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Bottlenecks and Strategies for the Implementation of Wind-on-Dike projects

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ABSTRACT

The realisation of wind turbines at and near dikes offers opportunities for achieving Dutch sustainability goals. A few of these Wind-on-Dike projects have now been implemented or realised. AnteaGroup, a consultant on wind turbine development, notes that bottlenecks in the decision-making process of water authorities lead to many initiatives not coming off the ground. Through a case study, conflicts and causes have been identified in the decision-making process and appropriate influence techniques have been selected from literature for the prevention and resolution of these conflicts. This study shows that almost half of the conflicts relate to the failure to guard stakeholder's interests. The most successful technique for preventing these conflicts, is to involve and motivate relevant stakeholders in the development process of wind parks. During forthcoming projects, AnteaGroup can apply the recommendations of this study. The reduction of the number of conflicts will probably increase the chance of realising Wind-on-Dike projects and encourages entrepreneurs to invest more in this type of projects, in which AnteaGroup can offer its expertise.

1. Introduction

In 2007, European heads of governments reached an agreement on the reduction of the greenhouse emission CO_2 by 20% in the year 2020 against 1990 (Klimaat voor Ruimte, 2016). The European minimum requirement for the Netherlands is that, in 2020, 14 percent of energy use should be generated by renewable energy sources (Zeeuw, 2016). To achieve the Dutch renewable energy target by 2020, the planned capacity of Wind-on-Land projects should rise from about 2,000 MW to 6,000 MW (Rijksdienst voor Ondernemend Nederland, 2016). By the end of 2015, the capacity was only 3,400 MW. To reach the minimum requirement, it is necessary to realise another 2,600 MW of generated power in the forthcoming five years.

The application of wind turbines at and near dikes offers opportunities to reach the objective. These so-called Wind-on-Dike projects can contribute to this objective by favourable weather conditions, relatively low urbanisation, and limited nuisance on and near dikes. In addition, these projects offer advantages regarding financial land compensations and the sustainability objectives of the respective owners, i.e., the water authorities (Straver & Zuidervaart, 2017).

At this moment, a few Wind-on-Dike projects have been implemented and executed, such as Project Krammer, Wind Park Bouwdokken, Wind Park Noordoostpolder, and Wind Park Nieuwe-Waterweg (Hingst, 2016). However, there are dozens of initiatives that are not realised or that have experienced long delays before realisation, such as the Oostpolderdijk, Houtribdijk, Afsluitdijk, and Haringvliet.

AnteaGroup, a consultant in the area of wind park development, not only works for governments and project developers, but also for companies which would like to have a wind turbine on their land. Because Wind-on-Dike project initiatives do not come off the ground or are delayed and are, thereafter, still not implemented, the risk to invest in such a project is often too high for a developer. As a result, AnteaGroup loses potential work.

AnteaGroup faces conflicts during the decision-making process at water authorities for the realisation of Wind-on-Dike projects. The causes of these conflicts, however, are unclear. The goal *of* this study is to realise more Wind-on-Dike projects and, thus, create more prospective work for AnteaGroup. The goal *in* this study is to identify the bottlenecks which prevent the water authorities to realise Wind-on-Dike projects and to advice AnteaGroup on how these factors can be influenced.

To get a structured response, this study began with defining the formal process and decision-making moments of Wind-on-Dike projects. Next, the conflicts during current projects were identified as well as the applied influencing techniques. Finally, the influencing techniques for conflicts which promote the success rate of decision-making moments, have been established. The study, thus, provides insight in the decision-making process of water authorities and bottlenecks in that process. This is of great importance for the realisation of Wind-on-Dike projects by which the Netherlands' sustainability objective can be achieved and work is being created for AnteaGroup and the wind turbine industry.

This article is structured as follows. In the next section, the theoretical framework is described in detail. The third section describes the research method including the research model of the case studies. The fourth section describes the results, followed by a conclusion. The sixth part includes a discussion of the results and the recommendations.

2. Theoretical Framework

The description of the development process of Wind-on-Dike projects starts with defining the formal *procedures* of these projects, clarifying the decision-making process of water authorities. This process depends on the *decision-making factors*, which are described next. Finally, the influencing techniques, by which the decision-making factors could be manageable, are explained in this section. These descriptions

are fundamental insights for the four case studies. The search process, presented in Appendix A, describes the theoretical framework's origin.

2.1. Procedures

The first characteristic in the development process is the procedures of such complex projects. The cooperation between the wind energy sector and the water authorities can yield social and economic advantages. Projects without a water-defence function have other procedures than the realisation of objects with a water-defence function. The Dutch water system is managed by the water authorities, except for the main water system, which is managed by Rijkswaterstaat (Dijk, 2008).

Consultation, consensus, and compromise are the key words in the Dutch decision-making culture. This culture can be traced back to the fact that governmental organisations avoid unambiguous 'yes' or 'no' decisions in policy documents. In the past, it was forbidden to install non-water-defence objects in the core zone of the dikes. By implementing a 'no, unless' policy, Rijkswaterstaat indicates that it has the willingness to challenge the boundaries of its initially strict policy (Ministerie van Infrastructuur en Milieu, 2014). Despite the policy adjustment, there are still many conflicts that lead to delay or even the suspension of initiatives.

The realisation process of wind turbines at and near dikes is comparable to the formal procedures of other complex projects, of which the formal process is illustrated in Appendix B. As shown in Table 1, a project starts with an initiative phase in which the idea is further studied and developed, and in which the basis is provided for cooperation between project partners (Baars, 2012). The project's next phase is the exploration phase in which the preferred alternative is chosen. The phase consists of a starting phase, an analytical phase, an assessment phase, and a decision-making phase (Ministerie van Infrastructuur en Milieu, 2010). A further elaboration of the preferred alternative takes place in the plan development phase. The goal of this phase is to come to a legal irrevocably project decision. Finally, the realisation phase is started, consisting of the work preparation, permits, execution, and project delivery.

After each project phase, there is a moment in which crucial decisions are taken (Baars, 2012). During these so-called 'go or no-go moments' it is decided whether the project is continued certainly or is (temporarily) halted, depending on the parties involved. Appendix C shows each party's role during this process (RvO, 2016b). This study considers a delay or a (temporarily) halt of a project as the negative consequence of a conflict in the decision-making process.

Table 1, Procedure

Phase	Feature
Initiative phase	Acknowledge future developments
	Results in Start decision
Exploration phase	Spatial research for alternatives
	Results in Preferred decision
Plan development phase	Develop into a plan
	Halfway Project decision
	Results in Implementation decision
Realisation phase	Realise the plan
	Results in Project delivery decision

2.2. Decision-making factors

Bottlenecks are the causes of conflicts in the decision-making process of complex works such as Wind-on-Dike projects. Conflicts in the decision-making process during the implementation of renewable energy sources can be divided into six categories (Painuly, 2001):

- Market failure;
- Market disruption;
- Economic and financial;
- Procedural;
- Technical;
- Social, cultural, behavioural.

Possible causes of market failure, market disruption, and financial conflicts fall outside the scope of this research as AnteaGroup cannot influence these. Wind-on-Dike projects are technically feasible if the financial resources are available. Causes of technical conflicts are therefore not further explained. This research focusses on the causes related to the 'Procedural' and 'Social, cultural, and behavioural' categories. Though the causes are unknown to AnteaGroup, these are of great importance because, by taking another approach, it may be possible to achieve more in less time.

Procedural

Process-related decisions can be divided into four elements: openness, safety, progress, and contents (Bruijn, Heuvelhof, & Veld, 1998). The conditions for a successful project are shown in Table 2. Based on these conditions, the causes of a process-related conflict in the decision-making process of Wind-on-Dike projects can be determined. This section describes each element, followed by principles to which each element should apply to avoid bottlenecks related to procedural decisions.

