



The permission process for large onshore wind turbines in Sweden

HOW DO AUTHORITIES INTERPRET THE LAWS?

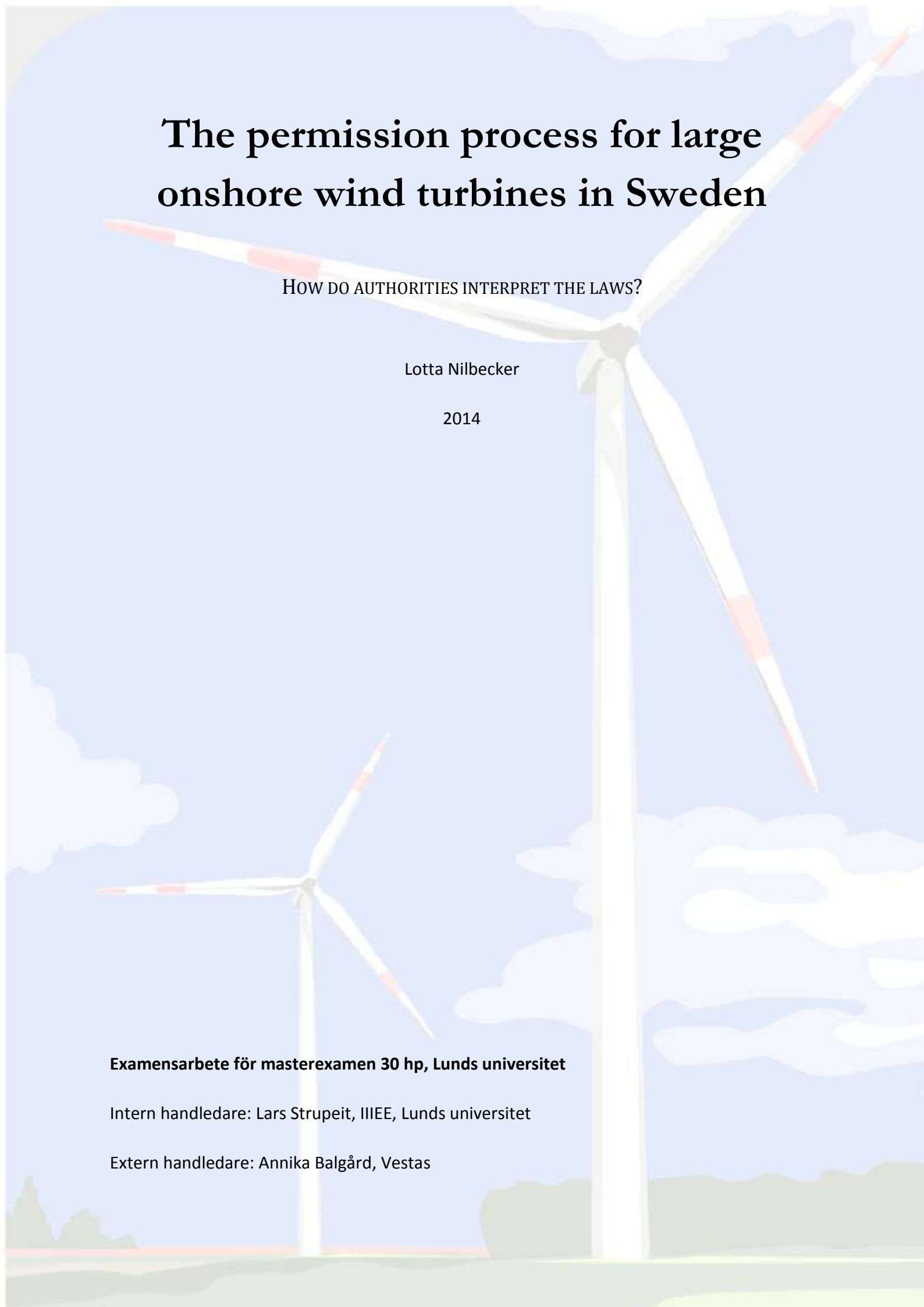
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ABSTRACT

Denna studie undersöker tillståndsprocessen för stora landbaserade vindkraftverk i Sverige. För att bygga en gruppstation med fler än sju vindkraftverk som är högre än 120 meter eller enstaka verk högre än 150 meter krävs tillstånd från Länsstyrelsen. Tillståndsansökningar till Länsstyrelsen kräver att den kommun där vindkraftverken ska placeras ger sin tillstyrkan enligt 16 kap. 4 § i Miljöbalken. I praktiken ger denna lag kommunerna vetorätt mot vindkraftverk utan att behöva motivera sina beslut. Jag har använt mig av semistrukturerade intervjuer med Länsstyrelser, konsulter och de nationella vindkraftssamordnarna för att komma fram till mina slutsatser. Jag har även gjort litteraturstudier av såväl vetenskapliga artiklar som medieflödet gällande vindkraftverk och dess tillståndsprocess. Studien visar att alla aktörer involverade i en tillståndsprocess finner lagen dålig och rättsosäker då beslut inte går att överklaga. Ett annat identifierat problem är att det saknas en standard för den fågel- och artinventering som måste göras under projekteringsarbetet. Bland konsulterna som jobbar med tillstånd för vindkraftverk är det svårt att veta hur noggrant de ska inventera. Länsstyrelsen å andra sidan finner det svårt att avgöra om inventeringen som redovisas i ansökan är tillräcklig och begär därför ofta in kompletteringar. Ett tredje hinder under tillståndsprocessen är Försvarmakten som är en av remissinstanserna. Försvarmakten menar att vindkraftverk kan störa deras tekniska utrustning, är i vägen för övningsfält och flygplatser eller kommer i intressekonflikt mellan nationella intressen för vindbruk och försvarsintressen.

Key words: Wind turbine. Permission process. County Administrative Boards. Neighbours. Chapter 16, 4 § Environmental code. Project developers.

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1. INTRODUCTION

1.1 CONTEXT

The world is meeting challenges like climate change and a huge need for energy. Complex and multiple challenges are facing us in getting a more secure energy supply that is clean and reduce carbon dioxide emissions. In a world where war and conflicts jeopardize a secure energy supply more countries find it important to become self-supporting. The need for countries to protect themselves against high and increasing oil prices is also an incitement for becoming self-supporting (EIA, 2013), (Svensk energi, u.d.) and (GWEC, 2013).

A Change in the energy systems of the world towards renewables is important in order to reach the two degree goal (Wikman-Svahn & Carlsen, 2013). One renewable alternative to use are wind turbines. The global wind turbine industry has developed rapidly during the last few years. At the end of 2012 the world had an installed wind power capacity of 282 482 MW (Svensk energi, u.d.), (IPCC, 2007) and (GWEC, 2013).

In Sweden the discussions about energy extracted from wind were actualised during the oil crises in the 1970's, and also in connection to the referendum about nuclear power in the 1980's. Since the 1980's the number of wind turbines and the installed effect has increased annually, especially over the last five years (Energimyndigheten, 2013). In 2013 Swedish wind power had an installed effect of 4500 MW that produced 9.9 TWh; which covers 7 % of the Swedish electricity use (Svensk Vindenergi, 2014). The goal of the Swedish parliament is that wind turbines produce 30 TWh annually after year the 2020. Electricity production from wind power is planned to be divided between on-shore wind turbines (20 TWh) and off-shore wind turbines (10 TWh) (Energimyndigheten, 2014).

The deployment of wind power comprises a number of different laws¹ and actors (Energimyndigheten, Vindlov, 2009). With a large number of regulations and referral organizations the permission process takes a long time and this contributes to an uncertainty among developers (Andersson, 2010). One key actor for this report is the County Administrative Board, (Länsstyrelsen), which handles the permit application (Vindlov, 2012). The County Administrative Board executes the relevant legislation and gives their final

¹ Naming a couple of them: Chapter 16, 4 § and chapter 6 in the Swedish Environmental code.

answer to the project developers, i.e. companies that plan and install wind turbines. These companies will be named developers in this report.

Sweden has a democratic process for permit applications considering wind turbines. Swedish citizens are allowed to comment on an application for wind turbines in their neighbourhood. They are also allowed to appeal against decisions. This is a unique process which causes increased costs and lengthy permissions processes (Söderholm, et al., 2009).

In Sweden the municipalities govern themselves in a lot of questions; this is a very important principle of Swedish local democracy. This has led to a clause in the Swedish environmental code, chapter 16, 4 §, which gives municipalities the right of veto concerning wind turbine applications handled by County Administrative Boards (Vindlov, 2013). This clause seems to be used in a way that was not intended and that creates uncertainty among developers. The intention of the clause was to simplify the permission process and contribute to the building of more wind turbines (Proposition 2008/09:146, 2009) and (Andersson, 2010).

