

**Annual status report 2003  
to Elsam Engineering**

**Sociological Investigation of  
The Reception of  
Horns Rev and Nysted Offshore Wind Farms  
In the Local Communities**

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## **1. Introduction**

This annual report presents the work related to the sociological part of the socio-economic project on the local communities' reception of the Horns Rev Offshore Wind Farm, west of Blaavands Huk in Jutland, and the Nysted Offshore Wind Farm, south of Lolland. The project is part of the monitoring programme in connection with the construction of the offshore wind farms. Unlike projects, which examine the impact of the wind farms on nature, the socio-economic project did not start until 2003. The socio-economic project examines the effects on the local communities. Among other things the environmental-economic part of the project examines the preferences of the population in relation to location of the wind farm and the willingness to pay for increasing the distance between the wind farms and the coast.

The sociological survey is qualitative. The survey is divided into three phases, as the aim is to investigate the public community's attitude towards the erection of an offshore wind farm before and after the construction of the wind farm. This aim is based on the assumption that attitudes may change once the wind farm is erected and the population has experienced the visibility of the wind farm, etc. The division into phases is as follows:

- 1) Phase 1 treats the conditions as they were before the erection of Nysted Offshore Wind Farm.
- 2) Phase 2 is an investigation of the development in attitudes towards Horns Rev Offshore Wind Farm a year after erection.
- 3) Phase 3 comprises a follow-up investigation of the local area at Nysted Offshore Wind Farm.

This annual report treats phases 1 and 2. Phase 1 was carried out in April-August 2003, and the interviews at Nysted were thus made during the erection of the first offshore wind turbines. Phase 2 was carried out in September-November 2003. The follow-up investigation of the conditions in the local area around Nysted offshore wind farm is to be carried out in August-December 2004. The results of the investigations in the two local communities will be compared to establish similarities and differences and make recommendations for future construction of offshore wind farms. The results of the follow-up investigation in Nysted, the comparison of the two cases and thus the conclusion of the overall results of the investigation are presented in the 2004 annual report.

### **Background of the investigation**

The overall investigation of the effects of offshore wind farms on the local area is based on the construction of two demonstration offshore wind farms at Rødsand, south of Lolland and Horns Rev, west of Blaavands Huk. The background of the demonstration wind farms is a political wish to reduce the CO<sub>2</sub> emissions and thereby the environmental problems

related to Danish energy consumption. In this connection, wind power is a significant contributor. The assessment is that it is more efficient to establish few, large offshore wind farms instead of small, scattered locations to reduce the impact on the coastal area (the Danish Energy Authority 1994).

The question is: how have the local communities received the two offshore wind farms? The part investigations are to reveal the local communities' attitudes towards the wind farms before and after erection. It is thus the purpose to investigate if attitudes towards the wind farms have changed over time, and if so, how they have changed. We work with three different attitudes towards the offshore wind farms: Supporter, opponent or a more pragmatic attitude in the form of acceptance. Initial attitude and possible change in attitude may be illustrated as follows:

Figure 1. Attitudes towards offshore wind farm before and after erection

	<b>Supporter</b> of the offshore wind farm	<b>Opponent</b> of the offshore wind farm	<b>Acceptance</b> of the offshore wind farm
<b>Before</b> erection of the offshore wind farm			
<b>After</b> erection of the offshore wind farm			

Supporters of the offshore wind farm are expected to base their opinion on environmental concerns or on local or national occupational effects, as these justifications have been found in a Swedish investigation (Mels, 2003). The opponents are expected to base their opinion on a fear of negative environmental and aesthetic consequences, decreasing (summer)house prices and income from the tourist industry. The acceptance is expected to be based on balancing of environmental considerations and the concern for nature and aesthetics. The purpose of the investigation is to find out if the assumptions are true and to identify other possible reasonings behind the attitudes and just as importantly any attitude changes over time.

### Investigation method

The investigation is a qualitative investigation, which means that text analyses and qualitative interviews have been made. This method is selected because it provides the possibility of scrutinising the different issues, pinpointing underlying explanations to phenomena as well as inserting the phenomenon in a larger context and overall picture. Thus there may be a number of reasons underlying a person's attitude towards wind turbines in general or the wind farm in particular, which it might be difficult to unveil in a questionnaire. In a qualitative interview it is possible to ask explanatory questions, and the thematic structure of the interview enables the interviewee to bring items into the discussions, which were not expected beforehand. The qualitative interview has also

demonstrated to be useful for establishment and explanation of dilemmas between consideration for the environment and respect for nature.

Another reason for selecting the qualitative method is that the wish to establish changes over time makes it relevant to include qualitative analyses of written material. This means that the examination of the subject is approached in more ways:

- Firstly, written material in the form of articles, leading articles and reader's letters from regional newspapers provide the basis of unveiling the nature of the debate in the local community, the extent of the debate and its participants. The newspaper material reflects attitudes in the local community throughout the course of the project; plans, decision and erection of the offshore wind farms. At the same time, the newspaper material shows which attitude towards the wind farm the paper has conveyed to the readers and how the readers have received this attitude.
- Secondly, interviews have been made with local players, politicians, government officials and citizens who have expressed their opinion on the matter in public or participated in the local debate. The interviews provide insight into the attitudes of the players and the reasons underlying their attitudes. In addition, the interviewees act as informants on attitudes in the local community.

The two different approaches supplement each other as the analysis of the newspaper material may help elucidate aspects of the local opinions, which the interviewees do not remember, because these aspects date back to a time several years ago. At the same time, the comments made by the interviewees on the newspapers' way of presenting the matter and the position of the newspaper in the community may help put the newspaper material into context.