Table 2, Procedural conditions

Element	Conditions
Creating openness	Include relevant parties
	Avoid substantive decisions
	Open and transparent process
Creating safety	Offer space for parties
	Protection of parties
	Presence of exit rules
	Presence of soft connections
Offering progress	Incentives for cooperative behaviour
	Process has powerful representation
	Active involvement of environment
	Investment in external authority and appearance
	Utilize the process' finitude
	Put down old conflicts
Monitoring contents	Use insights in a facilitating way
	Variety of opinions for selection

Openness: A possible bottleneck in the process is that the decision-making is not open. A condition of openness is that (1) all relevant parties are involved in decision-making, as these parties have the power to block the decision-making, which can then be viewed as 'wasted effort'. (2) Prior to the start of the process, as less substantive decisions as possible should be

made on, for instance, the exact location and the height of the turbines. If these decisions have already been taken, parties are not prepared to cooperate in the process. (3) In line with this, it is of great importance that the draft of the decision-making process is transparent. Transparency means that parties can verify whether the procedure is sincere and whether it offers them sufficient opportunities.

Safety: When a party feels not sufficiently protected, a bottleneck can arise (Bruijn, Heuvelhof, & Veld, 1998). (4) An important aspect is that every party's future should offer space, meaning that the parties joining a process, should be given the opportunity to influence future decision-making such as the determination of the turbine's locations but do not have to commit to several other decisions. (5) Regarding their central interests, parties should be protected so they can be sure they are not forced to certain behaviour beyond their own will. This can be achieved by, for example, an agreement to block certain decisions by a minority. (6) The process should have exit rules so, over time, parties can decide whether to continue their participation in the process. Exit rules lower the threshold for cooperation so parties are more willing to participate in the process. (7) In addition, the process should consist of a gentle connection between the decisions during the process and the process' outcomes and the subsequent activities. When parties know before the project start that there is a hard connection, there may be a fierce discussion on the action plan because this is the only moment to influence the plan. A gentle link implies that there is always some space in the future.

Progress: Another bottleneck can occur when the decision-making process has not enough progress and velocity. (8) The process should hereto generate profit opportunities and incentives for cooperative behaviour. To gain civilians' support, possibly affected residents in the turbine's area, should be compensated. (9) The process should require weighty personnel. For example, the process' progress is guarded in case the project developer assigns a person who can take decisions by him/herself, enabling to make arrangements on short notice. (10) The process actively uses parties that do not participate in the process, but which have some interest in the process or its outcome. The Ministry of Defence, for instance, is a party that usually does not participate in the process of Wind-on-Dike projects. The turbines' locations and heights, however, are of great importance to the Ministry as these may interrupt the radar. The active use of certain parties is, therefore, of great importance. (11) The process management should invest in external authority and appearance, preventing the process from becoming an object of criticism. Wind-on-Dike projects have a long lead time and are, consequently, vulnerable to criticism of participating parties. The process should, therefore, have a confident appearance. (12) The process manager utilizes the process' finitude. A future meeting between parties can be used to build in additional incentives for cooperative behaviour in the current process. (13) Next to that, conflicts arisen in the past, should be put away as deep as possible to avoid that the parties' representatives are confronted with too many conflicts. Conflicts that have occurred in the past between the government and another party may not stagnate during the Wind-on-Dike process.

Contents: Finally, barriers regarding the process can occur if the decision-making process does not have sufficient contents (Bruijn, Heuvelhof, & Veld, 1998). (14) Substantive insights should, therefore, be used in a facilitating way. In a Wind-on-Dike project, independent studies should be used. (15) Next to that, the process should have a course of a substantive variety to selection, starting with a variety of views, followed by a selection. The selection of a preferred option for the wind turbines which occurs too early or on basis of a limited variability, will not be authoritative.

Social, cultural, behavioural

Ngah et al. (2012) have researched the social, cultural, and behavioural factors in the decision-making process. The authors have divided this category into the following elements: interests, policy, impact, and knowledge. These elements and their corresponding conditions are displayed in Table 3 and subsequently clarified.

Table 3, Social, cultural, and behavioural factors

Element	Conditions
Guarding interests	Guarding interests of parties
	Guarding interests of governmental institutions
	Guarding personal interests
	Tax payer's expectations
Applying policy	In line with local government's policy
	In line with central government's policy
	Support strategic planning
Limiting impact	Conservation of environment
	Limit impact on environment
	Limit the socio-economic impact
	Limit the psychical consequences
Applying knowledge	Manageability of information flows
	Taking new knowledge into account

Interest: Bottlenecks regarding social, cultural and behavioural factors can occur when the plan does not guard all interests. This concerns the advocacy of (1) the interests of parties, (2) the interest of the governmental institution involved, (3) the personal interest, and (4) the tax payer's expectations. During the process of Wind-on-Dike projects, the advocacy of these interests should be considered.

Policy: If the plan does not comply with law and regulations, chances are that bottlenecks occur. (5) The plan should therefore be consistent with the policy of local governments and (6) central government. (7) Next to that, the plan should support the government's strategic planning. In addition to the criterion that the Wind-on-Dike project needs to be in line with policy, the strategic planning of the municipality or province concerned, is also relevant. If sustainability has a high priority, the success rate will be higher.

Impact: The risk of bottlenecks will increase if the plan has a negative impact on the environment. (8) Historical aspects in the area should not be negatively impacted by, in this case, the turbines. (9). This also holds for the impact on the environment. (10) Next to that, the socio-economic impact needs to be considered and (11) the psychical consequences, such as cast shadow and noise pollution, should be limited.

Knowledge: Finally, bottlenecks can occur if the plan does not consider current and new information. (12) The information flow should be manageable and (13) new knowledge and ideas need to be considered. When new studies, for instance, show

that another way of generating sustainable energy is better for everyone, the realisation of the turbines can be threatened.

In sum, the conditions that a successful decision-making process should meet, have been described per element. Failure to meet the condition, is a potential source of a problem. Based on this theory, the cause of a conflict can be determined in the studied cases.

2.3. Influence techniques

Conflicts that occur during decision-making process should be solved before a project can be realised. Conflicts related to the interests of involved stakeholders can be solved by using a certain approach in which influencing instruments and mediation types are applied.

Influencing 'forms'

French (2011) has drafted a social exchange matrix including four 'forms' by which a governmental institution or developer can influence another party's behaviour (Appendix D). According to French' social exchange matrix, a bottleneck can firstly be tackled consciously or unconsciously and, secondly, rewarded or enforces (Table 4). A technique that is characterized by active rewarding, is called 'hug' (to hug), for example, the compensation of planning damage. The second technique is 'to smack' in which passive punishment is imposed and the decision-maker is not open to any participation or objection. Passive reinforcement is the characteristic of the 'shove' technique (to punch) in which the plan is adapted to prevent conflicts. The 'nudge' technique (to push) is characterized by passively rewarding those involved (Thaler & Sunstein, 2008). In this method, the behavior of the ones involved are, for instance, managed by participation (Moseley & Stoker, 2013).

Table 4, Influencing 'forms'

'Form'	Characteristic
Hug	Influence consciously
	Reward
	Compensation of planning damages
Smack	Influence consciously
	Enforcement
	No objection possible
Shove	Influence unconsciously
	Enforcement
	Adjustment of the plan
Nudge	Influence unconsciously
	Reward
	Participation

Mediation types

Next to the four 'forms' of influencing, nudge, hug, smack, and shove, there are five basic types for mediation in response to projects that cause change; Control, Inform, Design, Educate, and Support (Table 5). This way of mediation stands apart from the influencing technique. A combination of influencing and mediating, however, is the ground for conflict avoidance. During the mediation type Control, conflicts are monitored, maintained, and stimulated. Mediation according to Inform implies communicating, signalling, and creating awareness during conflicts (French & Blair-Stevens, 2010). For Design, the plan or policy is changed during the conflict to resolve it. Resolving conflicts by involving, motivating and learning about the ones involved during developments is the characteristic of the mediation type Educate. Finally, the mediation type Support is characterized by assisting, advising and cherishing the ones involved at various services.

Table 5, Mediation types

Type	Characteristic
Control	Monitoring
	Maintenance
	Incentives
Inform	Communication
	Signalling
	Creating awareness
Design	Plan adjustment
	Policy adjustment
Educate	Involvement
	Motivation
	Learning
Support	Assistance
	Advice
	Cherishment

In sum, influencing techniques have been drawn up for conflicts involving interests. The foregoing section described the ways in which stakeholders are affected during a conflict and how these can be mediated.

3. Method

Next to studying fundamental concepts, theories, and models of the decision-making process, the research was conducted by a multiple case study. The goal was to determine the most common causes of bottlenecks in Wind-on-Dike projects' decision-making processes and what influence techniques governments apply to solve these bottlenecks.