All Swedish municipalities have structure plans that are considered an important instrument for implementing the national wind power goal. A structure plan can localise sites suitable for wind power, or designate areas as national interest for wind energy production, but not necessarily. Pettersson (2008) argues that because structure plans are not legally binding, and there are no guarantees that the plans will be adhered to in trials for permits, those plans must be considered insufficient. In several cases regarding wind turbine installations the Land and Environmental court, (Mark- och miljödomstolen), has stressed the leading role of the municipalities' in the physical plans. Only guidance is given by the overview structure plan, i.e. where sites for wind turbines may be planned (Pettersson, 2008, p. 60).

There is a knowledge gap about the detailed function permission process in the literature and industry (Balgård, 2014). Improved understanding about the process could facilitate the stream lining and facilitate cooperation between project developers and authorities. Most studies are specific about only one question concerning permission processes and do not emphasis the whole picture (Andersson, 2010), (Agterbosch, et al., 2009) and (Energimyndigheten, 2014).

1.2 OBJECTIVE AND RESEARCH QUESTIONS

The objective of this research is to identify how the permission process for large onshore wind turbines works. The County Administrative Board and their twelve environmental impact assessment committees are key actors in this process because of their role as the authority which makes the decision about an application. Most important is to find out how the County Administrative Boards handle and interpret the legalisation, but also find out how other actors involved experience the process. Other purposes of the research is to find out how County Administrative Boards in a selection of counties in Sweden learn from each other and if there are any differences in the handling of applications and also in the length of the process.

It is important to map the permission process for a better and more transparent communication between authorities and developers, but also how to further facilitate the processes of handling applications for wind turbines.

The research question for the thesis is:

- How do authorities interpret and execute relevant legislation for the permission process for large onshore wind turbine projects?

1.3 ENVIRONMENTAL SCIENTIFIC RELEVANCE

Energy extracted from the wind is a clean, competitive and safe source of energy; that does not take much land in use. Wind energy does not disrupt local eco-systems as much as e.g. large-scale hydro power station (C2ES, u.d.). The world needs more renewable energy sources in order to manage the lowering greenhouse gas emissions. Figure 1 illustrates grams of carbon dioxide emissions per kWh. This data shows big differences of emissions between energy sources; and why a quicker permission process for wind turbines and other renewable energy sources is needed. With a better understanding and more streamlined permission processes in the wind power industry, it should be easier to sell and install wind power.

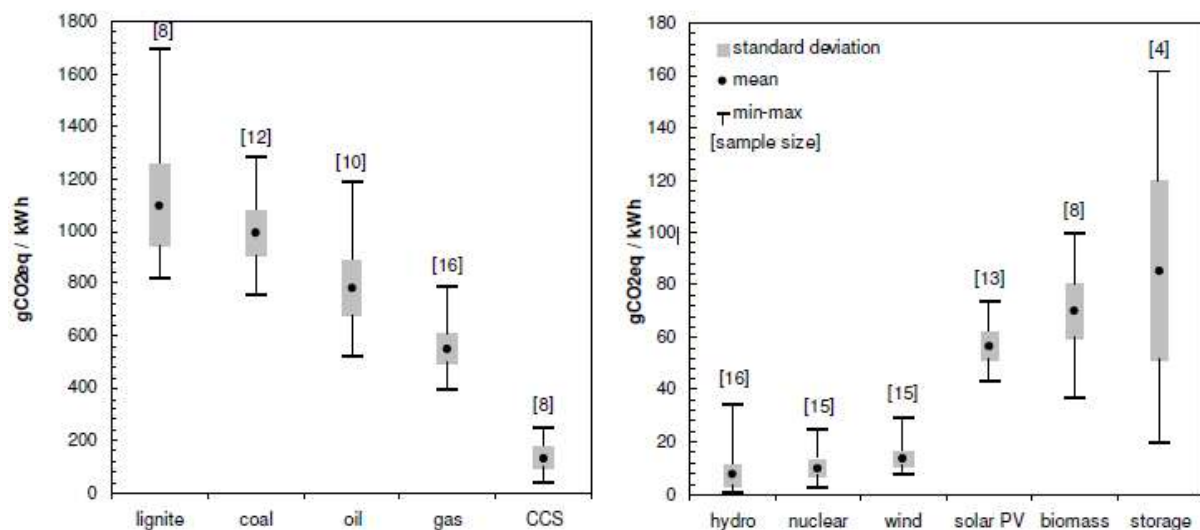


Figure 1 shows a summary of life-cycle, LCA, GHG emissions for selected power plants. The LCA account for GHG emissions at the following stages: energy resource exploration, extraction and processing; raw materials extraction for technology and infrastructure; production of infrastructure and fuels; production and construction of technology; transport of fuel; other related transport activity (e.g. during construction decommissioning); conversion to electricity or heat or mechanical energy; and waste management and waste management infrastructure (e.g. radioactive waste depositories, ash disposal etc.) (Weisser, 2006).

The Nordic countries have a common electricity market and the average emission is 110 grams of CO₂/kWh (Möln dal energi, u.d.). When analysing the figure it seems like the Nordic countries are able to lower the average emissions of grams CO₂/kWh by using even more renewable energy sources.

2. BACKGROUND

The permission process for wind turbines is complex; many different laws need to be considered. Which laws are relevant depend on the location and size of the wind turbine. The environmental code², the plan- and building³ act and the law about electricity⁴ are laws that concern most of the wind turbine applications are. Other laws are: utility easements act⁵, cultural act⁶, reindeer husbandry act⁷, forestry act⁸, road act⁹, act on the Swedish economic zone¹⁰, the continental shelf act¹¹, law on the protection of landscape-details¹², the electronic communications act¹³, law on electromagnetic compatibility¹⁴, transport agency's regulations and general advice¹⁵ and seafaring¹⁶

The wind turbine industry is fairly new and how the legislation is to be applied is still not fully matured or aligned within the authorities. This results in permits with different environmental focus and also demands on the application permit and its conditions (Bergek, 2010). If wind turbine manufactures as well as developers of wind power projects understand how authorities interpret relevant legislation, administrative processes could be more streamlined and facilitated. This, in turn, may reduce the costs and shorten development times for wind power projects (Bergek, 2010).

Anderssons (2010) report for the Swedish Energy Agency identifies one of the key problems in the permission process, which is chapter 16, 4 § in the Environmental¹⁷ code. Since the August 1, 2009, this clause gives municipalities the right to approve or reject an application

² Miljöbalken (1998:808) chapter 1, 2, 3, 4, 6, 7, 9, 11, 17 (Naturvårdsverket, Vindlov, 2012 a).

³ Plan- och bygglagen (2010:900) chapter 2, 3, 4. Plan- och byggförordningen (2011:338) chapter 6 (Boverket, Vindlov, 2012).

⁴ Ellagen (1997:857) chapter 8 and 12 (Energimarknadsinspektionen, Elsäkerhetsverket, Svenska Kraftnät, Vindlov, 2012).

⁵ Ledningsrättslagen (1973:1144) (Lantmäteriet, Vindlov, 2012).

⁶ Kulturmiljölagen (1988:950) chapter 1 and 2 (Riksantikvarieämbetet, Vindlov, 2014).

⁷ Rennäringslagen (1971:437) and Sametingslagen (1992:1433) (Energimyndigheten, Sametinget, Vindlov, 2012).

⁸ Skogsvårdslagen (1979:429) (Skogsstyrelsen, Vindlov, 2012).

⁹ Väglagen (Trafikverket, Vindlov, 2012).

¹⁰ Lag om Sveriges ekonomiska zon (1966:374), (1992:1226), (1992:1140). (Naturvårdsverket, Vindlov, 2012 b).

¹¹ Lag om kontinentalsöckeln (1966:314) (SGU, Vindlov, 2012).

¹² Lag om skydd för landskapsinformation (1993:1742) (Försvarsmakten, Vindlov, 2012).

¹³ Lagen om elektronisk kommunikation (2003:389) (Post- och telestyrelsen, Vindlov, 2012).

¹⁴ Lag om elektromagnetisk kompatibilitet (Elsäkerhetsverket, Vindlov, 2012).

¹⁵ Transportstyrelsens föreskrifter och allmänna råd (TSFS 2010:155) om markering av föremål som kan utgöra en fara för luftfarten (ändrad genom TSFS 2013:9) (Transportstyrelsen - Luftfart, Vindlov, 2012).

¹⁶ Sjötrafikförordningen (1986:300) (Transportstyrelsen, Sjöfartsverket, Vindlov, 2012).

¹⁷ Miljöbalken chapter 16, 4§

without any argumentation. The municipalities have in practice veto right¹⁸ when it comes to probation of wind turbines that the County Administrative Board handles. This means that the County Administrative Board can only pass new wind turbine applications if the municipality has approved them (Länsstyrelsen, Västra Götalands Län, u.d.). The purpose of this clause was to simplify and shorten the consideration of an application and by that to promote wind turbine expansion in Sweden. However the clause is identified as a legal insecurity because it cannot be appealed against (Andersson, 2010).

