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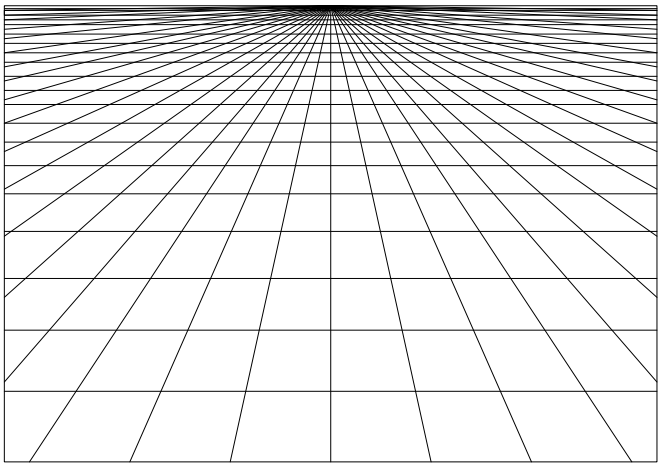

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The Road to Renewables:
A case study of wind energy, local ownership and social acceptance at Samsø

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Abstract

The aim of this thesis is to investigate how local participation and local ownership enhances social acceptance of wind energy. In Norway many planned wind energy projects are put down due to increased resistance among local populations. Denmark, on the other hand, has successfully implemented wind energy for decades. The historical context and resource supply is different from Norway and may explain their higher success rate with wind energy. However, although acknowledging that government policies are an important aspect in the development and diffusion of wind energy, this thesis looks at the social aspects and how social factors influence the process. The case study presented in this thesis is Samsø; an island in Denmark that has become 100 percent renewable in only ten years due mostly to wind energy onshore and offshore. This thesis analyses how this has been possible focusing on social capital, the involvement of local people in the decision-making process and the organisation of ownership. The overall theoretical view is innovation with the aim to better understand what factors that might enhance the development, diffusion and implementation of wind energy in Norway. Within the STS field this thesis is an attempt to contribute to a better understanding of the relationship between technology and society and what factors that enhance the society's acceptance of wind energy.

Key words: wind energy, social acceptance, local participation, local ownership, social capital, diffusion of innovation.

Acknowledgements

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1. Introduction

During the last decades, and especially the last years, the attention towards and interest of global environmental problems have grown dramatically. Global warming has become an issue, and according to the Intergovernmental Panel on Climate Change (IPPC) (2007)[1] global warming is caused by the large increase of CO2 emissions from human activity. This is a debated fact and not all environmental researchers agree on this statement. Nevertheless, that is the viewpoint by which this thesis takes departure. Moreover, the world's energy consumption is increasing as a result of to higher standards of living and population growth. Thus, in order to reduce CO2 emissions and secure future energy supply the implementation of renewable energy is important. This thesis discusses the implementation of wind energy. In many countries it has been difficult to implement wind energy due to local opposition and this thesis seeks to explore what factors that might enhance the social acceptance of wind energy. In the introductory chapter I will firstly discuss the difficulties of implementing wind energy in Norway, and compare this with Denmark which is one of the world's leading nations on wind energy today. Secondly, I will clarify the research objectives, theoretical framework and methodology. Lastly, I will present the structure of the content.

1.1 Wind energy in perspective

Today the wind energy production in Norway is 314 MW, but the government has passed a bill to increase wind energy to 3 TWh[2] within 2010 (Thele 2008: 96; Hofstad 2005). When

[1] Synthesis Report, 2007: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[2] Terawatt hour

the Norwegian Water Resources and Energy Directorate[3] (NVE et al. 2007) states that the potential energy production in Norway is thousands of TWh per year, it could seem like the Norwegian government lack political ambitions when it comes to renewable energy. Actually, according to NVE, Norway have much larger wind resources than Germany and Denmark that today produce far more wind energy than Norway (NVE et al. 2007). A reason for this is Norway's oil resources and hydropower. As a consequence Norway has not needed to consider wind energy to the same extent as for instance Denmark. However, another threat besides political will is the increasing resistance from local populations, the tourist industry and from environmental organizations (Thele 2008). Fredrik Thele has studied the resistance against the world's largest planned offshore wind park, The Havsul-projects. The local population was offered economical compensation, however, the opposition has been so large that the locals have managed to influence the political decision process and the license for the project has still not been permitted. Thele concludes that the idea of nature and the conflict between global concerns and local consequences are the dominant factors for opposition (Thele 2008).

Denmark, on the other hand, had an installed capacity of 3,135 MW in 2006 (Hvelplund 2005). The Danish wind energy story started in the 70s, when there were major protests against nuclear energy. Contrary to Norway, which has large water resources, Denmark's lack of other energy resources made the choice easy. However, another difference from neighbouring Norway is the fact that there has been a bottom-up initiative for renewable energy, as well as political policies that have fostered a successful development. Further,

[3] Norges vassdrags- og energidirektorat: http://www.nve.no/

local ownership through cooperatives makes the Danish wind energy story different from many other countries, and this has been decisive for the Danish wind energy development (Hvelplund 2005). The case study in this thesis is the Danish island, Samsø, which has become 100 percent renewable from 1998 until 2008 mostly due to wind energy onshore and offshore. With the Norwegian resistance against wind energy in mind, Samsø is a case that might learn Norway how to increase social acceptance for wind energy. This thesis seeks to understand how opposition has been avoided, and what factors that might have contributed to social acceptance of the wind energy projects at Samsø.

1.2 Research design

Objectives

My motivation to write this thesis is to gain a better understanding of how one can solve the conflicts regarding local opposition against wind energy in Norway. As discussed above, it has proved to be difficult to implement wind power in Norway due to local resistance. Although there are other factors as well, like the lack of political ambitions and the current supply of hydropower and oil resources, it seems like the main obstacle for wind power at the implementation level is local resistance. During the last couple of years there has been an expanding focus on social acceptance in the literature on wind power implementation. In this setting Samsø represents an extraordinary and unique case as one of the first renewable energy islands in the world. Thus, this thesis seeks to investigate some of the keys behind their success, and draw some conclusions about factors than can help develop social acceptance other places. The main factor that is different at Samsø than in similar

Norwegian projects is the factor of local ownership. If one wants to introduce local ownership in Norway, it is useful to assess the Danish experiences with this model of financing. Despite the differences in context and history, the case study of Samsø provides useful insight into the important social and political processes that influence the implementation process. I will seek to identify what aspects that should be included in an implementation process to ensure success, and will discuss how local ownership and participation in the decision-making process can lead to social acceptance of wind energy. An understanding of these processes is important if one wants to diffuse renewable energy technologies. Further, this question is highly relevant within the Society and Technology studies (STS) (Sismondo 2004), as the co-existence of technologies and society, and the relationship between them, is the main focus of this thesis.

Research question: *How can local ownership and participation in wind energy projects increase social acceptance of the technology and help ensure project success?*

Theorethical framework

The overall theoretical approach in this thesis is innovation and diffusion of technologies. The motivation behind this thesis is to gain an understanding of factors than can enhance social acceptance of wind energy in Norway, and thus develop the implementation of this technology. Hence, diffusion of innovation is a useful approach. In this thesis Roger's framework of the innovation decision-making process is used in order to analyse the decision-making process that has taken place at Samsø. Alternatively, I could have used the public policy approach instead (Parsons 1995). However, I choose innovation as the point of departure in this thesis as the main motive is diffusion of wind energy and thus diffusion of an innovation. Further, I make use of the social capital theory in order to analyse the specific

context and relationships at Samsø and how these particularities have influenced the process. Social capital was originally developed within sociology, but has been adopted by other disciplines. It is a useful concept that provides an analytical tool to understand the relations between people, which are important when studying social phenomena. This is highly relevant to implementation of wind energy and with regard to the diverse interests of the different stakeholders involved. Within the STS field there is an approach called the Social Construction Of Technologies (SCOT) that believes that technological systems "are both socially constructed and society shaping" (Hughes 1993:51). Thus, one may say that diffusion of a technology will affect the society, and the society will in turn affect the technology. In other words, if one wants to enhance social acceptance of wind energy, one must also study the society and its relation with the technology.

Methods

This thesis is based on a case study of the renewable energy island, Samsø. "The case study aims to understand the case in depth, and in its natural setting, recognizing its complexity and its context" (Punch 2005:144). The in depth case study one of the approaches within qualitative methods, and a qualitative approach is sensitive to context and process, and aims "to do justice to the complexity of social life" (Punch 2005:238). With the time limit and length of thesis, I found it most comprehensible to choose only one case to investigate the social acceptance of wind energy. Alternatively, it could have been useful to do a comparative study. The reason I chose Samsø was because they had already successfully implemented wind energy over a period of ten years, in which enabled me to look at what factors that had contributed to their success. Before I came to the point where I could create a clear research question, I did a literature review on the existing debate. I started out studying Samsø by reading web pages, reports, articles etc. Also, I went to Samsø on a one-

day trip to discuss my project with the Energy Academy and collect information. This trip was very useful as I could discuss my thoughts and ideas with relevant people, and thus narrow the ideas down to a more specified question. Further, this mini trip eased the process of choosing informants. Then, I went back to Samsø for four days to do my interviews. This thesis is based on 7 semi-structured interviews. The informants were chosen for their position in the projects; leader of the Energy Academy, the major of the Municipality of Samsø, chairman of Samsø Energy- and Environmental Office (SEMK), Samsø Development Office, two private investors as well as another employee at the Energy Academy[4]. This selection of informants provided me with material to investigate the different aspects of the projects, which was necessary to understand the whole process that had taken place.

In a case study and within qualitative methodology the most common criticism concerns the potential generalizations and transferability of findings. According to Punch there are two ways in which a case study can produce result that are transferable, dependent on the purpose and data analysis of the case study. This can be done either by conceptualizing or by developing propositions. By conceptualizing Punch means that the researcher develops new concepts to explain some aspects of what has been studied, which is actually only possible with an in-depth case study. When developing propositions the researcher puts forward propositions that link concepts within the case, and these can be assessed for their transferability to other cases. Contrary to quantitative research, in a case study the hypotheses become the output of the research (Punch 2005:146). The case study of Samsø

[4] See appendix for list of interviews and interview guides.

does enable me to put forward some propositions about how social acceptance can be gained in wind energy projects, which could not have been done by quantitative methods. This is not to say that quantitative methods are not useful in studying wind energy implementation. Rather, a quantitative study that compares many cases would provide broader results and a framework for future implementation planning. On the other hand, the case study in this thesis represents a unique case and although that the result from this case study cannot be generalized, hopefully the results may be assessed when studying similar situations.