For the most common causes in the decision-making process, a recommended approach has been drawn-up for AnteaGroup by which the success rate of the decision-making process will be increased.

3.1. Data analysis

The research data have been analysed by four case studies. As illustrated in the research model in Appendix E, case 1 served as a pilot case, providing the researcher the freedom to adjust the study of successive cases (Eisenhardt, 1989).

The data protocol in Appendix F shows how the data of the various cases have been collected. Per project, a description has been drafted, based on published documents, containing the cause, the process, the procedures, and the project status. Next, interviews with involved project leaders, area coordinators, governmental institutions, and residents complemented the cases on the conflicts which arose during the process (Appendix G). This supplement contains the identification and causes of decision-making factors and the applied influencing techniques.

To secure the *construct validity* during this study, the theoretical concepts regarding influencing techniques have

been defined, figured out, and specifically described to avoid any confusion by the respondents (Bordens & Abbott, 2002). Next to the in-depth questions, a fixed schedule has been used during the interviews, which, in addition, have been held under the same circumstances. The study's *internal validity* is guaranteed by precluding possible causes of the dependent variable (Bryman & Bell, 2007). This has resulted in a conclusion based on the comparison theory by which the most common causes can be assessed (Verschuren & Doorewaard, 2007).

Conflicts have been identified per project. Next, the pragmatic reality has been compared to the theoretical ideals and the causes, related to the 'procedural' and 'social, cultural, and behavioural' factors, have been analysed (Hak & Dul, 2009). Subsequently, the applied techniques for the identified conflicts have been analysed to make a distinction between successful and unsuccessful solutions from which can be concluded which solutions can avoid future conflicts.

This study's *external validity* has been secured by using a suitable selection of Wind-on-Dike projects which have been randomly selected (Bryman & Bell, 2007). To control the study's *reliability*, all interviews, except for the pilot case, have been held according to the same procedure and interview questionnaire. Where possible, the interviews have been recorded and subsequently transcribed, whereby it is not required to work from the researcher's memory. In addition, interesting statements are kept, which can give a deeper meaning to the study's conclusions. To increase the reliability, a feedback moment with the interviewees has been created in which the researcher's views were checked.

3.2. Projects

In this study, four Dutch Wind-on-Dike projects have been analysed. The first project is the pilot case of a successful Wind-on-Dike project in which the bottlenecks have been resolved by a particular approach. The pilot case ensures the completeness of the designed research framework. The cases have been selected based on *suitability*, which means that the turbines should be situated in the dike's core zone or protection zone and any form of decision-making is known. To identify the most common conflicts, there is a *variety* between the cases with a successful process, a process in the preparatory phase (or temporarily halted), and a process which has not come into being yet (Appendix H).

A project with a successful decision-making process is realised, in progress or, at the time of the study, went through the preparatory phase in which both the zoning plan and provincial integration plan have been changed to meet the demands for wind turbines on the dike. A project in the preparatory phase has reached the initiative phase at a minimum, but has not come to realisation (yet). A process which has not come into being is a project in which no initiative is taken because the investment for research in comparison to the chance of realisation is considered too high.

4. Results

Table 6 presents the findings of the case studies. Details and more in-depth information including foundation on the projects can be found in Appendix I. Results are summarized below.

4.1. Case 1: Oostpolderdijk

In 2010, when it appeared that the primary flood defence between the Eemshaven and Delfzijl needed to be strengthened, RWE took the initiative to realise a wind park with a maximum of three wind turbines on the flood defence. The dike's administrator, water authority Noorderzijlvest, has a positive attitude towards this 'coupling chance' of placing wind turbines on this location, providing that it can be proven that its security is not compromised.

The water authorities' General Council, however, was not informed about the development and raised much objection against the turbines. Neighbouring plot owners and the local Labour party group opposed the turbines because the dike's security could be jeopardized. The water authority decided to withdraw the 'connection possibility', as the advantages were negligible compared to the consequences of delays which may

Table 6, Case studies findings

Procedure			*Decision-making factor*	*Influence techniques*		
Project	**Conflicts**	**Phase**	**Causes**	**Influencing form**	**Mediation type**	**Solved**
Oostpolderdijk	Resistance General Board	Initiative phase	Not involving relevant parties	-	-	Yes
	Resistance General Board	Initiative phase	Substantive decision are taken	-	-	Yes
	Resistance General Board	Initiative phase	Interest of party not guarded	Nudge	Control	Yes
	Resistance Landowners	Exploration phase	Interest of party not guarded	Smack	Inform	Yes
	Resistance political party 'PvdA'	Exploration phase	Interest of party not guarded	Smack	Inform	Yes
	Dike improvement must be performed fast	Exploration phase	Plan does not support strategic planning	-	-	No
Windfarm Kreekraksluis	Resistance Residents (1/2)	Exploration phase	Interest of party not guarded	Smack	Inform	No
	Resistance Residents (2/2)	Exploration phase	Interest of party not guarded	Hug	Control	Yes
	Resistance Individuals	Exploration phase	Personal interest not guarded	Hug	Support	Yes
	Exceeding noice standards	Exploration phase	Physical consequences for the environment	-	-	Yes
	Radar disturbance	Exploration phase	Impact on the environment	-	-	Yes
	Possible expansion of sealock	Plandevelopment phase	Plan does not support strategic planning	-	-	Yes
	Aberrant land-use plan	Plandevelopment phase	Contrary to policy of local government	-	-	Yes
	Limited space during execution	Plandevelopment phase	Impact on the environment	-	-	Yes
Windfarm Spuisluis	Resistance Residents	Initiative phase	Interest of party not guarded	Smack	Inform	No
	Resistance Houseboat residents (1/2)	Exploration phase	Interest of party not guarded	Smack	Inform	No
	Resistance Houseboat residents (2/2)	Exploration phase	Interest of party not guarded	Hug	Control	Yes
	Resistance Province	Exploration phase	Interest of party not guarded	Shove	Design	Yes
	Exceeding noice- and microscopic dust standards	Plandevelopment phase	Physical consequences for the environment	-	-	Yes
	Radar disturbance	Plandevelopment phase	Impact on the environment	-	-	Yes
	Obstruct realization of sealock	Plandevelopment phase	Technical causes	-	-	Yes
Afsluitdijk	Dike improvement must be performed fast	Exploration phase	Plan does not support strategic planning	-	-	No
	Resistance of environmental organisations (1/2)	Exploration phase	Interest of party not guarded	Smack	Inform	No
	Resistance of environmental organisations (2/2)	Exploration phase	Interest of party not guarded	Nudge	Educate	Yes
	Limited opportunities for Wind-on-Dike	Exploration phase	Technical causes	-	-	-
	High costs of measures for turbines on dike	Exploration phase	Financial causes	-	-	-

be caused by the wind park's realisation. In the Provincial Integration Plan, three locations have now been cleared for the wind turbines' realisation. After dike improvement, it is possible to resume the development of the wind park.

4.2. Case 2: Wind park Kreekraksluis

In 2005, a four-market parties syndicate, started the re-development and the expansion of the current wind park on and near the Kreekraksluizen. The location was already used by wind turbines and large-scale infrastructure, such as highway, waterway, and high-voltage lines, limiting the scenic effects of the turbines on the environment. In this scale-up project, 26 existing turbines are replaced by 31 larger turbines. An incentive for cooperative behaviour from the municipality of Reimerswaal, is that this location is assigned to wind energy generation.

Despite the existing wind turbines, local residents objected the scale-up project. In the end, the conflict was solved by using a mediator who brought the municipality, the initiators, and the residents together. During the process, the initiators were confronted with past conflicts between the municipality and individuals. The municipality has adjusted the relationship and the involved persons still agreed to the realisation. Some turbines, however, still do not work at a maximum to prevent the exceeding of noise standards. At the expenses of the initiators, the military radar software of the Ministry of Defence is renewed to prevent faults potentially caused by the turbines. The wind park has been designed is such a way that the locks can be expanded unobstructed in the future. By an environmental license, there is a deviant from the zoning plan as the zoning plan 'only' allows for 29 turbines. By the permanent presence of a supervisory technician, unsafe situations due to the limited space, are avoided. The wind park has been officially put into service in September 2013.

