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The future for wind power

- A quantitative study of public participation in wind power planning

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Abstract

Wind power is one possible strategy for Sweden to convert to a more sustainable energy production needed to reduce the level of green house gases released to the atmosphere. However, wind power implementation in Sweden has been slow compared to other countries. Lack of acceptance for wind power in local communities has been suggested as one of the obstacles for efficient implementation.

The aim of this thesis is to analyse the relationship between the four factors; participation in the planning process, information, economic participation, location of the wind turbine and the level of local acceptance for wind power. A statistic correlation analysis suggested participation and information have the strongest correlations with level of acceptance. A multivariate regression analysis where the variables were under control for each other gave a similar result. Participation seems to have the largest effect on acceptance followed by information. The more participation and information, the higher the level of acceptance. Economic participation and the location of the wind turbine showed no correlation with the level of acceptance. The results from this study may bring us a step closer to understand how to create a planning process which facilitates further wind power expansion.

Key words: Wind power, local acceptance, attitudes, sustainable development, statistic analysis

Table of Contents

1. Introduction	3
1.1 Overview of the paper	4
2. Theoretical background and previous research	5
2.1 To shape and change attitudes	5
2.2 Justice through procedures	6
2.3 Creating acceptance for wind power implementation on a local level	6
2.4 Legislative background	9
2.4.1 Land-use planning and National interests	9
2.4.2 Planning and application process	9
2.4.3 The application process under The Environmental Code	10
3. Objectives and Questions	12
3.1 Objectives	12
3.2 Questions	12
4. Method	13
4.1 Approach	13
4.2 Delimitation and selection of cases	13
4.3 Data collection	15
4.4 Operationalization of the variables	16
4.4.1 Acceptance	17
4.4.2 Participation	17
4.4.3 Information	18
4.4.3 Location and specific attributes of the site of the wind power project	19
4.4.3 Economic participation	20
5. Results	20
5.1 Analysis results	20
5.1.1 Bivariate correlation of the relationship between the independent variable and acceptance	20
5.1.2 Regression analysis	23
5.1.3 The feedback effect	26
6. Conclusions and discussion	27
6.1 Conclusions	27
6.2 Discussion	28
6. References	32

Appendix

Appendix I List of cases

Appendix II Survey

Appendix III Types and forms for information and participation further explained

Appendix IV Common Swedish landscapes described

1. Introduction

By signing the Kyoto protocol in 1997 Sweden committed itself to reduce its emissions of green house gases. A shift to more renewable energy sources is one of the actions needed. An expansion of the wind power sector is one viable means of reaching this goal. So far the implementation has been slow and The National Building and Planning Authorities¹ now estimate the required expansion of wind power to be around 300 wind turbines per year over the next ten years (Boverket January 2009:15).

The National Building and Planning Authority together with the Energy Authority² have, however, identified a number of obstacles (not in any particular order) that stand in the way of Swedish wind power expansion (Boverket January 2009:19, “Nätverket för vindbruk³” 19/10 2009):

- Complicated application process for licensing.
- Application process takes a long time.
- Increased costs as a result of increased demand for wind turbines.
- Difficult to gain acceptance from local citizens.
- Difficult to find suitable sites for wind turbines that are not in conflict with other (national) interests.
- Lack of capacity in the electricity grid.

In a survey carried out by the Wind Power Network in 2009, approximately 7% of the wind power companies declare “difficulty to gain acceptance” as the *biggest* problem when planning a wind power project⁴ (“Nätverket för vindbruk” 19/10 2009). This is quite a remarkable figure considering the big investments and long processes also linked to wind power. Since the expansion of wind power is estimated, and encouraged, to grow over the coming years, more and more people will have wind turbines located in their local environment. Social acceptance will thereby become more and more important for future wind power expansion. Lack of local acceptance for wind power projects may complicate the process for future projects in the same area (Klintman, Waldo 2008:8).

¹ Boverket

² Energimyndigheten

³ Wind Power Network, part of the Energy Authorities

⁴ “Wind power projects” is, in this thesis used to describe one, or more, wind turbines for commercial use.

Current research, carried out through large and small case-studies, has seen an increased wind power expansion in communities that show high levels of acceptance for wind power (Klintman, Waldo 2008:16). Factors that, in several studies, have shown to be of importance for creating acceptance for a project in the local community are *participation in the planning process, information to the public, the specific attributes of the site of the wind turbine, and economic participation* (Khan 2003).

Each of these factors, or solutions to the acceptance issue, presents challenges. The numbers of sites suited for wind power are not infinite and as more wind turbines are being built, fewer spots free from other interests will be available for exploitation. Economic participation, which means that local residents have the option to become shareholders in the wind turbine, will come at a cost for the project developer. Information is an easy way to include the local community in the planning process but may create frustration if local citizens cannot give feedback on the information. Therefore, out of these factors, participation in the planning process appears to be the most viable way to create acceptance for a project and can also result in an improved outcome and enhanced acceptance for future projects. However, existing research does not fully agree that participation necessarily lead to acceptance, but few studies have systematically examined the relationship and how a participatory process should be designed to foster acceptance (Grimes 2005:165f, Khan 2003:565f).

This thesis aims to test whether a relationship exists between each of these factors and acceptance and if as, which of the factors has a stronger effect on the acceptance than the others. The answers might bring us closer to understanding how acceptance for wind power can be created. A more specified objective and the questions to be answered in this thesis are presented after the theoretical back ground.

1.1 Overview of the paper

The second chapter presents the theoretical background from which this thesis gets its structure. This chapter gives a short overview of previous research and theories that are relevant for the objectives of the thesis. It considers how attitudes towards wind power can be shaped and how the procedures that lead up to a decision may influence the level of acceptance for the decision. It also includes previous research on wind power and the level of

acceptance in the local community and a summary of the legislation regarding wind power and citizen participation in Sweden. The third chapter specifies and presents the objectives and questions that are to be answered through this study. In the following, fourth chapter, the method and the variables are presented. This chapter also describes the material on which the study builds and also the considerations made when choosing this material. The fifth chapter includes the results from the analysis from the questions presented in the second chapter. Finally, the sixth chapter includes the conclusions and discussion following this study. This chapter also discusses how the results from the study may be of interest for the community in general and contribute with new knowledge.

2. Theoretical background and previous research

2.1 To shape and change attitudes

As described in the introduction, wind power projects often encounter negative attitudes and low levels of acceptance in the local community. Thorough research on attitudes in connection with wind power projects has been conducted by Maarten Wolsink, amongst others.

In most European countries, the public hold positive attitudes towards wind power as an energy source (Holmberg, Weibull 2008:27). Despite this, project developers are confronted with low levels of acceptance and negative attitudes when trying to implement wind power on a local level. From this, many project developers and researchers have drawn the conclusion that negative attitudes towards wind power are based on egoism and narrow self-interest. This phenomenon is often referred to as NIMBY – “not in my back yard” (Wolsink 2007:1194f). Wolsink dismisses this argument and states that negative attitudes are not just based on egoistic motives (Wolsink 2000:53). However, Wolsink does not deny that self-interest does influence attitudes to some extent but points, at the same time, out other factors as more central in forming people’s attitudes.

A perception that the location of the wind turbine is inappropriate and causes a big visual impact, a belief that wind power itself conflicts with other interests or is posing an environmental hazard are all factors that may influence people’s attitudes. Perception of institutional factors such as a view that the planning and decision process has been unfair or flawed may create a negative attitude (Wolsink 2000:57, 2007:1203). However, Wolsink

points out that people's attitudes are not permanent but rather can be recreated and changed during the planning process of a wind power project. Institutional factors and the shape of the debate following a project can both shape and change the attitudes of the public (Wolsink 2000:56f).