In 2005 the Swedish parliament made the decision; to employ four national wind coordinators (Regeringen, 2006). Their main task is to help developers during the permission process whenever problems arise. They can help by 'opening doors' to authorities or give relevant information requested by developers and municipalities. They work for a better and smoother permission process. Each national wind coordinator is responsible for a number of counties in geographical proximity. They meet regularly for the exchanging of experiences and they report to the Ministry of Enterprise, Energy and Communications (Regeringskansliet, 2013) & (Energimyndigheten, 2013).

The Swedish government has given the Swedish Energy Agency a mission to build a network of actors, aiming to facilitate and spread knowledge about the extension of wind power. Their purpose is to facilitate the interplay between wind power producers, authorities and other participants at central, regional and local level (Energimyndigheten, 2013).

In Sweden municipalities have a key role in the development of, primarily, land-based wind power. This role has been more accentuated over the years, because of the existence of an ambiguous national policy towards wind power. Attitudes towards wind power development have differed considerably in local governments in the past; and the outcome of the permission procedure has often been significantly affected by this fact (Söderholm, et al., 2007, p. 392).

A permission process for wind turbines is a lengthy process. Appendix 3 explains how the permission process works. In Sweden the average time to get a permission for a B-enterprise according to the Environmental code is 3.1 years; this includes different lines of business e.g. extraction of minerals and infrastructure. One of the reasons is the strong municipal self-

¹⁸ Chapter 16, 4 § Environmental code

government. If someone makes an appeal against the permission, it will take another 35 weeks. The time taken for the whole process is 130 to 215 weeks, depending on whether court decisions are appealed against and also whether the further process is included in the time line or not (Ramböll, 2012) and (Energimyndigheten, 2012).

The risk of arbitrariness increases when decisions depend on the knowledge of the municipal administration and this may affect the decision given to the developer. Kahn (2003) claims that it is complicated for wind power developers who have to adapt their planning to the requirements in each municipality, because of the lack of common regulations and policies (Khan, 2003, p. 578).

There is not much research done in the area of permission processes in Sweden, which limit the use of scientific articles. Most research was made in the beginning of 2000, after this Sweden updated the Plan- and building act which in turn changed some parts of the permission process (SOU 2012:87, 2012). The most important change in the law was that no building permit is needed when an application concerns the County Administrative Board (Boverket, 2009).

In countries like Denmark and Germany another approach is taken. They have a strong support among the citizens by a tradition of joint ownership and cooperatives which have helped the development and expansion of wind turbines. The national state of Denmark respectively the federal states of Germany (Länder) also have more power over where to assign areas for wind turbines. In Sweden it is the municipality that has most to say about this (Klintman & Waldo, 2008).

3. METHODOLOGY

In this thesis I had to find out who to interview for answering my research question. This was done in consultation with my supervisors. People who are interviewed shows in Appendix 2

For answering my questions I have done semi structured interviews with officials at six different County Administrative Boards in Sweden, see Table 1 and see Appendix 1 for questionnaire. The chosen counties represent Sweden from north to south with high, low and some in the middle rates of wind power utilization. They are also chosen depending on where some of the twelve environmental impact assessment committees are. It is these committees that handle wind turbine applications, even from other counties.

For getting a broader perspective I have also interviewed consultants, project developer to the wind turbine producers and an opponent to wind turbines for finding out how they experience the permission process. All Swedish national wind coordinators are interviewed, by doing this, problem during the process are covered for the whole country.

By participating at a seminar organised by the Swedish chamber of commerce I got an overview about the problems facing County Administrative Boards, consultants and lawyers. The topic was about environmental permits - what the status is now and what will be required in the future. Participants at this seminar were lawyers, the County Administrative Board of Skåne, and people from municipalities and companies.

Neighbours are getting heard at a local level and for a better understanding of wind turbine opponents I participated at a meeting about neighbours' attitudes towards wind turbines in Skåne.

Literature studies are done by reading scientific articles found at academic databases and Google Scholar. For finding out how the permission process works I have primarily used the website vindlov.se where all involved authorities have gathered relevant information about wind turbines and different processes, studied the environmental code and reading the state's commission of inquiries concerning wind turbines.

The reason I interviewed the above mentioned actors was guided by innovation system theory, which argues that the deployment of new energy technology involves numerous actors from various sectors; such as public authorities, public firms and local neighbours.

When the interviews were done the empirical study have been summarized and analysed with help of the innovation theory in the 5. Findings and analysis section. Finally I have put it all in a perspective in the 6. Discussion section.

3.1 SCOPE

Sweden has 21 County Administrative Boards and twelve of them, named Miljöprövningsdelegation, are responsible for applications regarding wind turbines of a certain size. These counties, and this thesis, is about permission processes for the sizes of wind turbines that are in a group of seven mills or higher than 120 meters or all wind turbines higher than 150 meters (Länsstyrelsen, Västra Götalands Län, u.d.). To date, 640 wind turbines higher than 120 meters height have been installed in Sweden. Another 645 wind turbines at the same height are under consideration or have a decision in favour but are not yet installed (Vindbrukskollen, 2014).

Table 1 show which County Administrative Boards that have been objects for finding interviewees. As well as their total installed effect, number of wind turbines and how much electricity they have produced during 2012. Observe that these numbers includes every single wind turbine in the County Administrative Board no matter height (Energimyndigheten, 2013).

County Administrative Board	Totally installed capacity in MW year 2012	Number of wind turbines in year 2012	Electricity produced in 2012 (GWh)
Skåne	488.8	377	1180
Halland	256.5	191	504
Kalmar	246.4	161	474
Västernorrland	75.9	44	67
Örebro	37.8	36	86
Stockholm	2.1	6	* ¹⁹

¹⁹ The production number is under secrecy (Energimyndigheten, 2013).

4. THEORY

The deployment and operation of wind turbines concern different actors, from private firms and industry like the project developers and consultants to public authorities and as well as local neighbours. Legislation and attitudes are other important key roles. Innovation theory includes different actors and is a scheme that helps to structure these; see Figure 2 that illustrates which groups that interact with each other (Greenacre, et al., 2013). This report focuses on the three points under Policy, public and authorities involving the: European Commission, governments, ministries, local authorities and executive branches. The figure illustrates the complexity and all involved actors in innovation theory. What differentiates this theory is that it includes more actors than just, e.g. the economical point of view or the social point of view – it is an interdisciplinary theory (Szarka, 2006).

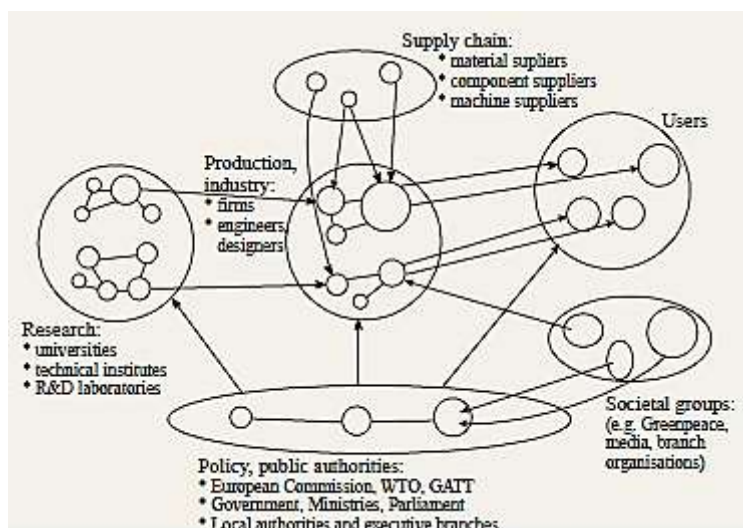


Figure 2 Interacting groups in technological innovation systems (Geels, 2002)

The innovation theory is defined by Carlsson & Stankiewicz (1991):

“A technological system may be defined as a network of agents interacting in a specific economic/industrial area under a particular institutional infrastructure or set of infrastructures and involved in the generation, diffusion, and utilization of technology. Technological systems are defined in terms of knowledge/competence flows of ordinary goods and services” (Carlsson & Stankiewicz, 1991, p. 111).

Interaction and learning processes, internally and externally, are changing with time. By using innovation theory the complexity can be illustrated by the interdisciplinary issue that it

is. Innovation theory includes learning processes like learning-by-doing, learning-by-interacting and learning-by-using (Hekkert, et al., 2007), (Lundvall, et al., 2002) & (Szarka, 2006). Learning-by-doing is a model that can be used in the production. For example, how developers learn from each other. Learning-by-using may be used by consultants and the counties. By doing the process over and over again improvements are done and knowledge is gained that may lead to better applications and more smooth processes. Learning-by-interacting is used in all kind of meetings between people. For example is a meeting between citizens and the wind turbine trade a type of interaction. Citizens are learning about the wind turbine industry and the wind turbine industry learns about attitudes from neighbours (Szarka, 2006). Some developers have learned how to interact with politicians in an early stage for knowing what their point of view is. These different learning processes are fundamental for innovation systems (Lundvall, et al., 2002).

