besides, Sweco thought the advisory group did not have the exclusive right to an advisory role. What the other residents thought was just as important to them. This is why public information provisions method were also applied. Two methods were applied as of the recommended class of participation number four, and one method was additionally applied. The project team reached the recommended intensity of participation with these participatory methods. The project team did more or less the same as recommended in literature.

Intensity of participation
The applied and recommended intensity of participation was 'intense participation'. The high level of activity and reach applied were equal to the recommended level in literature. The project team tried to create a strong solution by analysing the problems and outweigh solutions together with residents. The project team thought the advisory group did not had the exclusive right to advise. The input from other residents was equally important to them.

The average level of equality, transparency, power sharing, and flexibility applied were equal to the recommended level in literature. The advisory group consisted of volunteers who signed up for the group. All residents had the chance to apply. All other residents received information at the open public meeting. All information available, in the planning process, was shared with the advisory group. The reports, however, were not always understandable and sometimes delivered late. The opinion of the advisory group had an official status in the process. Feedback was given to the input of the advisory group. The project team had given the advisory group influence on important aspects, such as the location. The project team wanted to create a solution together with the advisory group.

5.2. ANALYSIS CASE B

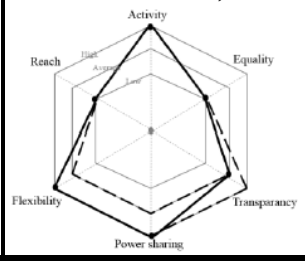
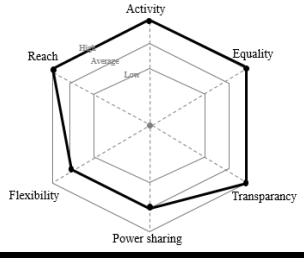
	Theoretical pattern (T)	**Empirical pattern (E)**	**Match**
Level	Advise: determines policy, but is open to other ideas and solutions.	Advise: within predetermined boundaries, the project team reviewed all input of residents on the feasibility	E=T
Methods	4. Surveys 8. Meetings 9. Workshops	1. Public information provision 4. Surveys 5. Events 7. Fora 8. Meetings 9. Workshops	T<E
Intensity	Focussed consultation, vertical participation 	Intensive participation 	T<E

Table 8: Theoretical and empirical patterns case B (=)-done as recommended, (<)-less done as recommended, (>)-more done as recommended, (≈)-done as recommended with a small deviation.

Degree of participation
In case B *advising* was applied in practice and recommended by literature (level 3). The project team chose to advise to create support in the environment. On the one hand, by including residents in the process, and on the other hand, to give residents influence within predefined frameworks.

Participatory method
The applied participatory methods were public information provision (1), surveys (4), events (5), fora (7), meetings (8), and workshops (9). The recommended participatory methods are surveys (4), meetings (8), meetings (8) and workshops (9). This was based on the fact that the project team wanted to give all residents the same opportunity to deliver input. Because of the additional methods, the project team needed to invest more money and time than necessary. Five methods were applied as of the recommended class of participation number four, and one method

was additionally applied. The project team reached a higher intensity of participation with these participatory methods. The project team did more than recommended in literature.

Intensity of participation
The applied intensity of participation was 'intense participation'. The recommended intensity of participation were ‘focused consultation’ and ‘vertical participation’. The high level of activity and transparency applied were equal to the recommended level in literature. The project team wanted to included residents in the process and gave residents influence within predefined frameworks. The project team had opted for this level of transparency in order to create involvement and support among residents.

The average level of power sharing and flexibility applied were equal to the recommended level in literature. The project team wanted to create clear expectations of the level of influence in advance by means of the framework. When input was not included, feedback about the reason was given. By creating clarity, the project team ensured that topics were not going to continue to be with the project. The project team had opted for this to create clear expectations for the residents.

The high level of equality and reach applied were not equal to the recommended low level in literature. By means of a stakeholder analysis the interests, level of influence, and attitude of residents towards the project were determined. Based on this analysis, residents were approached. Due to the high level of equality, across from the recommended low level of equality, it was necessary to invest more money and time. The additional participatory methods applied, resulted in a higher level of reach than recommended. In this manner, the project team wanted to create support from the environment.