2.2 Justice through procedures

The theoretical claim that institutional factors can affect people's attitudes and acceptance has been explored extensively in issues other than wind power. Social psychologist Tom Tyler, amongst others, points out decision procedures as a means of creating acceptance and enhancing the perceived legitimacy of decision making process as well as political institutions as a whole. A key to a functioning democratic community is that citizens accept and follow the rules and decisions made by authorities. The most effective way to accomplish this is by convincing citizens that the people in power "deserve" to rule and make decisions that will affect everyone's lives. This concept is known as legitimacy. Legitimacy facilitates the ability for an authority to gain acceptance for decisions (Tyler 2006:377-379). This, according to Tyler, is the core of democracy (Ibid 380).

Through empirical research and experiments, Tyler has found the procedures by which an authority exercises power to be of great importance for the perceived legitimacy of the authority. If the processes by which the authorities make decisions and exercise power are perceived as fair and just, the decisions will also be accepted as fair and valid (Tyler 2006:377f). Consequently, individuals are less likely to perceive an outcome of a decision as being unfair if they recognize the decision process and/or the authority as fair and legitimate. Tyler, as well as normative theories of participatory democracy see public participation in the decision process and deliberative political procedures as ways by which an authority can create legitimacy and acceptance for a decision (Khan 2003:6, Klintman & Waldo 2008:20, Tyler 2006:382f, Grimes 2005:120).

2.3 Creating acceptance for wind power implementation on a local level

As will be described in this section, acceptance of wind power projects, due to its specific characteristics, depends on numerous factors, some related to the planning process and others not. These factors will provide the structure of the analysis to come.

Extensive research on what generates low or high levels of acceptance towards wind power on a local level has and is being carried out in Sweden and other European countries by a number of researchers⁵. Within this broad research, a number of factors that influence the level of local acceptance can be distinguished.

- Participation in the planning process
- Information to the public
- Specific attributes of the site of the wind power project
- Economic participation

Participation in the planning process and *information* are the two factors mainly linked to the planning process. Despite a number of case-studies, not much of the previous research has been focused on determining how these two factors are put into practise and what effect they actually have on the level of acceptance (Khan 2003:575).

Participation in the planning process means that the local community and organisations (e.g. environmental organisations) are invited to take part in the planning process. As will be described under “legislative background” citizen consultation is compulsory and there are laws regulating citizen participation in the planning process. The extent and choice of consultation method is up to each municipality or project developer, however, and may therefore vary considerably among projects (Khan 2003:577).

Grimes (2008) lists a number of conditions that may be characteristic for a successful and (perceived) legitimate participation process when put into practice: *non-manipulation* and that *citizens have a reasonable opportunity to influence the outcome* (Grimes 2008:5). In a “manipulated process” only parts of the public (e.g. organisations positive to the project) may be chosen to participate in the consultation. The second condition, “reasonable opportunity to influence the outcome” speaks for itself. In order to live up to this condition, authorities/project developers need to be open and willing to incorporate arguments and feedback from the participants and modify the decision (Grimes 2008:5-7). Studies regarding citizen participation in wind power projects suggest that *procedural* assessments may be more important for acceptance of the decision than assessment of the proposed project itself. (Bengtsson, Corvellec 2005:19-22; Grimes 2005:107).

⁵ Bengtsson & Corvellec (2005), Ek (2005), Klintman & Waldo (2008), Jobert, Laborgne & Mimler (2007), Khan (2003)

Information is distributed from the project developer or municipality to the local citizens. As described further on, this information can take many different shapes. Grimes recognises, *sufficient knowledge* as an important condition for the local community to be able to fully understand and engage in the planning process (Grimes 2008:5f)⁶. In theory this can be achieved through information to the public. Therefore, information can to some extent be considered an important aspect of participation. Information regarding a wind power project is also considered the easiest and least expensive way to include the local community in the planning process (Boverket January 2009:132-134). Attitude studies carried out by Ek (2005:1679) suggest that general information about renewable energy sources may generate a more positive attitude towards wind power. *How* the information is distributed to the local citizens also purportedly has an effect on the attitude (Boverket January 2009:134).

People's attitudes toward wind power installation may of course depend on factors other than the planning process, and these must be taken into account in order to be able to make a correct assessment of the effects of the design of the decision-making process. The location of a wind power project and the *specific attributes of the site* is perhaps the factor that is most frequently acknowledged as a problem for wind power implementation. Wind power demands big, open areas with good wind conditions. Therefore, wind power may have a large visual impact on the surrounding landscape (Khan 2003:567). Landscapes may be associated with strong feelings within the public, as a part of their everyday life and perhaps also a part of the identity of a municipality or region (Boverket January 2009:39, Boverket May 2009:45, Wolsink 2005:1188,1191).

Economic participation means the possibility for local people to become shareholders in a local wind power project (Klintman & Waldo 2008:20). Studies suggest that the possibility of being a shareholder is a very strong factor for creating positive attitudes within the local community. Shareholding allows citizens to experience the positive effects of the wind power project in the form of income and perhaps also a sense of control and ownership (Khan 2003:573f).

⁶ In Grimes essay "*sufficient knowledge*" falls under the condition "*distribution of knowledge*".

2.4 Legislative background

Swedish wind power *planning* is carried out on two different governmental levels and single projects are planned and assessed under two different laws. These laws include a formal framework for how citizen participation in the planning process should be executed. This section aims to clarify the laws regarding planning and assessment of wind power.

As will be further described in the method chapter, this study concerns cases with applications from 2006, the legislation presented here is therefore from that time period. Some of the laws regarding which authority is responsible for the application assessment (local or county authorities) have changed since then but the application process is still the same.

2.4.1. Land-use planning and National interests⁷

The first step in the wind power planning process takes place on the national level when the government points out areas of “national interest” within the country. These are areas with cultural and environmental aspects worthy of protection or areas that are suitable for different economic purposes such as agriculture and wind power. (Boverket January 2009:93f).

Planning then moves to a municipal level. All municipalities are obliged to create a Municipal Comprehensive Plan⁸ (MCP) which regulates land use within the municipality. In the MCP the municipalities must point out areas that are possible and suitable for wind power implementation (Boverket January 2009:95f). During the creation of the MCP, the local community has the opportunity to give their say and give feedback on the planning. Participating in the creation or appealing the MCP is the easiest way for the citizens to *influence or change the prospects* for wind power in the area. However, the *interest for participating* in the making of the MCP has been shown to be very low among the citizens (Klintman & Waldo 2008:42).

2.4.2 Planning and application process

The planning and building of wind turbines on land is regulated mainly by two different laws. The Planning and Building Act⁹ (PBA) plans and regulates the location of the wind turbines. The Environmental Code¹⁰ regulates management of natural resources and governs the

⁷ “Riksintressen”

⁸ “Översiktsplan”. All translations of Swedish laws are based on Jamil Khan’s translations (Khan 2003)

⁹ “Plan- och Bygglagen”

¹⁰ ”Miljöbalken”

assessment of the impact of wind turbines on the environment and on human health (Boverket January 2009:87-93).

Law and responsible authority	Type of wind power project affected	Authority responsible for appeals, first round
Building permit under the The Planning and Building Act (PBA). Municipality, Building Board	Most wind turbines, except for small non-commercial ones are affected by the PBA.	County Administration
Project permit under the Environmental Code Environmental Court (national level)	Projects of more than three wind turbines or a total effect of more than 1 MW.	Environmental High Court
Project permit under the Environmental Code County Environmental Board ¹¹ (regional level)	Groups or single wind turbines with a total effect of more than 1 MW but less than 10 MW.	Environmental Court
Project permit under the Environmental Code Local Environmental Board (municipality level)	Single turbines or groups of turbines with a total effect of more than 125 kW but less than 1 MW ¹² .	County Administration

Figure. 1. Overview of the laws regulating wind power planning and assessment

As the figure shows, most commercial wind power projects need a double assessment, both under the PBA and The Environmental Code (Persson 2006:5). Assessments under the Environmental Code will be the focus for this study and only that application process is therefore presented here.

2.4.3 The application process under The Environmental Code

The application process under The Environmental Code can be divided into three main steps:



Figure 2. The application process under The Environmental Code.