4.3. Case 3: Wind park Spuisluis

The ambition of the municipality of Velsen to be energy neutral, resulted, since 2012, in a cooperation, of Wind Park IJmond and Eneco to develop a wind park at the north bank of the Noorzeekanaal at the Spuisluis. The province has assigned this location as a restructuring area. This province's policy on new wind parks is that a minimum of 6 turbines need to be placed in a line set-up.

The local residents and the initiators did not agree on the plans, because, in the residents' view, the location was not suitable for wind turbines. The project also lead to much objection from houseboat owners without a mooring permit who were settled in the area and needed to move due to the wind park. In concordance with the province, comparable moorings with an undisputed legal status have been found. The plans to install eight turbines has been adjusted to six because the province raised an objection for reasons unknown. To prevent more conflicts between the initiators and the province and to meet changes in noise norms and fine particles norms, plan adjustment was chosen. Moreover, the turbines' location has been changed to prevent radar disruptions of military equipment.

At the time of this study, the project is still in its initiative phase. To prevent the hindrance of the sea lock under construction, the wind park may not be realised earlier than the completion of the sea lock.

4.4. Case 4: Afsluitdijk

After the determination in 2006 that the Afsluitdijk no longer met the demands for water safety, the dike's damming function is improved. It is the state government's ambition to design the Afsluitdijk's improvement in such a way that the dike's unique spatial quality is strengthened. The ambition of regional parties, however, is focused on the improvement of its durability, the environment, and recreation on and near the dike.

Rijkswaterstaat organised so-called 'work ateliers' which resulted in a preferred option without wind turbines. Water safety and rapid recovery of the safety level was deemed more important than the realisation of a wind park. The commission which deals with the future, views a wind park as promising, upon which Rijkswaterstaat resumed the development of the wind park. Because of the Afsluitdijk's high cultural, historical and ecological value, nature conservation organisations opposed the realisation of the wind park. Rijkswaterstaat then changed the approach of the wind park's development from informing only to involving interested parties. In the exploration phase, it appears that the dike's shores are poorly accessible from both the road and the water. Next to that, a cable line is situated on a part of the Afsluitdijk for the Wind Park Fryslân in the IJsselmeer. There are three more possibilities for the realisation of a wind park in line set-up on the Afsluitdijk. The costs of the measures to be taken, will, however, be very high compared to other Wind-on-Dike projects. It is a matter of time before a developer wants to realise the wind park after the Afsluitdijk's improvement.

4.5. Data Analysis

The four case studies resulted in the identification of 26 conflicts which were raised in the initiative phase, exploration phase, and the plan development phase (table 6). First, the identified unsolved conflicts are selected followed by the solved conflicts without the use of influencing techniques. After that, solved conflicts regarding guarding interests in which influencing techniques are used. Finally, identified conflicts are selected which are outside the scope of this research (figure 1).

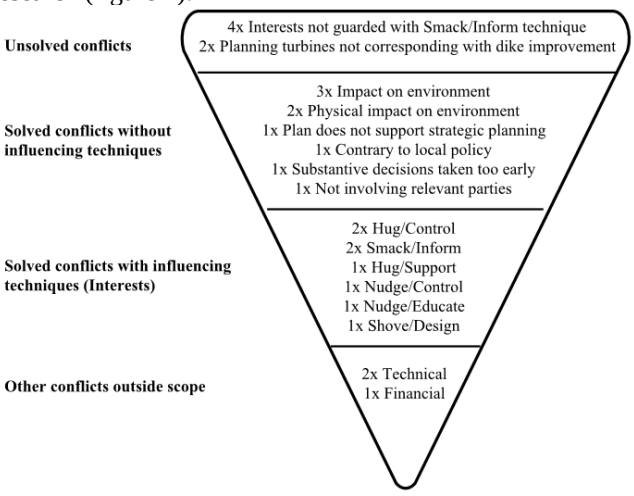

Figure 1, Data Analysis

Twelve conflicts are characterized by the objection of the people involved and are caused by the interests of the parties which are not guarded. Influencing techniques are applied to represent these interests yet. As shown in table 6, the Smack/Inform technique is used for six times. Involved parties are just informed about the developments of the wind park without the possibility to participate. In four of these cases the technique was unsuccessful and therefore the conflict was unsolved. Two analysed conflicts are related to the simultaneously development of the wind park and dike improvement. Both conflicts were unsolved because the dike improvement has to be executed short-term and the development of the wind park will result in delays.

Two conflicts are identified regarding damage on the environmental; the chance of military radar disruptions which are caused by the turbines. In consultation with the Ministry of Defence, these conflicts have been resolved by changing the turbines' locations and by updating the radar software. Physical consequences on the environment due to the turbines are caused by the exceeding of noise and fine particles norms. These conflicts have been successfully dealt with by adjusting the plan as such. During the four cases, there was once an aberrant land-use plan. Through the cooperation of the municipality concerned, this land-use plan has been adapted and the conflict resolved.

Subsequently, solved conflicts are selected in which influencing techniques are applied. In these conflicts, the interests of parties are not guarded. Six conflicts have been determined in which stakeholders were only informed on the wind park's development, without a possibility to participate. This influencing technique was successful in two conflicts where studies showed that the objections were unfounded. In four other conflicts, the techniques appeared to be unsuccessful, which resulted in more severe discussions between the stakeholders and initiators. In these cases, the applied techniques were changed. The reimbursement of residents in the form of compensations and support, appeared to be a successful technique in case where groups of residents were involved. The objection of nature conservation organisations against the wind park has been turned into support when the organisation was persuaded on the positive effects and the need for wind energy. Next to that, the organisations have been explicitly involved in the project's development and are motivated to contribute to it. From the case studies, it appears that the objections of participants in a governmental organisation can be countered by applying the persuasion technique and by involving the participants in the wind park's development. Finally, it is proven in this study that granting financial compensations and offering support by obtaining licenses, is a successful technique in conflicts where individuals oppose the project.

5. Conclusion

In this study, the bottlenecks in the decision-making process of Wind-on-Dike projects have been identified and the used strategies have been determined, which lead to a selection of successful influencing techniques, applicable for future projects. From the four analysed cases, it appeared that each Wind-on-Dike project is unique, as a variety of conflicts have appeared. The phases in which the conflicts arise, vary from the initiative phase to the exploration phase and the plan development phase.

The opportunity for realising a wind park in combination with a dike improvement, is small. As the goal of dike improvement is a rapid recovery of the water barrier, the development of a wind park can hinder this rapid recovery in such a way that the advantages are negligible compared to the risks. During Wind-on-Dike projects, noncompliance with noise and fine particles norms and the risks of radar disruptions appear in half the conflicts. Solutions for the noncompliance with the norms are moving the turbines, or reducing the number of rotations. The risk of radar disruptions can be reduced by moving the turbines' locations or by supplying the radars with the latest software.

From the analysis of the four projects, it appeared that 43% of the conflicts consists of stakeholder's objections. The resistance is caused because the parties' interests have not been guarded. A much-used influencing technique which is applied to solve these interest-related conflicts, is to inform the stakeholders without actively involving them in future planning. This technique appears to worsen the stakeholders' objection against the wind park.

Techniques which show to be successful in these types of conflicts, address the involvement of stakeholders during the planning phase, as this motivates them to participate in the wind park's development. If it is impossible to actively involve stakeholders in the planning process, it is an option to compensate the objectors by changing the design. An alternative technique is to grant financial compensation to objecting stakeholders. The latter technique is expensive but effective as it makes it possible to counter the objections of stakeholders, who are, in principle, against the wind park.

6. Limitation and Discussion

Due to the limited scope of the analysed projects, no solid conclusion can be drawn regarding all possible conflicts which may appear during Wind-on-Dike projects. Notwithstanding, it is remarkable that almost half of all conflicts have been caused by not guarding the stakeholders' interests. Influencing techniques are applicable to resolve these conflicts. During the cases, not all types of influence forms and mediation types have been addressed. Therefore, recommendations are solely based on the observed forms and types.

During the investigation it has been found that, over time, certain interests have been guarded, thus eliminating the bottleneck. This makes it possible to progress the implementation process of the Wind-on-Dike project. The relationship between stakeholders and government agency has not investigated. Discussions can be fierce during the process and despite the fact that a conflict has been resolved, the image of a governmental organization can be affected.