1.3 Structure of Contents

I have chosen to structure the content of this thesis into 7 chapters with different aims and purposes. Chapter 1 has been an introduction to understand the thematic departure, to gain an understanding of the scope and research objectives, to introduce the theoretical framework, present the methodology and structure the content. In chapter 2 I will present the case, the Renewable Energy Island Samsø, and briefly give an overview of the Danish wind energy history. Chapter 3 serves as an introduction to the debate and analysis, and the aim of this chapter is to provide an overview of the recent literature on social acceptance and what factors that matters in an implementation process. In the following chapters, 4,5 and 6, I have chosen to integrate the theoretical framework with the empirical findings in order to provide a thorough and consistent analysis and provide an in depth discussion of the research questions. The strength with this approach is the opportunity to always relate theoretical concepts and relevant literature to the case study and research questions. In chapter 4 I will discuss the particular context of Samsø, and look at how social capital influence project outcome and social acceptance. In chapter 5 I will discuss the role of local

participation in the decision-making process to enhance social acceptance, drawing on the findings from Samsø. Similarly, in chapter 6 I will discuss the importance of local ownership in wind energy projects. In the last chapter I will summarises my findings and give some concluding remarks on what Norway can learn from the experiences with implementing wind energy at Samsø.

2. Mapping Renewable Success

2.1 The Danish wind energy story

Renewable energy in Denmark has a special history as the people themselves initiated its development. The oil crisis in 1973 woke up the grassroots and people's attitude towards the use of resources radically changed. There was a great protest against nuclear energy, and hence a politically as well as a societal will to develop an energy sector based on renewable energy sources (Beuse et al. 2000). The Danish Organisation for Renewable Energy[5] (OVE) was established in 1975, and housed a number of activists engaged with renewable energy. OVE's currently works towards one hundred percent self-sufficient renewable energy in Denmark within 2030 (OVE 2008). The Danish wind energy sector has the past 25 years become the world's leading wind industry. The success is based on three main pillars; a *bottom-up* development, an *open* dialogue between politicians, scientists and grassroots enthusiasts, and *stable* economic conditions. The economic support has been important, but more significantly is the bottom-up development. The demand for wind energy has come from the grassroots, instead of being initiated by a technological push. According to Catherine Mitchell it is this foundation in the local people and a user-driven innovation process that has created the Danish success. Also, open dialogues between stakeholders, knowledge sharing and communication have been of importance (Mandag Morgen 2005). Another element of the Danish success story is the models of ownership. Ordinary people, independent of the industry, have invested in wind turbines. According to Frede Hvelplund,

[5] Organisationen for Vedvarende Energi: http://www.ove.org/

local ownership means compensation for the disadvantages and hence a greater acceptance for having wind turbines in the local landscape. Moreover, it has been common with co-operatives where up to 30 people own shares in a windmill (Mandag Morgen 2005; Hvelplund 2005). In 2002 cooperatives or individual farmers owned more than 80 percent of the Danish wind turbines (Krohn 2002)[6]. These ownership models cannot be overlooked when investigating implementation of wind energy and policy implications. Further, the Danish government has invested a lot of money on R&D[7] on renewable energy, and has been in the forefront on research on wind energy technologies for decades (Krohn 2002)[8]. Moreover, according to Jamison and Hård the Danish wind energy story is an example of cultural appropriation, by which they mean the way in which "new things and new ideas are made to fit into established ways of life" and the process of re-creating our societies so that new concepts and products make sense (Hård and Jamison 2005: 4). Hård and Jamison state (2005: 286);

> *"By making it possible for people to invest in and thereby share the ownership of local wind energy plants and by making arrangements so that the power that was generated could be easily connected to the already established energy distribution networks, Danish policy makers created an exemplary story of cultural appropriation".*

[6] Article can be found at http://www.windpower.org/en/news/articles

[7] Research and Development

[8] Article can be found at http://www.windpower.org/en/news/articles

2.2 Samsø: The Renewable Energy Island

In 1997 the Danish government announced a competition for a local municipality or an island to propose a plan for a total readjustment of the energy supply to renewable energy over ten years. The background for the government's initiative was the country's energy plan from 1996, "Energy 21". The target of "Energy 21" was that 35 percent of the Danish energy consumption should be covered by renewable energy by 2030. In 1997 the energy covered by renewables was 12 percent at the national level, as well as on Samsø. The idea behind the competition was to investigate how renewable energy could be implemented in a limited area with existing technology. The criteria for choosing a winner was a realistic plan for how converting to 100 percent renewable energy in ten years, and local involvement by different actors was considered an important aspect (Lunden 2003; Jørgensen et al. 2007). In 2007 Samsø, with 4300 inhabitants, was appointed the winner of the competition. Now, in 2008, they can congratulate themselves on having turned the challenge into a success-story. They now have a 100 percent renewable energy supply, and have demonstrated the possibilities of a small community to convert its energy supply to renewables and thereby reducing their CO2 emissions. Today Samsø is an exhibition window for renewable technology and a carbon neutral society. People all over the world visit this little Danish island, and the question to be answered is: how have they been able to put this idea into practice, and what can they learn those who struggle to obtain the same target?

2.3 The Renewable Energy Island projects

In 1997 the ten year plan proposed that the yearly energy consumption on Samsø was 29 000 MWh, and that an installation of 15 wind turbines would cover the yearly consumption. At the start of the project almost all of the islands electricity consumption was imported from the mainland's power plants based on coal. Only 5 percent came from a few wind turbines placed on the island. In 1998 the process of finding a suitable placement started, as well as investigating how the projects could be financed. There was a great interest among private actors to invest in the wind projects, especially so amongst landowners who had the possibility for placement on their own land. In order to ensure local participation in the projects the different organizations in the Renewable Energy Island – project cooperated with the Danish Wind Turbine Owners' association as well as Samsø's own association Samsø Wind Energy. Samsø municipality and Århus County were the officers in charge on the project. Samsø municipality proposed a local plan for placement of wind turbines that resulted in more than 40 individual applications. Århus County was in charge for assessing the landscape and the final plan that was permitted was an installation of 11 wind turbines that could produce 1 MW each. In 2000 eleven land turbines on 1 mega watt (MW) were installed on the island, delivered by Bonus AS (Jørgensen et al. 2007), and in 2005 ten 2.3 MW offshore wind turbines were installed. Samsø Offshore Wind Park is the largest project in the REI plan, and the electricity produced is supposed to compensate for the consumption of energy and CO2 emission from the transport sector (Lunden 2003). The actors involved in the offshore park are the Municipality of Samsø, the Samsø Trade Organisation, the Samsø Farmers' Organisation and the Samsø Energy and Environmental Office. The REI plan also includes projects on heating, solar energy and transport. Though, this thesis will focus on the electricity sector and the implementation of wind turbines on land and offshore. The wind

energy projects are the larges projects in the REI plan and the only project where the Municipality of Samsø, and hence all the citizens, owns shares. However, it is important to keep in mind that the wind projects are parts of a larger project, and that the success of the REI plan is due to the bigger picture.

Samsø's position as the Renewable Energy Island has improved the local economy in different ways. Firstly, the projects have created new jobs. For instance, the planning and implementation of the wind turbine- and the heating projects have created 20 jobs yearly from 1998 until 2007. Local craftsmen have been employed, and additionally the Energy Academy and other institutions involved in the planning process have created a multiple of new jobs. Furher, the projects have boosted the tourist sector. Samsø has always been a tourist island because of it's beautiful nature, however, now a totally new form of tourism has grown out of the REI project; professional tourism. Politicians, business people, grassroots organisations, media and students come to Samsø from all over the world to see how they have organised the projects. The Energy Academy offers seminars, courses and fieldtrips and the interest from outside Samsø is growing exceedingly (Jørgensen et al. 2007). Further, the projects have led to many environmental benefits. One of the main reasons for changing to renewable energy sources was to reduce the environmental impact of the existing energy consumption. The readjustment to renewable energy has led to a pronounced decrease of several gases, mostly because of the wind energy production (Jørgensen et al. 2007).

3. From Intrusion to Social Acceptance

Many studies show that while there is a high public support for wind energy, there is a strong opposition against local wind energy project (Gross 2007; Bell, Gray, and Haggett 2005; Wolsink 2005). This has led to an interest in what is termed ‘social acceptance’ of wind energy and several studies seeking to understand what triggers project success. These studies focus on factors influencing acceptance like different planning approaches, community perspectives, location choices as well as local ownership. What puzzles most researches is this gap between public support for wind energy in general and local opposition against local wind energy, and they seek to understand how this gap can be narrowed by increasing the social acceptance for local wind parks. Gamboa and Munda (Gamboa and Munda 2007) point out several factors for local conflicts and opposition such as the extensive land use, visual impact and fear of impacts on tourism as well as NIMBY behaviour. The most common explanation for local opposition is exactly the Not In My Backyard (NIMBY) syndrome. However, most scientists today have moved away from this explanation and today highlight other factors that might explain this gap.

3.1 The validity of the NIMBY explanation

The Not In My Backyard (NIMBY) syndrome has been frequently used to explain the gap between a high public support for renewable energy and local opposition. The definition of this behaviour is that wind energy is a good idea, as long as it is not in my backyard. Thus, this explanation implies an attitude-behaviour gap and a multi-person prisoner’s dilemma. People perceive wind energy as a god idea, but do not want to contribute by having wind

turbines in their communities. However, several authors have criticized the NIMBY explanation for being to simplistic and stress other factors that might explain this gap. Bell et al distinguish between two kinds of gaps; the social gap and the individual gap. They argue that the social gap is “the high public support for wind energy expressed in opinion surveys and the low success rate achieved in planning applications for wind power developments”. Then, the individual gap is the kind that exists when “an individual person has a positive attitude to wind power in general but actively opposes a particular wind power development” (Bell, Gray, and Haggett 2005: 460). Further, they provide three different explanations for the social gap where only one depend on the individual gap. Thus, one may say that the main problem is not necessarily people’s attitudes, but other factors or lack of factors that contribute to a low success rate in implementing wind power. Wolsink agrees and states that “the crucial factor is not that residents have strong intentions to shift the burden to others, but that they consider it unfair that others, or the decision makers, shift the burden to them” (Wolsink 2005:1203). This implies that a shift in project ownership towards including the locals may be of higher significance. The question is then; if NIMBY does not get to the bottom of the problem, what are the problems and how can one solve them?

According to Bell et al the two explanations for the social gap besides the NIMBY explanation are the “democratic deficit” and “qualified support” explanations where the first one represents decisions by a minority that does not reflect the will of the majority. This explanation suggests that supporters do not see their contribution worth the cost of participating, while the opponents think that protecting the landscape outweighs the cost of participating. The “qualified support” explanation reflects the principle that support for wind power should be qualified regarding impact on environment etc. After identifying some

possible explanations for the social gap, the authors provide some policy advices for each explanation. For the “democratic deficit” they suggest changing the decision-making process and planning process from “confrontation to collaboration” with the aim of public participation. For the “qualified supporters” information and knowledge may be they key to solve the problem as people may lack important knowledge about the importance of wind energy or information on for instance the impact on the environment. Thus, communication policies, in addition to direct involvement of the community, are important. As Bell et al points out such communication strategies will only work if “it is grounded in an existing relationship of trust built through a participatory process” (Bell, Gray, and Haggett 2005: 470). Gross elaborates on this point and argues that “perceptions of fairness do influence how people perceive the legitimacy of the outcome, and that a fairer process will increase acceptance of the outcome” (2007:2727). Using the concept of fairness may be problematic as the meaning of the concept may differ substantially according to definitions. In a project were there are cost and benefits it may be the case that these will never be distributed in a ‘fair’ way according to all actors involved. The concept of fairness will be discussed further in chapter 5. However, the lesson one can draw is that an open and participatory process can increase the social acceptance of wind energy. How then can one ensure local involvement in wind energy projects?