¹¹ "Miljönämnden, Länsstyrelsen"

¹² The average size wind turbine under 2006 had an effect of 1,1 MW. The average size 2008 was 1,7 MW (Statens energimyndighet 2009:18)

Stage 1. During the Initial Consultation¹³, information regarding the project (e.g. location, scale and environmental impact) is given to the responsible authorities and nearby residents. The project developer is also responsible for arranging consultation meetings with other governmental agencies (e.g. air force), municipalities, the general public and concerned organisations (e.g. environmental organisations) in order to get their opinions on the project (Boverket January 2009:112f). The Initial Consultation should, according to The Environmental Act, be executed “in time” and to a “necessary scale”. The law does not specify what “in time” and “necessary scale” means in practise (Energimyndigheten 2007:6).

Stage 2. The main objective for the Environmental Impact Assessment¹⁴ (EIA) is to determine the impact of the project on humans, animals, plants etc (6 chap. 3§ The Environmental Code). This information is used in the final decision (stage 3).

Stage 3¹⁵. The planning application is then sent to the appropriate authority body which depends on the size of the wind turbine in kWh. The Environmental Board then make their decision. Appeals can be made either by nearby residents, affected parties or non-profit organisations (e.g. environmental organisations) that have existed for more than three years and have more than 2000 members (Boverket January 2009:113f).

In sum, laws and regulations require public participation in the planning process but large local autonomy leaves a considerable room for variation in the extent and form of participation.

Existing research regarding acceptance for wind power projects builds heavily on social psychological experiments, which suggest that perceptions on procedural fairness shape acceptance and that attitudes towards wind power can be changed through information. Case study research in Sweden and Europe also suggests that the design of the planning process and the project is of importance for how it is received by the public. The factors suggested to be of importance for the level of acceptance are *participation in the planning process* and *information* together with *the specific attributes of the site of the wind* and *economic participation*. The extent of public participation, in particular, has been suggested to be an important factor for the level of acceptance. However, in the existing research there is a lack

¹³ "Samrådsprocessen"

¹⁴ "Miljökonsekvensanalys"

¹⁵ "Tillståndsprocess"

of studies that examine a larger number of cases making it hard to assess which factors are more important and whether the findings of case studies hold true on a more general level.

3. Objectives and Questions

3.1 Objectives

The main objective for this thesis is to examine which factors that may influence the level of acceptance for local wind power projects. The results may bring us a step closer to figuring out how to promote wind power in a positive way and facilitate further expansion.

Researchers suggest that low levels of local acceptance for wind power projects may pose an obstacle for implementation and expansion of the wind power sector. Through *case studies* a four factors have been identified as linked to the level of local acceptance. The first objective of this study is therefore to examine whether these factors can explain levels of local acceptance in a broader sample of cases.

The second objective for this study is to determine if participation has an effect on the level of acceptance under control for the other three factors considered and, if so, how large the effect is. Studies regarding attitudes and acceptance show that participation in the planning process may be a way to create acceptance for decision in the local community (Vindkraftsutredningen SOU1999:75, Khan 2003:575).

These analyses reveal that participation in fact does influence the levels of local acceptance. The third objective is therefore to explore how the design and extent of participation affect the level of acceptance.

3.2 Questions

- Do the suggested relationships between public participation, information, location of the wind turbine, economic participation and acceptance exist?
- How large is the effect of participation on the level of acceptance?
- Are there any factors within participation, such as opportunity to give feedback and who was invited to participate that may affect the level of acceptance?

4. Method

4.1 Approach

The study is mainly designed to *test* the different theories about the factors that have been suggested to affect the level of acceptance for wind power in local communities (Esaiasson et.al 2009:42f).

The study has a dual approach where a statistical analysis is based on the results from a web based survey. The survey was distributed to all Swedish municipalities that received planning applications for wind power projects under 2006. The survey was designed to acquire description of the planning process in each municipality from the factors identified in previous sections; *information, participation, economic participation* and the *specific attributes of the site*. Gathering information through a survey makes it possible to get standardized and graduated answers which can be analysed statistically (Esaiasson et.al 2009:262f). The option of using interviews for gathering the information was considered, but ruled out due to the timeframe of the study. The statistics programme SPSS was used for analysing the data from the survey.

As mentioned above, most previous research on wind power and local acceptance has been carried out through case studies and no emphasis has therefore been put determining the strength of the relationships between the factors. This can, however, be done through statistical analysis. A statistical analysis allows us to use a larger number of cases to rank the various factors according to their effect on the acceptance and isolate the effect of one single factor under control for other factors. This makes it possible to determine the different aspects within participation and its effect on the level of acceptance (Esaiasson et.al 2009:109-112).

4.2 Delimitations and selection of cases

When selecting the cases for a study it is important to make sure that the cases are representative for the whole population. This makes it possible to generalise the results of the study to a larger population. The best ways to select cases that can be generalised are through either total or random sample of the population (Esaiasson et.al. 2009:195f).

Wind power projects are assessed by three different authority bodies and there is currently no comprehensive national database over all the submitted wind power applications for a certain

time period.¹⁶ To identify *all* applications assessed by the different authority bodies, both municipalities, counties and the Environmental High Court would have to be contacted. Within the timeframe of this study this was not possible.

The cases used for the study were instead identified through the County Administration's records where they were assessed under The Environmental Code. A total sample of the cases assessed by the County Administration was chosen for the study. As described in section 2.4, cases assessed under the Environmental Code also need a double assessment under the PBA by the municipality. All the cases in the study have therefore been assessed on two different authority levels.

Wind power implementation is a slow process and the average time that elapse between the application and the decision is often more than a year. To ensure that the application process had finished for most of the cases, 2006 was chosen as the starting point for the study. An additional reason for focusing on cases from 2006 is that the laws regarding the wind power assessment changed in December of 2006. The limit for cases assessed by the County Administration changed from 1MW to 25MW (Persson 2006:5). This change resulted in more projects being assessed only by the municipality, and therefore harder to identify.

Since a total sample of cases assessed by the County Administration all cases too large and all cases too small (see figure 1) were excluded from the study. Statistics show that the average wind power project in 2006 had a size of 1MW, which means that it needed assessment under the Environmental Code (Statens energimyndighet 2009). The included cases will therefore provide a fair reflection of how the planning process is designed and carried out for average sized wind power projects.

The application process under the Environmental Code can be divided into three main stages (see section 2.4.3). Only cases that reached the third stage, "Planning Application", are included in this study. Some may therefore argue that the selection of cases will not provide an accurate picture of all the initiatives for wind power because cases may be "lost" between the Initial Consultation and Licence Application due to low levels of acceptance in the local community which may influence the project developers to not proceed with the application. However, research suggests that few projects are being terminated due to conflicts during the consultation period (Bengtsson & Corvellec 2005).

¹⁶ A comprehensive database is to be launched in 2010.

Under 2006, the total numbers of applications assessed under the Environmental Code by the County Administration were 62, allocated in 38 Swedish municipalities. All of these cases were included in the study. See Appendix I for a list of all the cases.

4.3 Data collection

This section describes how the data for the analysis was gathered; how the respondents for the survey were chosen, how the survey was designed and carried out and the response rate of the survey.

The respondents used for the survey were civil servants working for the municipalities' Building- and Planning Board or Environmental Board¹⁷. As described above, all the cases in the study needed a permit both by the County Administration, under the Environmental Code, and by Local Authorities under Planning and Building Act. The city servants working for the Local Authorities should therefore have adequate knowledge to respond to the survey. Choosing city servants and not county level servants as respondents had several purposes. Some counties received over 20 applications in 2006. To send such a large number of surveys to only one or two respondents could jeopardise both the quality of the responses and the response rate. A second reason for turning to the city civil servants with the survey was their *in situ* position during the process which allowed them to observe how the planning process was actually put into practice.

The survey was created online and the respondents were given a link that took them straight to the survey¹⁸. Their answers were then recorded directly online. Before the survey was distributed, all the respondents received a preparing e-mail containing the intention, extent and the sender of the survey. If the respondent who received the survey did not have the sufficient knowledge about the project, she or he was asked to forward the survey to whomever would be able to answer it. In the next step the respondents then received an e-mail containing further information about the study, the survey and a link to the website where it was located. Each project had its own survey which meant that some respondents received more than one survey. They were, however, alerted that *one response per project* was essential to the study. A total number of 62 of surveys were distributed.