However, the qualitative method is limited as it cannot possibly be representative and thus it cannot say anything about the extension of the phenomena identified. The qualitative interviews are long and heavy on information which makes it impossible to make enough interviews to obtain representativity. On the other hand, the interviews provide the possibility of scrutinising the problem, which is very efficient when investigating a field that has not been investigated before. Furthermore, it will be possible to examine some issues quantitatively later, when a questionnaire survey is carried out in connection with the environmental-economic investigation of offshore wind farms.

### **Design of the investigation**

The two part investigations are structured in the same way and are outlined here, as the structure of the investigations forms the basis of the subsequent review of the results:

- 1) The work of identifying attitudes towards the wind farms was initiated with a review of the course of events, which preceded the erection of the wind farm. The course of events is very similar and only diverge in relation to application and approval deadlines and thus also in relation to time of erection of the two wind farms. The purpose is to be able to compare factual information on progress, reasoning for choice of location, consulting rounds, etc with the subjective impression of the course of events which become available during interviews with local and regional players and which are subsequently analysed.
- 2) Then the press coverage of and debate on the offshore wind farm in the regional newspapers are identified. It is assumed that the newspapers' coverage helps form the public opinion of the wind farm. The debate, which has been printed in the newspaper in the form of reader's letters and leading articles, provides an impression of the different attitudes. In addition, the written material is central to the identification of attitudes in the early stages of the course of events, as these attitudes date back to the presentation of the first concrete plans for the offshore wind farms in 1997. It may be difficult for the interviewees to remember details dating back to 1997.
- 3) On the basis of the review of the course of events and the identification of themes and players in the local and regional debate on the two offshore wind farms, qualitative interviews are made with selected social actors from the two communities. The respondents express their subjective attitude towards the offshore wind farm and they act as informants on attitudes in the local community.
- 4) On the basis of the previous three themes, conclusions are made on attitudes and underlying reasons in the two local communities.

Below, the results of the individual themes are presented.

## 2. Course of events

The purpose of this review is to create a general overview of the long course of events which leads to the designation and erection of two offshore wind farms. Furthermore, the review of the course of events also functions as starting point for the analysis of newspaper materials and the interviews with local players.

The sequence, which preceded the decision to erect the two wind farms, was very long. The work started in the 1980s and throughout the years different working groups have investigated the potential and the constraints of erecting offshore wind farms, including mapping of different authority, fishing and other societal interests in Danish waters. Three reports have been issued in the course of the clarification and decision process:

1) The first report from 1994 was an investigation of the visual impacts of the erection of wind turbines at sea (the Danish Energy Authority 1994). The investigation concluded that the Danish coastline is intensively utilised and that the open spaces of the sea are highly appreciated and of large amenity value. Based on these conclusions, negative reactions were expected to erection of wind farms close to the coast. The visualisation study showed that wind turbines on sea have other visual impacts than wind turbines on land. This is among other things due to the open view at sea whereas the view on land is often limited by buildings, trees and hills. Furthermore, the visibility of offshore wind turbines depends on the altitude of the coast above sea level, the curvature of the earth, the nature of the light and visibility that is influenced by humidity of the atmosphere. The investigation also showed that the interpositioning of the wind turbines has a major influence on the visual impact, and that also the number of wind turbines plays a role.

On the basis of a survey of the Danish coastline, the report recommended to protect some coastal areas and avoid erecting wind turbines there. The report also concluded that positioning of many wind turbines in small groups would affect large portions of the coastline. It was thus assessed to be most efficient to concentrate the erection of offshore wind turbines in few, large wind farms at locations where the committee found the visual impacts on the landscape to be limited.

2) The next report from 1995 was an investigation of authority interests in Danish waters (the Danish Energy Authority 1995). Here a distinction was made between *bindingsområder* (*consolidated areas*) where it was not possible to locate offshore wind farms and *afvejningsinteresser* (*balancing interests*) where the interests of the sector were to be balanced against society's interest in wind power.

*Consolidated areas* are eg preserved areas; areas with bird protection in accordance with EU regulations; areas with raw material extraction; areas of military interests; areas with

power supply lines; areas for a possible coming Femer Belt bridge (the Danish Energy Authority 1995, p. 9).

*Balancing interest areas* are, eg areas with fishing industry interests, ie all Danish waters; areas of particular scenic interest; areas heavily populated by birds, which are not comprehended by EU protection; areas which hold raw materials; traffic and fishing harbours; leisure cruising areas; military rifle ranges; areas of significance to air traffic (the Danish Energy Authority 1995, p. 10).

The identification of consolidated areas exclude the construction of offshore wind farms in a number of areas in Denmark. On the basis of the statement the report pointed to four areas, which were assessed as being the most obvious areas of a sufficiency to hold large offshore wind farms, five in total. Two of these areas were Horns Rev and Rødsand at Nysted where the two first offshore wind farms were erected.

3) The third report, which was issued in 1997, comprised a more specific description of the plans for the five offshore wind farms in the form of assessments of wind conditions, technical possibilities, including water depths and thus the economy of the outlined wind farms (Elselskabernes og Energistyrelsens Arbejdsgruppe for havmøller, 1997). The report comprised plans for wind farms with a capacity between 120 and 150 MW, ie as a maximum 100 wind turbines, and the report also outlined the possibilities of enlargements until 2013.