Åstrand & Neij (2006) emphasizes that barrier to market introduction and expansion is high investment costs and policy instruments may be motivated to support and accelerate the learning process. It is important for everyone involved in socio-technical permission processes, like the wind power system, to be motivated and supporting learning processes. Especially policy makers who have barriers to market introduction and expansion is high investment costs (Åstrand & Neij, 2006).

Research that is done by Ek, et al (2013) shows that despite an equal legalisation in Sweden, there is different focus considering wind turbines in municipalities. One bottleneck that is pointed out is the limited grid capacity. But there is also a socio-economic point of view. Municipals that can show a positive impact on the local economic development may have a more favourable attitude investing in wind turbines. This explains why normative institutions can differ across different regions. In the wind power industry attitudes and legitimacy are important factors for being successful.

How well the permission processes will work depends on individual knowledge within people working during the process. Also how well different involved actors interact and use learning-strategies affect the process. In this report it is primarily the County Administrative Boards that have been studied.

Bergmann, et al. (2008) and Bergmann, et al. (2006) has shown that people living in rural and urban areas have significantly different preferences for wind power. Rural residents seem to value job opportunities higher than landscape values and vice versa for urban residents.

A more convincing and decisive energy policy can explain the rapid increase of wind power capacity from 2006. Reasons for this might be the classification system pointing out national interest areas for wind power 2004²⁰, ²¹ (Ek, et al., 2013).

It is shown to be more important for the realization of specific wind power projects and wind power market development to have a socio-political acceptance. The socio-political audience involves: policy makers, politics, key stake holders and the public as well as the community. There is a syndrome called Not-In-My-Backyard (NIMBY), meaning that people in general do favour wind power as long as it doesn't affect them personally (Agterbosch, et al., 2009). Even opponents to wind turbines are pro renewable energy, but not wind turbines because of their height and, as they say, inefficiency (Wachtmeister, 2014). This is a clear example of NIMBY.

Research by Agterbosch, et al. (2009) has identified three different explanations for the so called social gap between high levels of public support for wind power and the low success rate for planning applications. Those three social gaps are the NIMBY phenomenon, the democratic deficit of planning system – which means that people who does not like wind power are able to obstruct projects. The last gap is qualified support for wind power – which means that the support depends on some narrowly defined criteria like the landscape, animals or the environment. In concrete planning applications these criteria are not often met (Agterbosch, et al., 2009).

²⁰ Areas of interest are locals with an average wind speed of at least 6.5 m/s at 71 m above ground

²¹ Sensitive areas, such as national parks and virgin mountainous areas, and areas with settlements within a distance of 400 m are however accepted.

Kahn (2003) have identified three conflict dimensions between interests, actors and values as crucial to most land-use planning for interest in connection to wind power. First, there are a conflict between private and public interests. Second, Sweden experience some tension between national and local interests of how using land for wind turbines. Finally, third the potential conflict between economic growth and different goals of environmental protection (Khan, 2003, p. 565).

Other conflicts between investors and local residents are about costs and benefits. Conflicts about ownership of the wind park or the rented territory can also be very different depending on how they are allocated. Financial benefits from wind power are an important question for a better support by the public. It is shown that financial benefit and public participation in the planning process appear to enhance support for wind schemes locally (Agterbosch, et al., 2009).

5. FINDINGS AND ANALYSIS

5.1 RESULTS OF THE INTERVIEWS

My empirical results are structured according to the following themes: first an introduction of my findings. Then more about how interviewees stay updated (5.2). In the next paragraph (5.3) results about the beginning of the permission process and attitudes are presented. Paragraph 5.4 is about Environmental Impact Assessment and completions, the following result (5.5) is about chapter 16, 4 § in the Environmental code. Chapter 5.6 present results about environmental protection. The final two paragraphs are about the Swedish Armed Forces (5.7) and the National Wind coordinators (5.8).

Even though it is a slow process all interviewees agreed that the democratic process is important, see the timeline in Figure 3. The experiences of handling permit applications differed a lot between the counties that have been interviewed. One County Administrative Board had the last case a couple of years ago and some County Administrative Boards have people only working with wind turbine applications. My research shows that even though there are differences among actors, the line of business seem to be more matured. Consultants and authorities agree that large companies have more experience doing applications than small companies. It shows in the quality of applications.

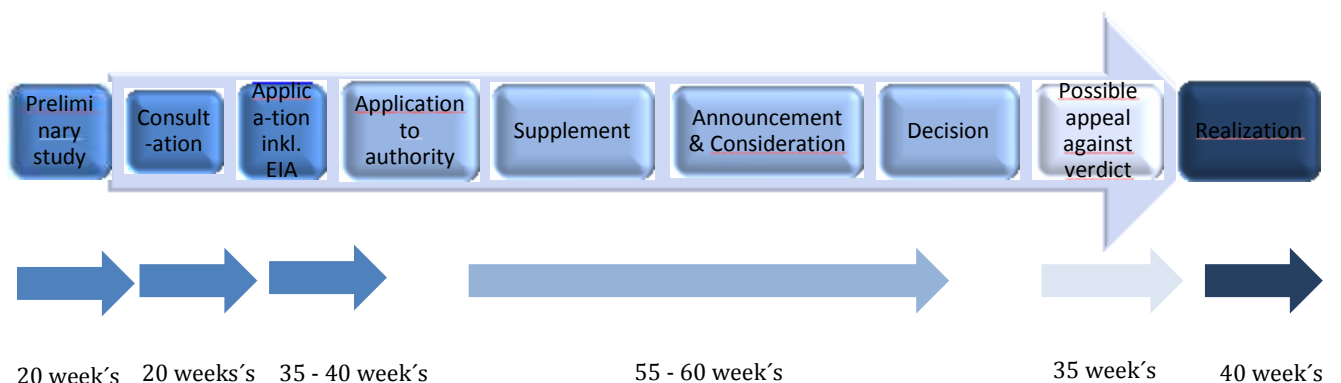


Figure 3 Illustrates the Swedish permission process, and the average time for different steps (Ramböll, 2012) & (Energimyndigheten, 2012)

5.2 HOW INTERVIEWEES STAY UPDATED & PRIORITY

At all consulted County Administrative Boards administrators' stay's updated with new legalisation, rules and verdicts. This is done by intern network in the Swedish county administration, by reading relevant verdicts and they have annual meetings where experiences are exchanged, this is learning-by-interacting. Because of the national intern network the system is not that vulnerable for people e.g. quitting. Some counties have office staffs that are specialized on applications for wind turbines. This depends on how many applications the County Administrative Board have and what the future look like. Almost all counties handle applications in order they arrive, but there are cases when wind turbines are prioritized. For example the county of Skåne did have extra money and resources a couple of years ago for speeding up the handling process of wind turbine applications. Skåne also mentioned that they now days give wind turbine applications a lower priority if the municipality having doubts or not yet given their approval as they must according to chapter 16, 4 § in the Environmental code.

The four national Swedish wind coordinators stay updated by reading relevant literature, articles and having regular meetings at the Ministry of Enterprise, Energy and Communications.

By learning processes the counties help each other with questions that may arise during a permission process. Learning-by-interacting is used in the counties of boards that have been interviewed. It is also important using learning processes among project developers and citizens for a better understanding of attitudes and how to meet them in the best way.

5.3 THE BEGINNING OF A PERMISSION PROCESS, ATTITUDES & CHANGES

Project developers often have a dialogue with politicians before they start an application. If they do not have the politicians approval the application will probably be rejected (Trulsson, 2014). All interviewees agree that a complete application and a good dialogue in an early stage between neighbours, developers and politicians are very important for a successful process. Misunderstandings often happen during the consultation meeting between neighbours, counties and developers. Sometimes it is not clear to neighbours how long time the permission process may take and they often lack the knowledge about what the consultation meeting means and should contain. Neighbours often expect to obtain detailed

information at these meetings. It is during the consultation meeting neighbours have the opportunity to get answers about noise and shadows created by wind turbines but also about the possible effects on the value of their property. This is also the meeting when they can express their point of view about wind turbines. A well-executed meeting between neighbours and developers in the beginning is important for a smooth and quicker process. This meeting also gives the developers the opportunity to inform citizens that the size and coordinates of the wind turbines may change during the process.

During the years the counties experience that the applications have been better and more complete at the beginning.