¹⁷ Depending on how the municipality boards were organised.

¹⁸ <https://websurvey.textalk.se>

The survey was designed to cover all the factors presented in previous sections (*participation, information, specific attributes of the site and economic participation*). The aim for the survey was to get an overall picture of each project through these factors. The survey contained 19 questions both multiple choice questions and questions with a scale from 0 to 5. The last question was open for the respondent to submit additional answers and comments. See the full survey and marks for all the alternatives in Appendix II.

Web based surveys are an inexpensive way to distribute a survey to a large number of people and the response rate may be higher than a normal mail survey since the respondent does not need to send it (Esaiasson et.al 2009:264f). The survey was distributed to the respondents in the beginning of December and reminders were then distributed every 5 days to collect as many responses as possible (Esaiasson et.al 2009:269f). The survey was closed down on January 30th and the data transferred into SPSS.

During the two months that the survey was active a total number of 24 responses were received. This may seem like a very low percentage (ca 39%) considering that expected response rate for surveys normally is around 60-65% (Esaiasson et.al. 2009:264). However, (through e-mail) another 24 responses were received explaining why the respondent was unable to answer the survey. Among these e-mails two main reasons for not replying could be identified; either a lack of time (5 res.) or that the civil servant who dealt with project was no longer working for the city authorities and the respondent did therefore not have sufficient knowledge (14 res.).

4.4 Operationalization of the variables

To be able to measure how the factors identified in previous chapters may affect the level of acceptance, the factors need to be made into variables that can be observed and measured through the questions in the survey. It is highly important that the operational indicators match the theoretical definitions to strengthen the validity of the results and to avoid systematic errors (Esaiasson et. al. 2009:64).

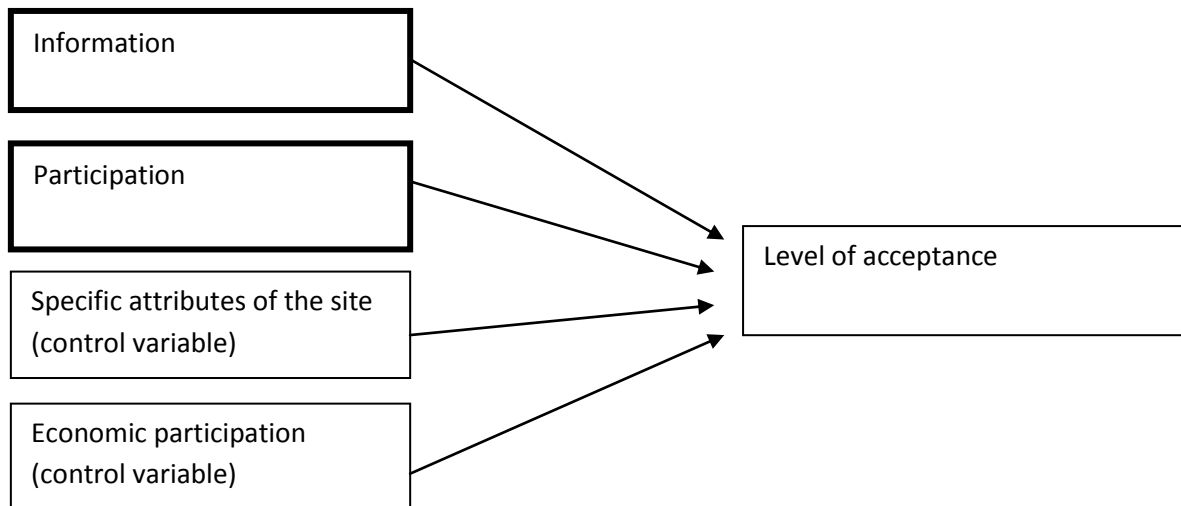


Figure 3. Hypothetical figure of the relationship between the independent variables and the level of acceptance. Participation and information are highlighted as the main objective of this study.

4.4.1 Acceptance

Acceptance is defined as the process of accepting something. To turn acceptance into a measurable variable is challenging since acceptance can be expressed in numerous ways. Previous research in this field identifies protest groups and letters to the local newspaper as means for people to show lack of acceptance (Klintman & Waldo 2008:28). To fully and accurately measure the level of acceptance for wind powers projects it would most likely require both surveys and interviews with local citizens. With the present time frame, this would not be possible.

However, a way to go around this issue is by measuring the number of appeals for a certain project. Appeals are a strong way of expressing lack of acceptance but it is also a very meaningful way to protest. Appeals slow down the planning process and generate high costs for the project developer and therefore affect the implementation process more than e.g. protest groups. *High numbers of appeals equals low levels of acceptance.*

An issue when measuring acceptance by the number of appeals is that not everyone is entitled to make appeals (see section 2.4.2). However, local and regional authorities are generally quite generous when allowing people to file appeals (Persson 2006:7).

4.4.2 Participation

Participation is the possibility or opportunity for the public to take part in the planning process. Participation can take many different shapes and the ones presented in the survey

have been defined as the most common in previous research and are used as examples in manuals and instruction books for project developers¹⁹. The larger the extent that these types of participation were used the higher the mark in the survey.

- Surveys
- Seminars and/or workshops
- Consultation meetings

To create a successful participation process a number of conditions have to be fulfilled, see section 2.3. A number of questions were asked to see how well these conditions were fulfilled and if they did affect the level of acceptance.

- Target group for participation. Either narrow, only including neighbours (low marks) in the participation process or broad, including a wider group of citizens (high marks).
- Opportunity to give input (higher extent of input equals higher marks).
- Input (from participation) incorporated in project plan (higher extent of incorporation equals higher marks).
- Receive information before participating (information before participation equals high marks).

4.4.3 Information

Information may be identified as meaningful content transmitted through various forms of communication. Numerous researchers have pointed out the great importance of information and knowledge for a meaningful and successful participation process (see section 2.3 and Grimes 2008:6). The forms or ways for distributing information used in the survey is based on general praxis in the field²⁰. The larger the extent that these types of information were used the higher the mark in the survey.

- Personal contact ex phone call or home visit.
- Mailings to home addresses.
- Open information meetings.
- Information through local media such as newspaper, radio or TV.
- Exhibitions of the project.

¹⁹ Boverket January 2009, Boverket may 2009, Grimes 2005, Glasson et.al 2009 chap.6, Klintman & Waldo 2008, Wolsink 2007

²⁰ (Ibid) For a further description, see appendix III

- Information to the citizens through the municipality's or project developer's website.

4.4.4 Location and specific attributes of the site of the wind power project, control variable

The visual impact that a wind turbine has on its surroundings has been suggested to be one of the most important factors for the level of acceptance in the local community (Khan 2003:566). It is therefore important to control for the location variable in this study.

To estimate and measure how people perceive and value their surrounding landscape is very complicated and controversial, and some researchers claim that it is not possible to make an objective list over how people value the different landscapes (Böhler 2004). However, it is necessary for the study to control for the landscape factor since it has been claimed to be of such great importance for the level of acceptance.

To list and rank seven of Sweden's most common landscapes, some general guidelines for wind turbines' impact on the landscape were used (Boverket January 2009:47f, SOU 1999:75, Boverket May 2009).

- Wind turbines that *stick out* or are *visible from far away* cause more nuisances.
- “*Unique*” and “*untouched*” landscapes are than “common” landscapes.
- Landscapes with high *recreational* or *experience values* are generally valued highly.
- The *more people* that use or live in a certain area the more people may be affected by wind power development and oppose it.

From these criteria the most common landscapes in Sweden were listed and ranked based on how they are likely to be valued by the citizens. Landscapes with a “higher value” receive higher marks in the survey. (For further description of the landscapes in the list see Appendix IV).

1. Archipelago and “ragged” coast line. This landscape often has an untouched/intact horizon and high recreational value.
2. Protected areas (nature reserves, Natura 2000 areas etc.). Protected areas are generally unique and untouched landscapes and exist for the mere protection of wild life, plants and landscapes.
3. Urban areas are rarely considered for wind power projects since the risk of nuisance effects is high.