### **Subsequent course of events**

After presentation of concrete plans for five offshore wind farm locations, years elapsed before the first offshore wind farm was erected. Shortly before the publication of the third report the power companies from East Denmark and West Denmark applied for principle approval of the construction of demonstration offshore wind farms at Rødsand and Horns Rev, respectively. The applications, along with the plan of action, were submitted to political, local and regional authorities as well as NGOs for comments. In both cases a number of objections were raised. Some objections were similar for the two areas while others were of different nature due to the different conditions in the two areas.

In both cases, the most prominent argument from local and regional authorities and several NGOs was that the distances to the coast were too short. At Horns Rev, the distance was outlined to be 14 km from the coast to the nearest wind turbine row; at Rødsand the distance was 10 km. This objection was based on concern for the visual impact on the landscape if the wind turbines were very visible on land. The reasoning behind the concern for the landscape was different in the two areas. At Horns Rev, local authorities feared a decline in the tourist industry if the view of the ocean was changed. At Rødsand, the issue was rather preservation of a characteristic area of natural beauty,

which was to be preserved for its unique character. This illustrates the difference in significance of tourism in the two areas.

Another argument used against the plans was the concern for the effect of the wind turbines on birds and animals. This argument was more prominent at Rødsand than at Horns Rev due to the different importance for bird and animals of the two areas.

Based on the objections raised in connection with the first presentation of the offshore wind farm plans and the principle approvals applied for, a new round with renewed applications from the two power companies for principle approval of the plans followed. In June 1999, the Danish Energy Authority issued principle approvals for the offshore wind farms at Horns Rev and Rødsand on condition that an EIA report was prepared.

The EIA report for Horns Rev was submitted to public hearing in July 2000, and the Danish Energy Authority gave its final approval of the erection of the wind farm in March 2001. The EIA report for Rødsand was submitted to public hearing in the autumn of 2000, and the plans to erect the wind farm received the Danish Energy Authority's final approval in June 2001.

In connection with the hearings on the two EIA reports, a number of the objections already raised at the end of 1997 were raised again, however, some parties to the hearing omitted to raise their objections in the second round. In both cases very few objections were raised by private persons. Explanations to this phenomenon will appear in the presentation of the interview analysis.

These approval rounds resulted in the erection of Horns Rev offshore wind farm in the spring and summer of 2002. The wind farm comprises 80 wind turbines of a height of 110 m. Nysted offshore wind farm was erected in the spring and summer of 2003. The wind farm comprises 72 wind turbines – these turbines are also of a height of 110 m.

## **Conclusion**

The review shows that the work of designating possible locations of offshore wind farms and the decision to erect the wind farms has been lengthy and thorough. However, control of the process has been centralised, ie balancing of different considerations, including consideration for the environment and landscape, but also consideration for technological possibilities and consequently economy and time. The mapping pointed to locations where a committee found that the damage to the landscape would be minor. As discussed later in this report, interviews with local players in the two local communities have, however, shown that the local communities have not found this approach fully acceptable. As such a conflict of interests has emerged between local assessments and interests and general societal assessments made by the Danish Energy Authority. Local citizens request more

influence on the projects, especially in connection with the distance to the coast. In both cases local citizens requested an increase of the distance to the coast. However, the committee and subsequently the governmental authorities have had to balance this interest with the interest of erecting offshore wind farms and obtaining actual experience with the erection and operation of offshore wind farms. Also technical possibilities and the economy of the projects have been considered.

Another striking issue in the review of the two processes is that the preconditions of the mentioned survey reports (1994, 1995) in respect to turbine size was overtaken by the technological development. The reports were based on turbine sizes of 450 kW and 1 MW of heights of 53 and 83 m. However, due to the rapid technological development within wind power, the turbine size available when the final decisions were made was a 2 MW wind turbine of a height of 110 m. This also implies that the preconditions on which the survey reports based their assessment of possible locations and distances to shore had changed. However, this did not result in a new approval round or new assessments of the visual impacts or new investigations of the possibilities of placing the wind turbines further offshore and consequently at greater depths of water. The reason for this must be that the different influential bodies have agreed that it was important to obtain experience with offshore wind power.

A significant conclusion of the review of the process is that the communication from governmental authorities to local and regional authorities and to the local communities about the balancing of the objections with the financial aspects, technological possibilities and time has not been sufficient. This particularly applies to the period from 1997 to 2000, when the plans were presented, public hearings held and principle approvals obtained. The governmental authorities could also have been more open about why the projects were completed despite changed preconditions and change of wind turbine size. A more overt approach may have contributed to an enlarged understanding of the basis of decision and reasons for proceeding despite the objections. Hearing answers from the different public hearings indicate opposition to the plans among local and regional authorities. The following analysis of the local newspapers' coverage of the two processes along with interviews made with persons from the local communities amplifies this statement.

### **3. Local news coverage**

The processes, which comprised planning and erection of the two offshore wind farm have been covered by different newspapers. Searches in news archives show that in both cases national newspapers have continuously commented on the matter. However, these are very general comments of principle approval, choice of wind turbine manufacturer, etc. The national newspapers have not followed the event intensively, and therefore it is necessary to look at the regional newspapers in the two areas to find written sources on how the planing and erection of the wind farm was received by the local communities. The two newspapers are Jydske Vestkysten and Lolland-Falster Folketidende. The purpose of this analysis is to:

- Identify any debate on the offshore wind farms and to identify which attitudes were presented in the regional newspapers and by whom.

As it appears from the review of the process, the selection and presentation of locations for offshore wind farms dates back to 1997. It may be difficult for interviewees to remember this far back, and written sources are thus important to be able to give an account of attitudes and thus to be able to analyse changes in attitude. Based on the identification of topics for debate another purpose is thus to:

- Analyse the role played by the newspapers in the formation of past and present attitudes towards the offshore wind farm in the two local communities.