7. Recommendations

Based on this research, AnteaGroup is advised not to invest in the development of projects in which wind-on-dike turbines should be developed at the same time as the dike improvement. The success rate of such projects is small. The risk of conflicts with regard to the non-guarding of interests can be reduced by involving all relevant parties from the start of the implementation process. In order to gain support for wind-on-

dike projects, project initiators should make use of explicit involvement in the form of participation and/or plan adjustments. In case the development of the project is in an advanced stage and adjustments are costly, conflicts can be solved through plan damage compensation. AnteaGroup is advised not to apply the strategy to inform those involved only without the possibility of participation because this has little chance of success.

It is recommended for academics to investigate the influence techniques that motivate and involve relevant parties. By managing the interests in advance, conflicts can be avoided during the process. The step for initiators to invest in Wind-on-Dike projects is therefore smaller and more projects will be developed where advisory agencies like AnteaGroup can participate in.

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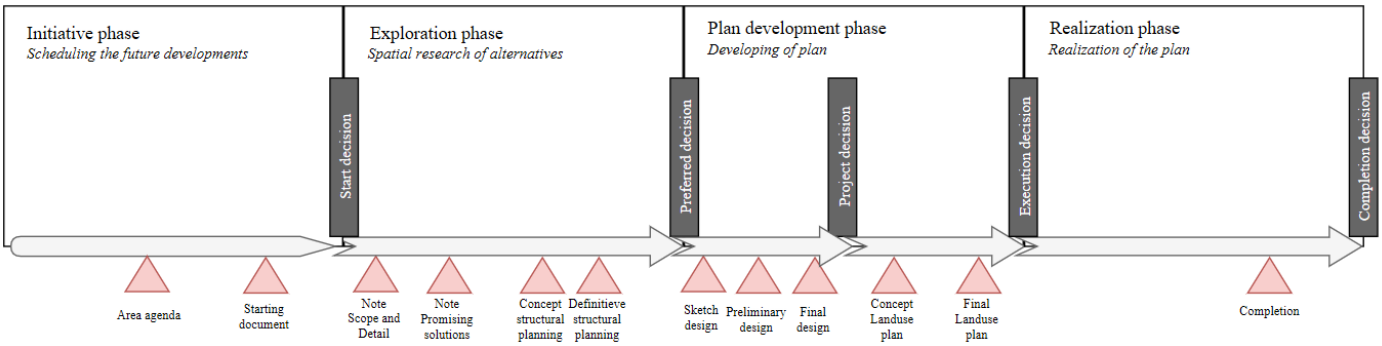
Appendix A – Search Process

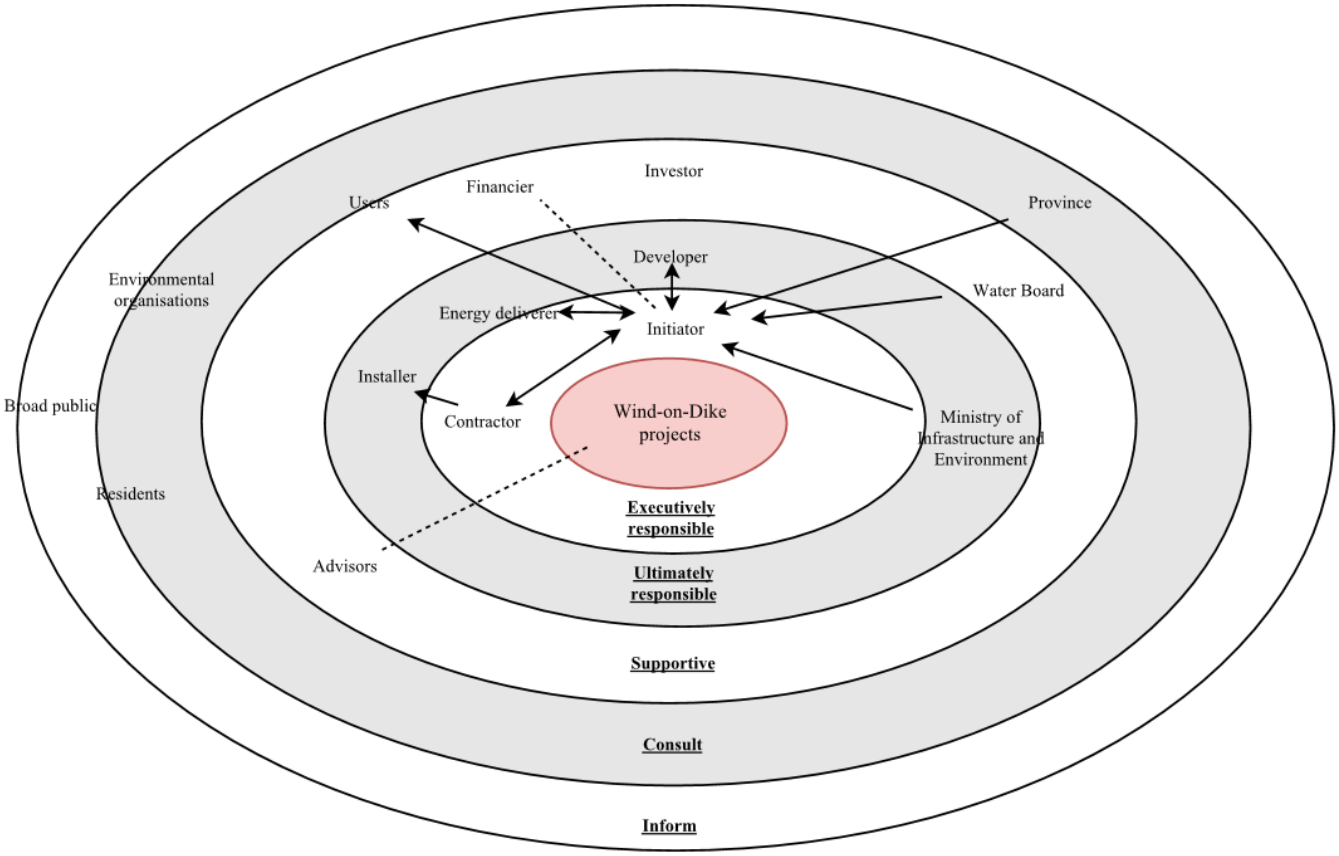
Search term	Source	Search field	Sort by:	Hits	Findings/Results
Barriers AND implementation AND Wind power	Scopus	Title	Relevance	2	Agterbosch, Glasbergen, & Vermeulen, 2007. Social Barriers in Wind Power implementation in The Netherlands
					Olmos, Cossent, Lobato, Gómez, 2011. Barriers to the implementation of response options aimed at mitigating the impact of wind power on electricity systems
Barriers AND implementation AND RET	Scholar	All	Relevance 1e	889	Mondal, Kamp, & Pachova, 2010. Drivers, barriers and strategies for implementation of RET
Barriers AND renewable energy	Scholar	All	Relevance 1e	3.650	Painuly, 2001. Barriers to renewable energy penetration; a framework for analysis
Implementation AND renewable resources	Scopus	Title	Relevance 3e	10	Raj, Devadas, 2014. Implementation of renewable resources for increased power demand in modern era
Process management AND barriers	Scopus	All	Relevance 3e	576	Dos Santos Machado, 2011. Management of process safety barriers
Decision making process AND government	Scopus	All	Relevance 1e	8.932	Ngah, et al., 2012. A proposed fundamental of decision making process
	Via Ngah et al.				Friend & Jessop, 1971. Local government and strategic choice-an operational research approach
Decision making AND waterboard	Google	All	Relevance 5e	68.847	Dijk, 2008. Water and Environment in Decision-Making
Windenergie AND waterkeringen	Google	All	Relevance 3e	12.285	Hingst, 2016. Quickscan windturbines op waterkeringen
Structuurvisie windenergie op land	Google	All	Relevance 1e	61.000	Ministerie van Infrastructuur en Milieu, 2014. Structuurvisie windenergie op land
Windenergie op land RvO	Google	All	Relevance 5e	83.000	Rijksdienst voor Ondernemend Nederland, 2016. Windenergie op land
Turbines op keringen	Google	All	Relevance 2e	38.473	STOWA, 2011. Windturbines op of langs waterkeringen
MIRT Ministerie van I en M AND handreiking	Google	All	Relevance	30.000	Ministerie van Infrastructuur en Milieu, 2010. Handreiking MIRT-verkenning
Stakeholderanalyse AND instrument	Google	All	Relevance 2e	75.000	RvO, 2016. Instrument: Stakeholderanalyse in een warmte-uitwisselingsproject
Process Management Bruijn Heuvelhof	Book				Bruijn, Heuvelhof, 1998. Process Management
Handboek Projectmanagement	Google	All	Relevance	39.800	Baars, 2012. Handboek voor Projectmanagement DANS
Nudging AND citizens	Scopus	Title	Cited by 1e	3	Moseley & Stoker, 2013. Nudging citizens? Prospects and pitfalls confronting a new heuristic
Nudging AND shove AND hug	Scopus	All	Relevance 1e	2	French J. , 2011. Why nudging is not enough
	Via French J. (2011)				French & Blair-Stevens, 2010. Improving lives together
Nudging AND decisions	Scopus		Relevance 2e	4.836	Thaler & Sunstein, 2008. Nudge; Improving decisions about health, wealth, and happiness
Framing AND effects	Scopus	Title	Cited by 7e	780	Druckman, 2001. On the limits of framing effects: who can frame?
					Nelson & Oxley, 1999. Issue framing effects and belief importance and opinion
Cialdini Influence	Google	All	Relevance 2e	462.000	Cialdini, 2007. Influence; The psychology of persuasion
Influence AND Citizen AND projects	Scopus	All	Relevance 1e	533	Van de Wijngaert, 2011. Influencing citizen behavior: Experiences from multichannel marketing pilot projects
Eisenhardt Research Methodology	Google	All	Relevance 1e	216.000	Eisenhardt, 1989. Building theories from case study research
Verschuren Doorewaard Onderzoek	Book				Verschuren & Doorewaard, 2007. Het ontwerpen van een onderzoek
Research Design Methods	Scholar	All	Relevance 1e	5.800.000	Yin R. , 2014. Case study research design and methods
			Relevance 2e	5.800.000	Bordens & Abbott, 2002. Research Design and Methods
Research Methodology Hartmann	Book				Hartmann, 2017. Research methodology & academic skills