4. Mountainous landscapes (open or with forest elements). The mountainous terrain is sensitive because it provides a great untouched unit and wind turbines may be visible from a long way away.
5. “Other” coastline has high recreational values and is relatively open and has an untouched horizon.
6. Agricultural landscapes (open or with some forest elements). The wind turbines visual from far away it is, however exploited by humans.
7. Rural landscapes with forest elements and woodland. The vegetation will prevent the wind turbines from being visible from a distance
8. Industrial and/or military areas. These landscapes are usually exploited by human and few citizens even have access to these areas.

4.4.5 Economic participation, control variable

Economic participation, the possibility to receive economic benefits from a wind power project has been shown to have a strong positive effect on people’s attitudes towards the project (Khan 2003:573f). The study will therefore measure if any personal economic gain was offered to the local citizens through the opportunity to buy shares in the project. (Opportunity to become a shareholder gives higher marks in the survey.)

5. Results

5.1 Analysis results

In this section, the results from the results from the analysis carried out in SPSS²¹ are presented. The first set of analyses examines the bivariate correlations to determine if a relationship between the different variables and acceptance is present.

5.1.1 Bivariate correlation of the relationship between the independent variables and acceptance.

Bivariate correlation analysis with Pearson’s r is used to determine the strength and direction of a relationship between two variables²². In this analysis, high scores on the dependent

²¹ Statistical Package for Social Sciences (SPSS) Version 17.

variable means a high number of appeals which is an indication on low levels of acceptance, see chapter 4.4.1 and Appendix II (Esaiasson et.al 2009:415f).

A first correlation analysis of the relationship between the independent variables and the dependent variable gave no results that could be considered statistically significant. After a closer look at the dependent variable, the following result was found.

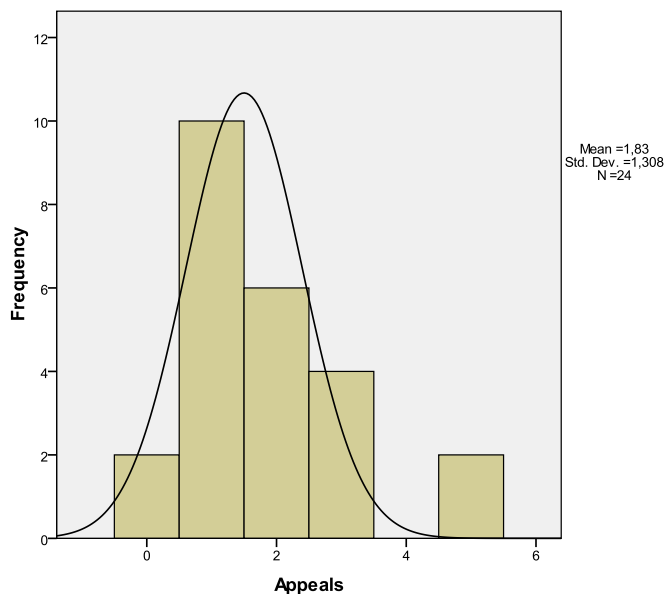


Figure 4. The histogram, with normal curve, shows the distribution of appeals following wind power projects.

The histogram clearly shows two outliers with very high numbers of appeals compared to the rest of the cases. Except for these two cases the histogram shows a normal distribution of the answers. Since the two outliers had an effect on the analysis they were traced and examined more carefully.

As it turned out, one of the cases was a very large wind power park and the other was located in an area of national interest for its high cultural value²³. The special nature of these two projects with their scale and conflict of interests made them very different from all the other cases included in the analysis. A very large scale project may have larger resources and different strategies on including the public in the planning process than smaller scale projects. Conflicts of interests are more a part of the legal side wind power planning and may therefore generate appeals that are based on legal grounds rather than the level of public involvement.

²² The Pearson correlation can vary between -1 (completely negative correlation) and 1 (completely positive correlation), correlation close to 0 shows that no linear correlation exists between the variables. A negative correlation (marked with -) means that high scores on one variable coincides with low scores on the other variable.

²³ Case Sjöberg 5:1, Bredsäter 4:14 and Glötesvålen, Appendix III

Based on this and the large effect that the outliers had on the analysis they had to be excluded from the analysis. The following sections are therefore analysed without the outlier values on the number of appeals.

The following table shows the results from the bivariate correlation analysis between level of acceptance and the independent variables.

Table 1. Correlation between independent variables and dependent variable, acceptance.			
Independent variable	Pearson Correlation, r	Sig. (2-tailed)	N
Information, personal contact	-,487**	,029	20
Information, mailings	,262	,264	20
Information, open meetings	-,129	,587	20
Information, local media	-,252	,285	20
Information, exhibition	-,556**	,011	20
Information, website	-,565***	,009	20
<i>Information index^a</i>	-,444**	,050	20
Target group for information (narrow or broad)	-,299	,201	20
Participation through survey	-,322	,166	20
Participation through seminar/workshop	-,459**	,042	20
Participation through consultation meeting	-,200	,397	20
<i>Participation index^b</i>	-,547**	,013	20
Target group for participation (narrow or broad)	-,443*	,058	19
Opportunities for the public to give input on the project	,305	,191	20
Input incorporated in the project plan	,098	,689	19
Information before participation	-,128	,724	10
<i>Economic participation</i>	-,178	,454	20
<i>Specific attributes of the site of the wind turbine</i>	,083	,729	20
Wind power in the area since previously	-,052	,827	20

*Comments: * significant at the 0.1 level ** significant at the 0.05 level *** significant at 0.01 level. Information index^a and Participation index^b are combinations of the different types and extent of information and participation.*

The correlation analysis gives a first overview of the data from the survey and also provides several interesting observations about the relationships between the individual independent variables and acceptance.

Three different types of information; through personal contact, exhibitions and websites seem to be individually correlated to the level of acceptance. However, it is also interesting to see the full effect of information by weighting all types of information into one index; *information index*. This index also shows a strong negative correlation to the level of acceptance. This suggests, in practice, that the more different types of information that are used and the larger the extent by which it is used, the lower number of appeals, in other words the higher the level of acceptance.

For participation, only one means of participation namely seminars/workshops show a statistically significant correlation to the level of acceptance. However, when all different means for participation are put together (*participation index*) it also shows a strong negative correlation to the dependent variable. A broader group of participants also seem to have a positive effect on the level of acceptance.

The two control variables; *opportunity to become a shareholder* and *specific attributes of the site* show only weak and insignificant correlations to the level of acceptance.

Other attributes that have previously been pointed out as important for how the participation process is perceived, namely; *opportunities for the public to give input on the project*, that *the input was incorporated in the project plan* and that the participants *received information before participating* all fail to correlate with the level of acceptance.

5.1.2. Regression analysis

Regression analysis is used to show the *effect* that the independent variables have on the dependent variable. It can either be carried out as a bivariate analysis with one independent variable or as a multivariate analysis that includes more than one independent variable. A multivariate regression analysis can analyse the relationship between a number of variables under control for each other. (Esaiasson et.al 2009:413f).

The B-coefficient in the analysis marks the effect, negative or positive, of the independent variable on the dependent. The R^2 coefficient shows how much of the variation that may be

explained by the B-coefficient, the closer to 1 the greater the explanatory power²⁴. The *Constant* tells us the value of the dependent variable when the independent variable is 0. From these two values a lot of information can be extracted. In this analysis the constant shows the number of appeals that would be filed if all the independent variables were 0. The B-coefficient represents how large the effect of “one step up” on the independent variable would have on the dependent variable. It is therefore essential to know the scales of the variables to be able to interpret the results of the analysis. For the extent of *information* and *participation* the scale goes from 1 to 5, where 1 represents “not at all” and 5 “to a large extent”. One “step up” on the information and participation scale could for example be from 1 to 2. In other words from “not at all” to “a little” information. For acceptance the scale also goes from 1 to 5 where 1 represents “no appeals” and 5 “more than 8 appeals”. A “step up” on the acceptance scale could then be from “no appeals” to “1-3 appeals”. These scales may seem very vague and hard to grasp but in social sciences it is almost impossible to put an exact figure on people’s behaviour and perceptions.