The local newspapers' presentation of the matter is assumed to affect the local attitude towards the wind farm. However, it is not a one-way process where the newspaper affects its readers. To varying degrees, the readers in the two local communities also express different opinions on the wind farms in specific and on wind power in general. As a prelude to the analyses, some relevant assumptions about media in general and newscoverage of environmental issues in specific are introduced.

### **Media, environment and opinions**

Media's coverage of a subject helps create and affect attitudes towards the subject. At the same time media's choice of subjects to be mentioned and presented is also influenced by social trends. When subjects such as wind turbines or environment in general are to be mentioned in the media, these subjects compete with other subjects, as the news coverage capacity is limited. Some subjects are thus considered more important and relevant than others, based on different criteria such as circulation and sales figures. When it comes to media's presentation of environmental issues, three conditions apply:

- Firstly, the subject shall coincide with an event. This means that wide-ranging environmental problems such as the greenhouse effect “have to find” an event to become news. This implies that the problem is not seen as a result of societal decisions or developments, but as the result of isolated events.
- Secondly, the question “why?” is rarely asked. This means that the background of a specific event or phenomenon is rarely discussed.
- Thirdly, the subject shall preferably relate to the present. This makes it difficult for long-term and abstract environmental problems such as the greenhouse effect and holes in the ozone layer to receive news coverage (Hannigan 1995).

Investigations have shown that there is no evident relation between media’s coverage of a specific subject and the general attitude towards the subject. This phenomenon proves that receivers of information and news do not simply accept the message; they interpret and select the meanings and contexts, which the media offer (Hansen 1991). Many readers will thus deny the invitation to form an attitude or opinion that lies in the newspaper’s angle of a story or a news item. Attitudes are rather formed in an interplay between experience and the influence of many different events. The willingness to accept the message of the newspaper also depends on the amount of interest the reader takes in the subject.

Finally, it should be mentioned that media’s treatment of subjects does not only contribute to creation of a public opinion. The media’s treatment of a subject also reflects the way in which journalists are affected and influenced by the public opinion (Gamson & Modigliani 1989). It is also worth noting that the news value of conflict is larger than that of consensus.

### **Presentation of newspaper material**

For both newspapers the above assumptions proved to be true; the matter of the offshore wind farms was only mentioned when news items were involved. This means that the publicity and debate have been dependent on the course of events related to the two wind farms. The offshore wind farms were discussed in articles in the newspapers, but were also mentioned in leading articles and debating points from the readers. All three forms of publicity are assumed to contribute to the public image of the offshore wind turbines. Furthermore, other subjects related to wind power have created a framework for the interpretation of news about the offshore wind farms. This applies to mentioning of local disputes about wind turbines on shore, discussion of high prices on electricity as a consequence of wind power, problems with integrating power from wind energy to the distribution grid, etc.

## Articles

There are certain similarities but also remarkable differences in the coverage of the local newspapers of the two courses of events in connection with the two offshore wind farms. A similar trait is that the newspapers have discussed the plans of offshore wind farm, the decision processes and the activities in connection with erection of the wind farms on a continuous basis. These discussions have been presented in individual articles and in large special issues comprising a number of articles on different aspects of the offshore wind turbines such as technical conditions, the history of wind turbines, environmental issues, etc.

The first noteworthy difference in the coverage by the two newspapers is that the local newspaper on Lolland-Falster put a lot of effort into the story of the presentation of the plans to build the offshore wind farm in 1997. In a number of frontpage articles during the last six months of 1997, the newspaper frequently and effectively discussed the plans and the local and regional reactions to the plans; authority reactions as well as NGO reactions. At Horns Rev on the other hand, local newspapers did not focus on the plans. There were a few, short articles in 1997, but it was not until 1999 that focus was directed towards the matter.

Another distinct difference between the two processes is the angles on the articles. Both newspapers are naturally characterised by a local/regional angle on the majority of the material. However, the degree to which the newspapers try to balance local and national viewpoints varies greatly. The coverage of the course of events at Nysted generally only conveys viewpoints of local and regional politicians and NGOs. In these articles or stories, the central authorities or the owner were seldom heard expressing other viewpoints, including explanations to the plans and the decision. The coverage of this newspaper is also characterised by the application of different angles to the same story, eg meaning that the same meeting of the local council was conveyed as several news items and articles in the newspaper, sometimes over several days. This fact is estimated to leave the readers with an impression of larger local opposition than was perhaps the case.

The news coverage of the course of events in relation to Horns Rev offshore wind farm brings out the viewpoints of both parties, even though the presenters of these viewpoints, like at Nysted, are local and regional parties' attitude towards the matter.

Another difference detected in the material from the two newspapers is the extent of the local debate which is reflected by debating points introduced by the readers. At Nysted, a number of readers have from the beginning of the news coverage expressed a significantly different and positive attitude towards the plans of constructing the offshore wind farm than the attitude conveyed by the newspaper. The extent of the debate among readers in the area around Horns Rev Offshore Wind Farm has been significantly smaller than at

Nysted. Both newspapers' coverage of the offshore wind farms is characterised by a limited extent of explanations as to why it is assessed necessary or beneficial to extend wind power. In both newspapers, it is the readers who bring such arguments into the discussion, on Lolland the debate is more extensive than around Horns Rev.