Appendix B – Formal Process



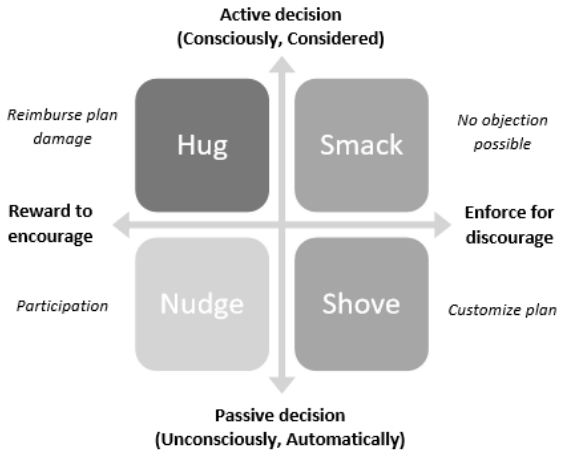
Source: MIRT-exploration (2010)

Appendix C – Involved parties



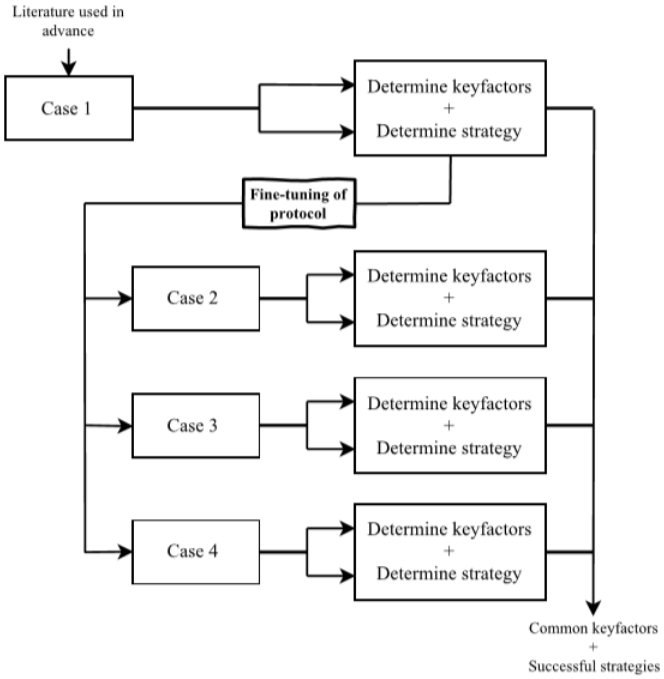
Source: RvO (2016)

Appendix D – Exchange matrix used for influencing techniques



Source: (French & Blair-Stevens, 2010)

Appendix E – Research Model



Appendix F – Data collection protocol

What	How	Where
Procedures	Available documents	Policy documents
		Environmental Impact Assessment
		Provincial Integration plan
		Investigations
		Database AnteaGroup
	Oral conversations	Involved persons in process
Decision-making factors	Available documents	Minutes of meetings with governmental organisations
	Oral conversations	Information sessions
		Project managers of developer
		Process managers of developer
		Environment manager of developer
		Project manager of governmental authority
		Area Coordinator of governmental authority
		Residents
Influence techniques	Available documents	Minutes of meetings with governmental organisations
	Oral conversations	Project manager of developer
		Process manager of developer
		Environment manager of developer
		Project manager of governmental authority
		Area Coordinator of governmental authority
Recommendations	Available literature	Theoretical framework
	Oral conversations	Successful influence techniques in practice

Appendix G – Interview Questions

Description of project	Initiators of wind turbines
	Support level
	Opponents
	Conflicts
	Used approach
Procedural	Are all relevant parties involved in the process?
	Was the process transparent and open?
	Were the interests of parties protected?
	What are consequences of the decisions?
	What are incentives for parties to collaborate?
	Was there an outer ate for the wind turbine decision?
	What conflicts have been played during the process?
Social, cultural and behavioural	What were the interests of the different parties?
	Was the plan in line with national and regional policy?
	Did the plan support the strategic planning of government?
	Are the turbines affecting the image of the environment?
	What is the impact of the turbines on the surroundings?
	What was the influence of amount of info/developments?

Appendix H – Case Selection

Wind-on-Dike initiatives				Wind-on-Dike selection
Oostpolderdijk Eemshaven West Krammer Haringvliet RWZI Vlissingen Bouwdokken Houtribdijk Afsluitdijk NoordOostPolder Hartelbrug Neeltje Jans Kreekraksluis Nieuwe Waterweg Industrieterrein Moerdijk Environment Noord-Brabant	Suitable →	Oostpolderdijk Eemshaven West Krammer Bouwdokken Afsluitdijk Windpark Spuisluis Hartelbrug Neeltje Jans Kreekraksluis Nieuwe Waterweg Industrieterrein Moerdijk Environment Noord-Brabant	Variety →	Oostpolderdijk (GP) Afsluitdijk (V) Windpark Spuisluis (V) Kreekraksluis (G)
Suitability **Variety**	Turbines are located inside the core zone or protection zone - GP, Success (pilot case) - G, Success - V, Preliminary stage - NG, Not started yet			

Appendix I – Case Descriptions

Case 1: Oostpolderdijk

Status	Legally completed
Sources	Contract manager Waterschap Noorderzijlvest
	Area Coordinator Waterschap Noorderzijlvest
	Project leader Innogy
	Owner neighbouring plot
Documents	Inpassingsplan Dijkverbetering Eemshaven-Delfzijl, 2016
	Memo Waterveiligheid, 2016
	Notitie Reikwijdte en Detailniveau Dijkverbetering, 2015
	Planning Oostpolderdijk, 2014
	Advies windturbines waterkering Oostpolderdijk, 2014
	Intentieverklaring Dijkverbetering Eemshaven-Delfzijl, 2014

The Oostpolderdijk is a 11.5-kilometre primary flood defence, located between the Eemshaven and Delfzijl. The periodical assessment (2006-2011) showed that this connection does not meet the required safety level as put down in the Water Management Law. The water authority Noorderzijlvest, responsible for the flood defence's management, intends to comply with the required security levels again.

