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Legal Preconditions for Wind Power Implementation in Sweden and Denmark

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ABSTRACT

Swedish energy policy relies heavily on the promotion of renewable energy resources, in particular wind energy and in 2002 the Swedish Government adopted a national planning goal of a yearly wind power generation of 10 TWh by 2015, which implies a substantial increase from the current 0.6 TWh level. The main purpose of this study is to analyse relevant functions of the Swedish law with reference to the implementation of wind power; the overarching question at issue being in what respects the law impedes respectively facilitates the development of wind power, and to compare the results from the Swedish analysis with the corresponding functions in Danish law, and b) to present some implications for the choice between different legislative measures to meet the Swedish wind power planning goal.

The results are based on in-depth studies of relevant legal rules and case law, and the overall indications are: a) on one hand, that several of the Swedish legal rules in connection with the overarching management and use of land and water areas are vaguely formulated and provide an extensive room for discretion, which makes the outcomes unpredictable and increase the uncertainties associated with wind power investments, b) on the other hand, that certain specific rules regarding the location of the windmills, together with the requirement to objectively assess alternative sites for the installation have shown to seriously hamper the establishment of windmills in Sweden, c) that the strong support for the municipal self-governance in connection with the system for physical planning in Sweden implies that great stress is laid on the existence of territorial plans for wind power, which in turn implies that windmills are unlikely to be established without municipal consent, and finally d) that the installation of windmills on Swedish territory may require as many as five different permits, which imply time-consuming (and hence costly) processes with unpredictable outcomes.

The results from the analysis of the corresponding Danish system reveal a quite different situation; the specific and precise regulations regarding the installation of windmills in Denmark imply a lot less room for discretion which reduce the uncertainty in connection with the investment decision. Moreover, that the vertically integrated planning system in Denmark greatly enhances the possibilities to implement national planning objectives on the regional, municipal and local level.

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Chapter 1
INTRODUCTION

1.1 Background and Purpose of the Thesis

From the time when the first oil-crisis struck the world with fear of economic collapse and irreversible resource depletion, energy policies in large parts of the world have been aiming towards a more differentiated energy use, a decreased oil-dependency and an increased use of renewable energy resources. In Sweden, for instance, a long term objective of converting from the exploitation and use of non-renewable energy resources, in particular fossil fuels and uranium, to an increased use of renewable energy sources, such as wind and solar, has been established in a number of parliamentary energy policy decisions since 1975.[1] In the early 21st century, energy policies in Europe still rely heavily on the promotion of renewable and carbon-free energy technologies as a means to contribute to a sustainable development and achieve different environmentally related goals, e.g., reduced acidification, air pollution etc., and not least, one of today's most recognized environmental issues; the imminent threat of climate change.

Thus, ever since the mid 1970s, Sweden has been confronted with the objective to increase the share of renewables in the energy system; earlier mainly as a result of the national energy policy objectives to e.g., gradually phase out nuclear power, and more recently also as a consequence of international commitments to e.g., reduce greenhouse gas emissions[2] and the obligations in this and other respects that follows from the membership in the European Union.[3] Moreover, on the national level, various subsidies, R&D programs, taxes etc., have been implemented to promote the diffusion of renewable energy technology, in particular wind power[4] and in 2002 the Swedish Government adopted

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[1] A summary of the decisions is found in Michanek, G. (1990). *Energirätt*, pp. 30-31

[2] I.e., the Climate Regime, see further part. 4.1 below

[3] Ibid.

[4] For example: the 1997 energy program for adjustment towards a sustainable energy system and Prop. 2001/02:143 regarding environmentally friendly electricity supply. Swedish wind power is or have been supported by e.g., investment subsidies (ranging between 10-35% of the investment costs), a production subsidy (e.g., an environmental bonus, SEK 0.18/kWh) and a temporary production subsidy (SEK 0.09/kWh). See Söderholm et.al. (2006). "Wind Power Development in Sweden: Global Policies and Local Obstacles."

a national wind power planning goal of a yearly wind power generation of 10 TWh by 2015. However, in spite of the past and present policy instruments designed to increase the share of wind power in the Swedish energy system, the current generation of 0.6 TWh per year shows that the Swedish wind power development has been noticeably smaller than the corresponding development in for instance Denmark, Germany and Spain although the basis for the energy policy is virtually the same. Hence, all things considered, the Swedish wind power politics cannot be considered a success story.

The main purpose of this study is: a) to analyse relevant functions of the Swedish law with reference to the implementation of wind power; the overarching question at issue being in what respects the law *impedes* respectively *facilitates* the development of wind power, and to compare the results from the Swedish analysis with the corresponding functions in Danish law, and b) to present some implications for the choice between different legislative measures to meet the Swedish wind power planning goal.

The basis for the study is thus that the implementation of wind power and hence also the possibilities to achieve the national wind power planning goal as well as other national and international energy policy objectives, is partly conditional on the requirements of the law; more specifically, the legal rules of importance in connection with the planning, location and operation of windmills. The choice of Denmark is motivated by the country's overall similarities to Sweden, in terms of the design of the legal system, and the – at the same time – considerable differences in terms of installed wind power capacity.

1.2 Methodology

Methodologically, the accomplishment of the purpose requires two approaches: to *determine* and to *compare* valid law. The basis for the determination of valid law is *the theory of the sources of law* (rättskälleläran),[5] according to which the following sources may be used in order to determine the content of valid law (in hierarchical sequence): a) legal provisions, b) preparatory statements, c) precedent court cases, d) customary rules, e) among jurists represented opinions and f) non-juridical considerations.[6] Thus, in concrete terms, valid law in relation to the planning, location and operation of windmills is determined on the basis of the legal text and the preparatory works to the ex-

[5] The theory of the sources of law is discussed in some detail by e.g., Rentto, J-P in his article "Rättsfilosofi, rättsteori, rättslära, rättsvetenskap? Hårklyverier och gränsdragningar."
[6] See further Strömholm, S. (1996). *Rätt, Rättskällor och Rättstillämpning*, pp. 320-321.

amined laws, in conjunction with relevant court cases, in this case primarily judgements of the Environmental Court of Appeal. These judgements are considered precedential in view of the fact that the Supreme Court of Sweden has not yet assessed any case on the subject of the installation of windmills. In addition to this, the interpretation of the legal sources is occasionally supported by the opinion of other jurists. With reference to the determination of Danish valid law, the study rests on the same legal sources as the Swedish part, i.e., laws that are relevant in respect of the purpose of the study together with preparatory works and illustrative court cases. However, in consideration of that the Danish law is the foreign legal system in the context of this study the elements of support from other jurists regarding the interpretation of the law are somewhat more frequent in the Danish part.

However, in consideration of that the core of the analysis is the function of the law in relation to the implementation of wind power and the preconditions that the law provides in this respect, the purpose of the study reaches further than to determine valid law as the traditional juridical method prescribes.[7] It is therefore more suitable to refer to this study as conducting what is described as constructive jurisprudence.[8] What characterizes constructive jurisprudence is that is problem-oriented,[9] i.e., the research question is admitted to determine approach, which implies that not only the relationship among different legal rules can be considered in a jurisprudential study, but that the connection between the legal rules and their societal function may also be taken into account.[10]

Legal *comparisons* normally involve comparisons of substantive character. In other words, the subject of the *comparison* is typically the content of

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[7] The traditional juridical method suggests that to determine the content of valid law, relevant facts shall be obtained from the established valid sources of law and worked up in accordance with certain methodological principles. Peter Westberg describes the traditional juridical method as a "rule-oriented approach" (rather than problem-oriented), which typically deals with questions regarding the relationship between different rules and their position in the legal system. See Westberg, P. "Avhandlingsskrivande och val av forskningsansats – en idé om rättsvetenskaplig öppenhet," pp. 427-428

[8] The concept constructive jurisprudence is developed by Anders Agell. See Agell, A. "Rättsdogmatik eller konstruktiv rättsvetenskap"

[9] According to Westberg, a problem-oriented approach opens up for questions regarding e.g., the social issues behind a particular regulation or the social consequences that the regulation implies. See Westberg (1992), p. 427-428

[10] See Agell (1997), pp. 42-43. A similar opinon is expressed by Claes Sandgren who states that although traditional legal analyses are necessary, not least to sustain legal security, an increased use of e.g., empirical material may enhance the "striking power" of jurisprudence. See Sandgren, C. "Om Empiri och Rättsvetenskap," p. 728

the legal rules, for instance, how a particular issue has been dealt with in the foreign legal system. It is thus not the terminology or the legal concepts that are compared, but rather the corresponding actual situations that the rules aim to regulate, i.e., the *function* of the rules.[11] The indispensable *tertium comparationis* (common ground for comparison) is thus typically formed by the rules' social function.[12] Accordingly, the comparison in this study rests on the presumption that the legal rules involved in the planning, location and operation of windmills in both Sweden and Denmark have the authority to hinder as well as facilitate the development of wind power, which, in view of the highly dissimilar diffusion records between the two countries, would imply that the result of the analysis may provide some important implications for the Swedish legislator in terms of the choice between different legislative measures to promote an increased installed capacity of wind power in Sweden.

Before moving on to the relevant functions of the law, i.e., the rules that are brought to the fore in relation to the installation of windmills, there are a few general issues related to comparative analyses that need to be highlighted. First of all, legal systems do not function independently of the institutional framework to which they are part; on the contrary, they are typically designed to meet the needs of society, in particular economic requirements, which, among other things, implies that legal solutions typically are context-dependent and hence may not be convertible. In the case of Sweden and Denmark, the hypothesis with respect to the countries social-economic system is that the systems are fundamentally similar, i.e., the comparison rests on the presumption that the political and economical systems in the two countries are similar in character and hence comparable.[13]

Secondly, almost as central as the importance of comparable social systems (and perhaps even more so in the context of wind power implementation), with respect to the explanatory value of a legal comparison, is the geographical environment. A country's physical prerequisites, in terms of e.g., climate and natural resources strongly influence the institutional setting and

[11] This is sometimes referred to as "the Factual Approach"

[12] For any comparison to be meaningful, the comparison-objects must have some mutual characteristic that make them comparable. To exemplify: if we are to compare computer programs, it may not make a lot of sense to compare a word-processing program to a calculating program if we are interested in improving the word-processing program (in that case it would be a lot more fruitful to compare two different word-processing programs), whereas it is completely doable to compare the two, for instance regarding user friendliness, graphics or layout. See Bogdan, M. (1993). *Komparativ Rättskunskap*, pp. 62-64.

[13] About comparability between similar and dissimilar basic social-economical systems, see Bogdan (1993), pp. 64-70 and pp. 73-76

hence the legal system; deposits of valuable substances such as the Swedish iron ore has give rise to legislation about mining and extraction; the prerequisites for hydropower on account of the many rivers have had a tremendous impact on the Swedish energy mix and hence also influenced the Swedish energy laws; comprehensive laws about nuclear power are typically found in countries using this energy source and so on. Therefore, differences in connection with the physical prerequisites in Sweden and Denmark may well prove an important explanatory variable as to potential differences in the legal prerequisites for wind power implementation.

Thirdly, although the legal settings in the selected countries are presumed to have effect on the implementation of wind power, there are other factors preconditioning the establishments, such as different policy instruments, taxes etc. What is achieved through regulations in one country may well be accomplished by other means in another. Hence, all things considered, it is very important to bear in mind that some of the differences between Sweden and Denmark as to the installed capacity of wind power may well be due also to other factors than dissimilarities in the legal settings vis-à-vis wind power implementation. Nevertheless, the legal system is however likely to strongly influence the prerequisites for a broad wind power implementation, and with respect to the Swedish energy policy objectives in general and in particular the wind power planning goal it is of vital importance to reveal possible contraproductive factors to that goal.