Wolsink explains the social gap by the tendency towards top-down planning in which he sees as an obstacle to successful implementation. He says that successful implementation is dependent on “institutional changes that create involvement and trust of actors at the actual implementation level” (2007:2692). Wolsink found that differences between countries can be explained by institutional conditions, and that democratic and collaborative planning is

necessary to advocate increased participation in planning processes. Further, Wolsink states that “the level at which the real decisions are taken about investments and the siting of wind power schemes is crucial” (2007:2694). Thus, it is important to ensure fairness of decision-making and representation of local values in relation to landscapes. Here one can think of fairness as referring to an open, transparent and participatory process. “Effective and positive decisions are affected by a complex set of variables that are rooted in institutional arrangements and social and political culture. These are variables in categories such as the planning regime, the financial support system, values attached to landscape quality and preservation, and the degree of local ownership of schemes to build wind farms” (Wolsink 2007:2693). Bell et al, like Wolsink, suggest financial compensation or local ownership to avoid NIMBYism. However, they highlight that in community ownership it might be beneficial to distinguish between financial incentives and local involvement as reduced opposition might be due to “local control over the siting process” (Bell, Gray, and Haggett 2005:473). They ask: “Is it money that matters to opponents of wind energy or is it control over the character of developments?” This question will be discussed in chapter 6.

Further, when it comes to landscape concerns Bell et al state that there is no technical fix. The only way to avoid opposition then is to include the local people when making location decisions. According to Wolsink landscape values are culturally determined and may affect the decision-making process through local political institutions. Wolsink states “visual evaluation of the impact of wind power on the values of the landscape is by far the most dominant factor in explaining why some are opposed to wind power implementation and why others support it” (Wolsink 2007:2696). Bell et al argue that in order to respond to NIMBYism it is essential to promote environmental citizenship as in promoting green

values. However, as Wolsink points out one needs to acknowledge the complexity of a planning process and the NIMBY explanation does not include a variety of factors. Based on the discussion above it is reasonable to conclude that the NIMBY explanation for wind energy opposition is outdated and that there is a need for a more complex framework to understand opposition and enhance acceptance.

3.2 Accepting acceptance?

The discussion above has focused on why people resist local wind energy projects, and how one can increase the social acceptance. The conclusion so far is that the NIMBY explanation is far too simplistic and that one needs to consider other factors in order to increase acceptance. According to Wüstenhagen et al there is no clear definition of social acceptance. However, they distinguish between three different dimensions of the concept; socio-political acceptance, community acceptance and market acceptance. They define socio-political acceptance as social acceptance of technologies and policies at a general level by the public, stakeholders and policy makers. Opinion polls often show a high public support for renewable energy, however when moving from global to local it seems that social acceptance is indeed a problem. “Many of the barriers for achieving successful projects at the implementation level can be considered as a manifestation of lack of social acceptance” (Wüstenhagen, Wolsink, and Bürer 2007:2685). When it comes to acceptance by stakeholders and policy makers, Wüstenhagen et al state that effective policies are required to enhance market and community acceptance. This can be done by for example the establishment of financial systems and planning systems that encourages collaborative decision-making. Further, “community acceptance refers to the specific acceptance of siting

decisions and renewable energy projects by local stakeholders, particularly residents and local authorities" (Wüstenhagen, Wolsink, and Bürer 2007:2685). Community acceptance is the arena in which the NIMBY explanation is frequently used to explain the lack of acceptance. However, as already discussed the validity of this explanation is questionable and there is a need to include factors like trust of information and abilities for participation as well as looking at the distribution of costs and benefits. Market acceptance is "the process of market adoption of an innovation" and the authors link this to the literature on diffusion of innovation "which explains the adoption of innovative products by consumers through a communication process between individual adopters and their environment" (Wüstenhagen, Wolsink, and Bürer 2007:2685). Although energy technologies are more complex, due to infrastructures like grids, than many other products one may learn something from this theory when studying renewable energy at the building level. However, this thesis seeks to gain an understanding of the mechanisms behind community acceptance and hence also the broader socio-political acceptance. Still, the literature on diffusion on innovation will be linked to the discussion on decision-making and the different phases involved.

The concept of social acceptance can be discussed as the term implies that there is a need for people to accept the technology, but it does not imply any further involvement. This in turn shows a top-down attitude towards wind energy implementation where it becomes important for decision-makers to make people accept the technology and the implementation of it. This is problematic as a bottom-up development of wind energy projects is highlighted here as one of the keys to ensure project success. It may be contradictory to speak of the importance of bottom-up initiative and local participation on the one hand and acceptance on the other. However, the concept does provide some useful insight especially as in acceptance versus

opposition. The concept will be used in this thesis with this purpose and without implying that acceptance exclude local participation. Rather, further involvement by the local community will be emphasized as a necessary key to in fact ensure acceptance. However, I will emphasize that the concept of social acceptance is a dynamic process. There can be different levels of social acceptance. Different actors and stakeholders may have different incentives for participation and thus different levels of acceptance. A wind energy project includes environmental, social and economic aspects, and the challenge is to find a way to make sure all these aspects and interests are integrated in the same project. That will increase the chances of social acceptance by different actors. Hence, participation in projects is acknowledged as the key to success. The two main factors highlighted in this thesis are the democratic decision-making process and local ownership. The discussion and analysis will focus on how these factors increase social acceptance and how has this been done at Samsø. However, before the points about the decision-making process and local ownership will be elaborated, I will discuss the social and cultural context, which is also necessarily influencing social acceptance.

4. Participation: Bridging the Locals

In this thesis, participation and involvement of the locals are highlighted as the keys to success for the wind energy projects at Samsø. However, also the specific context, culture and history influence project outcome. In this chapter I will analyse the particularities of Samsø in relation to the theory of social capital and especially the factors of trust and networks.

4.1 The value of social capital

The concept of social capital, initially developed within the sociology field, has lately been adopted by other disciplines such as economy and innovation studies. Pierre Bourdieu, James Coleman and Robert D. Putnam have all provided theoretical frameworks for social capital (Coleman 2002; Putnam and Feldstein 2004; Putnam 2000; Portes 2000). Both Bordieu and Coleman focused on individuals or small groups like families, and the benefits of social ties as the units of analysis. However, the adoption of the concept by other disciplines stretched the conceptual meaning. Putnam made it possible to speak of social capital as a possession of communities, or even nations, and used the concept as a matter to understand the structural effects on communities development (Portes 2000). Thus the concept's use in this thesis is inspired by the definition provided by Putnam through his work in "Bowling alone" and "Better Together: Restoring the American Community" as I seek to explore the effects of social ties in a community. Putnam defines social capital as a term that "refers to social networks, norms of reciprocity, mutual assistance, and trustworthiness" (Putnam and Feldstein 2004:2). Further, social capital is an input factor

similar to physical capital and human capital. According to Putnam the essential insight from social capital is the value of social networks both for the people in the networks and for bystanders. However, he also stresses that the external effects of social capital is not always positive and that NIMBY behaviour is one example of this (Putnam 2000:22). Hence, social capital can come in many forms; however Putnam stresses two forms of social capital; *bonding social capital* and *bridging social capital*. Bonding social capital refers to the networks that link people together in respect of family, friends, homogenous groups etc. and is inclusive, while bridging social capital is networks that consists of many different people and is more outward-looking in opposition to the inward-looking bonding social capital. An example of bridging social capital is civil rights movements that "encompass people across diverse social cleavages" (Putnam 2000:22). Putnam sees bridging social capital as most essential for providing a healthy public life, although, he identifies this type of social capital as the most difficult to create (Putnam and Feldstein 2004:2-3). Further, Putnam argues that "social capital is necessarily a local phenomenon because it is defined by connections among people who know one another". Also social capital is something that is developed over time (Putnam and Feldstein 2004:9). In "Better Together: Restoring the American Community" Putnam reaches a dilemma where smaller is often better for creating social capital whereas bigger is better for extending the power of social networks. However, it is not clear how Putnam defines small and big. How small is too small when it comes to extending power?

Putnam's framework provides insight to understand the local dimension when incorporating wind energy. It is relevant when analysing the social acceptance of wind energy as, already mentioned, social capital takes departure in the local and is a factor that is developed over time. Thus, it provides a useful framework for studying Samsø – a little island community. A

question that will be discussed throughout this chapter is how the social capital at Samsø may have influenced and perhaps benefited the outcome and social acceptance of the projects. Although, other mechanisms for enhancing public acceptance of wind energy will be discussed in this thesis, one can look at social capital as a factor that actually enables or at the very least eases the other processes. What are indeed the benefits of social capital? As Putnam points out, social capital can be used for "antisocial" purposes and "therefore it is important to ask how the positive consequences of social capital – mutual support, cooperation, trust, institutional effectiveness – can be maximised…" (Putnam 2000:22). In the following discussion I will see how the particular culture, history and networks at Samsø might have strengthened the social capital and contributed to social acceptance of wind energy. However, I want to stress that social capital itself makes social capital grow. Thus social capital is a process with synergy effects. However, it is a complex process that can be difficult to get started.

4.2 Context, history and culture

Putnam stresses that much of the success in the case studies "depended on particular circumstances of time, place, culture, and personality" and that there is no such thing as a prescription or rules to build social capital (Putnam and Feldstein 2004:275). This is also true for Samsø, and it is important to keep in mind that the success of the project is context dependent and thus it is problematic generalizing the results. I will discuss how local identity and local culture can have been factor that have influenced the projects at Samsø in a positive direction. Søren Hermansen, leader of the Energy Academy, believes that the fact

that Samsø is an isolated island society left to manage themselves in many ways have led to an interest in the projects. Hermansen says:

> *"This feeling is typical for an island society, and therefore I think that if one gets an opportunity to do something brand new, there is a certain interest for it. I think it would be much harder to make the same project someplace in the middle of Jutland because people do not have the same sense of belonging to a place".*

According to him, this feeling is strong on Samsø. Before the renewable energy projects started, the agriculture industry had been going downwards for many years, and the result was a weakened local economy. Hermansen points out that if Samsø wants to keep their younger citizens it is necessary to create good jobs and other opportunities in order to make people want to settle down there and make the society running. Hence, an opportunity, here represented by the renewable island project, may get more attention in an isolated society like Samsø than in other places.