5.3. ANALYSIS CASE C

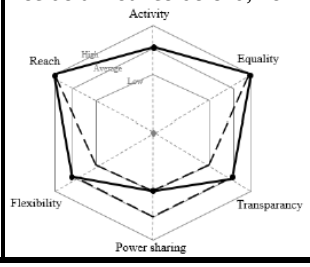
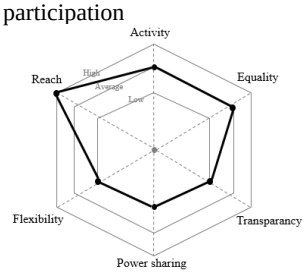
	Theoretical pattern (T)	**Empirical pattern (E)**	**Match**
Level	Inform: conducts independent policy and provides information on this.	Consult: requirements have been collected from direct residents, but it was not necessary to attach consequences to this.	T<E
Methods	1. Public information provision 2. Education 3. Interviews 4. Surveys 5. Events 7. Fora	3. Interviews 5. Events 9. Workshops	T<E
Intensity	Decide-announce-defend, horizontal participation 	Horizontal participation 	T≈E

Table 9: Theoretical and empirical patterns case C (=)-done as recommended, (<)-less done as recommended, (>)-more done as recommended, (≈)-done as recommended with a small deviation.

Degree of participation
In case C *informing* was applied (level 1). However, *consulting* (level 2) is recommended by literature. A higher degree of participation has been applied than recommended. The choice of consultation was made to provide a basis for ´building trust´ with direct residents. This was based on a stakeholder analysis, whereby the degree of interest and trust per resident was determined. The stakeholder manager made the analysis.

Participatory method
The applied participatory methods were interviews (3), events (5), and workshops (9). The recommended participatory methods are public information provision (1), education (2), interviews (3), surveys (4), events (5), and fora (8). By consulting residents, the project team had applied an additional participatory method. Besides, other residents were informed as recommended. The choice was made based on previous experience with similar projects from the stakeholder manager. Because of the use of an extra method, the project team needed to invest more time and money than necessary. Three methods were applied as of the recommended class of participation

number one, and one method was additionally applied. The project team reached a higher intensity of participation with these participatory methods. The project team did more than recommended in literature.

Intensity of participation
The applied intensity of participation was 'horizontal participation', with an average level of equality. The recommended intensity of participation was 'horizontal participation', with a high level of equality. The high level of reach applied was equal to the recommended level in literature. The project team wanted to reach a public as broad as possible by inviting the whole environment to the open public meeting.

The average level of activity applied is equal to the recommended level in literature. Based on the interest-trust matrix and previous experience of the stakeholder manager *consulting* for direct residents and *informing* for other residents was used.

The average level of equality applied is not equal to the recommended high level in literature. Not all residents were involved in the same way. Because of the difference, the level of influence varied.

The low level of transparency, power sharing, and flexibility applied are equal to the recommended level in literature. The project team knowingly decided not to provide background information during the process. The reason behind was 'the ongoing process' of conducting research in the planning process. For the project team, the planning phase was not the moment to involve residents. This was because 'residents cannot decide on major choices', which was suggested by the stakeholder manager. The project team felt that making decisions in the planning phase was up to them.

5.4. CROSS-CASE ANALYSIS

The cross-case analysis compares case A, B, and C based on the within-case analysis. Table 10 gives an overview of the comparison of the cases. The cross-case analysis is the basis for the citizen participation strategy for provincial roads in the planning phase.

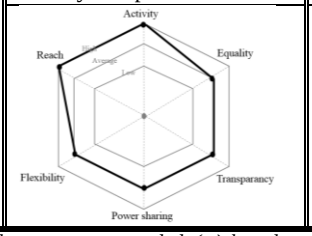
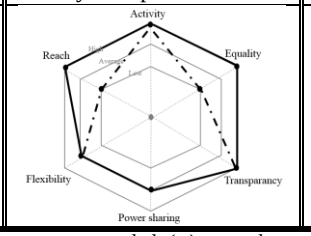
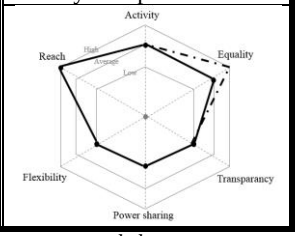
	CASE A: N233	**CASE B: N33**	**CASE C: N241**
Problem context	Unstructured (disagreement-uncertain)	Moderately structured (disagreement-certain)	Structured (consensus-certain)
Degree of participation	Theory>Empiricism (Co-produce>Advise)	Theory=Empiricism (Advise)	Theory<Empiricism (Inform<Advise)
Participatory method	Theory≈ Empiricism 1/4 recommend methods + public information provision and events.	Theory< Empiricism 3/3 recommended methods + public information provision, events, and fora.	Theory< Empiricism 2/6 recommended methods + workshop.
Intensity of participation	Theory=Empiricism 	Theory< Empiricism 	Theory≈ Empiricism 