The regression analysis starts with a bivariate model which shows the effect that each independent variable has on the dependent variable. The multivariate analysis consists of three different models. The following table shows the bivariate model and the three multivariate models.

Table 2. Bivariate and multivariate regression analysis of independent variables.				
Unstandardized B-coefficients				
Variable	Bivariate model B (R ²)	Model 1 B (sig.)	Model 2 B (sig.)	Model 3 B (sig.)
Information index	-0,30** (0,20)	-0,26 (0,11)	-	-0,17 (0,27)
Economic participation	-0,14 (0,03)	-0,23 (0,35)	0,03 (0,92)	0,04 (0,90)
Attributes of the site	0,67 (0,01)	1,94 (0,43)	1,20 (0,61)	0,86 (0,72)
Participation index	-1,00*** (0,30)	-	-1,08** (0,03)	-0,90* (0,10)
Constant	-	1,48	2,29	2,66
R ²	-	0,24	0,33	0,38
N		19	19	19

Comments: * significant at the 0.1 level ** significant at the 0.05 level *** significant at 0.01 level

²⁴ <http://spssakuten.wordpress.com/2009/12/21/regressionsanalys-1/#more-7>

As mentioned above, the bivariate model demonstrates the effect that independent variables *individually* have on the dependent variable. Again, both information and participation show a strong negative effect on the rate of acceptance. For the participation index, an increase in participation with one unit would decrease the number of appeals with one unit.

In *Model 1* the effect of the information index, economic participation and attributes of the site are tested under control for each other. The effect of information decreases slightly under control for the other variables but is still the only variable that is somewhat close to significant (to 0.1 level). Economic participation and the attributes of the site do not show to have a significant effect on the level of acceptance.

Model 2 includes participation index, economic participation and attributes of the site. The table shows that the effect of participation under the control for economic participation and the site gets slightly stronger. The relationship is statistically significant.

Model 3 is the most interesting model since it contains all the variables. The Constant in model 3 is 2,66. This means that if all the variables values were at 0 the number of appeals would be 2,66 which is between the two response alternatives “1-3” and “4-6” appeals. Economic participation and the site of the wind turbine again appear to have a statistically insignificant effect and it therefore does not, in these 19 cases seem to affect the level of acceptance.

As can be seen in the table, both the effect of information and participation becomes slightly weaker under control for each other. Since both information and participation are on a scale from 1 to 5 their B-coefficients may be compared with each other. The comparison shows that the effect of participation is much stronger than the effect of information. However, a correlation analysis between information and participation shows that the variables have a strong (0,539) correlation significant to a 0,01 level. This means that it is hard to tell the effect from the individual variables apart. A lot of information and a lot of participation may coincide.

A cross tabulation of information, participation and appeals gives the following figure. The mean number is the mean for appeals (on a scale from 1 to 5) and N is the number of cases in each category.

		Information	
		“Not a lot”	“A lot”
Participation	“Not a lot”	Mean: 2 N = 10	Mean: 1,67 N = 6
	“A lot”	Mean: 1 N = 1	Mean: 1 N = 3

Figure 5. Cross tabulation of information, participation and appeals.

The cross tabulation suggests that participation, after all, is the most effective factor in creating acceptance. High amount of participation without the “help” from information give the lowest mean for number of appeals. High levels of *both* participation and information give the same mean of 1 (“no appeals”).

5.1.3 The feedback effect

This section will analyse how the opportunity to give input during participation and if the input was incorporated in the project may affect the level of acceptance. Opportunity to give input and if the input was incorporated need to be examined together since it seems reasonable that the opportunity to give input needs to coincide with actual results on the project to create acceptance. If the input does not give any results it seems reasonable that this could produce low levels of acceptance. A cross tabulation of opportunity to give input, if the input was incorporated in the project and number of appeals gives the following figure. The mean number is the mean for appeals (on a scale from 1 to 5) and N is the number of cases in each category.

		Opportunity to give input	
		Yes	No
Input was incorporated	Yes	Mean: 1,71 N = 7	Mean: 2,0 N = 2
	No	Mean: 1,75 N = 8	Mean: 1,33 N = 7

Figure 6. Cross tabulation of opportunity to give input, if the input was incorporated in the project and number of appeals.

The interesting category in this table is where the participants have the opportunity to give input. The mean for appeals when the input was incorporated in the project is 1,71 when the

input was not incorporated the mean number of appeals is 1,75. This suggests that whether the input is incorporated in the project or not only has a small effect on the level of acceptance.

6. Conclusions and Discussion

6.1 Conclusions

The conclusions from the study are here presented together with the questions that were set out to be answered in the introductory chapters. Since the questions are quite separate from each other they will be discussed one at a time.

This study show that out of the four factors; public participation, information, location of the wind turbine and economic participation, suggested to be of importance for the level of acceptance only public participation and information showed strong and significant correlations with the dependent variable. When made into indexes, both information and participation showed strong, negative correlations with the number of appeals. These results may be interpret as *the more information and participation the lower the number of appeals*, in other words, higher levels of acceptance. However, neither the specific attributes of the site nor opportunity to become a shareholder seemed to any correlation with the number of appeals. These two factors have been suggested to be of great importance in previous studies.

In a multivariate analysis where the variables were analysed under control for each other participation emerged as the factor with the *largest effect* on the level of acceptance. An increase in the amount of participation with one mark on the 1-5 scale would lower the number of appeals with -1,0 on the “appeals scale”. A correlation analysis of participation and information showed a very strong correlation. This means that the variables *together create high levels of acceptance* and it makes it harder to isolate the effect from one of the variables. However, a cross tabulation verified that participation is the variable with the strongest effect on the level of acceptance.

The design of the participation process has also been suggested to influence the level of acceptance. However, only the group which is chosen to participate seemed to correlate with acceptance. A broad group of participants (not only close neighbours) appear to produce higher levels of acceptance. The opportunity to give input on the project and whether the input was incorporated in the project or not appear to have a small effect on the level of acceptance.

6.2 Discussion

That wind power may be a part of the solution to sustainable energy production seems to be quite agreed upon by the Swedish government and wind power expansion is widely encouraged. The rate of implementation has been somewhat slow, however, and a lack of local acceptance has been identified as one obstacle for more expedient implementation. The main objective for this thesis was to examine the factors suggested to be of importance for creating local acceptance for wind power (participation, information, economic participation and specific attributes of the site of the wind turbine).

The study showed that *participation* along with *information* had the strongest effect on the level of acceptance. The strong correlation between information and participation made it difficult to tell which of the variables that had the largest effect in the level of acceptance. However, a further cross tabulation with information and participation suggested that participation is the factor with the strongest effect on acceptance. The strong correlation between information and participation is not unexpected though. It seems quite reasonable that participation leads to information and that one does not exist to a great extent without the other.

Interestingly enough, opportunity to influence the project through participation seemed to have little effect on the level of acceptance for the project. This condition has been suggested by other researchers to be important for how the participation process is perceived. However, in this case it seems to be more important to people to be able to have a say in the planning process than the input has an effect on the actual project.

Economic participation was one of the control variables that have been suggested to be of great importance for the level of local acceptance. However, none of the analyses showed any correlation between economic participation and acceptance. Despite this, economic participation may still influence the level of acceptance. First of all the number of respondents that answered the questions regarding economic participation was very low (6/24) and it is therefore hard to find statistically significant relationships. Economic participation and the opportunity to become a shareholder in a wind turbine are not as common in Sweden as in other countries; only two respondents indicated that the public had been offered co-ownership. Since economic participation was identified as an important factor through case studies in many European countries, it may not be as important in the Swedish context. However, that shareholding may be an effective way to create acceptance.