This leads to a similarity between the news coverage by the two newspapers. Both newspapers can be said to have a negative attitude towards wind power. This is specifically expressed in negative publicity of the plans of the two offshore wind farms, but also in the newspapers' coverage of other wind production related topics. The newspapers publish negative stories about, eg aesthetic and visual concerns, increased power prices, etc and conveniently leave out articles which justify wind power and provide material for a democratic debate and balancing of different considerations. Furthermore, both newspapers also assume a very sceptical attitude towards assumptions about the greenhouse effect thus discrediting a significant argument in favour of wind power. This negative attitude towards wind power of the two newspapers is also presented in their leading articles.

In continuation of the newspapers' negative attitude towards wind power, another similarity in their news coverage lies in a tendency towards personification of the matter. This means that the presentation of the case and the course of events in general are turned into the current Danish Minister of Energy and Environment's own personal project. In this way he becomes the opponent of the local communities. The reason why the matter can be personified may lie in the fact that the newspapers have omitted to explain the energy and environmental reasons behind the plans to construct the two wind farms.

The final similarity between the news coverage by the two newspapers is that different attitudes towards wind power can be found in both newspapers depending of the subject that forms the basis of the article. On Lolland it is very evident that the negative attitude of the newspaper towards wind power changed when the wind turbine manufacturer, Vestas, established production facilities for part of the production in the area. Lolland is characterised by high unemployment rates, and the creation of new jobs is thus a very positive event. In the business section and from a local employment point of view, wind power became good news without it being linked to the local offshore wind farm. Similarly, the other newspaper gave negative publicity to the local offshore wind farm, but in the business section the newspaper gave positive publicity to the significance of Denmark's leading position within wind power. The conclusion must be that wind power's positive effect on local employment can contribute to the creation of a certain positive attitude towards the project, however, it must also be assumed that the reason for inconsistency in the news coverage of the two newspapers is that the different areas are covered by different journalists.

## **Conclusion**

It is noteworthy that the two local newspapers' coverage of the two offshore wind farms has been so different both in time and extent and that the extent of the local debate in the two areas has been so different. An explanation of why the newspapers covered the matter so differently in connection with presentation of the plans in 1997 is that the local opinions about whether the plans would actually be carried out differed. In both cases there is a connection between events of the matter and newspaper coverage. Another similarity is that explanations were rarely given as to why the plans were to be implemented. Both newspapers have expressed a negative attitude towards wind power in their articles and leading articles. However, in both cases this attitude has been countered by readers who have expressed positive attitudes towards the plans of the wind farms and in several cases readers have also provided justification for wind power. This accentuates the general assumption that the communication from newspaper to reader is not a one-way communication. The readers receive and interpret the news and attitudes towards the matter expressed more or less implicitly by the newspaper. The readers' reception and interpretation are based on their general attitude towards the matter. However, the newspapers' negative presentation of the course of events may have contributed to creating or enhancing negative attitudes towards the offshore wind farms among the readers who were already negative or recitant. This assumption has been confirmed through interviews with local players, where opponents of the wind farm found that the newspaper's coverage of the matter had been objective. However, supporters of the wind farm found that the newspaper had contributed to giving the impression that the resistance to the plans of the wind farm was larger than was actually the case among the population. They felt that this impression had been enhanced, primarily by promoting opponents and their views.

#### ***4. The local communities' reception of the wind farms – analyses of interviews***

Analyses of interviews follow below; the basic interviews were made with local players in connection with the two wind farms. The interviews describe the attitudes towards construction of the wind farms, which the local populations in the two communities gave voice to.

The interviewees voice both their own attitudes and their impressions of the general atmosphere experienced during the previous course of events as well as at the time of the interview. The interviewees' remarks are expressions of subjective opinions; therefore, these remarks must not be considered objective statements on the matter and the wind farms.

The analyses of the interview material are composed in accordance with the trends deduced from the interviews. Consequently, some similarities between the two analyses are found as well as conditions, which are specific for the individual area and course of events. Furthermore, there is a substantial difference between the two analyses, as the investigation at Horns Rev is conclusive and consequently reveals changes of attitude towards the wind farm over time. However, the investigation at Nysted is the first of two investigations as the interviews were made before the wind farm was completed. A follow-up investigation in 2004 serves the purpose of revealing the extent of attitude changes regarding the wind farm and the development of these changes of attitudes. Therefore, the present review of attitude changes can only be based on this single case. Primarily, this summary focuses on the basis of negative and positive attitudes towards the wind farms as well as on similarities and specific conditions. Subsequently, the changes of attitude, which were detected in connection with the investigation of the local community at Horns Rev, are analysed.

#### **Selection of interviewees**

Before the results of the analyses are presented, a general survey of the empirical material is prepared. The investigation in Nysted comprises interviews with 12 persons; at Horns Rev 14 persons were interviewed. The interviewees have either participated in the decision-making process related to the two wind farms, or they have, as citizens, expressed their opinions of the wind farms in public – or by virtue of their occupational background, the interviewees have had an opinion of the wind farm:

- As local politicians (three persons at each site)
- As municipal officers employed within local and regional authorities (two persons at Horns Rev, three persons in Nysted)

- Persons with a commercial interest on the matter (four persons at Horns Rev)
- Representatives from involved NGOs (three persons at Horns Rev, three persons in Nysted)
- Citizens, who have expressed their opinions of the wind farm in public (two persons at Horns Rev, three in Nysted)

The interviews are based on interview guides with subjects considered crucial to the comprehension of how the course of events was experienced locally. Furthermore, the interviews in Nysted provided input for the interview subjects at Horns Rev. Thus enabling a comparison of the two courses of events. Likewise, the results of the analysis at Horns Rev will incorporate the results of the next follow-up investigation in Nysted. Among the subjects are the historical course of events, view of wind energy, wind farm and nature as well as aesthetics and attitudes towards environmental questions. In both cases, the interviews have lasted between ½ and 2 hours.