Table 10: Comparison cases (=)-done as recommended, (<)-less done as recommended, (>)-more done as recommended, (≈)-done as recommended with a small deviation.

Degree of participation
Based on the analysis of the three cases was in case A less done than recommended, in case B done as recommended, and in case C more done than recommended in literature. The fact that there was less done in case A, was because of the limited financial resources and time constraints in the project. Case B did not have that (eg. no hard administrative deadline, no thight budget). In case B, there is done more because it was important for the client to involve residents in the process to deliver a better plan. This had strengthened the support base of the project. The stakeholder manager of the client had a clear picture in mind about the degree of participation to be applied. More was done in case C, because the degree of participation was based on the standardised approach of

the stakeholder manager of Sweco. This approach had the goal to generate support. Sweco's approach was at least the same as recommended by literature when the goal is, and the resources are available, to create support. The resources were not available in case A, because of this Sweco could not do as recommended in literature. The choice of degree of participation was based on the available resources and the experience of the stakeholder manager concerned.

Participatory methods
Based on the analysis of the three cases was in case A more or less the same done as recommended, and in case B and C more done than recommended in literature. In case A, the project team focussed on one specific group in the participatory process due to the lack of resources. In case B, the project team wanted to involve all residents living in the surrounding of the project in the process steps. In case C, the project team wanted to involve residents living directly next to the road in an intensive manner. Due to a broader focus, more participatory methods have been applied than recommended in literature. As a result, the project team made more efforts and higher costs than necessary.

Intensity of participation
Based on the analysis of the three cases was in case A done as recommended, in case B more done than recommended, and in case C more or less done as recommended in literature. In case A, residents got an equal chance to participate in the advisory group. Because of the use of an advisory group, intensive participation could take place on a small scale. More was done in case B because the project team wanted to involve all residents living in the surrounding of the project in the process steps in the same manner. The use of public information provisions, events, and fora resulted in a higher degree of reach and equality. In case C, the project team had not involved everyone because of the focus on residents living directly next to the road. Hereby, they were able to use a higher degree of participation than the recommended one. Sweco has organised the intensity of participation overall smoothly and has, because of over-dimensioning, done more in one case than necessary.

Inference
Sweco did at least participate as recommended in literature, or did sometimes even more than recommended. When there was done more than recommended in literature, the goal was to involve all stakeholders to generate support for the project. However, depending on the problem context it is not always necessary to involve all stakeholders in the process to generate support. When there was a higher participation than recommended, the project team invested more time and money than necessary. When the project team invested less than necessary this was due to the constraints in budget or time. When the participatory process will be based on the problem context of a project, the process could be organised more appropriately concerning the context, and could be more cost- and time effective.

6. Discussion

In this section 1) the findings of the research are reflected, 2) is reflected on the methodology of the research, and 3) limitations of the research are discussed.

6.1. Reflection of findings

Firstly, literature show a link between the design of the participatory process to the problem context of the project (Edelenbos, Domingo, Klok, & van Tatenhove, 2006; Hommes, 2008; Hurlbert & Gupta, 2015; Krywkow, 2009). This was confirmed by the cases, or deviated because of an explainable reason (eq. time or money constraints).

Secondly, it is described in the literature that creating support and acceptance in the planning phase leads to an effective participatory process (Woltjer, 2010). This was confirmed by the cases. When one of the goals was to create support, and resources were available, Sweco did at least what is recommended in literature or did sometimes even more. In all three cases, the goal was to create support.