1.3 Relevant Legal Functions with Reference to the Installation of Windmills

The main issue in relation to the functions of the law vis-à-vis wind power implementation is what legal rules are to be studied? Obviously the scope of the study does not allow an analysis of the entire legal system versus the wind power implementation issue. Therefore, the initial task is to sort out the laws and legal rules that essentially affect the installation of windmills. This implies that the characteristics of wind power *as such*, e.g., in terms of resource requirements and environmental impacts, as well as any explicit legal rules in connection with the windmill installation process have to be taken into account.

1.3.1 Resource Utilization

In addition to the material required to construct windmills, harnessing wind energy also claims such natural resources as *wind* and *land*.

Over two hundred years ago, Thomas Robert Malthus wrote about land as a scarce resource. Mathus' main argument was that since the supply of land is fixed, the massive growth in population would eventually outstrip the available food supply and as a consequence, starvation would occur; "[T]he Power of population is indefinitely greater than the power in the earth to produce subsistence for man."[14] More than a hundred years later, Harold Hotelling challenged Malthus' theory by introducing a theory of relative scarcity, which implies that the relative price of a non-renewable natural resource, such as land, will steadily increase, and bring about a decline in the demand for the resource and an increased use of substitute resources.[15] However, although an increased price of non-renewable natural resources indeed has proved to imply substitution, and the use of exhaustible resources may be made more efficient, for instance in terms of resource-input – utility-output, by and large, land still qualifies as a scarce resource which use to a large extent is exposed to competition and hence also conflicts. The use of land in terms of how it may be used and by who is typically subject to legal rules aiming e.g., to reduce (or handle) conflicts and to allocate the resource with respect to the environment, public interest, social structure and the like.

The installation of windmills onshore and offshore is thus exposed to rivalry about land and water areas, possibly followed by conflicts and litigations, all of which to various extents are surrounded by legal rules. Hence it follows that a significant part of the legal preconditions for wind power development are found within the framework of rules that governs the use of land and water areas. In Sweden this mainly implies the basic and special resource management provisions (grundläggande och särskilda bestämmelser om hushållning med mark- och vattenområden) in chapter 3 and 4 in the Environmental Code together with the Code's location requirement (lokaliseringsregeln) in s. 4, chapter 2.

Furthermore, and unsurprisingly, the most important natural resource to harness wind energy is wind, which implies that possible legal rights to the wind resource also is an important factor to consider in the context of preconditions for wind power implementation.

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[14] Malthus, T. R. (1798). *An Essay on the Principle of Population*, preface

[15] The Hotelling Principle, first recognized by H. Hotelling, in his article "The Economics of Exhaustible Resources," *Journal of Political Economy*, 39 (April 1931), pp. 137-175. See Nicholson, W. (1998). *Microeconomic Theory. Basic Principles and Extensions*, p. 713, not. 13

1.3.2 Physical Planning

In Sweden and in Denmark, the allocation and use of land areas are also controlled via decentralised systems for physical planning, which implies that development of wind power to a large extent also is conditional on the physical planning that is carried out by e.g., regional and municipal authorities. The main laws in this area are the Planning and Building Act (Plan- och bygglag) in Sweden and the Planning Act (Planloven) in Denmark. The implications for the implementation of wind power that follow from these two laws are hence examined in this study.

1.3.3 Environmental Considerations

Industrial installations, like windmills, are typically also subject to rules related to environmental considerations, i.e., rules that impose requirements on the activity or measure vis-à-vis the environment and that aim to prevent or hinder that the installation causes damage or detriment to the environment. Accordingly, legal requirements to reduce the environmental impacts of windmills, in terms of e.g., noise and visual intrusion, constitute central aspects of the legal preconditions for wind power implementation. In Sweden, the most important rules in this respect are the general rules of consideration (allmänna hänsynsregler) laid down in chapter 2 in the Environmental Code, and to some extent also the specific rules regarding considerations in connection with the physical planning in accordance with chapter 2 and 3 in the Planning and Building Act (allmänna intressen som skall beaktas vid planläggning och vid lokalisering av bebyggelse och krav på byggnader m.m.). In Denmark, the environmental consideration requirements in connection with the installation of windmills are mainly regulated via the wind power planning directive and a specific ordinance on the subject of noise from windmills.

1.3.4 Authorization

In addition to the side of the preconditions related to the resource use and the environmental impacts of windmills in connection with this use, the installation of industrial facilities is typically also conditional on some sort of authorization. Accordingly, the installation of windmills is likely to be subject to various permit requirements, such as construction permits, environmentally related permits, etc., which together may serve as potential obstacles to an increased installed capacity of wind power due to system overlaps, time-consuming processes and so on. Moreover, in consideration of the environ-

mental impacts of wind power, a windmill installation is also likely to require an assessment regarding the environmental impacts of the installation. Hence, the permit rules including the provisions regarding environmental impact assessments are added to the list of determining legal factors that need to be examined from a wind power development perspective.

1.3.5 Public Participation

Another important factor vis-à-vis the possible expansion of wind power in Sweden is the public attitude towards wind power. Although wind power is considered an environmentally benign energy resource *on the whole*, its impacts on the surroundings tend to be more noticeable on the local level and the arguments raised against windmill installations are – despite its non-polluting character – often based on subjective environmental drawbacks of wind power, such as visual intrusion and noise-pollution. The resistance towards windmill installations is thus often found in the local context, whereas the supportive arguments focus on the national (and even global) benefits of wind power.[16] However, the public attitude towards wind power is assumed to be affected by, among other things, the possibilities to participate in the planning for windmill installations as well as in the benefits of the installation (in terms of e.g., ownership or electricity supply), which implies that legal rules on the subject of access to justice, consultation procedures and appealing possibilities are of interest in the context of wind power implementation issues.

Yet another important prerequisite for wind energy production is access to transmission lines; although windmills have non-grid applications, the core function for the contemporary windmills is to contribute to the overall electricity supply. Hence, the typical utilization of wind energy requires that the windmills are connected to the grid. The legal aspects of grid-connection possibilities are however only briefly attended to in this study, and only with reference to the Swedish law. The corresponding rules in Denmark are thus not addressed. The reason for the somewhat step motherly treatment of this issue is that although electric wiring is subject to legal assessment, the issue is not as controversial as the location of the windmills and is therefore only addressed in a few words regarding the preconditions for electric wiring in Sweden.

[16] See e.g., Söderholm et.al. (2006).

To sum up, the core legal functions in connection with the installation of windmills are presumed to be:

a) Laws and legal rules related to the use of natural resources that are essential for wind energy production, i.e., wind along with land and water areas
b) The legal framework for physical planning
c) Environmental consideration rules
d) Rules relating to authorization for windmill installations, for instance permits, and environmental impact assessment regulations
e) Legal rules that influence the possibilities for public participation

1.4 The Basis for Environmental Law

Following the industrialization, the modern environmental law generally origins from a desire to protect peoples' health and the environment from various sorts of disturbances, nuisances or damages. Characteristic for environmental law is thus the strong connection to the state of the physical environment. However, considering the fact that the environment itself cannot be subject to laws or regulations, the rules typically address human activities that in various ways affect e.g., ecosystems, natural resources and human health, such as industrial activities, agriculture, operations in water etc. Accordingly, environmental law provisions are often designed to control disturbing activities through permit (concession) systems, or to prevent damaging activities by means of general obligations to be considered in relation to the use of land and water areas.[17]

As a consequence of the recognition of environmental issues and tailoring the Earth Summit held in Rio de Janeiro in 1992, several notions concerning conduct in relation to the environment have developed within the field of environmental politics and environmental law during the last decades. The perhaps most important of these is the concept of sustainable development. A "sustainable" development is defined by the World Commission on Environment and Development as: "[a] development that meets the needs of the present without compromising the ability for future generations to meet their own needs."[18] A sustainable development thus implies a necessity to economize with the use of natural resources, both renewable and non-renewable such, in order to conserve the prerequisites for development for the benefit of the present as well as future generations of mankind. Since 1992 and the Rio Convention, the objective of a sustainable development has been established in

[17] Within the EU, see for instance the IPPC-directive (Council Directive 96/61/EC)
[18] See further the Commission's report *Our Common Future*

various political documents throughout the world, and in some cases, like Sweden, it has also been laid down in law. Accordingly, the primary objective of the Swedish Environmental Code is to promote a sustainable development and the objective also has constitutional support (chapter 1, s. 2, para, 3, the Instrument of Government).

1.4.1 Sustainable Development – Concept or Legal Principle?

A lingering legal-theoretical issue in relation to the legal support for a sustainable development is whether to regard the concept as a legal principle or (plainly) as an objective of the law? The ambiguity of the definition does not speak in favour of treating the concept as a principle; according to Nicholas de Sadeleer, the "hard centre" of the sustainability concept is the objective to retain the preconditions for development for both present and future generations. Within this, however, lays an inevitable conflict of interest; *sustain or develop*? With de Sadeleer's own words: "caught between an economic logic seeking to maximize production --- and an ecological logic, sustainable development is situated at the junction of interests that are *a priori* at loggerheads."[19] Thus, the very core of the objective of a sustainable development is far too ambiguous to direct the legal application and hence steer the development.[20]

Following the ideas of Ronald M. Dworkin, there is a difference between on the one hand the objectives of the law and on the other hand the prevailing legal principles. Dworkin approaches this issue with an example from criminal law where he argues that although the objective of criminal law is to prevent crime, the aim must be pursued "subject to principles that may limit its efficiency in reaching it." Dworkin states that: "it would be wrong to punish an innocent man as a hostage even if to do so would in fact reduce crime."[21] Hence, if sustainable development is perceived as an objective of the law, it may well be subject to potentially severe constraints in terms of, for instance, such prevailing legal principles as the principle of legal certainty or legality, or the ownership rights, all of which may function as essential obstacles towards a sustainable development. It is in other words possible that, say, very strict ownership rights may prevent far-reaching environmental precautions and thus hinder a sustainable development.

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[19] See de Sadeleer, N. (2002). *Environmental Principles. From Political Slogans to Legal Rules*, p. 373
[20] Ibid., pp. 372-373
[21] See Dworkin, R. M. (1977). *Taking Rights Seriously*, p. 8

The core function of legal principles is to *express the underlying purpose of legal rules*, which implies that for something denoted as a principle to actually be a *legal* principle, it has to be recognized by a legal system. In other words, the legal system must in some way *carry the principle*, for instance through positive legal rules. Moreover, the principle must be considered worthy to pursue by "the persons concerned with the working of the legal system", i.e., the judiciary, the law-makers, practitioners etc.[22]

In Sweden, the continuous system for law-making generally *does* proceed from legal principles "in relation to which the actual [positive] legal rules appears as restrictions, extensions or specifications."[23] Consider for instance the ownership institute: as a basic principle, ownership implies a complete right of disposal. The owner of a piece of land is thus *principally* free to do whatever he chooses with his property; he may use it, sell it or even destroy it *unless the law says otherwise*.[24] The main function of the legal rules in relation to the ownership institute is thus to regulate *transactions*, *conflict situations* and *deviations* from the basic principle, for the benefit of for instance legal certainty, environmental protection or physical planning. In the same way concession- or permit requirements are deviations from the main principle that the form for agreements is free.[25]

In case of the concept of sustainable development in the context of Swedish *environmental law*, it does to a large extent carry the principle; not only has it been explicitly implemented as an overarching objective of the Environmental Code, but is also expressed in other environmentally related laws such as the Planning and Building Act, the Forestry Act etc. Various rules concerning for instance how to balance between different interests, or requirements vis-à-vis the use of natural resources have also been laid down in law. Still, it is very unclear whether the principle carries any significant weight in the overall legal system, notwithstanding the constitutional support. In view of the *function* of the concept of sustainable development in the Swedish legal system as a whole, and regarding some of the potential difficulties in

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[22] See MacCormick, N. and Weinberger O. (1986). *An Institutional Theory of Law. New Approaches to Legal Positivism*, chapter 2, p. 73, where – on the subject of worthiness, MacCormick discusses whether the principle that no one may profit from his own wrong is indeed a legal principle and argues that the first condition that has to be met is: "that the goal of preventing malpractices aimed at securing some benefit under an ostensible legal title is supposed to be a goal worthy of pursuit by the persons concerned with the working of the legal system"

[23] See Strömholm (1996), p. 178

[24] The Swedish property right, or ownership right, is thus *negatively determined*

[25] See Strömholm (1996), tables on pp. 179-183

the process of actually implementing the concept, put forward by foremost Westerlund, it seems as if it would be incorrect to view the concept of sustainable development as a legal principle; at the end of the day, the legal system and the prevailing legal principles cannot truthfully be considered as congruent with the demands that pursue a sustainable development because it is not sufficient to prevent an *un*sustainable development.[26]

In recent times, however, the Swedish Environmental Court of Appeal has in fact taken the sustainability objective into consideration in some of its judgements, which is a very positive progress from the point of view of a sustainable development in general, but also from the viewpoint of the legal significant of the objective since legal principles typically develop by means of the legal application. This however takes time, and the Environmental Court of Appeal is yet to provide the sustainability objective with specific and hence easily applicable contents.