### **General attitudes to wind power**

Before presentation of the pros and cons in relation to wind farms, it may be relevant to take into consideration the interviewees' attitudes to wind power in general. If a person is opposed to wind power, he is likely to be inclined towards the plans of a wind farm in a different way than a person who on grounds of principle supports wind power. It is significant that all the interviewees but two agreed that wind power is regarded as "common sense" as to the utilisation of a natural source of energy. Thus a wide consensus on wind power among the interviewees is demonstrated. The major part of the interviewees is simultaneously opposed to or critical to the placement of wind turbines on land and prefers the wind turbines sited off shore. This is due to the opinion that wind turbines are an eyesore, cause disorganisation and disturbance of the scenery as well as make noise. Only few interviewees were of the opinion that wind turbines are not unpleasant to look at.

Two interviewees were direct opponents of wind power. One of the two opinions was based on concern for the landscape and on the idea that today's conventional power production is so effective that the problem of CO<sub>2</sub> emission no longer exists. The other opinion was based on reasons related to economics and landscape.

A couple of interviewees made reservations about wind power maintaining the opinion that even though wind power is a fine form of energy it should not be chosen without consideration. In their opinion, it may be too expensive to utilise wind power. Two other interviewees were concerned if a significant development of wind power would cause power consumption problems in connection with the transmission grid. Based on this,

they were of the opinion that at present, society should take up a cautious attitude towards the development of wind power.

In other words, a wide, theoretical support of wind power is demonstrated in the interviews. Also based on the preferences of siting the wind turbines on sea rather than on land, a widespread, positive attitude could be expected towards the planning of two offshore wind farms. However, as it appears from the following the situation becomes complex, when the focus is on attitudes towards specific placements.

### **Attitudes to the two wind farms**

The widest support of the wind farm in question was detected among interviewees from Nysted. Here five of 12 interviewees expressed a positive attitude, other five a negative attitude, one person may be considered neutral and the last interviewee saw both benefits and drawbacks in connection with the wind farm.

At Horns Rev, the support of the wind farm was significantly less widespread. In this analysis, the changes of attitudes were examined over time. This analysis showed that only two out of 14 interviewees were in favour of the wind farm ahead of its erection. One year after its erection, three interviewees were in favour of the wind farm. It is noteworthy that the number of wind farm opponents had shrunk, as six previous opponents accepted the wind farm one year after its erection. This indicates that time and adaptation may change attitudes to the wind farm.

### **Positive attitudes**

At both sites, the interviewees' positive attitudes towards the wind farms are based on environmental considerations. The supporters are concerned about the prospect of a man-made greenhouse effect and the consequences of climate changes caused by the emission of CO<sub>2</sub>. To supporters, this concern implies a moral obligation for Denmark to take energy actions in order to reduce the emission of CO<sub>2</sub>. Several of the supporters of the wind farm at Nysted own parts of cooperatives; and apparently the support of wind power – as well as the involvement of citizens – on Lolland-Falster is large compared with Horns Rev.

Another reason for the positive attitudes, which also exist at both sites, may be found in the occupational impact of the wind turbine production. At both sites, wind turbine components are manufactured, but as it appeared from the analysis of the newspapers, the occupational effect had a special, local impact in Nysted, as Vestas placed part of the production in the area. This situation is, in fact, emphasised by several of the supporters in Nysted (though the erected wind turbines were manufactured by Bonus and not by Vestas).

In continuation of the occupational impact, another reason for supporting the wind farms is found among the interviewees in Nysted: export earnings. Several of the supporters emphasise Denmark's prominent position within wind power; and in their opinion the wind farm erection should be utilised in order to preserve and enlarge Denmark's position. To a couple of the interviewees, the emphasis on Denmark's leading role is focused on a fascination of the wind power technology. Several of the interviewees from Blaavands Huk reported that local supporters of the wind farm argued that the wind farm might become an extra, local attraction, as it was the largest wind farm in the world.

### **Negative attitudes**

At both sites, the strongest argument against the wind farm is based on aesthetic reasons. Both local communities were concerned if the distance between the wind turbines and the coast would entail high visibility of the turbines and thereby interfere with the experience of scenery. Therefore local and regional efforts were made, during the decision-making process at both sites, to place the wind turbines further off the coast. The subject of the concerns for the scenery was not identical at the two sites. Horns Rev has a major tourist industry and a part of the opposition to the erection of the wind farm was based on the fear that the impact on the scenery would have a negative effect on the number of tourists visiting the region. The consequence of that would be a decrease in summerhouse lettings and a reduction in summerhouse prices. Many inhabitants in the community have invested their money in summerhouses in anticipation of summerhouse letting. Thus, they have had a private, financial interest in preserving the scenery unchanged. In this case, the attitude to the wind farm is based on a business interest. In Nysted, no significant summerhouse tourism exists and the attitudes towards the wind farm are not based on a corresponding business interest. Here considerations rather focus on the unspoilt nature for the sake of itself, in spite of the concerns that the presence of the wind farm would have an influence on the yachting tourism in the community.

Based on the arguments related to nature, this analysis reflects on the importance of nature to the local citizens. It appears from the analysis that different opinions exist side by side. The most widespread opinion deals with nature in terms of it being unspoilt and possessing recreational and aesthetic qualities; this opinion can be derived from the business interest in tourism. Next to this opinion, focus is concentrated on nature's productive capacity. This attitude to nature is detected both at Horns Rev and in Nysted. In both cases this opinion was found among fishermen. At Horns Rev, however, the opinion forms the basis of another business interest, which the wind farm opposition is based on. The only reason for this point of view is that the wind farm reduces fishing

options. Thus the interviewed fishermen at Horns Rev would have preferred that the wind farm were sited closer to the coast and outside the fishing zones.