RWE Innogy Windpower Netherlands BV (RWE) took the initiative for realising a maximum of three wind turbines on the Oostpolderdijk. This location, appointed by the province for wind energy, has good wind conditions, limited building, and (higher) granted subsidy. The water authority has a positive opinion on this 'connection opportunity' to place wind turbines on the dike, providing that its safety is not compromised. In that respect, the water authority asked the Expertise Network Water Safety (Expertise Netwerk Waterveiligheid, ENW), for research.

Conflict 1: Objections water board's General Council

During the study on wind turbines in combination with dike safety, there were rumours amongst water authority members, after which the General Council raised questions about the realisation of the turbines during membership meetings. This conflict shows that members are not prepared to cooperate in the process if they feel they have not been involved in the project and that, over their heads, substantive decisions have been made. As a result, the water authority decided to organise several meetings in which members were informed about the developments. Though the water authority insisted that no decisions were taken on the realisation of the turbines yet, the members of the General Council were not convinced.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Initiative phase	Non-involvement of relevant parties	-	-	Successful
Initiative phase	Substantive decisions taken	Smack	Inform	Not successful

The Council is divided into proponents and opponents. The opponents have much doubt about the dike security and the project's benefit and necessity. The advantage of turbines on this dike are the land compensations which can (partly) cover the maintenance costs. The water board has chosen to take a facilitating attitude and does not take sides. Because the province Groningen wants to reach its sustainability goals, it organised meetings for the water board Council members, through which the members were convinced about the turbines' benefits and necessity. In addition, it was shown that the dike safety was not negatively influenced. The province emphasized that sustainability advantages for both the province Groningen and the water authority Noorderzijlvest, whereby Council members changed their direction. As a result, a majority voted in favour of the turbines.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Initiative phase	Party's interest not guarded	Nudge	Control/Inform	Successful

Conflict 2: Objections Plot Owners

During the initiative phase, owners of adjacent plots strongly opposed the realisation of the wind turbines at the sea front as these would have negative impacts on the dike's safety. By using several studies, the province showed that the turbines would not have a negative impact on the dike's safety and the concerns were ruled as unfounded. Looking more in-depth into the rationale behind the objections, it turned out that the plot owners had an interest in financial land compensation and, for that reason, rather had the turbines installed at their own land.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Smack	Inform	Successful

Conflict 3: Objection PvdA

In the exploration phase, the local political Labour party, the PvdA, passed a motion called 'Mills from and for Groningers' (Molens van en voor Groningers'). According to the PvdA, the interests of local companies have not been guarded as they have not been involved in the realisation and operational phase of the turbines. By its facilitating role, the water board can make the flood defence available and, if the process is open and transparent, a tender procedure is not obligatory. By involving local entrepreneurs in the project on the initiative of the water board, however, a tender procedure from the water board is necessary, leading to a changing role from public facilitator to a more active role with corresponding responsibilities and legal and financial risks.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Smack	Inform	Successful

Conflict 4: Dike improvement should be implemented rapidly

During the exploration phase, it was made clear very quickly that the preparations for the realisation of the wind turbines are very complex and time-consuming. To prevent a delay in the implementation of the dike improvement, the water board decided to drop the connection opportunity for wind turbines in combination with dike improvement. The possible advantages of the connection opportunity are negligible compared to the consequences of delays in dike improvement.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Plan does not support the strategic planning	-	-	Not successful

The preparations have resulted in three cleared locations, designated to wind turbines, in the Provincial Integration Plan. Next to that, the three turbines have been included in the Environmental Impact Report ('Milieu Effectrapportage'). No appeal has been lodged. At this moment, an environmental license, a water license, and a further elaboration of the turbines' technical aspects are necessary. The only thing this project still needs, is an investor who is willing to invest.

Case 2: Wind Park Kreekraksluis

Status	Operational
Sources	Project manager Eneco
	Wind Energy Coordinator Zeeland
	Chairman Workgroup Kreekraksluis
	Spokesman residents
Documents	Projectbeschrijving Windpark Kreekraksluizen-Spuikanaal, 2012
	Herontwikkeling en uitbreiding Windturbinepark Kreekraksluizen-Spuikanaal, 2008
	Ontwerpvisie windpark Kreekraksluis-Spuikanaal, 2007
	Natuureffect plaatsing windturbines Kreekrak, 2006

In 2005, four initiators, which are DELTA (16 turbines), Eneco (7 turbines), Scheldewind (6 turbines), and Winvast (2 turbines), had the plan to renew the existing wind turbine park near the Kreekraksluizen and to lengthen it, south of the A58 motorway. The initiative concerns, in fact, four smaller wind initiatives which form one entity by the set-up and the choice for the same turbines. Because this location is already used for wind turbines and is a junction of large-scale infrastructure such as a motorway, a waterway, and high-voltage lines, the turbines' scenic impact on their surroundings is limited. During this upscaling project, 26 wind turbines with a total capacity of 13 MW have been replaced and scaled-up for more and larger wind turbines. In this way, the windy location near the Kreekraksluis is optimally used. An incentive for cooperative behaviour is given by the municipality, which has appointed the location for generating wind energy. Among themselves, the four initiators have chosen one contact point to secure a clear communication with the municipality. The wind park has been officially put into service in September 2013.

Conflict 1: Objection Residents

In the exploration phase, objections against the new wind park emerged from the surrounding communities. Through information markets and meetings, the initiators and the municipality have tried to reassure residents. However, the opponents showed no understanding, leading to heavier discussions, whereby the acceptance of the renewed wind park was reduced. Both residents and initiators were radically opposite each other.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Smack	Inform	Not successful

By enabling a mediator, an attempt was made to re-engage the stakeholders. Initiators, the municipality, and residents participated. The mediator has provided a solution: Homes are valued before and after the turbines' realisation. The municipality compensated stakeholders for caused planning damage. In addition, the initiators paid an additional fee for the spoilage of living enjoyment. Next, the residents should withdraw their objection.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Hug	Control	Successful

Conflict 2: Objection Individuals

During the exploration phase, many old views which played in the past between the municipality and the residents were recalled. An example is not grating a permit for a swimming pool, whereas now, a permit was granted for the turbines. It was agreed that the municipality compensates by giving support of such permits or by granting a financial compensation.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Personal interest not guarded	Hug	Support	Successful

Conflict 3: Exceeding noise norms

Another conflict in this project's exploration phase concerns the physical consequences for the environment by an increase of the noise exposure caused by the new wind park. Road and shipping traffic noise already put a 'noise mark' on the area. The new wind park will inevitably produce additional noise. Without measures, the common norm of 40 db(A) will be exceeded at night close to the nearest homes, and residents' objections can be expected. To prevent this, the initiators decided to adjust the plan in such a manner that some wind turbines do not work on a maximum level.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Physical consequences for the surroundings	Shove	Design	Successful

Conflict 4: Radar disruption

After the exploration phase, the nearby airport Woensdrecht played a significant part in the development process. For a long time, there was uncertainty about the permitted height of the new turbines, because the airport may be possibly inconvenienced by radar disruptions. In the current policy, a maximum axis height of 60 meters was used. By searching for answers in cooperation with the Ministry of Defence, with the help of new radar software techniques, it has been possible to increase the permitted height to maximum tip height of 135 metres above NAP. The costs of these adjustments were for the developer, but lead to a 40% additional energy.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Impact on surroundings	-	-	Successful

Conflict 5: Possible expansion lock

The Kreekraksluis falls within the management of Rijkswaterstaat, is navigated densely, and is very important for the accessibility of Belgium. Rijkswaterstaat indicated that, in the future, the lock may be possibly enlarged. The new turbines are therefore located is such a way that, in the future, they are not a hindrance for the future lock.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*

Plan development phase	Plan does not support strategic planning	Shove	Design	Successful

Conflict 6: Deviating zoning plan

In the 'Rural Area Reimerswaal' zoning plan, in which the upgrading of the existing wind turbine park Kreekraksluizen-Spuikanaal is organised, the possibility of placing over 29 high wind turbines in the wind turbine park Kreekraksluizen has not been considered. The intended set-up includes 31 high wind turbines. For this reason, the municipality has derogated from the zoning plan by means of an environmental license.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Plan development phase	In breach with local government policy	-	-	Successful

Conflict 7: Limited space during implementation

During the plan development phase, it was clear that a limited volume of space is available for the implementation of the wind park. A number of turbines will therefore need to be placed from the water. The lock, however, needs to be operational during the realisation and vessels should be able to pass, including vessels with hazardous substances. It was not possible to close the entire work terrain. To ensure safety, a technician was permanently placed at the location to supervise.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Plan development phase	Impact on environment	-	-	Successful