Further, Putnam highlights the role of the enemy when creating social capital (Putnam and Feldstein 2004:285). One can possibly say that oil represents an enemy at Samsø. As an isolated society it costs a lot to import oil to the island. In many other countries, islands and far reaching places are subsidised because of the high price for transportation. However, this has not been the case for Samsø – they have paid for the transportation in addition to the price for oil. As Søren Hermansen points out then oil gets really expensive if one needs to be competitive. In the 50s and 60s oil was a cheap commodity, but today the prices are increasing. Hermansen says that people at Samsø have become aware of how they can save energy because of Denmark's high taxes on energy consumption, especially oil and gas. The solution for Samsø has been to produce energy cheaper and environmentally better by wind power. It may be reasonable to believe that the high price for oil has led to increased

acceptance for wind energy. According to Hermansen the project is not as much about idealism as about money. However, he points to the fact that Samsø is a windy island and therefore is ideal to use the wind for something sensible like green energy. One of the problems in other countries where opposition has been high, like Norway, is the conflict between global environmental concerns and local consequences represented by wind parks (Thele 2008). According to Wolsink "global warming – the issue the proponents argue about – is only a distant background in the context of local renewable schemes" (Wolsink 2007:2695). At Samsø it seems they have found a way around this problem, as the projects have contributed with many benefits for the whole society. For example, the use of local expertise in the projects may have contributed to enhanced acceptance and also a strengthened identity to the projects. According to Mette Løkke at Samsø Development Office, the farmers at Samsø showed early an interest in the projects. They thought the project was a good idea both from an idealistic point of view, but also economically, as they own the land. Further, they had the capacity needed in order to build the wind turbines. Thus, a lot of the expertise from the agriculture industry - with leadership and private business experience - has been used in the wind projects. This may have led to a feeling of belonging; strengthened the identity on the island and increased the acceptance of the projects. Further, the Municipality of Samsø owns 5 of the offshore wind turbines, which in turn benefits the citizens for example with fewer taxes. The major of Samsø, Carsten Bruun, says that "the fact that we can combine economy and get a cleaner environment is everyone's interest and I think it has made people at Samsø stick together and say that we are proud of it." Further, Løkke states that:

> *"Most of the citizens are happy to be co-owners of the offshore wind park and I am convinced that it has contributed to all of us having an identity of being part of a renewable energy island and that this is our hallmark. We all have 5 wind turbines we can be proud of."*

4.3 Networks, actors and trust

According to Putnam building social capital depends on structural conditions and on the actions of protagonists. Although many of Putnam's own case studies focus on the actions, he highlights that structural conditions, such as government policies that support participatory and connective strategies, are important for project success and an incentive for local organization. Further, he points to the importance of "true believers"; people in positions of power that are committed to grassroots participation. Also, he concludes, "interpersonal connections and civic engagement among ordinary citizens were essential to making participatory democracy work" (Putnam and Feldstein 2004:274). As mentioned in chapter 2, the structural conditions in Denmark support bottom-up development and local organization. Further, in an international perspective, Samsø represents an original case as it all started with a competition. The government initiated and supported the project, and hence the structural conditions have not been an obstacle, but rather the starting point. Moreover, the fact that Samsø wanted to participate in the contest shows grassroots initiative and a will for local organization. One of the early initiators behind the project proposal was Søren Hermansen who today is the leader of the Energy Academy. Carsten Schnoor, also employed at the Energy Academy, highlights the bottom-up development of the project and Hermansen's role as one of the key persons. He says:

> *"Søren Hermansen has done a great job. He started 10 to 12 years ago with going around talking to people …he is extremely competent, and he has believed in it and been a great motive power and inspiration throughout the whole project".*

Thus, the role of key persons or "true believers" seems to have been important for the project success at Samsø. This is related to the issue of trust. According to Wüstenhagen et.al trust is the key issue in siting decisions as siting decisions always include risks in regard to environmental, economic and social aspects. Thus, trust in the information about

the perceived risks as well as trust in the aims, motives and competence of the decision-makers becomes important (Wüstenhagen, Wolsink, and Bürer 2007:2687). It seems clear that when the decision-makers and initiators in addition are locals, like on Samsø, it is easier to enable trust. Putnam argues that the most important aspect of trust is social trust, which is trust in other people (Putnam 2000:137). According to Huijts et.al social acceptance is predominantly a social process where people have to rely on others with regard to information. "Trust can be understood as the willingness to be vulnerable under conditions of risk and interdependence" (Huijts, Midden, and Meijnders 2007:2780). Further, according to Huijts:

> *"Trust may cause greater tolerance of uncertainties, willingness to explore opportunities, and openness to new information. It allows people to make decisions and enjoy the benefits of new and potentially risky technologies without having to understand all the details" (2007:2781).*

Putnam takes this a step further and states "trustworthiness lubricates social life" (2000:21). According to Putnam "shared vision of collective action" and "creating a new dimension of similarity within which bonding can occur" is important in creating bridging social capital (Putnam and Feldstein 2004:282). Also Huijts et.al highlights similarity as something that can provide a common ground between the public, the government and the industry. "Drawing attention to common goals and values may increase trust through increasing perceived good intentions as well as perceived competence" (Huijts, Midden, and Meijnders 2007:2788). Thus, similarity may affect trust and also ease the process of recognizing and understanding people's needs. When considering similarity, it seems clear that it is important to involve local people and consider local values somehow in the decision-making process. Putnam thinks that the creation of common spaces is important in a process of building social capital (Putnam 2000:291). At Samsø such common spaces include the local newspaper that has provided information and enabled debates. Also, the Energy Academy

represents an important common space where people can get information and attend public meetings. It may seem that the fact that the project on Samsø has been rooted in local actors and local initiators have led to increased acceptance. It is reasonable to conclude that the project has been possible due to bridging social capital, and that the project indeed also has strengthened social capital on the island. As Putnam points out; “society as a whole benefits enormously from the social ties forged by those who choose connective strategies in pursuit of their particular goals” (2004:269).

It seems like social capital has led to increased trust and acceptance in the wind energy projects. The local culture, context and history have played a role in the project outcome. Consequently, it does not seem that the community of Samsø has been too small to extend their power. If the particular context of places influences the acceptance and outcome of projects, the result from Samsø may not be transferable. Social capital will differ from place to place; however, the aim of this chapter was to show how it might matter in an implementation process. Although, there is no prescription for building social capital, it seems like a process that involves and unites local people may actually contribute to strengthen social capital. However, as already mentioned it should exist social capital in order to actually develop it further. Thus, it is a complex process that might be difficult to create. In the following chapters I will elaborate on other factors that can enhance social acceptance and are closely connected to bridging social capital. These factors are a democratic decision-making process and local ownership.

5. The Making of Democratic Decisions

Much of the debate concerning acceptance of wind energy concludes that participation in the decision-making process is an important issue for solving local opposition. Gross' study of social acceptance in Australia indicates that perceptions of fairness influence the acceptance of the project outcome (Gross 2007). Two central concepts in Gross' article are fairness and justice. However, the concept of fairness is questionable as what one considers fair or unfair is subjective and hence the concepts meaning becomes unclear and perhaps even irrelevant when solving a local conflict. Thus, when speaking of a fair process one needs to identify certain criteria for what is fair. According to Gross, in a decision-making process one can speak of two different types of justice; distributive justice and procedural justice. Distributive justice focuses on how equitable the distribution of the outcome is, while procedural justice focuses on the process where decisions are being made and how people are allowed to participate in this process (Gross 2007:2729). Gross identifies important elements that need to be included in procedural justice; "rights of participation, access to information, and lack of bias on the part of the decision-maker" (2007:2729). Environmental justice is concerned with the distribution of environmental impacts such as impact on landscape. According to Gross several studies show that procedural justice is important in a public participation process. Important factors when judging fairness are representation, information, voice, consideration and satisfaction with both the procedures and the outcomes (Gross 2007:2730). The extent to which these principles are followed in a decision-making process influence participants' perceptions of fairness. "People who feel that they have been treated fairly are more likely to accept the decisions resulting from the process, and also will be more likely to trust the institution making the decision" (Gross 2007:2730). Further, Wolsink has also paid attention to the question of fairness. He states that the greatest

obstacle for successful implementation of wind energy is the tendency towards top-down planning (Wolsink 2007:2692). Wolsink highlights that collaboration and participation in the planning process is crucial for increasing acceptance especially with regard to location choices (Wolsink 2007:2694; Breukers and Wolsink 2007; Toke, Breukers, and Wolsink 2006). In most countries such decisions are taken at the local level, and according to Wolsink it becomes a question about how the decision-making at this level is organized and thus influences the implementation rate of wind power at the national level. According to Wolsink one must consider the real options local people have to become involved in the decision-making process. The following discussion will look at how these issues have been solved at Samsø, how the locals have participated and how these factors have enhanced project acceptance. Even though recognising the subjectivity of the concept of fairness, Gross' identification of the elements that needs to be included in a "fair" decision-making process provides a framework for analysing how the local people have been included at Samsø. In addition to these elements, the following discussion will be centred on factors identified as important in the case study. These factors are transparency, openness and communication. However, firstly, I will draw on the literature on diffusion of innovation and especially the innovation decision-making process and its different phases. After introducing the theoretical framework, the following discussion will be divided into the different phases recognised in the innovation decision-making process at Samsø. This categorization may enhance the understanding of the different phases involved in an innovation decision-making process, and thus provide an understanding of the necessary steps that needs to be taken in wind energy projects to ensure project success and social acceptance.

5.1 Phases in an innovation-decision process

Rogers define diffusion as “the process in which an innovation is communicated through certain channels over time among the members of a social system” (Rogers 2003:5). According to him diffusion is concerned with a new idea, and this element of newness means that diffusion involves uncertainty, which in turn implies a lack of predictability (Rogers 2003:6). The aspect of uncertainty is related to the issue of trust, which I discussed in chapter 4. It seems that social capital creates trust towards actors, and thus one can assume that it is easier for people to accept uncertainty and lack of predictability. However, one must keep in mind that social capital and trust may not remove all conflicts in an innovation decision-process. As discussed earlier especially location choices are often an arena for local conflicts, and this point will be elaborated on when discussion the decision phase in this chapter. Further, Rogers also sees diffusion as “a kind of social change, defined as the process by which alteration occurs in the structure and function of a social system” (2003:6). Hence, the implementation of wind energy is diffusion of a technology that also bring about a social change, which in this case is a change in the energy supply from fossil fuels towards renewable energy, as well as a change towards a more environmentally friendly society. Moreover, according to Rogers (Rogers 2003:168);

> *“The innovation-decision process is the process through which an individual (or other decision-making unit) passes from gaining initial knowledge of an innovation, to forming an attitude toward the innovation, to making a decision to adopt or reject, to implementation of the new idea, and to conformation of this decision”*.

This can be used as a theoretical framework when examining the innovation decision-process that has taken place at Samsø. The implementation of wind energy is also diffusion of an innovation and of a technology, and one of the aims of this thesis is to provide a better understanding of the social mechanisms that may enhance the implementation and diffusion

of renewable energy. The different phases highlighted in this chapter will be based on Rogers' model of the innovation-decision process with the following five stages or phases; knowledge, persuasion, decision, implementation and lastly confirmation. The *knowledge* phase occurs when people are "exposed to an innovation's existence and gains an understanding of how it functions". The *persuasion* phase is when people form an attitude towards the innovation that is either favourable or unfavourable. Further, the *decision* phase, takes place when people "engages in activities that lead to a choice to adopt or reject the innovation". The *implementation* phase is when the new idea is put into use, while the last phase of *confirmation* occurs when people seek "reinforcement of an innovation-decision already made" (Rogers 2003:169). The purpose of using these stages in the discussion is to provide a better analysis of the involvement of the local people in the actual innovation decision-making that has taken place at Samsø, and possibly identify the most critical phases for involvement and factors for avoiding opposition and increase acceptance. Roger identified five stages in an innovation decision-process; however, the stages identified here are adapted to the results of the findings from the case study. Hence, four different phases will be highlighted as I see Rogers' phase two, the persuasion phase, as a more dynamic phase intertwined with the other phases in the process. Based on the findings from Samsø and drawing on relevant literature, attitudes towards wind energy may change throughout the decision-making process based on the actual management of the process. The question about attitude or acceptance will be discussed in the last part of this chapter. Further, it is important to keep in mind that the different phases are meant as an analytical tool only, in reality the different phases can be somewhat intertwined and have undefined limits.