5.4 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND COMPLETIONS

An experienced difficulty by the counties and the consultant is the Environmental Impact Assessment, EIA. They find it difficult to know where to draw the line for how much information the EIA should contain. Some applications that arrive to the counties are too comprehensive but most of them need to be complemented. One project developer experienced that the counties require more of the applications with time e.g. about noise and radio-controlled obstacle lightning, every sixth month. A wish from consultants is that authorities would be more predictable and handle out information about what will be required in future applications. Almost all interviewees said that complementation's are required at least once for an application. According to the interviewed consultant the kind of complementation that needs to be done varies a lot between the counties. The interviewed consultant has also experienced differences in knowledge about EIA at the municipalities.

The project developer says that small municipalities with part time politicians' do not have the knowledge that is needed for making well-informed decision about wind turbine applications. It is also mentioned that they may give other decisions than their officials recommend. Especially during the consultation meeting it is notable who knows what to require and how question can be answered. The consultation meeting is the process the interviewed consultant experiences as the most difficult step during the permission process. The neighbours expect a lot of answers at the meetings that cannot be answered because of the early stage in the process.

In most of the applications developers mentioned co-ordinates where to place the wind turbines. From these co-ordinates some changes during the process may be possible. An official at one County Administrative Board says that a change in the application with 25 % during the process may be possible about the size; about the effect there are no limits. Other counties say that it is not appropriate changing the conditions other than the coordinates. At some places consideration to the area is taken before deciding if changes in the applications are accepted. There is one thing they all agree about, and it is that changes mustn't vary too much from the EIA. If the application contains a large number of wind turbines there is a box-model²². This is a model that some counties approve and some do not. E.g. does Västernorrland approve the model, but Halland does not.

5.5 CHAPTER 16, 4 § THE ENVIRONMENTAL CODE

In a synthesis done by the Swedish Energy Agency was chapter 16, 4 § in the Environmental code investigated (Andersson, 2010). This investigation shows that a change in the clause is requested by all involved actors aside from the municipalities. Almost all interviewees mentioned the same experience about chapter 16, 4 §, as one of the biggest issues. All interviewees experience this clause as legally insecure.

The municipal right of veto in the environmental code, chapter 16, 4 §, often makes the processes long or is the reason for rejection. All interviewees at the County Administrative Boards, despite Västernorrland, mentioned problems regarding chapter 16, 4 §. There seems to be fewer problems with this clause in the northern part of Sweden. None of the interviewees thinks the clause is legally safe because there is no possibility to appeal against the municipal decision. In Skåne it has been notable that developers apply for less wind turbines than the County Administrative Board handles. By doing this it is the municipality that handles the permission, and their decision can be appealed against. In this way chapter 16, 4 § in the Environmental code is avoided. The clause is experienced insecure; politicians do not need to argue why they give an application a rejection. Sometimes it takes a very long time for developers to get an answer if the application will be rejected or not. This depends on when the municipal politicians have their committee meeting where a decision will be taken. The fact that the clause of chapter 16, 4 § is so unpredictable creates significant uncertainty for developers, especially when it is an election year. Politicians are sensitive to

²² A box-model means that the exploiter can apply for an area to use instead of apply for specific coordinates.

the public opinion and they may change their mind during the process. They would not make any decisions about big questions like wind turbines at least six months before an election, they will wait until after the election is accomplished. This may also lengthen the permission process every fourth year in Sweden.

In Northern Sweden the national wind coordinator mentioned that politicians have to argue why they may reject an application according to chapter 16, 4 § in the Environmental code. By doing this developers may get a better understanding why their application has been rejected. This does not seem to be a policy in the rest of Sweden.

The purpose with this clause was to shorten and simplify the permission process; however my research shows that it has got the opposite effect.

5.6 ENVIRONMENT PROTECTION

In Sweden it is necessary to do an inventory of species before a permission process starts. It is the bird- and species directive that rules what is needed to investigate. The bird directive was introduced in EU 1979 and was valid in Sweden when we entered EU in 1995. The directive is meant to protect and make sure that birds and their natural environment are protected (SLU, 2014). The species directive started in EU 1992 and in Sweden 1995, this directive aims to protect species and habitat (SLU, 2011).

A common feature across counties and consultants is the lack of a national standard for a bird- and species inventory. All County Administrative Boards find it difficult where the limit should be drawn for how well the species inventory must be done. Consultants also find it difficult where to draw the line, in almost all cases the interviewed consultants stated that they normally get request to complement the inventories. According to the national wind coordinator in North, Piteå has a program for how to consider flora and fauna during the whole process; this is probably done because of the sizes of wind turbine parks that are planned in the near future. One interviewed official at a County Administration Board mentioned that a future requirement is that project developers must do an inventory of species two years in row before trial at the County Administrative Board. Another interviewed official at a County Administrative Board wants more information from the Swedish Environmental Protection Agency about species inventories. At the same time the

official at this county wonders why such an accurate inventory is not necessary regarding other application that is licensable according to chapter 9 in the Environmental code²³.

Another environmental related request that some interviewees have mentioned is that they do require or in the near future will require project developers to use crushed rock instead of natural gravel for the fundament. This because gravel is a finite natural resource that is important for clean water supply.

Wind turbines do contain chemicals and oil (Balgård, 2014), but it is considered by officials at counties being such small amounts that they are not a problem for getting an approval of an application. There are no special regulations or requirements about chemicals in the wind turbine, as long as the EIA contains a statement that the developer will use as environmental friendly chemicals as possible and that also the operator will be careful. The County Administrative Boards consider the use of chemicals and risks as very low and trust the project developers being careful and use as few and small amounts as possible. Of all interviewees only one mentioned that they require a condition plan explaining how the project developer will handle chemicals and how they will take care of them if there are accidents.

5.7 THE SWEDISH ARMED FORCES

The Swedish Armed Forces is also significant for rejections of applications. This authority is a referral organisation²⁴ to applications of wind turbines (SOU 2008:86, 2008). They mentioned that rotating parts of wind turbines are a potential danger near airports and artillery range. They also claim that wind turbines may disturb wireless communication in the air (Försvarsmakten, u.d.). One example where the Swedish Armed Forces has given a rejection for establishing wind turbines is in Robertsfors municipality. The plan was to build 20 – 24 wind turbines in two stages. But the Swedish Armed Forces has an opposition about this with the argument that the wind turbines may have big impact on their technical systems, which is a risk to the national interests (VINDKRAFTSnyheter.se, 2014). Of course there are also examples when the Swedish Armed Forces has given their approval like in

²³ Chapter 9, 1 § The Swedish Environmental Code (Miljöbalken kap. 9, 1 §, 2009)

²⁴ In Sweden authorities have a right to give their expert opinion when it comes to big decisions like large wind power farms.

Brattberget (VINDKRAFTSnyheter.se, 2013). After a quick scan at the web it seems like the authority have more objections than approvals.

It is especially the national wind coordinators and consultants that claim about the Swedish Armed Forces as an actor during the permission process that has a significant legal right to reject an application for wind turbines.

5.8 NATIONAL WIND POWER COORDINATORS

An assignment of the national wind power coordinators is to educate and spread information about wind turbines and the relevant rules. One coordinator points out the most common questions coming from different actors when they have their information meetings, these are:

- Project developers have questions about acceptance and how the local politics works.
- Citizens have questions about the wind turbine business in general.
- Politicians and officials are being informed about what role the municipality has.

During the interviews the national wind coordinators talks about different experiences of project they have been involved with. They also explain their mission spreading information and talk to people. One problem is that they only work as national wind coordinators 10 hours per week, which limit their time doing a great difference.

One interviewee from a project developer who has been in contact with a couple of national wind coordinators experienced that they do more harm than good for the permission process. The person says that the coordinators have the will and good intention but that they lack knowledge and the communication level is low. This interviewee says that he avoid them, but also mentioned that perhaps the coordinators do not know that people in the business consider that they lack these skills.

6. DISCUSSION

6.1 RESULTS OF THE INTERVIEWS

I have identified three problems that seem to be the most significant after interviews that are done with different actors. These are chapter 16, 4 § in the Environmental code, the lack of a standard for species inventories and finally the Swedish Armed Forces. These problems are mentioned by all interviewees e.g. (Fahlstedt, 2014), (Olsson, 2014) and (Trulsson, 2014). I believe that it is important working out a plan for solving as much of these issues as possible for being able to reach the political goal for wind power. It should be done by using the learning processes and involving all relevant authorities, developers and consultants.

6.1.1 HOW INTERVIEWEES STAY UPDATED & PRIORITY

In my findings it seems like different actors are being updated about new legalisation regularly. It also seems like they have a good interacting dialogue about problems that may arise during a process (Nilsson, 2014), (Broman, 2014), (Ekelund, 2014), (Olsson, 2014), (Fahlstedt, 2014) and (Sjölund, 2014). As a conclusion this part of the process is not a problem. For creating a process that is more uniform across Sweden it is of great value that applications will be meet and treated in the same way and having the same priority.