1.4.2 Research in the Field of Environmental Law

Initially, research in the field of environmental law concerned legal issues in relation to neighbourhood relationships (grannerättsliga förhållanden) and was thus a part of the civil law, more specifically, the branch of real-estate law (fastighetsrätt) that is referred to as special real-estate law (speciell fastighetsrätt).[27] In time, the character of the environmental problems changed; from legal issues between neighbours to industrial pollution and intense use and competition over sometimes scarce natural resources, and so did the environmentally related legislation. Hence, alongside with the (civil legal) neighbour legislation, another branch developed, i.e., the (public) police law, which eventually exceeded the civil legal part of the environmental law. In 1975 a second dissertation in the field of environmental law was presented[28] and prior to that, in 1972, the first educational book on the subject had been published.[29]

In the beginning of the 1990s environmental law became an independent research field and the discipline in terms of choice of subject as well as number of researchers has increased ever since.[30] The research in the field of environmental law gives proof of a great variety:

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[26] See further Westerlund, S. (1997). *En Hållbar Rättsordning: Rättsvetenskapliga paradigm och tankevändor*.

[27] In 1943, Seve Ljungman published his doctoral dissertation *Om skada och olägenhet från grannfastighet*.

[28] Westerlund, S. (1975). *Miljöfarlig Verksamhet*.

[29] Bengtsson, B. (1972). *Miljörätt*.

[30] See Michanek (2003) ”Utvecklingen av miljörätten i Sverige” In Michanek and Björkman (Ed.). (2003) *Miljörätten i förändring – en antologi.*

During the early days, the research in environmental law was mainly focused on questions regarding determination of valid law and interpretation of environmentally related laws (from a positivistic point of view). In time the environmentally related laws increased in both number and complexity, which called for another field of study; analyses of the environmentally related laws as a legal system. The research pointed towards system overlaps and inconsistencies between the different environmental laws. The consequences of the typical design of the legal rules aiming to protect the environment, i.e., legal instrumental analysis, have further been a special area of interest. In this field, particular attention was drawn to the legal rules in relation to the actual state of the environment, and revealed e.g., that environmental legal rules often are designed in a way that implies insufficient assessments regarding the environmental impacts of for instance industrial activities and that they hence cannot always prevent damage or detriment to the environment. Partly as a result of the instrumental analysis, another research field concerning the legal implementation of environmentally related goals developed. The expansion mainly consisted in the broader perspective of the research; while the instrumental analysis mainly focused on specific legal instruments, the implementation related research is concentrated on how the law in general influences the possibilities for implementation. Not least important in this context is the fact that the law may actually hinder the achievement of environmentally related objectives as a result of the existence of contradicting legal rules or principles. Yet another focus area has been the development of a specific methodology for studies and research in environmental law that proceed from the quality of the environment when designing legal instruments.[31] As a final point, a special branch of research in environmental law is made up of the legal sociological research directed towards environmental law.[32]

Of particular interest in view of the topic of the present study is the research in environmental law that is related to the legal implementation of environmental policy objectives, not least the identification of possible obstacles in the law.[33] Among the previous studies dealing with these types of issues, Michanek's *Energy Law*[34] from 1990 is especially worthy of note in the context of the present study, which however did not focus on wind power diffusion only. This study is in this respect a more thorough analysis. Furthermore, the preconditions for this study differ in one important sense: The Swedish

[31] See Michanek (2003), pp. 21-25
[32] The legal sociological research in environmental law is mainly carried on in Lund under the guidance of Håkan Hydén
[33] See Michanek (2003), p. 24
[34] *Energy Law* deals e.g. with the legal preconditions for energy conservation

Environmental Code entered into force in 1998, with an expanded and modernized objective; a Sustainable Development, which includes not only protection against pollution and similar "traditional" environmental problems, but also e.g., efficient management of natural resources and energy. It is thus important to analyse how this new, long-term objective is, or should be regarded when windmill installations are subject to trials in accordance with environmental law. Another important difference compared to the 1990 study is that the installation of windmills have been subject to trial in the Environmental Court of Appeal on several occasions over the last years, and the judgements in these cases are highly important in the context of legal preconditions for wind power implementation. Finally, this study includes a comparison between the legal preconditions for wind power implementation in Sweden and the corresponding prerequisites provided by Danish law. Michanek's work and conclusions did not build upon such a comparison.

Chapter 2

ON THE INFLUENCE OF INSTITUTIONS IN MATTERS OF IMPLEMENTING ENVIRONMENTAL OBJECTIVES

"Would the best possible laws, at the present period, have been the best possible laws in times past? Will the best possible laws, at the present period, be the best possible laws in all time to come?"

Jeremy Bentham

On the Influence of Time in Matters of Legislation

The context in which the law appears is at the same time a reflection of the past and a manifestation of the present. The path dependency of the legal system is ever-present; the laws of today derive from the precedent institutional framework, and today's institutional framework is in part a result of previously implemented laws and legal rules. Thus, customs, norms, ideals, ideologies and so forth, serve as the basis for the legal system, and the laws and legal rules created within that system in turn amend the institutional setting.

> Consider a rule that obliges women to wear skirts. Such a rule may be the result of a social norm imposing that women only on exceptional cases may wear the same clothing as men. In time, however, social changes may imply that the skirt rule become obsolete; an increased amount of women involved in activities that used to be regarded as "exceptional," like for instance factory work or sports, might, at the end of the day, write off a rule that states that women shall wear skirts for being old-fashioned. In the same way, social change may imply that new rules are created; new or previously not recognized issues, like for instance toxic emissions, might trigger standards for pollution.

Social change is, however, for the most part, a slow, uneven and heavily path dependant process. Political objectives regarding for instance economic growth or environmental concerns may thus well have called for and might still be calling for major institutional changes, but while revolutionary changes are rare, the force of existing social structures is typically great, which implies

that the existing system of customs, norms, laws etc., at every point of time is likely to be rather persistent and strongly influence the path of any changes.

As a social phenomenon, the legal system and the development of law is to a large extent constrained of its own accord; on the one hand, the law aims to be stable and systematic, but on the other hand, the law needs also to be flexible enough to adapt to, and instigate, social changes. In the context of the function of the law in connection with wind power implementation issues, the institutional setting is important: the law exists and effects in connection with other standards for conduct, such as customary rules, moral rules, self-imposed codes of conduct, norms and so forth. *Together*, the formal and informal rules constitute the institutional framework of a particular culture or society. The efficiency of the legal rules, in terms of identity between the objective of a rule and the outcome of its application, is thus dependent on *inter alia* the strength of the rules of enforcement and the proximity to the prevailing norm system in terms of the perceived legitimacy of the legally imposed rules.

An analysis of the legal aspects of wind power implementation thus not only requires knowledge about the legal rules as such, i.e., their contents and internal interaction, but also understanding of the rules' origin and context, not least regarding the possibilities to provide fruitful policy implications. In view of the purpose of the thesis, the aim of this chapter is thus to present possible underlying reasons for why the legal system may function as an essential restriction to an increased installed capacity of wind power in Sweden that in turn possibly will enhance the findings of the thesis and thus the implications for how to improve the legal framework governing the wind power implementation process.

2.1 Institutional Theory

Douglass C. North defines institutions as *rules for human interaction*.[35] Institutions in this sense provide a structure for economic and social interaction; they outline the social order to which we are part and restrict our conduct by imposing norms and regulations for all conceivable situations, for instance when we enter an agreement, or make a transaction. With risk of being over explicit, the restrictions on human behaviour established through the institu-

[35] See North, D. C. (1990). *Institutionerna, tillväxten och välståndet*, p. 16. Observe the difference from the Swedish concept of institutions, which (in common language) normally denotes hospitals, organisations, institutes etc.

tional framework enclose all sorts of rules; legal rules, customary rules, norms of behaviour, conventions, self imposed codes of conduct and so on.[36]

The concept of institutions shall be distinguished from the concept of organizations. To use North's own analogy to sports, institutions constitute the rules of the game, whereas the organizations serve as players. Thus, the task of the players is to play the game to the best of their ability within the framework of the established rules.[37]

> "If the highest rates of return in a society are to be made from piracy, then organizations will invest in knowledge and skills that will make them better pirates; if organisations realize the highest payoffs by increasing productivity then they will invest in skills and knowledge to achieve that objective."[38]

Naturally, the rules of the social game may be consciously created (e.g., through legislative measures aiming to guarantee property rights), but they may also gradually develop, like customary rules. Institutional theory distinguishes between *formal* and *informal* institutions, where the former consist of legal rules (e.g., positive law) and the latter of "unwritten" rules of behaviour. The dividing line between on the one hand purely informal restrictions, such as taboos, customs etc. to the other extreme, with constitutional rights and legally sanctioned regulations, is however diffuse. According to North, "[The] difference between formal and informal institutions *is a difference in degree*[39]" (Emphasis added). In any case, all human interaction – such as exchange of goods – is in some way restricted by institutions. In some societies, the institutional framework governing the exchange situation is almost completely restrained by legal rules, whereas in other informal rules, such as behavioural norms or customs restrain the interactions. Regardless of which, the core function of the institutions is to reduce uncertainties involved in human interaction since cooperation generally is considered worthwhile if the outcome can be predicted.[40]

A glimpse in the rear-view mirror depict that technical achievements apart, without e.g., defined property rights, basic contract law, insurance letters, finance houses, independent court systems etc., human interaction were

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[36] See North (1990), p. 16
[37] Ibid., p. 18
[38] See North, D. C. "Institutional Change: A Framework of Analysis" p. 3
[39] See North (1990), p. 78
[40] According to game theory a wealth-maximising individual will usually find it worthwhile to cooperate with other players when the play is repeated and he has complete information of the other players' past performance and when the number of players is limited.

dependent upon loyalty and trust and unlikely to take place outside the family sphere. Large scale trade, specialization and diversified labour both called for and were enabled by the established institutions.[41] Throughout history, the conversion from informal institutions to positive law has been a one way street; the emerging societies had much to gain in terms of reduced economic and social uncertainty by a systematic legal system that made it possible to predict the behaviour of others regardless of title or social position.[42]

Thus, institutional settings may reduce the costs for transactions and increase the overall social utility. On the other hand, legal as well as informal constraints may serve a less great purpose than the good of all; although well defined property rights in general are considered to prevent, for instance, resource depletion, the ownership structure may well serve only a few, powerful interests.[43] Thus, although the structure for interaction provided by the institutions implies *stability*, it does not necessarily imply *efficiency*. North explains the existence of inefficient institutions by the fact that all development (technical as well as societal) is path dependant. Path dependency in the institutional context implies that institutional development will inevitably depend on the status quo, against which the pros and cons of institutional changes in turn will be measured. Hence, although some institutional settings may be poorly functioning in the sense that they do not provide economically efficient solutions, the development path is formed by choices and decisions to some extent made under the veil of ignorance, i.e., since individuals and organizations do not have access to complete information, their decisions are influenced by experience, ideologies, religion etc. and as a result inefficient institutional settings may continue to exist.[44]

From a technological viewpoint, the path dependency explains for instance (in part) why inefficient technical solutions prevail while others (perhaps better) are abandoned or not further developed. Once the development has headed in a certain direction, the path is somewhat chosen. The path dependency of change is also due to the fact that "the political and economical organizations that have come into existence as a consequence of the institutional matrix typically have a stake in perpetuating the existing framework"[45].