Phase 1: Knowledge sharing

The first phase can be seen as the pre-phase in the implementation process. At this point people are introduced to the technology, and sharing of knowledge about the technology and implications for implementation is important. The third phase identified by Roger is the phase where people decide upon whether to adopt or reject the technology (Rogers 2003). Hence, information and knowledge sharing are crucial before this decision can be made. Before discussing how this was done at Samsø, I will firstly look at some of the preconditions on the island. As discussed in chapter 4, social capital and trust may influence people's attitudes towards wind energy. At Samsø the locals were introduced to wind energy by the government's contest. A few people on the island, including Søren Hermansen, took the initiative to propose a ten years plan for the island's adjustment to renewable energy. According to Hermansen the motivations for joining the contest were partly a result of environmental concerns, partly because of economic incentives. As discussed in chapter 4, the island was dependent upon oil import and the agriculture industry was going downwards. The renewable energy plan represented a solution to the energy problem, as the island could become 100 percent self-sufficient on energy. Further, a total readjustment to renewable energy also meant that Samsø would decrease its CO2 emissions. Thus, people at Samsø saw renewable energy as something that might contribute positively in the community. A factor that might have enhanced the social acceptance of the wind energy projects is the fact the project was rooted in a bottom-up mobilisation. One of the conclusions drawn from chapter 4 is that trust in actors is important regarding information. One comparative study on local acceptance of wind energy shows that local integration of the developer is important in terms of being able to create a network of local actors, as well as knowledge of the context and contacts with local authorities (Jobert, Laborgne, and Mimler 2007:2758). Leader of Samsø Energy and Environmental Office (SEMK) and chairman in the offshore wind parks

cooperative, Inge-Dorthe Ellegård Larsen, says that in the beginning of the project Søren Hermansen was employed as the leader of an office that took initiative to organise public meetings and orientation meetings. Other actors involved were the private business sector, public institutions, Samsø Energy Company, the agriculture association and business forum in addition to other associations. Thus everyone could meet and discuss how to do things. *"It has meant a lot that one has agreed to commonly figure out where to place the turbines and how especially regarding the land turbines"*, says Ellegård Larsen. SEMK has been one of the initiators and has been helping the process along by making public, private and business interests cooperate. According to Ellegård Larsen SEMK is an association that stands outside, but have the time and knowledge required working with the project and that is competent working with such processes. The leader highlights the importance of having such an instance with that role and competence.

Then, at Samsø knowledge sharing has been an active process where local people have been represented through local associations, as well as had the possibility to attend public meetings and working groups. Further, it is reasonable to assume that people have trusted the actors involved and the information given, which may have reduced the element of uncertainty. In Roger's persuasion stage people form an attitude towards the innovation through activities (2003). Presumably, the involvement of the locals in the first phase of the process has led to increased acceptance for wind energy. I will discuss involvement of locals in making decisions regarding placement in the next phase. However, firstly I will briefly explain how the initiators behind the project argued for implementing wind turbines on the island. Today the wind turbines are placed on the southern part of the island, while the

northern part does not have any new turbines and have a big nature reservation consisting of small islands prohibited for humans[9]. According to Hermansen:

> *"Our idea of nature is that one part of the island is a cultivated area with houses and villages, while the other part is nature. It is landscape of nature versus landscape of culture and we can have both at Samsø".*

This is an interesting view when it comes to landscape concerns. One of the problems of implementing wind energy in Norway has been local concern over impact on nature and the idea of the untouched nature (Thele 2008). Hermansen states:

> *"I think that the idea of the untouched nature is an illusion, we live here and where there are people there are activity, and when one looks at our electricity consumption I think you have to accept a certain amount of production…Our argument have been that on Samsø we use 25 ooo MWh[10] annual, and we have to be able to produce this from wind power in order to be self sufficient. If we want fewer wind turbines, we also have to reduce our consumption. It is a good discussion to say that if one has consumption, one also needs to produce electricity. The problem with other types of production like gas and oil is the CO2 emissions so if the goal is to reduce CO2 emissions wind power is a good thing, if not one has to compare wind power to nuclear power. We have a very high consumption which we have to deal with and consider how to produce it in the best possible way".*

Phase 2: Making decisions by involving the public

The second stage in Roger's framework is the phase where people form an attitude towards the innovation that is either favourable or unfavourable. His third phase is the decision stage where people engage in activities and decides whether they want to adopt or reject the innovation (Rogers 2003). However, I argue that Roger's second stage, the persuasion stage, is more a state of mind, than a phase, that can change during the process. As discussed

[9] See map of Samsø in the appendix.

[10] Megawatt hour

earlier, acceptance is not static, but rather a dynamic process. Also, people might accept an innovation and have a favourable attitude to implement it, but that does not mean that their attitude towards it is necessarily only positive. Hence, I will here move on to Roger's third phase, the decision stage. From the discussion on social acceptance of wind energy one can conclude that matters of democracy, openness and transparency are important. How were these factors included in the process at Samsø, and how were local people involved in the innovation decision-making process?

According to Hermansen the initiators behind the projects treated the ideas and the project proposal before an official meeting was organised where people from Samsø were oriented about the projects and invited to join different working groups. Then a project idea was proposed and sent to a hearing round at the Municipality of Samsø. The Municipality treated it and then sent it to the Environment centre in East Jutland. They assessed the technicalities of the turbines as well as the placement and environmental impact. The Environment centre then evaluated the proposal, which Samsø regulated before the project was given a final permission and was ready to be realised. At this point the developers could involve the locals for investment and further participation. Hence, the project developers made most of the preparation. However, in this case the project initiators and developers were local people, and the local authority was a part of the process. The most crucial aspect in this phase was the placement of the turbines. The placement of the turbines today is a result of a long process where the locals participated in deciding on the best placement. Everyone at Samsø, including summer residents, was invited so it was an open process. *"People have the right to object without any particular reason. In Denmark some think turbines devalue property and just the worry that that may be the case means that one have to accept the*

doubt," says Søren Hermansen. *"If one wanted to participate, one could. There were no obstacles,"* says SEMKs chairman Inge-Dorthe Ellegård Larsen. Many things were discussed to a great extent. Regarding the offshore wind park there was a great debate in the press about the placement. *"It was a big discussion, but it took place very openly. Sometimes people argue because of conflicting interests, however, it is important that it is as clear and open as possible to avoid problems later on,"* says Ellegård Larsen.

Wolsink highlights landscape values as important since such values are culturally determined. Hence, it is important to give local interests a voice when making decisions regarding siting (2007). "Hence, it is not the values as such, but also – and particular – the institutionalization of those values in current practices and organizations (nationally as well as locally) that affects outcomes in terms of implementation" (Wolsink 2007:2694). According to Thele it is different and conflicting landscape values that have hindered the development of the Havsul projects in Norway (Thele 2008). Thus, it is interesting to see how Samsø has managed to overcome such conflicting interests. It does seem like the involvement of the local population when making location decisions, is one of the best parameters to ensure acceptance. One of the latest contributions to the debate on social acceptance of wind energy, by Eltham et al, is based on a study of a wind farm in England. They argue that the most important issue for opposition is the visual impact of wind energy and the intrusion in the landscape. The issues for concern are the possible impact on tourism as well as noise. They highlight that in order to reduce opposition it is important to reform the planning system so it becomes more transparent and participatory. This way, planning authorities can communicate with local people so that their concerns can be addressed in an early phase of the project. Further, they also conclude that there is need for trusted

information. In their study they find that many people feel only remotely involved in the planning process and a few opportunities to consider the impact of wind energy (Eltham, Harrison, and Allen 2008). People at Samsø participated in suggesting the placement of the wind turbines on land, as well as where they did not want them. There were some protests against suggested placements, like near Kolby church and also two of the proposed sites for the offshore wind park. These worries were taken seriously, and other alternative placements were found that could be accepted by all the inhabitants. When it comes to the offshore wind park three possible placements were initially suggested. According to Hermansen the three possibilities included the same conditions for ownership and differed only with regard to the actual placement. One of the suggestions was a big summer resident's area. There are about 300 houses there, and the people living there during the summertime did not want the turbines as they meant the wind park would destroy the view of the sunset. Thus, visual pollution represented an arena for conflict. The second option was close to a little island with a great bird and animal life. People objected because they thought the distance from the turbines to the island was too small and they worried about the birdlife. The project developers did not recognise the turbines as an environmental threat; however, they took the local people's worries into consideration. In the end the offshore wind park was situated at a place where it affected only one family who gave its acceptance. *"So the challenge was to find the best suitable place where fewest possible people were influenced by the wind park. In such discussions it is very important that one can the find the least possible burden of a project,"* says Hermansen. The advantage with the current placement is that is the best placement when it comes to the wind, and hence the production of electricity. The disadvantage is that the sea is deeper so it cost more to build the park. Hermansen states:

> *"These are things you have to discuss all the time. For and against and how it should be done practically. On this island we are used to the fact that one have to discuss how to solve things, how to find acceptable solutions, and it may well take some time to find a good solution, but when one have found one there is a general accept for it among the population".*

Further, farmer and investor, Jørgen Tranberg, tells that there was a similar conflict when one of the suggested locations was close to one church at Samsø. The Minister of the church did now want the turbines as he worried about the effect they would have on the church services. He wrote letters of objection and the result was that the location was changed.

Based on the above discussion, one can conclude that at Samsø people had a real opportunity to participate in the discussion and planning phase, and that the developers considered their voices. Søren Hermansen points out that they had to consider people's voices to avoid unnecessary delay and a slow down in the projects, as well as to ensure a good dialogue with the local community to find the best suitable placement for all actors involved.