The experience of nature involves a feeling of identity. Being in nature, places people in certain emotional states. Experiences and emotions, which are important for the creation of identity, are connected with and dependent on certain places; and these impacts are the reason why many people recognise the existence of a bond to nature. Based on this theory, a person's identity is preserved by visiting the same place again and again thus making it possible for a person "to find himself". Therefore people always prefer that the scenery stays unchanged. An interviewee explained that watching the sea is a matter of emotions – incidentally, the sea is no longer a part of the unspoilt nature. In this connection, the wind turbines become a question of emotions. Several interviewees at Nysted explained the local pros and cons by maintaining that it was a matter of emotions. However, none of them were able to provide further arguments for this statement. Furthermore, it may be assumed, on the basis of the strong bond between local identity and scenery, that Government interventions in local nature matters awaken strong emotions and easily result in protests. Based on that, the local population at the two sites does not necessarily sympathise with the general outline of the Danish stretches of coast and the assessments, which were performed in order to pinpoint wind turbine sites where the turbines would be less harmful to nature. As mentioned previously, the said outline and assessment were parts of the committee work, which was performed ahead of the actual plans for expanding offshore wind power in Denmark.

A further, significant reason for the local opposition at both sites is the way the decision-making processes went off. At Horns Rev, all the interviewees, apart from one single supporter, emphasise this fact; and in Nysted, both wind farm opponents and supporters stress this argument. The local and regional authorities were in both cases presented to the plans for the wind farm in question in the summer of 1997. The reactions to the plans vary – a fact, which also appears from the newspapers. At Horns Rev, the interviewees considered the plan to be only one of many plans; and consequently they were of the opinion that the Government would end up selecting another site. The idea of spoiling such unique scenery was unthinkable to the locals. At Nysted, the plans were apparently considered realistic; and consequently the reactions here were strong from the start. In both cases, the interviewees who had been part of the decision-making process, either as local politicians or municipal officers, were unappreciative of the reason why they were not involved in the process ahead of the actual plans being presented. These interviewees

felt ignored, and in both cases they had expected to be able to influence the further process because of the opinions, which had been expressed in connection with the public hearings.

In both cases the local authorities argued that the wind farm must be sited further off the coast. Primarily for aesthetic reasons, but in Nysted the arguments were also based on concern for animals and birds. At both sites the governmental authorities argued that a wind farm placement further off the coast and consequently in deeper waters, would increase both the construction costs and the operational expenditure. Furthermore, in the case of Horns Rev Offshore Wind Farm the governmental authorities argued that due to weather conditions, the wind farm would only be slightly visible. According to several interviewees from Horns Rev, this argument was very provocative.

This leads to an analysis point concerning the contrast between the different kinds of knowledge: local knowledge contrary to expertise. At both sites, the local authorities – and in Nysted also the local NGOs – experienced non-approval of the asserted, local experience by the governmental authorities. Local knowledge is based on local experience of the actual conditions at the site in question. Substantially, local knowledge is based on experiences made by a person or on information passed on to the person in question. This kind of experience is local and specific; and consequently it may not necessarily be general knowledge. Therefore, local experience may conflict with expert opinions, which are general and objective. Facing expert opinions the local experience fails because it cannot be substantiated to the same extent as expert opinions. This may be the explanation for the experienced non-approval.

The question of the different kinds of information and the access to information is also relevant in connection with another widespread criticism detected at both sites: the criticism of the preparation process and the public hearing in connection with the EIA report. The interviewees at both sites criticise that local investigations were rendered impossible. Furthermore, a general criticism focuses on the fact that none of the arguments presented at the public hearing were considered important enough to cause a revision of the plans. Several interviewees stress the fact that the projects were changed during the period as from the presentation of the first plans until wind farm erection in 2002 and 2003 respectively. In both cases, the height of the wind turbines ended up larger than originally planned and presented in 1997. The increased height entailed a lighting demand for the wind turbines. The interviews indicate a conflict between the results expected from a round of EIA hearings and the actual substance of this procedure. Some interviewees criticise the estimation of the protests for not having been impartial, due to governmental authorities' and the owner's interests in erecting the wind farm<sup>1</sup>.

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<sup>1</sup> A possible submission of the decision to the Energy Board of Appeal was never effected.

Another subject derived from the round of hearings related to the EIA report is mentioned here because it calls the attention to the weaknesses related to public involvement in the decision-making process. At both sites, surprisingly few, private persons protested, considering the assumed, widespread local opposition to the plans. According to several interviewees, the explanation may be that it is difficult to comprehend the substance of the material. Likewise, also the necessity of mastering difficult argumentation at the necessary level was pointed out. Additionally, an explanation focuses on the fact that the matter is not considered to have any present relevance to the everyday life of the local population. According to some supporters, the few protests may be interpreted as indications of an opposition, which is less widespread than asserted by the opponents.

Finally, the level of information is criticised at both sites. In general, all interviewees agree on the necessity of further information on the matter as from the time of presentation of the initial plans in 1997 until the time when the final decision was made by the relevant authorities in the end of 2000. At both sites, the interviewees from the local authorities were of the opinion that it was not their obligation to provide information on the matter, as the project did not belong to them. In stead they argue that the responsibility of informing the population primarily rests with the governmental authorities and secondly with the owner. An interviewee from Horns Rev explained that the municipality required a public meeting to ensure information at a factually and professionally correct level to avoid protests and risings. In her opinion, the least the governmental authorities could do was “to come forward and give factual and professional replies to the questions presented to them”. Several interviewees refer to the basic opinion that the information level is proportional to the ability to cope with a situation. Likewise, a high level of information is a way of showing people respect. One interviewee explains that information about the matter and the background of the decision makes it easier, even for an opponent to understand what will come to happen.