Thirdly, Ebdon (2002) describes that one of the largest barriers to citizen participation is the budget made available by the government. In citizen participation, the government is the largest determining factor for the available budget and time (Zhang & Yang, 2009). This was confirmed by case A and B. In case A, the project team applied a lower degree of participation than recommended, because of financial constraints and time pressure from the Province. In case B the project team applied more participatory methods than recommended one. There was no hard administrative deadline and no tight budget.

Fourthly, the participatory methods were linked to the degree of participation in this study (Krywkow, 2009). Citizens experience benefits when approaches are applied which fits the degree of participation (Denters, 2014;

Pröpper, Litjens, & Weststeijn, 2006). In the cases, the participatory *methods* applied did not always match the recommended participatory methods, while in the same cases, the recommended *degree* of participation and/or *intensity* of participation was reached. Castenmiller (2009) describes a critical article that citizen participation is not suitable for everyone. An participatory method which fit the needs of an stakeholder is important for the acceptation of the participatory process by participants (Barreteau, Bots, & Daniell, 2010; Edelenbos & Monnikhof, 2001). Therefore, participatory methods should not only be selected based on the problem context but also based on the need for participation of participants.

6.2. Reflection on methodology and limitations

This paragraph first gives a reflection on the methodology of this research. Firstly, this research mainly used scientific literature from civil engineering and public administration. References within papers have shown that the literature type public administration is the main type for citizen participation theories. However, a broader focus could have provided a more complete insight. Such as the literature of Jens Newig, professor of Governance and Sustainability at Leuphana University Lüneburg, which published scientific papers about citizen participation in literature about policies and government.

Secondly, at the beginning of the research the focus was on the perception of residents. Given the limited time of the research and the subjectivity of the residents in the project, this was not the right focus. This part of the research could have better been part of a research whereby, the conformity of the applied method was compared to the perceived method by stakeholders.

Thirdly, Sweco's project manager and stakeholder manager were interviewed in the current research. The project manager did not always had a complete picture of the participatory process. The project managers had more overall tasks, whereby he had less knowledge of more specific tasks, such as citizen participation. In order to get a more complete picture of the process, it would have been more interesting to interview the stakeholder manager of the Province and Sweco.

Lastly, during the conducting of the research it was difficult to find suitable projects. Some projects took place a long time ago, whereby it was not possible anymore to approach residents. The use of projects that were recently completed gave an accurate picture of the project. In the other projects, it was not permitted to approach the residents at all. Therefore, in retrospect, it would have been better for the research process to conduct only interviews with the stakeholder manager of Sweco and the Province and not with residents. In this way, more projects could have been evaluated within this study and less uncertain factors has influence on the data collection.

Besides the reflection on methodology, the limitations of the research are discussed. Firstly, the respondents, three residents per case, were selected in a random manner in the open public meeting. The internal validity could have been higher when criteria had been set for the respondents in advance. The internal validity also could have been higher when more respondents were involved in the research. In this way, the findings were more representative of the environment.

Secondly, the internal validity is higher because of the use of data-triangulation. The results of the research were based on interviews with two project members, three residents, project documentation, and media. The interpretation of the response of interviewees was verified by sharing the interview report and adjust it when necessary.

Thirdly, three residents were interviewed per case, this has been supplemented by means of project documentation. With this number of interviews, the interviews could have been more in-depth. However, the external validity is smaller and the research is thus less generalisable.

Fourthly, because of limited time three cases have been evaluated. To increase the reliability of this research, more comparable cases should be evaluated.

Fifthly, the research is focused on the upgrading of provincial roads in the Netherlands. However, the problem context – participation process matrix is based on general literature about citizen participation. Because of this, it is assumed that the base for the strategy if applicable to other type of projects. However, more research is needed to determine this assumption.

7. Conclusion and recommendations

This paper compared the current citizen participation approach of Sweco for the upgrading of provincial roads in the planning phase, with the recommended approach by scientific literature. A qualitative research on three cases

was conducted, N233, N33, and N241. Facts and perceptions from project members, residents, documents, and media about the citizen participatory process were collected. Thereafter, a within-case analysis with pattern matching and a cross-case analysis had been conducted. It provided the basis for the recommendations on the current approach of citizen participatory processes by Sweco.