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[41] See for instance Rosenberg, N. and Birdzell, L. E. jr (1986). *Västvärldens Väg till Välstånd,* chapter 4.

[42] See Ibid., p. 148, see also North (1990), p. 86

[43] From historical evidence, this type of ownership structure tends to persist, not least do to the reluctance among leaders to disregard powerful citizens/voters. See North (1990), pp. 131-133

[44] Ibid., pp. 145-146

[45] See North "Institutional Change: A Framework of Analysis" p. 7

This brings us a bit closer to the subject of this thesis, i.e., the legal preconditions for wind power implementation. Assuming that path dependency is prevailing in the energy sector, the unsuccessful diffusion of wind energy technology in Sweden could in part be explained by the fact that wind power is not a traditional source of energy.[46] Therefore, the policy instruments implemented for instance to reduce greenhouse gas emissions may thus – rather than incite the development of wind power, direct the efforts towards improvement and development of existing energy technology, such as hydro- or nuclear power. However, although technological development in general tends to be path dependent, institutional frameworks *do* change and – perhaps more importantly – may *be* changed, for instance by means of various policy instruments.

Thus, what was once considered to be the best possible laws may not, after all, be the best possible laws in all times to come; political ambitions, new scientific findings and increased knowledge etc. change the course of time and create new notions, in the light of which old ideas seem behind the times.

2.2 Institutional Change

As noted above, although institutions provide stability, they are not constant. The direction of institutional change is determined by the interaction between individuals and organisations on the one hand and the formal and informal institutions on the other; the institutional framework determines the limits for conduct and individuals and organisations act within these boundaries, and *as they act*, institutions change. In other words, the incentive-structure provided by the institutions determines the individual and organizational choices that form the society.[47] However, in consideration of that the institutional framework often reflects the distribution of authority and responsibility in a society – in the sense that the people or groups in power have obtained their positions as a result of the current institutional arrangements, it typically exist a certain disinclination to initiate and promote radical reforms. Consequently, institutional change is a complicated and for the most part gradual process.[48] Never-

[46] Söderholm and Strömberg consider it likely that the "outcome of the competitive process in the power industry will be *path dependent.*" The investments already made provide a strong incentive to steer the development towards technical solutions that can capitalize on these investments. See Söderholm, P. and Strömberg, L. "Options, Costs and Strategies for CO2 Reductions in the European Energy Power Sector," p. 193

[47] The incentives are also defined by other constraints, such as budget and technology. See North (1990), p. 1

[48] According to North institutional changes mainly comes about as a result of *changes in relative prices* or *altered preferences*. For a non-economist the first explanation may seem

theless, external sources of change as well as unexpected consequences of conduct or policies may redistribute power and create new organizations with different interests that will change the course of development.[49]

> An example of a highly unexpected, external source of change is the first oil-crisis in 1973 when a sudden raise in the price of oil changed dramatically the relative price on energy and brought about major political and economical changes all over the world; the positioning of the actors on the energy market changed, and the general course of action was, not surprisingly, to diversify the energy supply and hence become less oil-dependant.
>
> Prior to, and over time alongside with, the institutional impacts of the oil-crisis evolved what can only be referred to as an environmental awakening. This movement was set in motion during the 1950s when concerns over the balance between humanity and the environment assumed international proportions. In the 1960s, Rachel Carson's book *Silent Spring* (1962) and Garreth Hardin's article *Tragedy of the Commons'* (1968) became landmarks that, together with a chain of environmental catastrophes, further brought together the environmental community and in the beginning of the 1970, the Western world

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somewhat questionable and a reasonable argument for a *legal* scholar may be that amendments in the formal (legal) rules, as well as changes in the administration (supervision) or application of those rules also instigate institutional change. This is true. However, following North's argument, amendments in formal institutions typically reflect political or economical objectives aiming to get the highest pay-off in terms of, for instance, investments, seats or period of office, which implies that also changes in the formal institutions may be explained by changes in the relative prices. For example: Faced with a proposal for a new law, the Swedish Parliament will pass the new legislation only if a majority of the members perceive the proposal as superior relative to the existing legal situation. Since the proposal reflects the perception and ambition of its initiator, the institutional changes that follow from the new law are a result of the initiator's perception that the new situation will imply a higher utility than the previous. See North, (1990), p. 129-130, see also North's "Institutional Change: A Framework of Analysis" pp. 4-5. The origin of the second cause for change, i.e., altered preferences, is naturally hard to capture; peoples' preferences may change by reason of almost anything, but clearly changes in relative prices play a role also in this context since vast adjustments in relative prices alter peoples' behaviour and in time also their likes and dislikes. North illustrates how major institutional changes may stem from of altered preferences in the prevalence of institutions that lower the transaction costs with an example from the abolishment of slavery in the United States. In short, the growing perception that slavery was essentially wrong together with the constitutional right to freedom of speech made it possible for people who opposed slavery to express their opinion in the election at a low personal cost (i.e., without the transaction costs of being threatened or bribed etc.) and slavery with all its institutional features were eventually brought to an end. See North (1990), p. 131.

[49] See North "Institutional Change: A Framework of Analysis" p. 7

decided to take action.[50] Accordingly, the first international environmental conference was held in Stockholm in 1972[51] and addressed issues such as soil conservation, water pollution and land degradation. Thus, the environmental degradation caused by human activities had initiated a change in peoples' preferences in relation to the environment. Together the changed relative prices on energy as a result of the oil-crises and the modified preferences caused by the environmental awakening helped form the "mainstream" European energy policy of today; a policy which is to a large extent focused on energy conservation and an increased use of renewable energy resources. Thus, although the oil-prices that stroke the world with amazement eventually dropped, the damage, in terms of fear of e.g., heavy oil-dependence, was already done and the concerns for the human impact on the environment remained.

However, no matter how radical the cause for change initially may seem, the extent to which the new positioning or organisations will change the institutional framework will be conditional on the existing institutional preconditions.[52] This implies that the correlation between the aim of a legal rule or policy instrument and the actual outcome of that arrangement depends on the how effective the rule or the policy can be implemented in the existing institutional environment.[53] In other words, if the correlation between the objective of a particular constraint and the existing institutional setting in terms of norms, legal rules etc., is high, the more likely it is that the goal is accomplished, and vice versa; the more radical the new constraint appears, in terms of inconsistencies in relation to the existing standards for conduct, the more challenging the implementation will become. Hence it follows that the preconditions to attain the Swedish energy policy objective to increase the share of wind power in the Swedish energy system, to a significant extent is embedded in a complex institutional framework of formal and informal rules. However, since the purpose of this study is to analyse the legal preconditions for wind power development, the possible impacts owing to the *in*formal institutions in relation to the implementation of wind power is beyond the scope of this study.

To sum up, the preconditions for wind power implementation are partly embedded in a complex institutional system and in order to identify the factors

[50] See UNEP "Integrating Environment and Development 1972-2002"
[51] United Nations Conference on the Human Environment, Stockholm, Sweden
[52] North "Institutional Change: A Framework of Analysis," pp. 6-8
[53] North defines three types of what he refers to as enforcement: enforcement carried out by the first party, e.g., self imposed codes of conduct, enforcement carried out by second party, e.g., retaliation or/and enforcement carried out by a third party, e.g., social sanctions or coercive enforcement by the State. Ibid., p. 2.

that hinder respectively facilitates the development of wind power the legal system that governs the implementation process must be thoroughly examined.

Chapter 3

WIND ENERGY

"From California and the Pacific northwest to the heartland states and New England, from the mountaintops of Wales and the dikes of the Netherlands to the coast of India and the steps of Mongolia, wind energy has come of age and is on the road to making a valuable contributions toward a sustainable electricity supply"

Paul Gipe

Wind Energy Comes of Age

3.1 Energy from the Wind

Winds are created because the solar radiation reaches the world unevenly; in some areas there are net gains of heat (tropical regions) and some areas experience a net loss (Polar Regions) and in order to transport heat from net-gain areas to the poles, the atmosphere circulates, which involves immense transportations of energy.[54] However, most of the solar radiation disappears as outgoing radiation into space; only 3-5 percent of the received radiation is converted into the kinetic energy that serve as the basis for the world's wind energy resource. Kinetic energy is converted into mechanical energy by the use of a wind turbine. Mechanical energy can in turn be used directly, or it can be stored or transformed into electricity (through a generator), which can be distributed by connection to the electricity grid.

3.1.1 Past and Present

Harnessing wind energy by means of technical applications is not a new phenomenon. Systems designed to utilize the energy in the wind were used in the ancient China and the Near East and descriptions of Persian windmills from as early as the seventh century are found.[55] Along with the water wheel, wind

[54] See e.g., World Energy Council. (1994). *New Renewable Energy Resources: A Guide to the Future*, pp. 148-149

[55] See for instance Redlinger, R. Y. (2001). *Wind Energy in the 21st Century: economics, policy, technology, and the changing electricity industry*, chapter 3

energy is one of the oldest forms of mechanical energy. From Asia the use of wind power spread to Europe during the 11th and 12th century. During the 15th century and the increasing economic activity, windmills became an important source of mechanical power all over Western Europe to pump water and grind grain. Until the end of the 19th century, wind power contributed significantly to the economic development in countries like Denmark, the Netherlands and the USA. For example, in the Netherlands 10,000 large wind turbines were providing power by the end of the19th century. In Denmark wind power accounted for as much as one forth of the industrial demand in the middle of the century, due to 3,000 operating wind turbines.[56]

However, with the industrial revolution, humanity forever changed the boundaries for its existence and the relationship between humanity and nature, comparable only to the development during the Neolithic revolution when agriculture replaced hunting and collection as a basic means for survival. The industrial revolution with its fundamental changes in production, due to the use of new power sources, made it possible for the human species to grow into considerable numbers. In short, the use of fossil fuels ended what the steam engine had begun, namely a complete transition towards the use of machinery based on thermodynamic processes as the major source of energy. The advantages of these new processes were obvious, not only were they cheaper, they had greater capacity and were not depending on location or weather conditions. The use of wind power dropped significantly all over the world during the 19th and 20th century.[57] There were, however, some drawbacks related to the use of the new energy resources: since they required external fuel sources, large amounts of power were concentrated to central energy demanding areas, like cities and industrial areas, which implied that they were less suitable to produce power to remote low-density areas. Hence, for countries like Russia, Australia or America, windmills continued to play an important role in supplying power, mainly in agricultural areas.[58]