The other control variable, *specific attributes of the site of the wind turbine* also showed no correlation with the level of acceptance. Spontaneously this feels slightly more remarkable since the location of new wind turbines often is very controversial and is likely to make headlines in the media. The lack of correlation may be an effect of my own ranking and scoring of different types of landscapes. As mentioned earlier, objective ranking of how different landscapes are perceived may not even be possible. However, the results from the survey also showed that most of the wind turbines (62%) were placed in the same type of landscape, namely agricultural land.

Another reason that may affect the lack of correlation between the location of the wind turbine and the level of acceptance is that project developers may try to avoid locations that are likely to cause controversy. It seems likely that project developers would avoid such locations, if possible, and instead plan wind power in a location without high local values. The results from this study cannot entirely exclude the location of a wind turbine as of importance for the level of acceptance. However, information and participation may help to reduce and solve conflicts over the location.

Even though not all wind power projects under 2006 could be identified and included in the analysis, the total sample of all cases assessed by the County Administrations still gives a good reflection of the planning process for average sized wind power projects in Sweden. Since one of the projects that had to be excluded from the analysis was very large it is fair to assume that the planning process may look slightly different in larger projects. That type of projects may be implemented by companies with great knowledge and resources for creating acceptance. Also projects that were too small to be included in the study may have a slightly different planning process since they may not affect the community as much and therefore not attract as much attention. It is therefore probably safe to generalise the results from the study to other average sized projects. However, thinking back on Tyler's and Grimes' theories regarding *justice thorough procedures* it is not the size of the project, but the procedure leading up to the decision should be of greatest importance for acceptance. It would therefore be very interesting with another study that examines very large and very small scale projects to see whether the same relationships could be discovered there.

An important methodological issue number of responses on the survey. Despite a number of e-mails encouraging replies the total response rate was 39%. The total number of cases included in the analysis was therefore 24. This low response rate could of course affect the

external validity and the possibility to generalise the results. However, despite the low numbers of cases, strong and significant correlations could be found between information, participation and acceptance. This suggests that these relationships would be present even with a larger number of cases and that the external validity is significant.

However, as mentioned before, it may not be possible to generalise the results outside of Sweden. Regulations and praxis regarding ownership may look very different and therefore affect the level of acceptance in a very different way than in Sweden. The legislation may also have different requirements when it comes to public participation, which could affect how citizens perceive the planning process and accept the decision.

As mentioned in the legislation chapter, the laws regarding wind power applications changed in December of 2006 and fewer projects now have to be assessed under *both* the PBA and the Environmental Code. This was an attempt to make the application process faster and easier for the project developers. These changes may help to increase the expansion rate for wind power but it may also affect the local acceptance for wind power projects. If the application process is made faster by requiring less assessment this may also mean less public involvement in the planning process. This may potentially be negative for the level of acceptance and thereby for a further expansion of the wind power sector.

The results from this thesis leave a number of questions for further studies to answer. One of the main issues that would need to be more thoroughly examined is the assumption that it is participation, information, economic participation and the location of the wind turbine that affects the level of acceptance not vice versa. This is the assumption made by researchers through case studies and it is on that assumption this thesis is built. However, the relationship may be opposite. Perhaps project developers, through e.g. pre-studies, notice low level of acceptance within the local community and based on this decide the extent to which the citizens should be included. The level of acceptance would thereby affect the design and extent of the participation process. This is a very interesting issue that needs to be properly addressed before any major conclusions can be drawn.

Another interesting question to examine is the effect that the new legislation might have had on the planning process and public participation in the planning. If the application process is faster now, does that mean less public involvement and has this had any effect on the level of acceptance?

In sum, out of the four factors identified to affect the level of acceptance participation seems to be the most effective. Together with information it shows great potential to facilitate further wind power expansion. However, there are still questions that need to be answered before we can present a “model” for how to create acceptance for wind power.

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Appendix I, List of cases

Referance number County	Project name	Municipality	Answer
Västra Götalands län			
003910-2006	Härjevad 8:3, 8:20	Lidköping	no
021739-2006	Hasslösa 24:1, 29:1	Lidköping	no
054042-2006	Storeberg 3:1	Lidköping	no
056249-2006	Lindärva 5:3	Lidköping	no
036151-2006	Sjöberg 5:1, Bredsäter 4:14	Mariestad	yes
042057-2006	Vättlösa 5:43	Götene	yes but not through survey
091264-2006	Västermark 2:2, Nattorp 6:1	Götene	yes
052268-2006	Ulfstorp7:1	Vara	no
055854-2006	Ryda 8:1	Vara	no
085795-2006	Viglunda 1:1, Märene 1:16, Berga 2:1	Skara	yes
062091-2006	Blombacka 1:2	Skara	yes
096593-2006	Forsvik 5:20, Brasmaviken 1:1	Karlsborg	no time
002212-2006	Tolvmanstegen	Strömstad	yes but not through survey
054380-2006	Neanberg 1:4, 2:2, Vik 1:17	Strömstad	yes but not through survey
026974-2006	Tanum, Skaveröd 1:4, Gruseröd 1:2,1:3	Tanum	not sufficient knowledge
036260-2006	Kil 1:3, 1:4, Vålle 1:3	Tanum	not sufficient knowledge
031865-2006	Grinstad Hagen 3:21	Mellerud	yes
064068-2006	Bolstad Hagen 4:6, Bron 1:9 mfl.	Mellerud	yes
056243-2006	Sal	Grästorp	yes but not through survey
067638-2006	Hajom Holane 1:17	Dals Ed	yes
069986-2006	Frugården 1:6	Vänersborg	yes
072139-2006	Bokenäset "Lejdeberget"	Uddevalla	yes
000439-2006	Laggbolet 1:10	Hjo	no
Blekinge län			
00149-2007?	Lörby 45:1, Ysane 2:2	Sölvesborg	yes
07159-2006	Trollebodaområdet	Karlskrona	not sufficient knowledge
Dalarnas län			
Gotlands län			
Gävleborgs län			
Hallands län			
	Torebro 1:20, Lis 1:20, Stafsinge 6:4	Falkenberg	yes
	Morups Lunnagård 1:1	Falkenberg	yes
	Hässlås 5:2	Falkenberg	yes
	Almedal 1:6	Kungsbacka	yes
Jämtlands län			
06302-2006	Funäsdalen	Härjedalens kommun	no
13270-2006	Glötesvålen	Härjedalens kommun	yes
01807-2006	Rodovålen Hån 2:18	Härjedalens kommun	yes
03839-2006	Skålan 4:3	Berg	no
06913-2006	Rätansbyn (Digerberget)	Berg	no
Jönköpings län			
Kalmar län			
Ref. number missing	Hallnäs 5:3, 13:1, 14:1, Persnäs 10:1	Borgholms kommun	yes
Kronobergs län			

08527-2006	Åseda	Uppvidinge kommun	no
Norrbottens län			
12716-2006	Svartskataudden 2:82	Kalix	no
20340-2006	Galtviksberget, Axelsvik	Kalix	no
20771-2006	Pahtohavare	Mörbylånga	no
16534-2006	Råneå 9:21 (Rånknölen)	Luleå	no
Skåne län			
00454-2006	Lyngby 21:4	Kristianstad	not sufficient knowledge
58855-2006	Skepparslöv 26:9	Kristianstad	not sufficient knowledge
62970-2006	Nymö 1:9	Kristianstad	not sufficient knowledge
03329-2006	Brönnestad 22:1	Trelleborg	yes
07736-2006	Tjustorp 12:8	Svedala	yes
08323-2006	Skarhult 13:10, 13:36	Eslöv	no
35988-2006	Äspinge 14:1, Klemendstorp 2:1	Eslöv	yes
60162-2006	Borlunda 8:3, Viderup 1:7	Eslöv	yes
12251-2006	Ingelstråde 2:16	Höganäs	no time
36025-2006	Stora Görslöv 7:1, 8:1, 23:2, 23:3	Höganäs	no time
35914-2006	Ingelstad 25:1, Bollerup säteri 1:74	Tomelilla	no
Stockholms län			
Södermanlands län			
11884-2006	Runtuna-Åkra 3:5	Nyköping	no time
Uppsala län			
5783-2006	Skarpängen, Sundet (Hyvlinge 2:3)	Enköping	no
10024-2006	Gästre 8:3	Enköping	no
14417-2006	Koby 5:3	Enköping	yes
Värmlands län			
Västernorrlands län			
551-1516-06	Möckelsjöberget Överskog 1:15, 2:27 och 2:39	Härnösands kommun	no time
551-3604-06	Skuruberget, Hultom 2:4	Härnösands kommun	no time
551-18777-06	Skedom, Skedom 3:10	Härnösands kommun	no time
Västmanlands län			
Västerbottens län			
Ref. number missing	Gabrielsberget	Nordmalings kommun	not sufficient knowledge
Ref. number missing	Berget Bleikevare, (mellan Risbäck & Rajastrand)	Dorotea	yes
Örebro län			
Ref. number missing	Göksholm 1:1	Örebro	yes
Östergötlands län			
016561-2006	Normlösa	Mjölby	not sufficient knowledge

Appendix II, Survey

The original survey was in Swedish and has here been translated.