### **Change of attitudes**

As mentioned above, it has only been possible to detect a possible change of attitudes towards the wind farm in connection with the Horns Rev analysis. This is due to the fact that this analysis was performed after one year. As it appears from the above indications, a change of attitudes is found among the interviewees; a change which tends to go towards less opposition and a growing acceptance. According to their statements on the opinions in the local community this also applies to the change of attitudes in general. The change of attitudes may be explained by the fact that mainly business interests provided the basis of the opposition to the plans. As it appeared from the above, the main issue was the interest in tourism at the site.

After erection of the wind farm, experiences show that the wind farm has not alienated the tourists. Tourists still pay visits to the area, and the fear of a decrease in the summerhouse prices has, this far, proven to be groundless; as the prices here have increased concurrently with the equivalent prices applying to other places in the country. Another explanation of the change of attitudes may be the fact that people have become accustomed to the new view.

Several interviewees explain their fear of the wind farm by stating that it was difficult to imagine what wind turbines with a height of 110 m would look like, however, the wind turbines proved to be acceptable. Finally, some interviewees explain the change of attitudes by the statement that, in the long run, it is not possible to continue being an opponent.

In other words, the analysis indicates that specific experiences may change the attitudes and consequently time and adaption to the situation may contribute to a change of attitudes. It will be interesting to see if the follow-up investigation at Nysted provides equivalent indications, as the opposition here is not based on business interests but on views on nature and thus on aesthetics. The question is whether these views will prove to be changeable over time.

## **5. Preliminary conclusions**

The investigations in both communities and the analyses of the statements in the local newspapers have in both cases detected a considerable opposition at the start of the project (1997-2000). Several similar reasons have also appeared from the analyses:

### **The aesthetic reason**

The interviewees were concerned if the presence of the wind turbines and their visibility would alter the scenery negatively and at both sites, the regional and local authorities have made attempts to erect the wind farm further off the coast. The analyses have demonstrated the apparent existence of different arguments for the opposition in the two communities; at Horns Rev the opposition was based on substantial business interests in tourism; in Nysted the interviewed opponents wished to preserve nature unspoilt by human hands.

### **Disappointment with the course of events**

According to several interviewees at Horns Rev, the course of events contributed to the creation of the opposition. From the beginning, scepticism regarding the plans existed, and when the locals felt ignored by the authorities, the scepticism changed into actual opposition. A similar criticism of the course of events in Nysted was detected, but according to the analyses the interviewees did not reflect on the effect of the process in the same way. However, it can be concluded that the interviewees who had been involved in the decision-making process at both sites maintained that they were ignored and it was perceived that the decision of wind farm erection was made in advance. Another similarity is the few protests at the public hearings related to the EIA report. This can be interpreted in two ways; either the locals thought protesting would be difficult and in vain or the opposition was not as strong as suspected.

The presence of supporters of the wind farm also appears from the analyses. At Horns Rev, very few supporters participated in the debates, but all of the interviewees from Horns Rev agreed that supporters could be found in the community. The supporters were found especially among the residents who assumed they would benefit from the wind farm. On the contrary, there was a major opposition among the owners of summerhouses who are likely to attach great importance to a recreational nature. Judging from the contributions to the debate stated in the local newspapers, the debate in Nysted was more intense than the debate at Horns Rev. In Nysted, a lot of supporters participated in the debate, and in the town council supporters and opponents were split politically.

According to the analyses, the interviewed supporters base their opinions on environmental concerns and on occupational and export interests related to wind power.

Regardless of the size of the opposition, an important point of the analyses is the fact that the opposition was much more widespread than the governmental authorities apparently noticed. Furthermore, this indicates that in future projects it may be appropriate to establish a dialogue. Additionally, importance must be attached to thorough and professional information in the entire process. The local authorities do not necessarily feel obligated to inform about the process locally, and thus only the local newspapers bring up subjects for discussion. This has been demonstrated at both sites. Even though it was emphasised that information was not based on one-way communication between the newspapers and the readers only focusing on negative attitudes towards the wind farms, the newspapers' negative views may have contributed to a negative atmosphere. Furthermore, attention must be drawn to the fact that newspapers in general only provide limited explanations of why utilisation of wind power must be extended and of the basic considerations regarding this extension.

A substantial purpose of the entire investigation is to detect the scope and direction of the change of attitudes. At Horns Rev this was practicable, but in Nysted the results of the follow-up investigation in 2004 must be awaited. However, it is already possible to conclude that the attitudes among the interviewees have changed. According to the interviewees, this trend also applies to the attitudes in the rest of the community. The change of attitudes has developed from scepticism at the time of presentation of the plans to opposition in the decision-making process; and one year after the erection of the wind farm, the opposition has apparently been replaced by acceptance. Opponents have not become actual supporters of the wind farm, but their opinions can be summarised in the following statement: "It is possible to accept and endure living with a wind farm since they are here to stay". Based on that, it can be concluded that time and adaption to a situation may change the attitudes towards offshore wind farms. It will be interesting to analyse the results of the follow-up investigation in Nysted and to detect a possible, equivalent tendency applying to Nysted and if so, to draw the general conclusions on this basis, if possible.

## Reading list

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