Case 3: Wind Park Spuisluis

Status	Preliminary stage
Source	Project developer Eneco
	Project developer Windpark IJmond
	Environment Department IJmond
	Licensing Authority Environmental Department Noordzeekanaal
	Inhabitant of Velzen
Documents	Zienswijze ontwerp-weigeringsbesluit Windpark Tata Steel, 2016
	Participatieplan windpark Spuisluis, 2016
	QRA Windpark Spuisluis, RHDHV, 2016
	Onderzoek geluid en slagschaduw windpark Spuisluis, 2016
	Algemene presentatie Windpark Spuisluis, 2015

Some years ago, the ambition of the municipality Velsen to be energy neutral resulted in approaching Wind Park IJmond to realise wind parks within municipality borders. To this purpose, the municipality engaged in a cooperation with Eneco to strengthen the realisation possibilities of wind parks in the IJmond region. The province North-Holland is the competent authority for placing wind turbines and deploys the restructuring of solitary wind turbines, outdated line set-ups, and limited capacity growth. A condition for new wind parks in the province North-Holland is that at least two wind turbines are replaced by one new wind turbine, which needs to be part of a line set-up of at least six turbines. The province has assigned the north bank of the Noordzeekanaal and Tata's industrial area as restructuring area.

During the wind park's development, the windy area of the north bank of the Noordzeekanaal, at the Spuisluis, came into the picture. At first, there would be room for a total of 8 wind turbines. The wind turbines to be built, get a shaft height between 117 and 120 meters and a rotor diameter between 114 and 117 meters. The peninsula on which the turbines are built, is owned by the State, but is managed by Rijkswaterstaat, which is also the licensing authority of the turbines on the peninsula.

Conflict 1: Objection residents

On September 28, 2015, the province North-Holland organised an 'area atelier' to clarify the plans of the wind park Spuisluis to the residents. The province found it important to inform the residents and other stakeholders at an early stage by using multiple presentations. From the reactions of the district team (*wijkplatform*) participants, it was clear that no one agreed with the realisation of wind turbines at this location. To the initiators' question what needs to be done to make the possible arrival of the wind park acceptable, did not come a clear answer. Many attendees at the district team meeting were surprised about the pace at which the province wanted to implement the plans. The initiators and the provinces have then organised several meetings in which residents were further informed. Residents indicate that they are not listened to. To this day, informing residents only during the process has not been successful.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Initiative phase	Party's interest not guarded	Smack	Inform	Not successful

Conflict 2: Objection House boat residents

In the project area, some house boats are moored for years without a permit. During the exploration phase, the initiators have informed the house boat owners on the wind park plans and emphasized that the house boats needed to be moved. Despite laws and regulations, the house boat owners indicated they were not willing to move. The initiators could not find a solution with the house boat owners.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Smack	Inform	Not successful

Subsequently, the province, as policy enforcer, has taken on the conflict with the house boat owners and looked for a cooperative solution. Equal moorings have been found with an undisputed legal status where most house boat residents want to move to. The province thus meets the owners and then maintains the agreements.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Hug	Control	Successful

Conflict 3: Objection Province

The municipality's goal of energy neutrality was processed in the zoning plan, which anticipated an expansion of the wind turbines at the Ryenderweg from 3 to 6 and located the wind turbines at the north bank of the Noordzeekanaal between the Spuisluis and the ferry. Here, there would be room for a total of 8 wind turbines (dependable on size). During the exploration phase, the province has raised an objection. Because the initiators foresaw that litigating was senseless and to avoid larger conflicts with the province, they adjusted the plans in the zoning plan. It appears that the province that it does not want the municipality to decide the wind turbines' location, but that province wants to decide. An enquiry at multiple involved authorities about this conflict, has not given any clarification.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Shove	Design	Successful

Conflict 4: Exceeding noise and fine particle norms

Multiple research has shown that the wind park meets the noise norms. Residents, however, are concerned about the noise pollution which the wind park may cause. Next to that, residents are worried about the presence of fine particles because the turbines can bring these in vortices and influence the emission of chimney. The province has thereto changed the policy from a minimal distance between the turbines and building from 500 meters to 600 meters. Initiators have therefore adjusted the design to meet the province's demands.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*

Plan development phase	Physical consequences for the environment	Shove	Design	Successful

Conflict 5: Radar disruption

During the plan development phase, it appeared that some turbines can cause military radar disruptions. To prevent these, the initiators have searched for solutions in cooperation with the Ministry of Defence. To prevent radar disruptions, the initiators chose to change wind turbines' location.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Plan development phase	Impact on the surroundings	-	-	Successful

Conflict 6: Prevention of lock's realisation

During the development of the wind park Spuisluis, Rijkswaterstaat realised a new sea lock by which the Amsterdam port region keeps its international allure. Building a lock is Rijkswaterstaat's priority so the wind park may not hinder the lock's construction. At the moment of this study, the new sea lock is under construction. It is expected that the lock is finished in 2019 and the wind park's realisation starts in the Spring of 2019.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Plan development phase	Plan does not support the strategic planning	-	-	Successful

Case 4: Afsluitdijk

Status	Preliminary stage
Sources	Advisor Water embankments Rijkswaterstaat
	Policy Advisor Renewable Energy Rijkswaterstaat
Documents	Voorlopig Masterplan Beeldkwaliteit Afsluitdijk, 2013
	Onderzoek naar mogelijkheden voor plaatsing Windturbines, 2013
	Handreiking waardering landschappelijke effecten van windenergie, 2013
	Onderzoek technische mogelijkheden windturbines Afsluitdijk, 2012
	Structuurvisie Toekomst Afsluitdijk, 2011
	Visie Afsluitdijk: Marktverkenning, 2008
	Primaire waterkeringen getoetst, 2006

Since its completion in 1932, the Afsluitdijk protects large parts of the Netherlands from floods by the sea. In 2006, it was established that the Afsluitdijk did no longer meet the demands of water safety, after which the dike's damming function was strengthened. It is the state government's ambition to form the Afsluitdijk's improvement in such a way that its unique spatial quality is improved. The aspirations of the local stakeholders, however, are focussed on the improvement of sustainability, the environments, and recreation on and near the dike.

Conflict 1: Dike improvement should be executed promptly

The decision in the initiative phase that the Afsluitdijk should be the hydraulic engineering and the sustainable icon of the 21st century, resulted in so-called work ateliers, organised by Rijkswaterstaat during the exploration phase. Water safety and promptly recovery of the dike's safety level was required and has, finally, resulted in a preferred version without wind turbines. The assessing commission considers the wind park as promising in the future.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Plan does not support the strategic planning	-	-	Not successful

Conflict 2: Objection nature conservation organisations

After the decision not to realise a combined wind park, Rijkswaterstaat, however, continued the developments of a wind park at the Afsluitdijk. The Afsluitdijk has a high cultural, historical, and ecological value, causing nature conservation organisations to show much objection in the project's exploration phase. Rijkswaterstaat organised meetings to inform interested parties, including nature conservation organisations, on the developments. Informing, however, was not successful in solving the conflict.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Smack	Inform	Not successful

Rijkswaterstaat changed its approach to guard the nature conservation organisation's interests. By involving interested parties in the developments and to develop a joint plan, Rijkswaterstaat convinced the latter of interested parties.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Party's interest not guarded	Nudge	Educate	Successful

Conflict 3: Limited possibilities

During the exploration phase, it appeared that many variants of a wind park in line set-up are not executable. In addition, on a part of the dike, a cable line is installed as part of the wind park Fryslân. For a line set-up for the turbines, there are, therefore, only three principal possibilities: on the IJsselmeer side on a new peninsula, on the IJsselmeer side in the water, and on the dike on the Waddenzee side.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Technical	-	-	Not successful

Conflict 4: High costs of measures

Rijkswaterstaat has estimated the costs of the measures to be taken before the possibility to build the turbines, as high. Now, it is up to investors to invest in the wind park on the Afsluitdijk and to realise the park after the dike's improvement.

Phase	*Cause*	*Influencing 'form'*	*Mediation type*	*Result*
Exploration phase	Financial	-	-	Not successful