The development of wind energy technology was more or less brought to a standstill when wind power was no longer able to compete with the cheaper and more efficient fossil fuels, although it did not end completely; during the entire 20th century technological improvements were made, primarily in Denmark, Germany and the US.[59] This steady, but somewhat slow, development turned out to be of great importance when the first oil-crisis hit the world in the beginning of the 1970s and the vulnerability in using primarily non-

[56] See World Energy Council. (1994), pp. 160-161
[57] Rooke, D, Fells, I and Horlock, J. (Editors). (1995). *Energy for the Future*, p. 10
[58] See e.g., World Energy Council (1994), p. 147 and Redlinger (2001), chapter 3
[59] See World Energy Council (1994), p. 160-161

renewable energy resources became apparent. From the fear of resource depletion, the interest in renewable energy resources as a means to secure a diversified energy supply grew strong and a new era for wind power arose, which was further stimulated by the increased concern for the environment.[60]

Modern windmills can be divided into three main categories: large grid-connected turbines often placed groups that operates as a single plant; medium sized turbines that can operate in hybrid systems (i.e., in combination with different energy sources such as diesel, small-scale hydro etc.); and small single systems often used for water pumping, battery charging, heating etc. Wind turbines can be conducted with either a vertical or a horizontal axis (VAWT and HAWT respectively). However, the most commonly used windmill is a three-bladed, horizontal axis turbine. Since the beginning of the 1980s, wind energy technology has turned high tech and the main manufacturers are located in Denmark, Germany, USA, India, Netherlands and Spain.[61]

3.2 Wind Power Vis-à-vis the Environment

Wind power is, by and large, an environmentally benign energy resource; the environmental impacts of wind power are local, relatively predictable and primarily aesthetic[62], whereas the environmental impacts of e.g., coal, oil and gas as well as nuclear power typically involve long term risks whose magnitude it is difficult to foresee. Nevertheless, the negative aspects of wind power vis-à-vis the environment may prove to be significant, not least when it comes to planning for windmill installations; the supply of suitable areas for efficient wind energy extraction is restricted, which implies competition, and sometimes conflicts between different interests. The conflicts are to be solved by courts and other authorities, which assess the activity on the basis of, among other things, environmental impact and the interest of the public. The International Energy Agency (IEA) reports that "the main constraint on the rate of development is difficulty obtaining building consent." And further that "objections are often on the grounds of environmental concern – in particular, the visual impact of wind farms."[63] Next, the main environmental impacts associated with windmill installations are examined.

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[60] Rooke et.al. (1995), p. 10

[61] See Redlinger (2001) pp. 51-61

[62] The entire windmill installation process may however imply some emissions (if fossil fuels are used in the construction and installation process) and acidification (same reason). See Redlinger (2001), p. 159

[63] See International Energy Agency: IEA R&D Wind Annual Report 2001, p. 53

3.2.1 Visual Intrusion

The most suitable places for wind power are naturally open, windy areas, such as the mountains or the coast line. Such areas are often characterized by a relatively low population density and high aesthetic values. In such areas, windmills are strange elements and the public often oppose even small scale installations. In order to obtain public consent to wind power establishment, some factors have shown to be important, e.g., involvement in the planning and permit process as well as participation in the benefits of the produced power, for instance through joint ownership of the windmills.[64]

3.2.2 Noise

Noise has a strong influence on the well-being of humans. It affects the possibilities to rest and sleep, which in turn may lead to tiredness and depression. Such negative aspects are severe and must be attended to when planning for the siting of windmills in order to protect people from being exposed to unhealthy noise. Regulations regarding maximum permitted noise levels or distance limitations are commonly used to abate the problem with noise. Another very important factor is the technological development; improved construction of windmills may reduce noise. Nevertheless, the disturbance caused by noise is almost certainly the most significant disadvantage to locating windmills close to densely populated areas.[65]

Like the visual impacts, the problem with noise has subjective aspects; the experiences of noise from a windmill vary among individuals and are likely to depend also on the individual's attitude towards wind power.[66] Other factors to consider in relation to the noise impact are the time of day and the character of the environment; noise is more audible at night and in environments that are expected to be silent, like the mountain areas in the north of Sweden.

3.2.3 Bird mortality

The wind turbine impact on bird-life has two aspects; bird mortality and other influence (resting and breeding etc.). Several studies regarding bird mortality have been conducted and the average result shows that approximately 0,1 –

[64] See further Redlinger (2001), pp. 166-168
[65] See World Energy Council, p. 172
[66] See Sesto. E. "Wind Energy in Europe" in *Renewable Energy Technology and the Environment: proceedings of the 2nd World Renewable Energy Congress*, p. 1539 see also http://www.naturvardsverket.se "Buller och Riktvärden"

1,2 birds are killed as a result of installed windmills every day, which is in parity with the number of bird deaths caused by 1 km highway.[67] Studies on the subject of other influences on bird-life show that birds seems to get used to the presence of windmills and learn to avoid them. Nevertheless, history gives evidence of unacceptable losses of birds (many of them under threat of extinction), mainly as a result of poor planning.[68] The risk of unacceptable bird mortality may thus be prevented through careful planning and localization of windmills, and it may be necessary to accept that certain locations must be avoided. Another relevant factor is the shaping of the turbines; large tubular towers, rather than lattice ones, are easier to detect, rotate more slowly and are higher off the ground, all of which avoid bird impacts.[69]

3.2.4 Telecommunication Interference

Windmills may reflect, scatter or diffract electro magnetic waves and therefore interfere with telecommunication links. Also these obstacles can be avoided through careful planning, where location is avoided in microwave routes or near sensitive areas, such as airports or military zones.[70]

3.2.5 Safety Aspects

Operating wind turbines, like every industrial plant, involve a risk of accident. In the case of windmills, the main risks consist of management failures, the presence of electronic equipment, and in cold climate, sometimes tossing ice. Safety issues are commonly resolved through technological improvements, which can be implemented through standards. Over the last decade, international standardization of wind energy technology, there among technical standards for safety, has taken place foremost within the framework of the European Committee for Electrotechnical Standardization (CECELEC) and the International Electrotechnical Commission (IEC). If these standards become internationally accepted, the overall safety is likely to increase.[71]

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[67] To take another comparison, the bird deaths caused by windmills are ten times less the number of bird deaths caused by high voltage transmission lines. See World Energy Council, p. 172

[68] A major planning mistake was made in Spain in 1993 when 269 turbines were located in the middle of Western Europé's bird migration track to Africa. Several species under threat of extinction have been killed by those turbines. Ibid., p. 172

[69] See Redlinger (2001), p. 160

[70] See Sesto, p. 1540 and World Energy Council, p. 175

[71] See Redlinger (2001), p. 64-65

3.2.6 Environmental Impacts of Offshore Installations

The largest environmental effects due to offshore wind turbine establishments take place during the turbine installation phase; a number of organisms are negatively affected by the muddy waters caused by the dredging work. These environmental effects can to some extent be prevented through carefully conducted dredging work. During the running phase, the possible environmental effects on the maritime life are mainly connected with noise, vibrations and electro magnetic radiation. However, sufficient data on the overall environmental impacts of offshore wind turbine installations is to a great extent lacking. The present general knowledge about the Swedish marine environment (flora and fauna) is restricted to small parts of the ocean areas and the effect studies done so far on the impact of offshore wind energy have been carried out for limited time periods and in connection with specific installations and does not give a concise picture of the overall environmental impacts. Nevertheless, experience can be drawn from other offshore installations, which implies that the environmental impacts of offshore wind energy are relatively small compared to other exploitation.[72]

At present, eight member states of the European Union are linked together in an ongoing study, *the EU Concerted Action on the Deployment of Offshore Wind Energy* (COD), with a view to bring together knowledge in the field of environmental impact of offshore wind energy. Expectedly, the increased general knowledge will restrict the environmental assessment to site specific aspects and thereby reduce the investments costs, which in turn may smooth the offshore wind energy implementation process.[73]

In sum, this brief introduction to the environmental and social disadvantages accompanied with wind power implies that several issues can be attended to by legal means; first and foremost through careful planning of windmill installations.

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[72] Boverket (National Board on Housing, Building and Planning) (2003), ”Planering och prövning av vindkraftsanläggningar,” pp. 56-57

[73] See International Energy Agency: Strategic Plan of IEA, R&D Wind, 1 November 2003 – 31 October 2008, p. 11 see also European Wind Energy Association: Wind Directions, Focus on Offshore, EWEA document 2004: “Dutch Presidency Leads Offshore Policy Debate.” Available on the internet, see http://www.ewea.org/

Chapter 4

THE CASE OF SWEDEN

4.1 Introduction – Why Wind Power?

The Swedish wind power planning goal is pursuant to a number of energy policy decisions and governmental bills directed towards an increased use of renewable energy. In 1997, the Swedish Parliament adopted a program for adjustment towards a sustainable energy system.[74] The program comprises guidelines to promote an efficient use of energy and to increase the share of renewable energy resources in the Swedish energy system. In 2002, the Government laid down a proposal concerning environmentally friendly electricity supply including a new system of rules aiming to promote the production of renewable electricity, there amongst wind power.[75] This development is in compliance with the Directive goal within the European Union[76] to increase the share of renewable electricity to 22 percent in 2010 (compared to 14 percent in 1997). For Sweden, the Directive requires the share of renewables in the electricity mix to reach 60 percent (implying a 20 percent increase compared to 1997 levels) by 2010. Sweden has however indicated that perhaps a more realistic goal would be a 12 percent increase, which would imply that the renewables share would be 52 percent. There are several reasons for Sweden's reluctance in respect of the requirements of the Directive, there among the obstacles regarding the installation of windmills, which are said to be mainly due to difficulties in obtaining permits, which in turn is conditional on e.g., the planning system, "where the wind interest needs to be visualized," and the lack of public acceptance towards windmill installations.[77]

An increased installed capacity of wind power would also contribute to a number of other policy objectives and legislative requirements that follow from international commitments and EC-law. Accordingly, *on the interna-*

[74] I.e., Prop. 1996/97:84

[75] According to Prop. 2001/02:143, p. 15, "The Swedish electricity supply shall be provided by an energy system founded upon long-lasting, preferably domestic and renewable energy resources together with an efficient energy use."

[76] Directive 2001/77/EC

[77] The strong protection against further development of large scale hydropower (it is in fact forbidden) is one of the other main reasons for Sweden's standpoint regarding this issue. Prop. 2001/02:143 p. 85 and part 8.3.2 "Planning objectives for wind power."

tional level, the adoption of the Climate Convention[78] and the Kyoto Protocol implies that legally binding greenhouse gas emission reduction targets are imposed on states.[79] To achieve the reduction targets, the Parties to the Protocol shall implement policies and measures to e.g., promote an increased use of renewable energy.[80] As a party to the Climate Convention, the European Union and its member states have ratified the Kyoto Protocol and agreed to fulfil their respective commitments under the Protocol jointly.[81]

On the regional level, and as a direct consequence of the Climate Regime, the European Union has adopted several legal and economic instruments aiming to reduce the emissions of greenhouse gases, there among the EU Emission Trading System (EU ETS).[82] The EU ETS is a so called cap-and-trade system based on the quantified emission limitations that follow from the Kyoto Protocol (i.e., the cap), which implies that operators of certain greenhouse gas emitting installations are allotted tradable allowances[83] to emit for instance carbon dioxide corresponding to the overall cap. The intention is to enable for operators who find it relatively easy to reduce their emissions by increasing the proportion of carbon-free energy technology, switching fuels, or via improved abatement technology etc., to sell their allowances to other operators who find it relatively cheaper to buy allowances than to reduce

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[78] I.e., the United Nations Framework Convention on Climate Change (UNFCCC)

[79] The ultimate objective of the Climate Convention and the Kyoto Protocol is: "to achieve (…) stabilization of greenhouse gas concentrations at levels that would prevent dangerous anthropogenic interference with the climate system." (Art. 2, UNFCCC) in consideration of the principles of *equity* and *common but differentiated responsibility* as well as the *precautionary principle* (Art. 3(1) and (3), UNFCCC). Accordingly, the commitments under the Convention and the Protocol are based on the level of economic development and industrialization in the countries and thus vary. See further e.g., Art. 4, UNFCCC and Annex I and II, and the Protocol's Annex B.