Phase 3: From theory to practice

Roger's fourth phase, implementation, is the phase I have termed from theory to practice. At Samsø this represents the time where the project could be put into realization, which means that the locations had been decided upon and that the project had been given a final permission. In this phase people were involved in the financing through local ownership. The different ownership models at Samsø include private owners, co-operatives and municipality ownership. However, also in this phase communication and openness were important factors as it involved several conflicts. Regarding the turbines on land the conflict concerned placement and which landlords that got the opportunity to invest in a turbine on

their own land. According to the private investors Jørgen Tranbjerg and Erik Koch Andersen the fact that only eleven out of about 50 interested farmers got the opportunity to invest in their own turbine, and hence get the surplus, created a conflict of interest and envy among the landlords. Tranbjerg and Koch Andersen highlight the economic advantage of owning a turbine, and hence this was an economic opportunity that many landlords wanted. However, SEMK's chairman Inge-Dorthe Ellegård Larsen, tells that they decided that a certain amount of the profit should go to a fond that should be used for the common good. This agreement solved the conflict. Further, two out of total eleven onshore turbines are owned by cooperatives. This means that many people got the opportunity to invest in shares. Koch Andersen says that he thinks all of the turbines should have been owned by a cooperative, as that is most fair. To sum up, when the projects were realised the local people participated by investing. The conflicts that came up were solved by communication and openness. Again, the main point is that involvement of the locals does seem to enhance social acceptance. However, at the point where the project was realised there was a degree of acceptance. The conflicts were no longer centred on location choices or whether people wanted the turbines, but rather how they argued about investment opportunities. According to Wüstenhagen et al investment reflects social acceptance of wind energy (Wüstenhagen, Wolsink, and Bürer 2007). Thus, one can assume that in this phase people at Samsø had accepted the projects. This means that Roger's second phase, the persuasion stage, had somehow been reached as people had formed a positive attitude towards the innovation.

Phase 4: Confirmation: Success and acceptance

In the last phase, confirmation, it is time to make up status. How do people review the implementation of the innovation today? It seems that acceptance is a factor that has been developed through the different phases of the innovation decision-making process, but most importantly it seems to be an effect of the involvement of the locals. The process has been transparent and people's voices have been heard by the developers. Especially when it comes to location decisions participation and openness have been important. The debate on this issue took place very openly, protests were heard, and in the end they found placements that everyone accepted. Further, people choice to invest in the projects and this shows a high degree of acceptance. This point, however, will be elaborated on in the next chapter on local ownership. Moreover, the projects have contributed to local development in many ways. First of all, Samsø has been branded as a renewable energy island, and this has led to an increase for the tourism industry. Further, new jobs have been created and it seems like the local economy has boosted. Maybe more importantly for acceptance, though, is the local identity and the local pride that has got a new dimension. My informants can tell that they are proud of living at Samsø, and proud of what they have achieved. Mette Løkke at Samsø Development Office thinks that the most important factor for acceptance was the island's title as a Renewable Energy Island and that people really wanted to become 100 percent self sufficient with energy. Another factor is the amount of wind turbines. In Løkke's opinion it would be different if they were to implement hundreds of turbines:

> *"People are pleased with the 11 land turbines we have today because they show that we are a renewable energy island – they are visible in the landscape in a good way without being too many"*.

Thus, it is reasonable to conclude that projects have had an enormously success, people have not just accepted the innovation, but it has also become a part of their identity. The reasons

for the success, it seems, is the participatory planning process and the involvement of the locals. In the next paragraph I will look closer at some of the factors that I see as most importantly in an innovation decision-making process.

5.2 In between phases: Democracy, Communication and Acceptance

Communication has throughout this thesis been highlighted as one of the keys to in fact ensure participation and project success. In a wind power implementation process there will often be many stakeholders and actors with different and perhaps conflicting interests- Problems, actors, networks and acceptance in between phases. Thus, it is difficult to make all actors involved accept the project. Communication through democratic planning, then, may make this process easier to handle. Søren Hermansen thinks that the information flow and communication have been of great importance in the process. He refers to information through the local newspaper, web pages and open orientation meetings and he believes that people have been well informed. This is also one of the reasons people interested in renewable energy flock to Samsø from all over the world. “If people wanted to see wind turbines they would go to Vestas or Siemens in order to see the newest within wind turbine production” says Mette Løkke at Samsø Development Office. “It is the way we have organised the project that has led to an expansion of tourism and visits to the Energy Academy,” she continues. Further, she points to the fact that it is the whole project and their identity as a renewable energy island that are interesting. When it comes to the organisation of the projects she highlights the democracy process, openness and public meetings. It seems like the project developers at Samsø have been “bringing the society back in” (Szarka 2005). Løkke thinks that it is important that people’s voices have been heard, and also that there

have been people that have taken initiative to the process. *"One cannot be democratic in one day, it takes longer time. And one should have the patience to do that and know that such projects demands time for discussion,"* Løkke concludes. Also the major at Samsø, emphasizes the organisation of the planning process and concludes:

> *"Many people from the outside world – and also Danes – come to see how it is done here and what they see is on a ordinary human level – someone has a wind turbine and it has been done in a certain way – it is not because there is something super-special about it, it is just the way it has been done."*

6. The Means of Local Ownership

Wüstenhagen et al explains that local ownership reflects social acceptance of wind energy - acceptance is expressed through investment. In chapter 5 I discussed the importance of local involvement in an innovation decision-making process, however local ownership is the other factor recognized in this thesis as one of the keys to social acceptance and project success. Also Wüstenhagen (2007:2688) stress local ownership as an important factor in a wind energy implementation process and he states;

> *"Together with the crucial significance of local involvement in siting decisions for the relative success in implementation, the authors recommend facilitating local ownership and institutionalising participation in project planning to help arrive at a better recognition and involvement of the multiple interests (environmental, economic and landscape) that are relevant at the local level of implementation".*

Further, Loring as well emphasizes financial ownership when involving the local population in wind energy projects. She supports this claim by referring to studies done in Wales, England and Denmark. In Loring's own study she investigates how local involvement in the planning process and network stability relates to project success and acceptance. According to Loring around 80 percent of the installed wind energy capacity in Denmark is actually owned by local individuals and cooperatives (Loring 2006). Further, Muruyama et al have done a study on wind power and acceptance in Japan and introduce a new concept to the discussion; social innovation. They define this concept as a new social system that changes the dynamics between renewable technology and the society and the distribution of risks and benefits. Their study concludes that public involvement has raised the development of community wind power. Further, they highlight the possibility to invest through cooperatives. In Japan investment has taken place by limited partnership projects and by funds both at a local and a national level. According to this study community wind power,

with local participation and involvement, has created a relationship between the local community and the people living outside that community (Maruyama, Nishikido, and Iida 2007:2763). In Japan investors can have their names inscribed on the wind turbines. This provides an added value to the investors and is also meant to stimulate investment "as environmental action" and some investors use this opportunity to invest in the name of for instance their grandchildren. *"Investors feel a sense of ownership toward the wind turbine, and events such as the completion ceremony attract strong participation…these events are ways for investors to reaffirm that it is their wind turbine"* (Maruyama, Nishikido, and Iida 2007:2764). Further, the study shows that the wind turbines also strengthen local interaction amongst the local people as the social mechanisms used reflect both a contribution to and participation in the community that result in a network that brings many benefits (Maruyama, Nishikido, and Iida:2764). Maruyama et al stress that in community wind power there are several aspects like a business aspect, an environmental movement aspect as well as the secondary social aspects. Maruyama et al (2007:2764) say:

> *"When the large numbers of citizens that participate in this kind of project is taken into consideration, the mechanisms by which participating in community wind power functions as a kind of civic action becomes all the more worthy of attention…the community wind power system becomes highly effectual when there is a synergy between the people who set up the system and the people who participate in it".*

They attempt to answer the question of why people invest in community wind power, and consider different incentives among the local people. They point to environmental, economical and social factors, and state that as one project consists of all these factors, wind power offers various incentives for different actors. Thus, they state that social acceptance of wind energy depends on whether or not there is a system in place that can generate the variety of benefits that different actors seek (Maruyama, Nishikido, and Iida 2007:2768). From the above discussion one can assume that local ownership does enhance social

acceptance, and thus is a necessary factor to include in implementation planning. I will now look at how local ownership has been organised at Samsø, and how local ownership may have influenced acceptance for the projects.

6.1 Organisation of ownership at Samsø

The organisation of ownership takes many different forms at Samsø. Local farmers or small groups of farmers privately own nine of the wind turbines on land, while the last two turbines are owned by cooperatives with many local shareholders. The Municipality of Samsø owns five of the wind turbines in Samsø Offshore Wind Park. The surplus then must be used on other renewable projects. Three offshore turbines are privately owned, while the last two are owned by cooperatives. One of these cooperatives is locally owned, and the other cooperative is owned by an investment foundation, Difko I/S (Samsø Energy Academy 2007). The opportunity to invest in cooperatives solved the debate around the wind turbines, as the possibility for local investment and ownership gave the citizens at Samsø a reason to understand the presence of the wind turbines (Jørgensen et al. 2007). Local ownership also gives a commercial reason as the citizens can keep the surplus from the production. Further, another central issue, in addition to the financial interests, is the possibility to participate in the projects. No matter if a person owns a share or a whole turbine, he or she can relate to the project from a participatory aspect (Lunden 2003). The initiators behind the REI[11] projects also ensured that people could participate without owning – through open meetings and working groups (Jørgensen et al. 2007). *"The first thing we did was to organise a model of ownership which became a combination of privately owned turbines and cooperatives to*

[11] REI: Renewable Energy Island projects

ensure that everyone was involved in the project. So that was our primary interest – to install 11 megawatt wind turbines and ensure a local organization of the project," says Søren Hermansen, leader of the Energy Academy. Further, he tells, *"everyone at Samsø was asked to participate and invest in the project, and in that way nobody was left out not accepting the project"*. A factor that might have influenced the private investment rate of the projects is that the investment opportunities for wind energy in Denmark are well known among people, so the rules were clear and obvious and people knew how to invest. Secondly, these investments give direct return. Thirdly, the project developers cooperated with the bank so it was easier for people to receive loans for financing the investment.

6.2 The matter of making sense

Hermansen thinks that local ownership has been decisive for making people participate in the projects. He states:

> *"It is one of the best parameters in this project. If the project was owned by for instance Statkraft I think people would have been angry and have had a bad feeling and a different perception of the project and why it should be on Samsø. I believe that local participation and local ownership are completely decisive for the success of the project"*.

Further, both Hermansen and Mette Løkke at Samsø Development Office stress the importance of making sense; local wind energy projects have to make sense to local people. According to Hermansen, *"it starts with a feeling of ownership and understanding why the turbines should be here, it is all about being involved and getting responsibility for the project"*. Also Ellegård Larsen from SEMK states that wind energy projects "must give meaning to people".

Moreover, Hermansen thinks that it does not matter how much people invest in the projects;

> *"Even if they have invested only a little part in the project they are involved and get a letter from the wind turbine society with information etc. Then one feels that one is a part of the society and an active participant… it is a very psychological discussion because if you build wind turbines it means a lot if you participate. All the villages around can see the turbines, but if one owns a share it means that you are looking at your own installation, that you are participating and that it is your turbine and in addition you earn some profit. Then it gives meaning and you also accept the disadvantages with the turbines. However, if you do not own it and do not have any interest in the project you want the turbines to be placed far away as you only get the disadvantages."*

Inge-Dorthe Ellegård Larsen, leader of SEMK, says that she thinks that "every step will feel extreme" when you implement wind turbines. Thus, if they give meaning to people, and they understand the reason to have them, it may feel different. Ellegård Larsen continues:

> *"You get used to the turbines being there. You acknowledge them; the problem is when they arrive. The first time you drive up a hill and see them it really hits you. But when you're used to them you hardly notice them. The experience is different".*

Thus, it seems like the feeling of participating is just as important as economic ownership. This is related to the study by Muruyama et al in Japan, where activities like name inscriptions took participation and ownership to a higher level. It made the project significant for the local people and contributed to increased social acceptance.