In the literature review, the problem context has been described as decisive for the design of a citizen participatory process. A citizen participatory process can be described based on the degree of participation, the participatory method, and intensity of participation. The problem context – participatory process matrix describes for every type of problem how citizen participatory process should be organised. Whether this is actually done, was evaluated by comparing theory and empirical cases.

The results and analysis showed that citizen participation applied by Sweco was, in the cases studied equal to the recommended approach in literature. When there was a higher participation than recommended, the project team invested more time and money than necessary. When the project team invested less than necessary this was due to the constraints in budget or time. In general, there can be concluded that Sweco organised the citizen participatory process at least as recommended in literature or does sometimes even more than recommended.

When the participatory process will be based on the problem context of a project, Sweco could organise processes more appropriately concerning the context, and could be more cost- and time effective. It is recommended to use the problem context-participatory process matrix in future projects as basis for a citizen participatory process strategy. Whereby, participatory methods should not only be selected based on the problem context but also based on the need for *participation* of participants.

Based on the basis of the citizen participatory process strategy it is recommended to develop a strategy concluding at least the following steps:

- Determine the problem context of the project based on the certainty of knowledge base and the consensus on norms and values of the project.
- Determine based on the problem context the degree of participation.
- Determine based on the problem context the intensity of participation.
- Determine based on the degree of participation, intensity of participation, and the need for participation of the stakeholders the participatory methods.
- Record choices made about the participatory process beforehand, monitor during the process, and evaluate the process afterwards.

Under the *new Environmental and Planning Act*, Sweco will not have to make changes to their citizen participatory process if they follow the recommended basis of the participatory process strategy from this research. Sweco, then, exactly applies the participatory process as literature recommends, and makes it provable why certain choices have been made.

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APPENDIX A: PROBLEM TYPE AND PARTICIPATION CONCEPTS MERGED

PROBLEM TYPE AND PARTICIPATION CONCEPTS MERGED

Problem type	**Form of policy**		**Ladder of participation Edelenbos (1998)**		**Management styles Pröpper en Steenbeek (1999)**	**Role of citizen**	**Role of management**	**Classes of participatory method***									**Intensity of participation Krywkow (2009)**
								1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	
1. Structured (Consensus-Certain)	Non interactive	0	Participant is not involved	1	Closed authoritarian style	None	Performs independent policy and provides no information										Decide-announce-defend
1. Structured (Consensus-Certain)		1	Informing	2	Open authoritarian style	Target group of research/information, does not provide input	Performs independent policy and provides information	X X X	 X X	 X	 X X	 X	 	X X 	 	 	Decide-announce-defend Horizontal participation
2. Moderately structured (Consensus-Uncertain)		2	Consult	3	Consultative style	Consulted discussion partner	Determines policy and provides opportunity for comments, but does not have to link any consequences	 	 X 	X X X X X	X X X X X X	X X X X X X	 	 	X X X X X X	X X X X X X	Horizontal participation Symbolic participation
3. Moderately structured (Disagreement-Certain)	Interactive	3	Advise	4	Participative style	Advisor	Determines policy, but is open to other ideas and solutions	 	 	 	X X X	 	 	 	X X X	X X X	Focussed consultation Vertical participation
4. Unstructured (Disagreement-Uncertain)		4	Co-produce	5	Delegating style	Co-decision maker: within boundary conditions	Management decides on the policy with due observance of the pre-set preconditions	 	 	 	X X X X X	 	X X X X X	 	X X X X X	X X X X X	Vertical participation Intensive participation
4. Unstructured (Disagreement-Uncertain)				6	Collaborative style	Collaboration partner on the basis of equality.	Management works and decides on the basis of equality with the participant	 	 	 	 	 	X X	 	X X	X X	Intensive participation
n.a.		5	Co-deciding	7	Facilitating style	Initiator	Provides support and allows policy-making to participants	 	 	 	 	 	 	 	 	 	n.a.

** Classes of participatory method: 1. Public information provision, 2. Education, 3. Interviews, 4. Surveys, 5. Events, 6. Popular involvement campaigns, 7. Fora, 8. Meetings and 9. Workshops. (Edelenbos, Domingo, Klok, & van Tatenhove, 2006; Hommes, 2008; Hurlbert & Gupta, 2015; Krywkow, 2009)*