[80] Art. 2 (a) (iv), the Kyoto Protocol

[81] In accordance with Art. 3 (1), the Kyoto Protocol

[82] EU ETS consist of: a) Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (*"the Trade Directive"*), b) Directive 2004/101 /EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community in respect of the Kyoto Protocol's project mechanisms (*"the Linking Directive"*), and c) Commission Regulation (EC) No 2216/2004 of 21 December 2004 for a standardised and secured system of registries pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision No 280/2003/EC of the European Parliament and of the Council (*"the Registries Regulation"*).

[83] With allowance means an allowance to emit one tonne of carbon dioxide equivalent

emissions. The allowances may be traded freely, on condition that for every emitted tonne of carbon dioxide, one allowance can be accounted for in the end of the period.

The EU ETS thus has the potential of providing a strong incentive to increase the share of renewable energy provided that the cap is strict enough to promote trade. However, in view of the rationale for the EU cap-and-trade system, it cannot be withhold that its main purpose is to enable cost-effective reductions of CO_2 and not to promote renewable energy, which implies that other means to achieve the target are not only visible, but perhaps preferable; in view of the relatively high abatement record in Sweden, Swedish operators may choose a compliance strategy that implies technology export rather than energy resource alteration. At the end of the day, the flexibility of the economic instruments aiming to reduce the overall impact on the climate may hence not go hand in hand with the promotion of renewable energy.

The Swedish implementation of wind power, and in turn also the possibilities to fulfil national and international energy policy objectives and commitments, is partly conditional on the requirements of the law, with special reference to the functions of the law vis-à-vis wind power outlined in the introduction chapter. The fact that the law attends to a great variety of interest indicates a need to explore more thoroughly in which way the law facilitates as well as hinder the development of wind power.

4.2 The Right to the Resource

Wind does not fall under the definition of real property (estate); it cannot be individualized and thus it cannot be owned. Michanek uses the term right of disposition (rådighet) to denote the "rights" in connection with such energy resources.[84] Pursuant to the prevailing legal principle vis-à-vis ownership to land[85], the right of disposition to the wind is due to the land-owner during the period of time that the resource is within the borders of his or her property.[86]

On the subject of *expropriation* of private property with the intention to harness wind energy the legal situation is not entirely clear. According to the Expropriation Act (Expropriationslag), expropriation with the object of "meeting a public demand for electricity" may be permitted (chapter 2, s. 3), *unless* the purpose of the expropriation is best met by other means, or if the damages

[84] See Michanek (1990), p. 492
[85] The legal principle of ownership to land is briefly explained in the above, see part 1.4.1 above. See also Michanek (1990), pp. 490-491
[86] Ibid., pp. 490-492

of the expropriation from the viewpoint of the affected public and private interests exceeds its benefits (chapter 2, s. 12). In other words, private property may be expropriated with the objective of establishing installations that meets the demand for electricity if the benefits of the installation exceed the damages associated with the expropriation of the property. However, although different energy installations are clearly covered by the expropriation rule, previous research on the subject matter indicates that the relevant expropriation rule (i.e., chapter 2, s. 3) most likely, is not applicable if the purpose of the expropriation is to harness energy from a natural resource, such as wind, which another person has the right of disposition of.[87]

When it comes to wind energy extraction in the common water areas[88], the situation is a bit different: as regards ownership to these areas, the lack of clear legal support indicates that the common water areas are so called common resources, which in principle implies the resources within these areas are due to everyone unless the law says otherwise.[89] Accordingly, resourcefulness to certain resources, such as oil and gas, is due to the State according to specific legislation,[90] while the right to harness energy from the wind in common water areas is not regulated. Hence, *on the basis of property rights*, windmill installations in the common water areas cannot be subject to any requirements.

However, the installations are still subject to various *public laws*, such as the major part of the Environmental Code (Miljöbalken) and the Planning and Building Act (Plan och bygglagen). On the subject of offshore windmill installations within the Swedish economic zone, i.e., outside Swedish territory, the legal situation is somewhat specific; a permit from the Government is required to install windmills in the economic zone according to the Act on Sweden's Economic Zone (Lag om Sveriges ekonomiska zon), s. 5, first paragraph, item 1 and 3).

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[87] See further Michanek (1990) pp. 222-227 and pp. 515-524. Although a windmill installation is considered an energy installation, the purpose of the expropriation to install windmills would still be to harness wind energy. Legal issues related to expropriation issues are not closely examined in this study.

[88] The common water areas in Sweden are: the Sea, Vänern, Vättern, Hjälmaren and Storsjön, with the exception of the 300 meters from the shoreline that normally is due the land owner.

[89] See Michanek (1990), pp. 506-514

[90] I.e., Lag (1966:314) om kontinentalsockeln (The Continental Shelf Act) and Lag (1966:319) om rätt till sand- grus- och stentäkt inom vissa allmänna vattenområden (Act on the Right to Sand, Gravel and Stone Pit within Certain Common Water Areas).

4.3 Law on Land Use and Planning in Sweden

In consideration of the fact that access to land is one of the most fundamental prerequisites for an increased capacity of wind power, the legal rules governing use of land and water areas are of central importance vis-à-vis the possibilities to achieve the Swedish wind power planning goal. Accordingly, this part of the study focuses on the laws and legal rules concerning land use that are related to the installation of windmills, i.e., the Planning and Building Act and relevant parts of the Environmental Code.

The Planning and Building Act was enacted in 1987 as a result of extensive legislative work.[91] The main driving forces behind the reformation of the planning system were partly the social development and economic growth that had led to an increased demand for natural resources, and partly a desire to decentralize the decision-making by enhancing the municipal self-governance.[92] The physical environment, defined in the preparatory works as: "[L]and and water with belonging buildings and installations" was considered "an asset that shall be used to promote a development that is suitable from a public point of view."[93] Decisions regarding changes in the use of land were thus considered mainly a matter for the society, foremost represented by the State and the municipalities.

Together with the Planning and Building Act came the Natural Resources Act[94], in which the former guidelines for national physical planning[95] were laid down in law in terms of provisions for resource management. In the preparatory works to the resource management provisions the need for a long-term perspective in connection with the use of natural resources, in terms of management, conservation and preservation as well as the necessity to meet

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[91] The work to evaluate and renew the planning system was initiated already in the middle of the 1960s, but took many turns before the final proposal for a new Planning and Building Act was presented for the Swedish Parliament in 1985. See e.g., Prop. 1972:111, Prop. 1985/86:1

[92] See Prop. 1985/86:1 p. 70

[93] Ibid., p. 9

[94] Lag (1987:12) om hushållning med naturresurser m.m.

[95] I.e., *Guidelines for the Management of Land and Water Areas of National Interest*. The guidelines that were generally shaped with the intention of being specified and concretized in the planning procedure, had been accepted by the Parliament in 1972 and served as a basis for decisions regarding the use of land and water areas. Prop. 1972:111, appendix 2, p. 140. However, for the new planning system to be consistent the guidelines had to be converted into legal rules: according to the proposal for the Planning and Building Act, the Government should only be able to interfere with the municipal decisions regarding physical planning if certain national interests laid down in law had not been attended to. See Prop. 1985/86:3 p. 8

the various needs of society, was strongly emphasised.[96] In 1998, the resource management provisions were almost intact transferred to the Environmental Code.

In the following, the different levels of physical planning in Sweden with reference to wind power implementation will be examined, starting from the top with the provisions concerning national physical planning.

4.3.1 The Concept of Sustainable Development in the Swedish Environmental Code

In view of the fact that the national level land use provisions in Sweden are laid down in the Environmental Code, a few words about the Code's objective and application directives are in place. The overarching objective of the Environmental Code is to promote a sustainable development. The concept of sustainability as it is expressed in the Code implies that present as well as future generations have the right to a good environment and that the right to make use of natural resources brings with it a "good management" responsibility (chapter 1 s. 1). The objective of the Code thus emphasizes the necessity for a long-term perspective and wise management of natural resources, including energy; s. 1, paragraph 2 states that the Code "*shall be applied in such a way* as to ensure that --- reuse and recycling as well as other management of materials, raw materials and energy are encouraged with a view to establishing and maintaining natural cycles." (Emphasis added).

Although s. 1 has no immediate legal effect, in the sense that the rule does not address individuals, all provisions of the Code shall be applied bearing the sustainability objective in mind.[97] Accordingly, if a situation occurs where the assessment in accordance with the immediately valid provisions are not sufficient to solve, say, a conflict about land use, the alternative that best comply with a sustainable development shall be selected, unless of course the situation is covered by an EC Directive, in which case the EC-law takes precedence. Hence, the explicit support for a sustainable development together with the additional "subgoal" provisions in s. 1, paragraph 2, thus implies that the objective of the Code has an applicable function; even if the sustainability objective is yet to be considered a prevailing legal principle, s. 1 may nevertheless be applied to strengthen the line of reasoning.[98]

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[96] See Ds.Bo 1984:3 pp. 29-33

[97] Prop. 1997/98:45, appendix p. 8

[98] The concept of sustainable development and its "position" in the Swedish legal system is analysed in some dept above, see p. X

Thus, in view of the fact that wind power is a non-emitting, renewable energy resource, with little or no long-term effects on the environment, the opening section of the Environmental Code may well work in favour of an increased installed capacity of wind power. In a legal case from November 2005, the Environmental Court of Appeals did indeed decide that "the public interest to develop the wind power capacity in order to promote a sustainable development (see chapter 1, s. 1, the Environmental Code) speaks for authorization of the company's application in a trial according to chapter 3, s. 6, the Environmental Code."[99]

To sum up, it is clear that the sustainability objective may work in favour of the development of wind power. It may however just as well work *against* such a development if, for instance, other interests are considered more beneficial for a sustainable development. At the end of the day it is thus mainly a matter of how different interests are assessed and weighted against each other.