6.3 Sense of ownership versus economic incentives

According to Bell et al, it may be important to distinguish "the economic from the social and political effects of community ownership". As already suggested the "benefits of community ownership may have as much to do with local involvement in the development

process as they do with the potential profits of ownership" (Bell, Gray, and Haggett 2005:473). However, Hermansen believes that money matters the most:

> *"The reason you invest differs from who you are, but in the end it is about money, and the fact that when we show that if we do it like this we save on the import of oil. Everyone knows that price for oil fluctuates and is therefore interested in doing something else. "*

This being said, it seems like the story is more complex. When it comes to the involvement of locals in the decision-making through working groups, Hermansen emphasizes the sense of belonging to the project;

> *"It is a really good process because people have a feeling of ownership to the projects and also the local history around the projects gets positive because you get a sense of belonging to the project you participate creating. And that is incredibly important".*

Or as Inge-Dorthe Ellegård Larsen say;

> *"It just feels differently, and it is different…if one looks at it very objectively the wind turbines look exactly the same whether I own them or the electricity company. They make the same sound."*

Based on the interviews it is difficult to say that acceptance is a result of either a feeling of ownership or economic incentives. The informants told different stories on this aspect, and in the end I believe it is an issue of subjectivity. Again, it is a matter of the actors involved, and their different incentives. However, it is reasonable to conclude that both the feeling of ownership and the economic prospects matter in an implementation process. If one feels like an active participant in a project, one may feel a sense of belonging to it and hence accept it. Similarly, the prospects of earning a profit also increase social acceptance as this aspect also reflects participation. Muruyama et al concluded in their study from Japan, participation adds value to the investors, which signifies that it is not as simple as a question about money or feeling, but rather what both these factors contribute with together to a project.

6.4 Idealism versus profit

Mette Løkke at Samsø Development Office believes that green idealism has meant a lot in the projects.

> *"It has meant a lot as we have had a small discussion whether wind turbines are ugly or not so the idea of green energy has had an influence, but it has also been combined with the fact that it is a reasonable business. Further one can say that the 11 wind turbines on land are owned by cooperatives, which means that many people on Samsø could buy a part and many have taken this opportunity. Hence, we all can be participants in the projects. It is not only the landlords that own the land and thus have the opportunity to lend a lot of money, but also those who cannot lend as much as they can buy a share in a cooperative. Hence, it becomes a bigger ownership as we all can participate and own a little share".*

However, Inge-Dorthe Ellegård Larsen says that *"I don't think one should be so blue-eyed to believe that local ownership can make it better on its own, there also has to be a real profit."* She emphasizes that if idealism was the only motive, one would get a certain section of the population to participate in the projects, and not the big farmers, entrepreneurs or craftsmen. Erik Koch Andersen and Jørgen Tranberg are farmers at Samsø and have invested in their own wind turbine. They both tell that they are proud to be involved in the renewable energy project, and that they chose to invest because they thought it was a good idea and an opportunity to make a profit. Further, they point to the dependent on the mainland for energy and the wish for independence of energy supply. In their opinion, this wish is a general agreement among people at Samsø. Løkke concludes:

> *"If one can say that it is both a good idea, that it is good for Samsø because one can find a different way to produce energy, but also make some money because it is a good investment, one will get both the idealists and everyone else to participate. I do know that these boundaries can be crossed, but I think it is important if one wants to engage everyone."*

6.5 The distribution of costs and benefits

When it comes to wind energy projects, one can assume that implementation will include both costs and benefits. Costs are factors like noise, light and visual pollution, while benefits can be economic profits, community development or increased tourism like at Samsø. Hermansen believes that the renewable energy projects at Samsø have been predominantly positive;

> *"I think that on the level we have wind turbines today it has been predominantly positive. Economically it has been positive for those who have invested. For the identity of the island it has been positive, as it is visible that Samsø is a renewable energy island. In addition the turbines are placed in a reasonable way so that one can see nature without turbines, but also nature with turbines. They are not spread all over the island so I clearly see most benefits. Of course there are some disadvantages for example for the people living close to the turbines and are affected by sound and light. However, it is the landlords that have invested in them that get these costs; it is not many people that are not part of the ownership that live with those costs. So with the number of turbines today it is predominantly positive and clearly a positive story for Samsø".*

The Major of the Municipality of Samsø, Carsten Bruun, says that it is the landlords that have invested in private wind turbines that get the economic benefits. However, they are also the ones who get the risks with for instance repair costs, as well as sound and light disadvantages. The Municipality of Samsø, though, owns five of the offshore wind turbines, which means that all the citizens at Samsø gain from the project. The surplus from the offshore turbines owned by the municipality is used for other energy projects that benefit everyone that live on the island. Regarding the placement of the turbines, Carsten Bruun says; "I believe that we have found a good location for the turbines at Samsø, at least nobody is complaining, so at some level they have accepted it".

To briefly sum up local ownership is a form of participation that includes economical, environmental and social aspect, and financial involvement may foster all these incentives.

Thus, it is easier for people to accept the outcome of the projects. Hermansen sums up the benefits with local ownership by stating:

> *"You can look at other projects in Denmark where for example a power company is building wind parks and you get a great opposition because people do not want the wind turbines. The attitude is that it is okay with wind turbines as long as they are far away, but not in our town. The most important reason for such attitudes is that it does not give any meaning to me because I do not own any shares, I do not get the surplus, and the wind turbines are not here for me, rather it is some company from Copenhagen or Oslo that own them. So it is a close relationship between ownership and acceptance of wind turbines, and that is essential."*

7. Concluding Remarks

In this thesis I have investigated how local ownership and participation in wind energy projects can increase social acceptance of the technology and help ensure project success. This has been done by looking at one specific case; the renewable energy island Samsø in Denmark. I started out by looking into the existing debate on social acceptance of wind energy. A number of studies in different countries have tried to understand why there is a high public support for wind energy at a national level, but local opposition against local projects. Consequently, this has led to an interest in the term social acceptance and what factors that can help develop it. I have discussed the concept of social acceptance, and emphasized that acceptance is a dynamic process. Accordingly, there can be social acceptance at different levels, and different actors and stakeholders may have different incentives for participation and thus different levels of acceptance. For instance, some people may accept a project due to their influence on the siting decisions, while others have an economic interest in the project and develop acceptance on the basis of ownership. Further, acceptance may be fostered through participation and social commitment. It is important to understand the mechanisms that enhance social acceptance, but moreover it is necessary to know why people resist local wind energy projects. The NIMBY syndrome has frequently been used as an explanation for opposition. Further, impacts on nature and visual intrusion have also been emphasized as reasons for objection. Many authors have criticized the NIMBY explanation due to its simplicity. Bell et al (Bell, Gray, and Haggett 2005), amongst others, suggest that there is a need for a collaborative approach to wind energy projects, as well as a focus on knowledge and communication. Gross and Wolsink (Gross 2007; Wolsink 2007) have looked at the issue of fairness, and emphasize that an open and participatory approach that includes local people will provide a better foundation for

acceptance and project success. So, a bottom-up and democratic approach that increases trust in actors is necessary to advocate public participation in the planning process. Public participation is important to make sure local values are represented, especially with regard to landscape concerns. One way to ensure public participation is through local ownership. Financial commitment also reflects acceptance for the projects. Hence, one can conclude that participation in the planning process and ownership is important to enhance social acceptance of wind energy.

At Samsø it seems like these factors have played an important role for the projects success and social acceptance. The decision-making process has been open and democratic, and the local people have had a real opportunity to participate. In fact, they have been involved in all the phases of the process. In the beginning of the project the project initiators focused on knowledge sharing, and they used different channels to inform the citizens of Samsø. For instance they arranged open information meetings and people could participate in working groups. The cooperation with local associations also ensured that different local actors were represented. As discussed, landscape concerns have been an issue that has led to local opposition, and this aspect created conflicts at Samsø as well. However, people participated in the debate, which took place very openly, and influenced the siting decisions. The project developers took people's concerns into consideration, and in the end they found a placement for both the onshore and the offshore projects that was accepted by everyone. Consequently, the local people had a great impact on the outcome of the projects. Regarding the importance of fairness in the planning process it is reasonable to conclude that this has contributed to social acceptance. Moreover, the projects at Samsø have included different models of local ownership. The range of models includes private investors, shares in cooperatives and

municipality ownership. These different forms of ownership provide an opportunity for different actors with different incentives to invest. The landlords that have invested in their own wind turbine gain economic profit. The shareowners feel that they are active participants in the community no matter how much they have invested. Further, the Municipality of Samsø owns five of the offshore turbines. This means that all the citizens are in fact owners, and the surplus benefits them all. Local ownership includes different aspects; economic, environmental and social. Besides economic profit, local ownership is also a way for people to show environmental and idealistic interest and social commitment. At Samsø ownership has made sense to people, and made it easier for them to understand why the projects should be implemented. My informants told that it would be very different if an electricity company outside Samsø owned the turbines. In their opinion, ownership changes the attitude towards wind energy; if someone else owned the turbines, the attitude would not be as positive. Rather, people would have objected because they would have to look at someone else's turbines. However, if they own them, it feels differently and they accept the turbines in the landscape. Consequently, the project makes sense. Further, it seems that ownership includes both a social and an economic aspect. One cannot say that one is more important than the other, rather it seems that they are complementary. The economical aspect is important because ownership contribute to local development as well as private profit for the investors. Yet, the social aspect plays a major role for acceptance as well. Again, it is about this feeling of participation, and the feeling of being an active participant in the local community. Moreover, there is an environmental side to the story. Even though some of my informants emphasize the economical prospects, there is also an idealistic aspect. However, also here the two aspects are complementary. As the major of Samsø pointed out, they got the opportunity to produce energy in an environmentally friendly way, and could also earn money. It is not easy to say whether the one aspect or the other would be

"enough" to develop acceptance. The most reasonable conclusion is that the projects actually did include several interests and incentives, and thus enhanced acceptance among different actors.