6.1.2 THE BEGINNING OF A PERMISSION PROCESS, ATTITUDES & CHANGES

For a more easy process it is important for developers talking to politicians and the Swedish Armed Forces in an early stage of the process. It is important having knowledge about their point of view concerning wind turbines. A permission process cost a lot of resources, (Petterssen, 2014) and (Trulsson, 2014), therefore the developers can save a lot of money and work by doing a good research at the beginning of a project.

It seems like the wind turbine industry and authorities surrounding the industry are getting more experienced (Olsson, 2014) and (Nilsson, 2014). They have found out how the permission process works and therefore make fewer mistakes and make better applications. Especially large developers doing the process more often have been significant better during the years making applications, this is learning-by-doing. Small developers with limited experience have a longer process for making better applications (Olsson, 2014). I think this is natural because an application may cost millions of Swedish crowns, resources small

companies may lack or they cannot afford to hire experienced consultants. The quality of applications has improved by the years (Ekelund, 2014).

Wind turbines seem to be controversial creating a lot of emotions and preconceptions in some parts of Sweden (Olsson, 2014). One exception seem to be Norrland (Lundmark, 2014), and a reason for a more positive attitude in Norrland is probably because it is a less populated area and less people are getting disturbed by wind turbines compared to people in south of Sweden. An important factor for their more positive attitude to wind turbines may be the fact that the industry creates jobs. On the other hand the NIMBY-theory always seems to be present (Ekelund, 2014).

Rural residents seem to value job opportunities higher than landscape values and vice versa for urban residents (Bergmann, et al., 2008). That seems to be true after talking to an official at a County Administrative Board in north; one reason may be that it is a sparsely populated area in Sweden. I visited a meeting in Skåne where wind turbines were discussed (Linderödsåsen, 2014). This meeting showed another side of the coin. Those who showed up seemed to have a negative attitude to wind turbines at start; no one seemed to believe that the business did create local job opportunities. They also discussed the noise created by wind turbines and the methods developers use when collecting data about noise for the application. The most important thing to these people where to protect silent areas in a specific part of Skåne. Research (Skärbäck, 2007), shows that we need silent areas. But by not having a representative from the company who wants to build the wind turbines makes the debate one-sided account. Project developers could, by having an open and honest dialogue with neighbours about the methods of noise accounting, gain better trust with neighbours. It is also important explaining the complexity of how noise increases and decreases depending on the surrounding environment e.g. is a forest a complex example (Skärbäck, 2007). I consider it most important that both sides are present at meetings regarding wind turbines.

In Sweden a number of organisations against wind turbines arise. One of them is Föreningen Svenskt Landskapsskydd, (FSL). This is noted by customers to wind turbine developers, like Petterssen (2014), who know when FSL has affected citizens and their opinion when they arrive to consultation meetings. This organisation is rhetorical good sending out their

message. They use arguments that sound like “*wind power is a threat against the view of landscape*” and that “*wind power is not reliable and it will lead to rationing of electricity*” (Wachtmeister, 2014). Arguments like these are powerful and may affect the listener. Without getting questions about their messages people listen and seem to trust what they say about wind turbines (Linderödsåsen, 2014). For example Wachtmeister (2014) claims that no jobs are created and that the efficiency of wind turbines are too low. He also claims that the wind turbine industry is a hobby activity that cannot supply enough energy and neither has the capacity to provide sufficient financial return on investments. For having a more balanced debate I believe that developers need to come at meetings arranged by organisations like FSL. People do have questions at these meetings that are not getting any answers because invited speakers do not have the knowledge about the technology. What they do have are answers that still satisfy the listeners by getting round the question or claiming that it is not relevant or important in the big picture. It can be questions about technology, jobs and energy supply in Sweden and Europe.

6.1.3 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND COMPLETIONS

According to Swedish law²⁵ developers needs to do an EIA when making applications for wind turbines. My results show that consultants find this part as one of the most difficult pieces of an application. Not in my backyard is a significant key message for many people that show up at the consultation meetings in an early stage of the process (Trulsson, 2014). By meeting these concerns and show concrete examples how neighbours are affected by wind turbines perhaps some attitudes may be changed. But it is important that it will be an honest and open discussion, of course there are citizens that are negatively affected. If developers map those neighbours and find out in what way they are negatively affected it may help projecting new sites for wind turbines. It is also this part of the process that may be a foundation for a rejection if it is not executed well (Fahlstedt, 2014). It is important that the EIA describes worst case scenario of how wind turbines may affect animals (Olsson, 2014), the environment and neighbours. The EIA shouldn't later in the process diverge from what become reality (Sjölund, 2014).

²⁵ Chapter 6 In Swedish Environmental Code

If the authorities become more predictable on their requirements for applications, perhaps the process time will be shortened. Predictability would probably facilitate the job done by consultants and save money (Petterssen, 2014) and (Trulsson, 2014).

6.1.4 CHAPTER 16, 4 § THE ENVIRONMENTAL CODE

One of the most important key problems for the permission process is the municipal right of veto according to chapter 16, 4 § in the Environmental code (Trulsson, 2014) and (Petterssen, 2014). This clause lengthens the process and creates an uncertainty for developers when politicians' do not give an answer to the County Administrative Board handling an application. The fact that the clause cannot be appealed against creates a situation that it is legally insecure for the project developers. It also creates an uncertainty among developers when politicians change their mind, especially during election years (Trulsson, 2014). I believe that politicians could gain votes if they stand for their point of view about wind turbines even during election years. By planning for wind turbines in the local structure plan and create a policy for wind turbines in the municipality perhaps the decisions would be easier to make. By doing this it would also facilitate for developers who early in a planning process can find out if it is worth the time and money starting projecting. Another approach is if local politicians have the same point of view as their party has at national level it would contribute to a more predictable process for developers and neighbours. I think that an addition to the clause saying that the municipality must give a legal promise to the developer that cannot be changed; early in the process is an important step to take. By adding this, the risk that politicians change their mind during the permission process or that they will lengthen the time till decision could be eliminated.

6.1.5 ENVIRONMENTAL PROTECTION

Environmental protection is important in Sweden; therefore an inventory of species must be done and shown in the application. One problem for involved actors are how well executed these inventories must be done. The consultant and the counties are lacking a standard and guiding principle for a better knowledge about this (Nilsson, 2014) and (Trulsson, 2014). It would probably be a good idea if the national Environmental protection agency, perhaps together with a student or PhD-student, developed a standard for inventories needed in a wind turbine application. Sweden is a long country therefore, I believe, different standards may be developed. For example one standard is needed for wind turbines in forests, one for

open landscape, one for the fjeld and one for offshore wind turbines. I believe that a work like this would best be performed when all involved actors contribute with their knowledge and all learning processes are used.

Piteå municipality seem to have a guide for inventories (Lundmark, 2014). The experience gained in Piteå could be valuable for other parts of the country as well. However to spread this experience it is important to have a platform of knowledge exchange and learning. The program may be a good example for rest of the country that is lacking a standard like this. It is important mentioning that I have not studied this program myself because it is out of my scope. However I do not find any reasons believing that my references have made this up. It would be a good idea studying this program in the near future and how it may be applied in rest of the country. I find it a bit remarkable that a national standard does not exist when there are so high demands in the law about inventories.

6.1.6 THE SWEDISH ARMED FORCES

The Swedish Armed Forces is an authority that is referred to for consideration about applications for wind turbines (Försvarsmakten, u.d.). This authority does often have objections against wind turbines saying they disturb their electronic equipment. One important solution is that in an early stage having a good dialogue between developers and the authority. Another possibility for a better interaction could be if developers and the Swedish Armed Forces cooperate about the technology used in wind turbines. By doing this some hurdles may be overcome and the technique could help the business getting more positive decisions. I have not studied if, or how well they cooperate today

6.1.7 NATIONAL WIND POWER COORDINATORS

One problem is that the wind turbine industry is not a neutral actor who may not have the credibility spreading information about wind power. A more neutral actor like the national wind coordinators may have more credibility even though they have a positive attitude for wind power (Thomsson, 2014), (Hansson, 2014), (Lundmark, 2014) and (Wärmby, 2014). However a stronger roll for the national wind power coordinators needs more resources but if they were working full time, I believe they would also get time to meet and map attitudes surrounding wind turbines. A task for the Swedish national wind power coordinators could perhaps be even better spreading information, for managing the need about more easy

processes and information they will need to be more employees. If more people would be employed they could perhaps work a bit more with attitudes, but also study how other countries deal with the wind turbine industry. This could create a better interaction between different actors.

One project developer (Petterssen, 2014) believes that companies selling wind turbines may contribute with some information to neighbours. Some tasks are already done by wind turbine companies but project developers think they can be better; for example the wind turbine manufacturers can help the project developer choosing the right turbine for special needs that are required for a site. A new task for project developers could be helping with communication. The advantages about wind turbines need to be communicated better at different point of views. It can e.g. explaining how many local jobs the industry creates, find out more about attitudes and spread simple facts and information about wind turbines. This may be very important contributions for answering opponents' utterance. Better knowledge about the society value of wind power, for example local job creation, as well as local tax revenues and environmental benefits could be an important asset to be communicated to local communities. This knowledge could be collaboratively be produced by the wind power industry, the national wind coordinators, consultants as well as academia.