4.3.2 National Physical Planning

As a result of the social and economic development in Sweden during the 1950s and 1960s, the demand for natural resources increased and accordingly the conflicts over use and allocation of the resources aggravated. In the light of this development, a long-term, overarching planning was considered necessary in order to e.g., prevent conflicts over the natural assets and damages to the environment.[100]

The primary legal conditions for the use and land and water areas, i.e., the rules on national physical planning, include a) rules that specify the use of land and water areas in relation to certain activities, and b) rules that aim to protect certain geographically appointed areas due to their natural and cultural values. Next, the basic and special resource management provisions in chapter 3 and 4 in the Environmental Code are examined and analysed with reference to wind power implementation issues.[101]

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[99] Judgement of the Environmental Court of Appeal 2005-11-01 in case M 2966-04

[100] Prop. 1972:111, pp. 126-127

[101] For a more thorough analysis of the underlying purpose and the development of the law in connection with natural resource use, see e.g., Michanek, G. and Zetterberg, C. (2004). *Den Svenska Miljörätten,* pp. 78-79 and pp. 144-146

4.3.2.1 Basic Provisions Concerning the Management of Land and Water Areas

The basic resource management provisions (grundläggande bestämmelser för hushållning med mark- och vattenområden) in chapter 3, the Environmental Code, are generally formulated and provide an extensive room for interpretation regarding the legal application as well as the actual content of the provisions.[102] This implies that valid law is not easily revealed on a theoretical basis; unclear situations will perhaps be somewhat clearer illustrated by case law. This part is outlined as follows: *first*, the content of the rules in terms of general requisites are examined, *secondly*, some implications of the provisions relative to wind power implementation are depicted, *thirdly*, the concept of national interests in accordance with chapter 3 is discussed with reference to wind power, and *finally*, the different conflict/competitive situations and the solutions proposed by the provisions are presented. The basis for the description and analysis of valid law is the legal text, supported by the preparatory works to, mainly the Environmental Code, but also by the proposition for the Natural Resource Act, since these preparatory works are still valid.[103]

The basic resource management provisions are rules for the overall use of land and water areas in Sweden. As a general assessment rule, s. 1 gives directions for the assessment of conflicts of interests, stating that "priority shall be given to use that promotes good management from the point of view of public interests", which implies that the interest of the public shall take *precedence over* any private interest (even though a combined use shall always be considered[104]) and that a *long-term perspective* shall be put on all use of land and water areas. The assessment shall furthermore be undertaken in the view of the sustainability objective of the Environmental Code (chapter 1, s. 1). The harnessing of wind energy is thus not given any explicit priority through the

[102] This legislation technique was met by scepticism by the Council of Legislation, partly due to the fact that the provisions in this way not by itself gave a comprehensive picture of the implications of the law, and partly because not all the potentially relevant provisions regarding the use of natural resources were included in the law. The following statement illustrates the viewpoint of the Council: "In the preparatory works to the law, statements are made intending to clarify the content of the provisions. Even if this is a common legislation technique nowadays, one ought to require that the ones affected by the law are able to form an opinion regarding the content and legal effect of the legislation". Regarding the large span between the proposed text and the motive statements the proposal was said to "balance on the limit of what could be considered consistent with high-quality legislation". Prop. 1985/86:3 p. 224-225

[103] Prop. 1997/98:45 part II, p. 29

[104] See the legal text: *"That or the* purposes…"

general assessment rule. Even so, the prioritized position given to public interests in relation to private such may, in exceptional cases, promote wind power, i.e., in view of the fact that even small scale wind mill installations normally are looked upon as interests of the public. Still, the situation where the wind energy interest enters into competition with other (long-term) public interests is perhaps more common. For these situations, neither the guidance given by s. 1, nor the application directives of the Environmental Code provide enough guidance for the assessment of the conflict of interests.

In addition to the general assessment rule, different types of land and water areas are regulated. These provisions aim to look after specific interests that are connected to certain areas by reason of quality or suitability. These areas shall "to the extent possible" be protected against: a) activities that may *significantly affect* (s. 2), *significantly damage* (s. 6) or *damage* (s. 3), for example the character of the areas, or b) activities that may be *prejudicial to* (s. 4, 7 and 8), *significantly interfere with* (s. 5) or *detrimental to* (s. 9) the interests appointed by the different provisions.[105] The basic resource management provisions are furthermore only applicable to new (or changed) use of land and water areas. Activities in progress are thus in principle not affected by these rules.[106]

Impact of the Provisions Relative to Wind Power Implementation

The purpose with s. 2 is to protect large relatively unaffected areas. Subject to the rule are activities that may significantly affect the character of the areas, which implies a barrier towards the establishment of windmills unless the turbines are small enough not to have a significant influence on the landscape.[107] However, for particularly site specific activities (e.g. mining, peat cutting etc.) the rule should only be applied for the case alternative locations are at hand, which may have some implications also for the installation of windmills since sufficient areas for an efficient wind energy extraction may be less frequent. In general, it is thus a matter of how site-specific the production of wind power is considered to be. In other words, what prerequisites, in terms of e.g., infrastructure and natural resources are considered necessary for a windmill installation? If it is considered enough that there are other available areas more

[105] With *significantly* in this context is intended *not trivial*, which, according to preparatory statements imply that only such actions that may cause a long-lasting negative impact or temporarily a substantial impact in relation to the interest are aimed at. Prop. 1985/86:3 p. 155

[106] Prop. 1997/98:45 part I, p. 240

[107] Prop. 1985/86:3 p. 155

suitable from the point of view of landscape influence, s. 2 may well prove an obstacle to an increased installed capacity of wind power, but if for instance the possibilities for grid-connection, or even energy efficiency aspects are taken into account in the assessment of alternative locations, the impact of s. 2 in relation to the preconditions for wind power may prove less of an obstacle.

Areas of particular sensitivity from an ecological point of view are subject to s. 3 and thereby (to the extent possible) protected from activities that may damage the environment. Examples given in the preparatory works are: areas with unfavorable regrowth and production conditions (such as the mountain areas and primeval forests), areas accommodating species under threat of extinction (one important purpose with s. 3 is to guard the biological diversity) and already damaged or polluted areas, which have become more vulnerable as a result of for example supply of heavy metals.[108] The starting point for the protection is thus the ecological conditions in the areas and the reasoning regarding whether to allow for interference or not lies in the possible negative impacts on the ecological values aimed to protect. Since the word *significantly* is excluded in this provision, the protection arises already at the risk of damage. The installation of windmills is therefore likely to be affected by the rule. Still, wind power in s. 3 areas is perhaps not totally inconceivable; not even ecologically sensitive areas are automatically damaged by the installation of a windmill, nor is already damaged areas, or all threatened species, for example large animals or plants. A possible installation of windmills in s. 3 areas thus has to be considered on a case-to-case basis where the environmental impacts of the installation are assessed in consideration of the sensitivity of the particular area.

> Chapter 3, s. 3 was applied in a court case from 2000 regarding the (offshore) installation of 7 windmills at Utgrunden in Kalmarsund in the municipality of Mörbylånga. Since the case concerned more than one public interest of particular importance, the Environmental Court of Appeal handed the case over to the Government, together with its own assessment.[109] Accordingly, on the basis of the wind and water conditions, the Environmental Court of Appeal pointed out that the area was well suitable for wind energy production and that no other *exploitation* interests were at hand. However, due to the area's importance as bird migration track, the Court brought the resource management provisions in

[108] Prop. 1985/86:3 p. 50 and 157

[109] According to chapter 21, s. 7, paragraph 2, the Environmental Code, an environmental court that finds that a case before the court "relates also to another public interest of great importance other than those referred to in chapter 1, s. 1, it shall refer the matter to the Government for decision together with its own opinion."

chapter 3, s. 3 (and possibly also s. 6), to the fore, and concluded that these provisions make rather heavy demands upon protection of valuable natural and cultural environments. Hence the matter for the Court to assess and the Government to decide was whether the interest of wind energy production on this particular site could be considered important enough to outweigh the installation's possible impacts on bird-life.

The Environmental Court of Appeal came to the conclusion that the risks for negative impacts for birds were difficult to assess, but that the current knowledge on the subject matter indicated that windmill installations in general were not likely to cause serious negative impacts on bird life. The Government shared the courts assessment and decided that the installation was not prevented by the basic resource management provisions. However, in view of the difficulties involved in assessing the risks of negative impacts, the installation was permitted *on condition* that a follow-up program aiming to evaluate the installation's impact on bird life was initiated. The Court as well as the Government further emphasized the possibility to – for example based on the outcome of the prescribed evaluation – prohibit ongoing activities that prove to cause considerable inconvenience that was not predicted in the permitting process.[110]

A special feature among the resource management provisions is the protection of agricultural and forestry areas. These areas are considered of national importance in accordance with s. 4. Useful agricultural areas, i.e. land areas that meet the necessary conditions for cultivation, can only be used for building purposes if it is required to meet important public interests which cannot satisfactory be met by an alternative location. The protection of agricultural and forestry areas are foremost directed towards activities that permanently undermines the biological production, such as villages, industries, roads and so on.[111] Sizeable windmill installations, such as large wind farms, may hence be prevented by the provision, whereas smaller systems may well be installed without compromising with the protection. According to s. 4, paragraph 2, forest areas of importance for the forestry shall, to the extent possible, be protected from activities that may be prejudicial to a rational forestry. Serious conflicts between the forestry interests and the wind power interest are however improbable since efficient wind energy production requires a rather flat landscape without a lot of disturbing elements such as (large and numerous) trees.

[110] Decision and statement of the Environmental Court of Appeal to the Government 2000-01-17 in Case M 833-99 together with the decision of the Government 2000-03-09
[111] Prop. 1985/86:3 p. 158

The aim for the protection in s. 5 is the reindeer husbandry[112], the commercial fishing and water usage. Land and water areas of importance for the reindeer husbandry are thus protected against activities that may significantly interfere with the husbandry.[113] The protection thus has some bearing for the prerequisites to install windmills in the mountain (and surrounding) areas since these are often reindeer grazing land, and the question is therefore whether windmills would significantly interfere with the reindeer husbandry or not. The protection in s. 5 also aims at commercial fishing and water usage, which thus are protected against interfering activities in the same way as the reindeer husbandry.

Physical environments (land, water and other) that contain natural and cultural values or are of importance for the outdoor life are protected in accordance with s. 6. To be comprised by the rule, the areas must be valuable from a public viewpoint, i.e., contain values that "cannot be recreated or substituted if once destroyed".[114] Accordingly, such areas shall "to the extent possible be protected against activities that may significantly damage" the values. The application of s. 6 is wide-ranging; it aims at e.g., aesthetical values, historical buildings, unusual floras and faunas, the possibilities to camp, fish and hike etc., which implies that the rule is likely to cover, not only large windmill installations, but the establishment of single turbines as well, since these may well cause significant damage if established in, say, a hiking area.

> A court case from 2005[115] concerned the installation of 3 windmills in the municipality of Sotenäs in an area of importance from a public viewpoint due to its natural and cultural values (s. 6). According to one of the Bodies to which the Environmental Court of Appeal referred the case for consideration, i.e., The National Board on Housing, Building and Planning (Boverket), the area was however also particularly suitable for energy production in accordance with chapter 3, s. 8, and the Board hence argued that the interest to protect the area's natural and cultural values should be balanced against the public interest

[112] The reindeer industry is exclusively a matter for the Swedish indigenous people, the Saami, and is considered a prerequisite for the preservation of the Saami culture. The Saami rights to use land and water areas for the maintenance of their way of life (i.e. as a reindeer herder) is called *the reindeer herding right* and it is based on immemorial use and can be carried out by a member of a Saami village. See Rennäringslagen (1971:437) (The Reindeer Herding Act), s. 1

[113] The land areas of importance for the reindeer husbandry are mainly the reindeer grazing land. Reindeer herding in Sweden is conducted from Treriksröset in the north and Idre community in the south.

[114] Prop. 1985/86:3 p. 162

[115] Judgement of the Environmental Court of Appeal 2005-11-01 in case M 2966-04

to increase the installed capacity of wind power in accordance with the general assessment provisions in chapter 3, s.1, i.e., that "priority shall be given to use that promotes good management from the point of view of public interests." The Court's (visual) inspection of the site confirmed that the current area was indeed of interest from a social (cultural) historical point of view and that the landscape without a doubt was beautiful. However, since the area was *not* of national interest for these values, the Court – in line with the reasoning of the Board – decided that the public interest of an increased share of wind power as a means to promote a sustainable development outweighed the opposite interest and the installation was hence permitted.

Areas that contain valuable substances and materials are protected in accordance with s. 7 with a view to guarantee a durable supply of scarce natural resources.[116] The purpose with the protection is to "enable future extraction of such substances and materials that is considered valuable from socio-economic viewpoints."[117] Extraction of substances *below* ground or in the seabed is hindered by installations *above* ground, which implies that the installation of windmills or wind farms may be considered prejudicial to the utilization of the protected substances and materials. However, according to the preparatory works, extraction of the embedded resources is not always due right away (*future* extraction is intended) which implies that the rule does not necessarily prevent interim use of the areas.[118] Hence, resources above ground, such as wind energy, may thus be temporary utilized as long as the installations are not prejudicial to future extractions below ground.