Another factor that may have contributed to social acceptance at Samsø is the social and cultural context. Social capital is a framework that emphasizes relations between people and trust to actors. At Samsø there are several social and cultural factors that might have enhanced acceptance for the projects. First of all, Samsø is an island community isolated from the mainland. At the time the project started, the local economy and the agriculture industry was not going that well. Further, it was difficult to create opportunities for young people to settle down. The renewable energy projects, though, represented new opportunities. The project has created many new jobs, and increased the tourism industry. The project also became a common project, where everyone could get involved. I argue that this have contributed to strengthen social capital and enhance social acceptance. The project has created a common identity as a renewable energy island, and the people at Samsø are today proud of being part of the project. This social aspect of the process is important to keep in mind, as it may have contributed to acceptance just as much as ownership and participation in the planning process. This also means that the result may not be transferable. Yet, the lesson learned is that creation of social capital is a factor that should be considered in wind energy projects. Further, I have used the diffusion of innovation approach to discuss the different project phases and how local people participated at Samsø. This framework was useful as a model for an innovation decision-making process and the different phases involved. However, in reality the phases seem to be more dynamic and intertwined. Especially, I found it difficult to recognize the phase Roger called the persuasion stage

(Rogers 2003). At Samsø people's attitudes towards the project changed during the process depending on different conflicts and situations that came up. Thus, I chose to disregard this phase in the analysis, and rather discuss attitudes throughout the chapter. The conclusion is that when it comes to diffusion of renewable energy technologies one needs to consider the social aspects in addition to the technical and economical. The result from this thesis confirms the results from the existing literature on social acceptance. However, the results are influenced by the choice of theory and concepts. Participation and local ownership do contribute to social acceptance. People feel a sense of ownership towards the project, they have the opportunity to influence the outcome, they can gain economically, and all these factors lead to enhanced social acceptance and project success. Further, it is necessary to include local actors, encourage bottom-up mobilization and ensure representation of local values. Hence, to avoid opposition in Norway it is important to include local communities in the planning process, as well as promoting local ownership instead of economic compensation. Moreover, the results of this thesis contribute to the understanding of the relationship between technology and society. Society does shape the development and implementation of wind energy technology, and wind energy also changes the society. In order to provide transferable result of wind energy implementation I suggest that future research should focus on comparative studies. Also, I suggest future case studies on Samsø to investigate the long term effects of the project in relation to social acceptance. Lastly, studies that integrate other concepts and theoretical frameworks may highlight different aspects of social acceptance.

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Samsø Energy Academy: http://www.energiakademiet.dk/

Danish Wind Industry Association: http://www.windpower.org/en/news/articles

APPENDIX 1

List of interviews

Søren Hermansen – Leader of the Energy Academy (13. May 2008)

Mette Løkke – Leader of Samsø Development Office (13. May 2008)

Inge-Dorthe Ellsgård Larsen – Chairman of Samsø Energy- and Environmental Office

Carsten Bruun – Major of the Municipality of Samsø (14. May 2008)

Carsten Schnoor – Employed at the Energy Academy (16. May 2008)

Erik Koch Andersen – Farmer and investor (15. May 2008)

Jørgen Tranberg – Farmer and investor (15. May 2008)

APPENDIX 2

Interview guidelines

Søren Hermansen

Leader of the Energy Academy, and one of the initiators behind the project.

UP-START AND IMPLEMENTATION OF THE PROJECT:

Q1: What have been your position in the project/process? (Hva har vært din rolle i prosjektet?)

Q2: Could you tell about the development of the projects from the beginning until today?

Q3: Can you describe the local energy market system?

PARTICIPATION IN THE DECISON PROCESS:

Q4: What actors were involved in the decision-making process?

Q5: How have national and local policies influenced the development?

Q6: How did you include the local community in the process?

Q7: How did people participate in the process, and in what ways were their voices heard?

Q8: How has the information flow been between the different actors?

SOCIAL ACCEPTANCE OF THE PROJECTS:

Q9: Has there been any conflicts or local opposition, and if so how did you solve the problem?

Q10: Did people's attitude towards the project change during the process?

Q11: Other places there have been great local opposition against wind energy projects, why do you think people at Samsø have "accepted" the projects?

Q12: How important would you say local ownership has been for the decision-making process? why?

COSTS AND BENEFITS:

Q13: When you think about the outcome, what are the costs and benefits and how are they distributed?

Q14: Have the project strengthened the relationship between the island's inhabitants? (Har prosjektet styrket samholdet mellom øyens beboere?)

EVALUATION OF THE PROCESS:
Q15: Looking back, could anything have been done differently? (site, decision-process, investment etc).

Jørgen Tranberg and Erik Koch Andersen
Farmers and investors

IMPLEMENTATION OF THE PROJECT:
Q1: What have been your position in the project/process? (Hva har vært din rolle i prosjektet?)

PARTICIPATION IN THE DECISON PROCESS:
Q2: What actors were involved in the decision-making process?
Q3: How did you participate in the process, and in what ways were your voice heard?
Q4: What do you think about the quality of the information given during the process?

SOCIAL ACCEPTANCE OF THE PROJECTS:
Q5: Did your attitude towards the projects change after you invested?
Q6: How do you perceive the decisions that were made concerning the wind energy projects?
Q7: Why did you choose to invest in the projects?

COSTS AND BENEFITS:
Q8: When you think about the outcome, what are the costs and benefits and how are they distributed?

EVALUATION OF THE PROCESS:
Q9: Looking back, could anything have been done differently? (site, decision-process, investment etc).

Mette Løkke

Samsø Development Office

EVALUATION OF THE CULTURE AND VALUES AT SAMSØ:

Q1: How would you describe Samsø's culture and values?

PARTICIPATION IN THE DECISON PROCESS:

Q2: What have been the development office' position in the project/process? (Hva har vært din rolle i prosjektet?)

Q3: How would you describe the decision-making process, and in what way could people participate?

Q4: Why did Samsø municipality invest in the projects?

SOCIAL ACCEPTANCE OF THE PROJECTS:

Q5: How do you think local ownership has influenced the process of implementing wind energy at Samsø?

Q6: Other places there have been great local opposition against wind energy projects, why do you think people at Samsø have "accepted" the projects?

COSTS AND BENEFITS:

Q7: When you think about the outcome of the projects, what are the costs and benefits and how are they distributed?

EVALUATION OF THE PROCESS:

Q8: Why do you think implementing wind energy has been a success at Samsø, and how have the projects had an impact on the development of the island?

Q9: Looking back, could anything have been done differently? (site, decision-process, investment etc).

Inge-Dorthe Ellegård Larsen

Chairman of SEMK – Samsø Energy- and Environmental Office

PARTICIPATION IN THE DECISON PROCESS:

Q1: What actors were involved in the decision-making process?

Q2: What have been SEMK's position in the project/process? (Hva har vært din rolle i prosjektet?)

Q3: How did people participate in the process, and in what ways were their voices heard?

SOCIAL ACCEPTANCE OF THE PROJECTS:

Q4: How do you perceive the decisions that were made concerning the wind energy projects?

Q5: How will you describe the community networks and their role in the process?

Q6: How do you think local ownership has influenced the process? Why?

COSTS AND BENEFITS:

Q7: When you think about the outcome, what are the costs and benefits and how are they distributed?

EVALUATION OF THE PROCESS:

Q8: Looking back, could anything have been done differently? (site, decision-process, investment etc).

Carsten Bruun

The major of the Municipality of Samsø

PARTICIPATION IN THE DECISON PROCESS:

Q1: How would you describe Samsø's culture and values?

Q2: What have been the municipality's position in the project/process? (Hva har vært kommunens rolle i prosjektet?)

Q3: Why did Samsø municipality invest in the projects?

Q4: How have national and local policies influenced the process?
Q5: How would you describe the decision-making process, and in what way could people participate?

SOCIAL ACCEPTANCE OF THE PROJECT:
Q6: Why do you think implementing wind energy has been a success at Samsø, and how have the projects had an impact on the development of the island?
Q7: Other places there have been great local opposition against wind energy projects, why do you think people at Samsø have “accepted” the projects?
Q8: How do you think local ownership has influenced the process of implementing wind energy at Samsø?

COSTS AND BENEFITS:
Q9: When you think about the outcome of the projects, what are the costs and benefits and how are they distributed?

EVALUATION OF THE PROCESS:
Q10: Looking back, could anything have been done differently? (site, decision-process, investment etc).

The last interview with **Carsten Schnoor** was not a planned interview, and hence I do not have an interview guide for this interview.

APPENDIX 3

Roger's model of the Innovation Decision Process

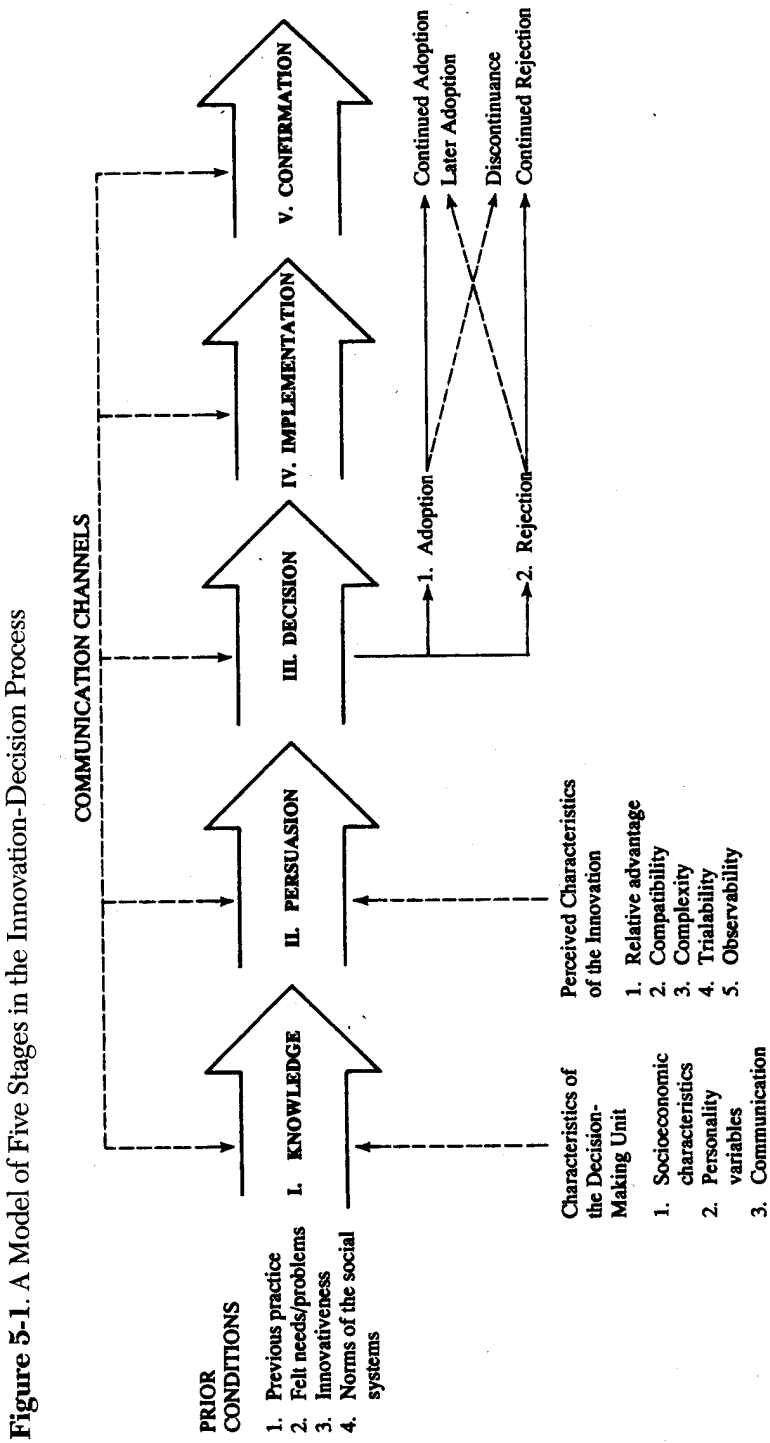

Figure 5-1. A Model of Five Stages in the Innovation-Decision Process

APPENDIX 4

Map of Samsø