6.1.8 COMPARISON TO OTHER COUNTRIES

All countries have their way in solving the need for renewable energy. Two examples are Denmark and Germany who have different systems for establishing wind turbines. They have got the support from citizens mostly by different economic incentives like joint ownership and cooperatives. These stimuli have contributed to a positive attitude among citizens were they get economically compensated having wind turbines in their neighbourhood. In Germany where an ownership in a wind turbine generates a secure income from the state, contribute to a more positive attitude (Klintman & Waldo, 2008). This has led to a built out wind turbine industry that provides the country with significant share of renewable energy. The Swedish minister of energy says that the feed-in-tariff system used in Germany is political unsecure and that it is not a way of building renewable energy sources in the long term (Hatt, 2012). This system has led to that customers need to pay more for each kilowatt hour than Swedish citizens have to do. I believe that Sweden has a lot to learn from these countries for changing the negative attitude against wind turbines in this country. For

managing the need in changing from a fossil energy to renewables it is a must working at many different levels. Learning-by-interacting between citizens, politicians and developers, I do believe, is a must for better understanding why wind turbines are an important piece for a more sustainable energy system.

6.1.9 SUGGESTIONS FOR FURTHER RESEARCH

It is worth to take in notice that national interests for wind energy does not really seem to matter for how municipalities support applications. Officials at County Administrative Boards that have been interviewed do notice that applications in areas with national interest for wind power have increased since these areas were announced.

It is also possible that different national interests arise for areas that are suitable for wind power use. If it is a conflict between the interest for wind and the interest for the Swedish Armed Forces the law says that our defence has the priority (SOU 2008:86, 2008).

More concrete goals towards renewable energy at local, regional and national level could help for a quicker development towards renewable energy. With more specific goals forcing politicians having, perhaps, a specific percentage share of renewable energy sources in the municipality they may get a more positive attitude to wind turbines. It would also give the municipality the possibility using their best prospects for renewables. If Sweden had more defined goals at different levels I believe that the national goal for 30 TWh wind energy in year 2020 would be much easier to achieve. It would also give incitement to local politicians giving the question a higher priority.

Noise of wind turbines has been a sensitive issue; more research is needed to get an overview and better understanding for how noise spread from wind turbines. In a stressful world places for recreation are getting more important. This must be taken in consideration when planning areas for wind turbines. Of course it is important having areas that are quiet and reserved for this purpose without any disturbance from wind turbines.

Building wind turbines is a resource demanding project (Zwaan, et al., 2012). One way doing this is to utilise that Sweden has a long coast with a lot of potential for offshore wind turbines. This is a step to take for Swedish expansion towards renewable energy sources. Offshore wind turbines do not affect people that much with noise and shadows like onshore

wind turbines (Ladenburg, 2008). Building offshore wind turbines is more expensive and difficult (Koch, 2014). One advantage for offshore wind turbines is that they have higher installed effect and do not disturb citizens' as much as onshore wind turbines. The NIMBY-syndrome is not a big problem for offshore wind turbines as it is for onshore wind turbines, but offshore wind turbines still have a visual impact (Haggett, 2011) & (Snyder & Kaiser, 2009).

6.2 ENVIRONMENTAL SCIENTIFIC RELEVANCE

With a better understanding and a more stream lined process in the wind power industry it would be easier selling and installing wind power – which will be good for the environment and to help the energy transition in the world.

A wind turbine with an effect of 1 MW can each year limit the effect on the global environment. By replacing electricity produced by condensing thermal power stations using fossil fuel located in Europe emissions of:

- NO_x will be reduced with about 2½ tons
- SO₂ will be reduce with about 3 tons
- CO₂ will be reduced with about 2 500 tons
- Save coal extraction with barley 1000 tons (the same as about 1 kg coal per minute)
- Produce about 2 500 MWh, which correspond to the need of 500 households electricity use and
- Saving the nature from extraction of coal, transports of fuel and spreading of ashes (SOU 1999:75, 1999) (Moe, Niels, 1999).

7. CONCLUSION

The result shows that there are four important issues for all involved to handle in a good way for a smooth permission process, these are:

- Do inventories of relevant species at right time during the year.
- Talk to politicians in the municipality for a better understanding of their standing point.
- Talk to the Swedish Armed Forces and look up their rights and land use.
- Have an open and honest discussion with neighbours; they seem to have a lot of concerns about noise and shadows. It is important they get the knowledge they need.
- If municipalities can learn from each other, learning-by-interacting, they can all gain in efficiency.

The answer to my research question is that there are no big differences about how authorities interpret the legalisation surrounding wind turbines. But there are differences in experience.

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APPENDIX 1

This appendix shows the questionnaire that has been used during interviews with County Administrative Boards, consultant and customers to Vestas. The questions are in Swedish because it's the language that has been used.

FRÅGOR TILL LÄNSSTYRELSENA OCH KONSULT

Övergripande frågor kring tillståndsprocessen

1. Hur samlar Länsstyrelsen in information och håller sig uppdaterad kring tillståndsprocessen för vindkraftverk?
 - 1.1. Hur prioriterar ni då ni har många olika verksamheter att se över?
2. Ni tillståndsprövar när det gäller två eller fler verk som är högre än 150 meter samt sju eller fler verk som är högre än 120 meter.
 - 2.1. Finns det några stora skillnader mellan dessa två processer i t.ex. tid och metod?
 - 2.2. Hur har utvecklingen av tillståndsansökan sett ut – är det skillnad på idag, för tre år sen och vad ser ni väntar?
3. Hur ser den vanligaste tillståndsansökan ut?
 - 3.1. Har ni exempel på bra, dålig och vanlig ansökan?
 - 3.2. Kan aktören, och isåfall hur, påverka processen?
4. Hur ser samarbetet ut mellan de olika länsstyrelserna – syfte och omfattning?
 - 4.1. Jag vet att det finns fyra tjänster som är statens vindkraftssamordnare, är det heltidstjänster, hur ofta träffas ni och vad är ofta huvudfrågan på dagordningen?
 - 4.2. Hur ser ert samarbete ut med Naturvårdsverket?
5. Vilket/vilka moment i processen tar mest (kalender)tid?
 - 5.1. Hur ser tidslinjen ut för den som ansöker respektive för länsstyrelsen?
6. Vad i processen är svårast och/eller mest problematisk?

- 6.1. Definiera vad det är som är svårt/problematiskt, t.ex. MKB-processen, tillståndsansökan i sig, kompetens, fauna, plats/lokal, byggdens och/eller kommunens attityd etc.
7. Om det sker missförstånd, var i processen händer då det?

Frågor relaterat till produkten vindkraftverk inkl. ställverk och relaterad infrastruktur

1. Vad och var i processen kan sökande underlätta bristerna och minska risken för försinkning?
 - 1.1. Är det speciella dokument som MKB:n och samrådshandlingar eller andra dokument som är lättare att påverka?
2. Vilka produktrelaterade miljövillkor är vanliga att ställa?
 - 2.1. Material, kemikalieinnehåll, risk för miljöpåverkan som t.ex. kemikalieutsläpp. Lokal miljöpåverkan som buller, skuggor och iskast?
 - 2.2. Vilka frågor hade ni önskat att ni fick och vad missas ofta i tillståndsansökan?
3. (Hur hanteras ansvar för nedmontering?)
 - 3.1. Hur värderas kostnader för nedmontering?
 - 3.2. Vilka finansieringslösningar accepteras?
 - 3.3. Hur finansieras nedmonteringen?
 - 3.4. Hur ser den vanligaste varianten ut i Sverige?
 - 3.5. Vad och hur mycket ska återställas vid nedmontering? Gällande t.ex. fundament, kablar, vägar etc.
4. Tillståndsprocessen kan vara lång. Hur hanteras förändrade parametrar under processen relaterat till ansökan om t.ex. turbinens storlek och prestanda?
 - 4.1. Vilka faktorer är mest kritiska att förändra under processen?
5. Under byggprocessen, var finns det eventuella problem under byggfasen?
 - 5.1. Gällande transporter
 - 5.2. Tvättvatten
 - 5.3. Hänsyn till djur och natur, t.ex. häckningsperioder

Utvidgade frågor

1. Hur påverkas ni av kommuners olika attityd och inställning till vindkraftverk?
 - 1.1. Om det uppstår konflikter, vad gäller då de? (t.ex. intressen på olika nivåer som lokalt, regionalt och nationellt samt ekonomi)
 - 1.2. Är ni involverade i tillsynsprocessen och servicefasen, om ni är det, på vilket sätt?