Wind power survey 

• = Mandatory question

Name of municipality

Name of the project (as given in the e-mail you received)

Who was the main project operator?

In what way/ways and to what extent was information distributed to the public?
Mark your answer on the scale between 1 and 5

	1 Not at all	2	3	4	5 To a large extent
Personal contact with the citizens (ex. home visits, phone call)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mailings to the citizens	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open information meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information through local media (ex. news paper, local radio)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exhibition and information about the project in a public place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information through the municipality or project website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On which group was the information focused?

Neighbors and affected parties All citizens in the municipality

When in the planning process was the information distributed?
The planning process is here divided into two steps.
1. During the initial consultation stage (before the application has been sent to the county authority)
2. During the planning application stage (after the application has been sent to the county authority but before the decision has been made)

During the initial consultation stage During the application stage During both stages

In what way/ways and to what extent was the public included in the planning process?

	1 Not at all	2	3	4	5 To a large extent
Surveys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seminars/Workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consultation meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When in the planning process was the public invited to participate?
The planning process is here divided into two steps.
1. During the initial consultation stage (before the application has been sent to the county authority)
2. During the planning application stage (after the application has been sent to the county authority but before the decision has been made)

During the initial consultation stage During the application stage During both stages

Who was invited to participate in the planning process?

Neighbors and affected parties All citizens in the municipality

Was it possible for the public to give feedback on the site, size and design of project?
Mark your answer on the scale between 1 and 5

1 Not at all 2 3 4 5 To a large extent

Did the participants receive any information before the consultation activity?

Yes No Don't know

Which is the municipality's attitude towards wind power implementation?

Generally negative Neutral Generally positive

Was the public offered to become share holders in the wind turbine?

No Yes, and they were positive Yes, but there was a lack of interest Don't know

Were there any appeals from the public after the application had been granted?

No appeals 1-3 appeals 4-6 appeals 6-8 appeals More than 8 appeals

Was the project granted by the authorities?

Yes No Decision process not complete

Rated from 1 to 5

1 p for "neighbours"
2 p for "all citizens"

1 p for "planning application stage"
2 p for "consultation stage"
3 p for "both stages"

Rated from 1 to 5

1 p for "planning application stage"
2 p for "consultation stage"
3 p for "both stages"

1 p for "neighbours"
2 p for "all citizens"

Rated from 1 to 5

1 p for "no"
2 p for "yes"
0 p for "don't"

1 p for "negative" 3 p for "positive"
2 p for "neutral"

0 p for "don't know" 1 p for "no"
2 p for "yes but no interest" 3 p for "yes"

1 p for "no appeals" 2 p for "1-3"
3 p for "4-6" 4 p for "4-6"
5 p for "more than 8"

Question not rated

In what type of landscape was the project planned?
 Mark one or more alternatives

Archipelago and "ragged" coast line
 Agricultural landscapes (open or with some forest elements)
 Protected areas (nature reserves, national parks, Natura 2000 areas etc.)
 Rural landscapes with forest elements and woodland
 Industrial and/or military areas
 Other type of landscape

9 p for "archipelago"
 8 p for "protected area"
 7 p for "urban area"
 6 p for "mountainous area"
 5 p for "other coastline"
 4 p for "agricultural area"
 3 p for "rural area"
 2 p for "industrial area"
 1 p for "other"

Were there wind power turbines in the area previously?

Yes No

1 p for "yes"
 2 p for "no"

Is there anything you would like to add?

Appendix III, Types and forms for information and participation further explained

Information

- **Personal contact with affected parties.** Creates a personal contact and makes immediate questions and customized information possible.
- **Mailings to home addresses.** Will reach all local citizens it is intended for.
- **Open information meetings.** Organised by the municipality or the project developer. Will reach the citizens that are interested in the project.
- **Information through local media such as newspaper or TV.** Likely to reach a majority of the citizens.
- **Exhibitions of the project with information and opportunity to ask questions.** Displayed at for example the local library or city hall will reach anyone how is interested and goes looking for the information.
- **Information to the citizens through the municipality's or project developer's website.** Will only reach whoever is looking for the information.

Participation

- **Surveys,** is an opportunity for the project developer to gather opinions from the public. Surveys give the participants a chance to answer questions and present their views in the peace and quiet of their own home.
- **Seminars and/or workshops,** where the project is presented to the public and the public is invited to a dialog regarding the project. During the seminar or workshop representatives for the municipality and/or project may be present to create a dialog. People are with different views and interests may be encouraged to discuss issues and find solutions under supervision from the project developers.
- **Consultation meetings,** The more people with different interests that are invited the bigger the chance to discover and deal with conflicting interests.

“Quality”, Participation and Information

- **Who is invited to the event?** For an un-manipulated and fair participation process all citizens, positive and negative has to be invited to participate. The project developer may decide only to consult nearby citizens and thereby leave some out of the planning process.
- **Is the organiser open for questions and input from the participants?** Is the agenda for participation set or are project developers willing to let citizens in with further questions or issues?
- **Is there a possibility for the participants to influence the decision?** Do the participants have an actual opportunity to influence the decision?
- **Have the participants received information before they are expected to participate in the planning process?** Without knowledge and information participants cannot be expected to be able to fully engage in the process.

Appendix IV, Common Swedish landscapes described

1. Archipelago and “ragged” coast line. Landscapes that often have an *untouched/intact* horizon and the *sight is long*. The archipelago and coast line are considered to have *high recreational value* and *attracts a lot of residents and tourists*.

2. Protected areas (nature reserves, national parks, Natura 2000 areas etc.). Protected areas are generally *unique and untouched* landscapes and exist for the mere *protection of wild life, plants and landscapes*. Landscapes like this have *high recreational values*.

3. Urban areas. This type of landscape is rarely considered for wind power projects since the risk of *nuisance effects* are high. Wind turbines may also have a negative *impact on the general impression of a town with old buildings*.

4. Mountainous landscapes (open or with forest elements). The mountainous terrain is sensitive because it provides a *great untouched unit*. Wind turbines may be *visible* from a long way away. This landscape *doesn't have a lot of residents* but provides a *high recreational value*.

5. Other coastline. Like the archipelago, the rest of the coast line has *high recreational values* and is *home to a large percentage of the Swedish population*. The landscape is relatively *open* and the *untouched horizon* is once again important. However, part of the coast line is covered with agricultural land where developments can be more discrete.

6. Agricultural landscapes (open or with some forest elements). The open landscape makes wind turbines *visual from far away*. The landscape is however *“touched”* or exploited by humans and is a *common type of landscape* in southern parts of the country.

7. Rural landscapes with forest elements and woodland. The vegetation will prevent the wind turbines from being *visible* from a distance. In some parts of the country this type of landscape is *very common*. The landscape may, however, provide *recreational values* for the local residents.

8. Industrial and/or military areas. In industrial or military areas wind turbines do not protrude as an *uncharacteristic or inconvenient feature*. These landscapes are usually *exploited* by human and *few citizens even have access* to these areas.