Slutligen

1. Ge gärna konkreta tips på hur processen kan underlättas, med produkten i fokus.

Tack för din tid. På återhörande/återseende.

Med vänliga hälsningar

Lotta Nilbecker

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FRÅGOR TILL DE NATIONELLA VINDKRAFTSAMORDNARNA

1. *Beskriv ditt arbete/roll och vilka eventuella hinder som stöts på och isåfall var i - processen.*
2. *Upplever du skillnader inom de olika länen du är samordnare för?*
3. *Precisera hur du samordnar med andra nationella samordnare.*
4. *Har du någon annan befattning än samordnare och isåfall vad?*
5. *Vilka är de största problemen?*
6. *chapter 16, 4 §*
7. *(ny för Sydväst och Nord) Är ni med i hela processen, kan vilken part som kontakta er närsom i processen?*

FRÅGOR TILL VINDKRAFTSMOTSTÅNDARE (FSL)

1. *Vilken roll spelar Föreningen Svenskt Landskapsskydd för tillståndsprocesserna av stora landbaserade vindkraftverk?*
2. *Går ni på samrådsmöten? Överklaganden?*
3. *På vilket sätt når ni ut med ert budskap?*
4. *Vad är ert huvudargument mot vindkraften – och hur bemöter ni de fakta som talar emot era argument?*
5. *Hur önskar ni att energiförsörjningen ska se ut?*
6. *De nationella samordnarna?*

FRÅGOR TILL KUND TILL VESTAS

1. *Hur upplever ni tillståndsprocessen i Sverige?*
2. *Hur mycket av den gör ni själva?*
 - 2.1. *Och hur mycket lämnar ni ut till konsulter?*
3. *Hur ser roll ut på samrådsmöten?*
4. *Vilket intryck har ni av Länsstyrelsen?*
 - 4.1. *Upplever ni att ni får olika besked av olika länsstyrelser i landet?*
 - 4.2. *Vad är det isåfall som skiljer?*
5. *Hur lång tid brukar det ta från att ni startat en projektering till att vindkraftverket står på plats?*
6. *Hur ofta blir era tillståndsansökningar överklagade?*
7. *Vilken skillnad i inställning till vindkraft märker ni på olika kommuner och dess invånare*
8. *Har ni varit i kontakt med Statens nationella vindkraftssamordnare?*
9. *På vilket sätt skulle Vestas kunna hjälpa er i processen?*
 - 9.1. *Hade ni önskat en komplett produkttjänst från Vestas – från ansökan till bygge*
10. *Agerar ni på den Tyska marknaden?*
 - 10.1. *Vad upplever ni isåfall är de största skillnaderna mellan Sverige och Tyskland?*
 - 10.2. *Lättast – svårast? Myndigheter – befolkning?*
11. *Är det något ni vill tillägga som jag har missat?*

APPENDIX 2

PEOPLE WHO HAS BEEN INTERVIEWED

County Administrative Boards

Nilsson, Mikael – Kalmar (Nilsson, 2014).

Ekelund, Peter – Örebro (Ekelund, 2014).

Olsson, Anna-Lena – Halland (Olsson, 2014).

Broman, Anette – Stockholm (Broman, 2014).

Fahlstedt, Stefan – Skåne (Fahlstedt, 2014).

Sjölund, Karin – Västernorrland (Sjölund, 2014).

National wind coordinator for wind power

Thomsson, Lars – Mitt (Thomsson, 2014).

Hansson, Agne – Sydost (Hansson, 2014).

Lundmark, Stefan – Nord (Lundmark, 2014).

Wärmby, Lennart – Sydväst (Wärmby, 2014).

López, Eva Centeno – contact person at Näringsdepartementet (López, 2014).

Consultant

Trulsson, Ola – WSP, project leader permission processes for wind turbines (Trulsson, 2014).

Opponent

Wachtmeister, Henrik – Föreningen Svenskt Landskapsskydd (FSL) (Wachtmeister, 2014).

Project developer

Martin Petterssen – Projekteringsgeneral på Rabbalshede kraft (Petterssen, 2014).

APPENDIX 3

This appendix contains the permission process for large wind turbines in Sweden, including laws.

DEFINITION

The EIA regulation²⁶ defines large constructions that have permit requirements B and activity code 40.90 or 40.95. Activities like these are permit obliged according to the environmental code²⁷ (Regeringen, 2013).

A building permit is not demanded according to the plan- and building regulation²⁸ to construct such a state given activity. An announcement is demanded according to the plan- and building regulation²⁹, even though the construction does not claim a building permit (Vindlov, Energimyndigheten, 2012 a).

Permit requirements B and activity code 40.90³⁰ applies to activities of

1. Two or more wind turbines standing together and each one of them, including rotor blade, is higher than 150 meters.
2. One wind turbine that is, including rotor blade, higher than 150 meters standing together in a group station referred in 1 or
3. A wind turbine that is, including rotor blade, higher than 150 meters standing together with a similar wind turbine, if the activity was started after the activity with the other wind turbine had begun.

²⁶ 2013:251 chapter 21, 10-11 §§

²⁷ Chapter 9, environmental code.

²⁸ 2011:338 chapter 6, 2 § paragraph 2

²⁹ Chapter 6, 5 § paragraph 7

³⁰ EIA regulation chapter 21, 10 §

Alternative

Permit requirements B and activity code 40.95³¹ applies to activities of

1. Seven or more wind turbines standing together and each one of the wind turbines, including the rotor blade, is higher than 120 meters.
2. One wind turbine that is, including rotor blade, higher than 120 meters standing together in a group station referred in 1 or
3. One or more wind turbines where each one of them, including the rotor blade, is higher than 120 meters standing together other similar wind turbines that the group station in total consists of at least seven wind turbines, if the activity was started after the activity or activeness about the other wind turbines where started.

The permit requirements do not apply if the activity is licensable is pursuant to 10 §.

(Regeringen, 2013)

INITIAL STAGE

There are five different interests to take in consideration when planning wind turbines.

These are:

- Planning conditions – Includes municipalities' comprehensive plan, regional planning and wind conditions and national interest for wind utilisation. Also information about the extension of the power grid and connectivity. Finally in this section information about rules that are important to know considering land access.
- Interests of infrastructure – When planning of wind turbines consideration to the Swedish national defence, civil aviation, navigation, civil telecommunication, roads, railways and power lines. All of these examples can affect establishment of wind power.
- Nature, culture and landscape – Consideration to protected areas in the nature and valuable cultural environments must be taken. Information about wind turbines and there effect on the landscape.

³¹ EIA regulation chapter 21, 11 §

- Health and security – This is a section that handles information about noise, shadows, reflexion, light and security and risk range.
- Other businesses – Other businesses such as tourism, reindeer activity, agro culture and forestry affect and can be affected of a planned wind power establishment.

(Vindlov, Energimyndigheten, 2012 b)

TRIAL PROCESS

The trial process includes several steps. The first thing to do for the person or company who applies for a permission is to have a consultation with everyone that are involved or those affected by the wind turbines³². Chapter 6 in the environmental code aims the company doing an environmental impact association (EIA).

Next step is to do the application³³. The application will be sent to County administrative Board (Vindlov, Energimyndigheten, 2012 b). Sweden has twelve environmental impact assessment committees deployed at different County Administrative Boards handling permissions for wind turbines (Sveriges riksdag, 2011). The permit application can be sent on a supplementing round where referral authorities are given the opportunity to comment; this is not compulsory but is often done. When the application is complete an announcement is done³⁴ and sent under consideration. The business is allowed to start when the licensing authority has announced a verdict (Vindlov, Energimyndigheten, 2012 b).

³² Environmental code chapter 6, 6§

³³ Environmental code chapter 9 and 22

³⁴ Environmental code chapter 22, 3 §

CONSTRUCTION STAGE, INSTALLATION, OPERATION & DISMANTLING

Other important aspects and rules to know in this phase are that permission by the Swedish transport agency is required. For connection with between private roads to public roads where the transport agency are responsible permission is required (Vindlov, Energimyndigheten, 2012 c).

A building application and an application to the flight obstacle database must be done before starting the building process. The wind turbines must also be obstacle marked (Vindlov, Energimyndigheten, 2012 c).

When it is time for installation framework provisions³⁵ from the electrical safety authority on power installations must be followed and Swedish standard regarding good electrical safety praxis (Vindlov, Energimyndigheten, 2012 c).

When the wind turbines are working rules that regulate control and supervision exist. Also existing are general provisions about wind turbines working, discrepancy record and journal writing of obstacle marking (Vindlov, Energimyndigheten, 2012 c).

A permission can, according to the environmental code³⁶, be made validity depending on the permit holder if they have an economical security for costs to restore operation that can be necessary (Vindlov, Energimyndigheten, 2012 c).

³⁵ ELSÄK-FS 2008:1

³⁶ Chapter 16, 3 §

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