According to s. 8, land and water areas that is "particularly suitable" for e.g., energy production and energy distribution shall, "to the extent possible" be protected against prejudicial activities. According to the preparatory works, s. 8 aims to protect areas that "due to their characteristics or location are particularly suitable for activities that are necessary and important for the society."[119] Areas that enclose less frequent and site-specific natural resources are thus subject to s. 8, which implies that areas particularly suitable for wind power in terms of prerequisites for an efficient wind energy extraction are protected against activities that may hinder an economical use of the installation, such as large buildings or constructions.[120]

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[116] Prop. 1985/86:3 p. 72
[117] Prop. 1997/98:45 part II, p. 33
[118] Ibid., p. 33
[119] Ibid., p. 34
[120] Prop. 1985/86:3 p. 167

Finally, s. 9 protects areas of importance for the military defense. The protection is directed towards both reserved areas for specific military activities (shooting ranges, military training, military preparedness etc.) and areas surrounding military constructions.[121] On the whole, s. 9 is expected to prevent establishment of wind power within the protected military areas since windmill installations are likely to cause detriment to the military interest by limiting the possibilities to use the areas for the intended purposes, or through interference with the telecommunication systems.[122]

National Interests

During the early development of the provisions for management of land and water areas, i.e., what eventually became the resource management provisions of the Natural Resources Act, some of the protected interests were considered to require the holding of an exceptional position in the weighting process and was therefore given a stronger legal protection.[123] This protection is connected to areas covered by s. 5-9 and is expressed in a second paragraph to each provisions where the phrase "to the extent possible" is excluded.[124] Accordingly, areas of *national interest* for some purpose *shall* be protected against activities that may significantly damage, significantly interfere with or that may be prejudicial or detrimental to the interest, which implies that no balancing shall occur; the protected interest simply has precedence over other, non-prioritized, interests. The concept of national interests is highly important in the context of wind power development since it changes the legal prerequisites for wind power establishments; if an area is designated as national interest for wind energy production, wind power is clearly promoted, whereas if the area is of national interest for some other purpose, windmill installations are prevented if they significantly interfere or are prejudicial or detrimental to the protected interest.

What is required for the interests in s. 5 – 9 to be considered national interests within the meaning of the law is not entirely clear since the concept is not defined in the legal text. The preparatory works however offer some examples of national interests in relation to the different interests in s. 5 – 8:

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[121] Prop. 1985/86:3 p. 168

[122] The International Energy Agency (IEA) reports that several windmill installations in Sweden and the United Kingdom have been prevented or delayed as a result of protests from the military defense regarding the turbines' interference with radar and microwave transmission systems. See IEA R&D Wind Annual Report 2001, p. 54

[123] Prop. 1972:111, for instance pp. 127-130, p. 387

[124] In section 5 *water use* is not included in paragraph 2 and in section 9 only the areas required for military constructions are subject to paragraph 2.

- Areas of particular interest with regard to different stages in the conduction of reindeer husbandry, such as calving and migration tracks[125](s. 5)
- Areas that have nearly nothing corresponding to it in the country[126] (s. 6)
- Areas that comprise substances and materials that are or are expected to be particularly important from a safeguarding perspective[127] (s. 7)
- Areas for installations that form part of a connected system that is of national (or regional) importance, such as grid-connected power transmission lines[128] (s. 8)

In relation to wind power, s. 8, paragraph 2 is of particular interest. According to the preparatory works, the provision is applicable for land and water areas that are particularly suitable for installations included in e.g., the transport system or the electricity system, which implies that areas encompassing certain qualities in relation to the production of wind electricity, in terms of for instance resource supply or topographic conditions, that are of interest for the country as a whole may be designated as national interest for wind power.

The designation of national interests shall be conducted by administrative authorities within different sectors, specified in the Ordinance of Management with Land and Water Areas.[129] The authorities shall notify the county administrative board of the areas selected as national interests. The delegation to the administrative authorities is however not legally authorized and the designation hence has no legally binding effect (although it is important in practice, which implies that it is the duty of courts and other decision making authorities to determine whether an area is of national interest or not on a case-to-case basis.

> In two court cases, windmill installations were planned in areas designated as national interest in accordance with chapter 3, s. 6, paragraph 2. The first case concerned the installation of two windmills in Mollösund in Västra Götaland.[130] The coastal area in question was of national interest for outdoor life and recreation and should therefore be protected against activities that may significantly damage the protected values. The Court found the planned installation to have some impact on the landscape, but in view of the fact that the area was already relatively exploited by industrial activity, such as an existing

[125] Prop. 1985/86:3 p. 161
[126] Ibid., p. 164
[127] Ibid., p. 166
[128] Ibid., p. 168
[129] F (1998:986) om hushållning med mark- och vattenområden m.m.
[130] Judgement of the Environmental Court of Appeal 2001-10-31 in case M 9540-99

windmill and other tall buildings, the Court concluded that the planned windmills were not likely to significantly damage the outdoor life and were hence not prevented by s. 6, paragraph 2.

The other case[131] also concerned the installation of two windmills, this time in Löddeköpinge which is situated within the coastline Hjälarp-Lomma, an area designated as national interest for nature preservation by the Swedish Environmental Protection Agency. Also in this case the level of existing exploitation (e.g., a nuclear plant) implied that the Court did not consider the installation likely to cause any significant damage to the natural values in the area, although it would change the landscape to some extent. The installation was thus not prevented by s. 6 paragraph 2.

Conflict Assessment

The basic resource management provisions regulate the use of land and water areas in so far that: a) certain – particularly important – interests from the perspective of social and economic development are explicitly mentioned in the law, and b) the rules give directions for how to balance between competitive interests claiming land or water areas. The provision are however altogether vague and the outcomes thus unpredictable, which to all appearances seems intentional; it is stated in the preparatory works that: "it is hardly possible to specify the outcomes of different competitive situations in the Act. The provisions therefore aim no longer than to give guidelines for the assessment."[132] Still, on the basis of previous research the possible outcomes of the rules vis-à-vis wind power are examined next.[133]

Competitive claims in accordance with the basic resource management provisions can be divided into several categories. The basis for the following examination is however that at least one of the provisions in chapter 3 is applicable. Included is therefore also s. 10, which has yet to be considered. Since the provisions only apply for new activities, only such conflicts that arise as a result of the establishment of new activities will be examined. An additional criterion for the provisions to be applicable is that the activity is assumed to cause damage, significant damage or interference, or that it is prejudicial or detrimental to the interest at issue.

To begin with, the basis for conflict assessment is given by the general assessment provisions in chapter 3, s. 1, which thus in part function as a com-

[131] Judgement of the Environmental Court of Appeal 2002-01-18 in case M 1391-01

[132] Prop. 1985/86:3 p. 225

[133] The examination follows Michanek's (theoretical) systematization and analysis of the conflict assessments in accordance with the basic resource management provisions. See Michanek (1990) part 2.2.4.1, (1993), part 2.2.5.3 and (2004), part 9.3.2

plement to the provisions in s. 2 – 9 and in part serve as an independent rule to assess conflicts that does not involve any interests appointed in chapter 3. As stated above, s. 1 stipulates that resources shall be used in a way that is suitable with regard to their nature, the situation at hand and the "existing needs", and further that a combined use always shall be considered, and if that is not possible, that priority shall be given to interests that that promote a good management from a public point of view.[134]

> In two similar court cases from 2003, the assessment of the location with reference to chapter 3, the general assessment rule, prevented the installation of windmills. One of the cases[135] concerned the installation of one wind turbine in Laholm, in an area that already enclosed several windmills. The Court asserted that "Land and water areas shall be used for purposes for which they are best suited in view of their nature and situation and of existing needs." The location of the new windmill was however planned at such a distance from the existing windmills that the Court considered its' impact on the landscape to be significant; the importance of how the installations are perceived was emphasized by the Court as was the possibilities of disturbance in the form of noise due to the closeness to residential areas.
>
> In the other case[136] the Court was to assess the installation of two additional windmills to an existing group station. The Court made the following assessment: in consideration of the height of the new turbines (they were more than 20 meters higher than the existing ones) the impact on the landscape was likely to be significant. As for one of the windmills, the planned location also implied an unacceptable level of noise and shadowing for the residential property closest to the planned location. The planned location for the other turbine lay outside the row of existing windmills and would hence imply less noise and shadowing, but – due to its height and deviating location still have a significant impact on the landscape. The Court hence concluded that the two additional windmills could not be approved either in accordance with the location rule or in accordance with chapter 3, s. 1. Also these installations were planned in the municipality of Laholm.

Furthermore, several competitive situations can arise involving the interests in chapter 3, without yet involving national interests:

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[134] Thus, if a situation occurs where two interests claim the same land area and no provision in s. 2-9 is applicable for the interests, the conflict shall be assessed solely by applying the general provisions in s. 1.

[135] Judgement of the Environmental Court of Appeal 2003-12-29 in case M 7625-00

[136] Judgement of the Environmental Court of Appeal 2003-12-29 in case M 623-02

A conflict situation may occur between non-specified interests on the one hand and interests laid down in law on the other. If a municipality wishes to establish houses in an area particularly suitable for wind energy production, the starting point for the assessment is the directions given by s. 1. The first question is whether it is possible to combine houses and windmills? If that is not possible, the wind energy interest is likely to have some precedence over the municipalities wish since wind energy production is in fact represented by the law (s. 8), while house building is not. However, since the wind interest is only protected "to the extent possible", deviations are possible; whether the planned houses would indeed be prejudicial to the installation of windmills has to be assessed on a case to case basis.[137]

Assume instead that the municipality wishes to lay out a park in the area suitable for wind power and that the park has significant recreational values. Parks in built up areas are subject to s. 6 and the area in question is thus suitable and therefore protected for two purposes; green areas and wind power. Once again a combined use shall be considered and if that is not possible, priority shall be given to the interest that best promote a good management of the land resource from a public point of view. The same conflict situation occurs if two interests protected in accordance *with the same rule* are competing; a rule may well cover more than one interest, like s. 8, but that does not necessarily imply that the different activities go well together; an industrial plant may well be prejudicial to a windmill installation and vice versa, in which case the vague directions in s. 1 once more is applicable.

The interests laid down in s. 2 – 9 (with the exception of s. 4) shall only be protected "to the extent possible", which implies that even if an area is particularly suitable for wind power, other aspects shall be considered. According to the preparatory works this mainly implies the socio-economic consequences of the protection, for instance in terms of the planned activity's relation to regional development objectives or employment rate. The purpose is thus to enable socio-economic assessments on a case to case basis.[138] Still, "to the extent possible" also implies that the socio-economic considerations may not be allowed to endanger protected values unless the assessment altogether shows that this is in compliance with a "good management from the point of view of the public."[139]

If national interests are added to the equation, the following conflict situations may arrive on the scene:

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[137] See further Michanek (1990), p. 62
[138] Prop. 1985/86:3 p. 155
[139] Ibid.

Assume that the area from the previous example is designated as national interests for wind energy production (s. 8, paragraph 2) and not for parks. This implies that the wind power interest *shall* be protected against prejudicial activities whereas the park is only protected against damage *to the extent possible* (s. 6). In this case, the wind energy interest has a stronger position than the park since no balancing shall occur. Still, whether the area is in fact of national interest for wind energy extraction is a matter for the court to decide; the sector authorities do not have the authority to finally decide upon this issue, and moreover, the area is only protected against activities that significantly hinder extraction; prohibition to log trees may thus be legal although the possibilities to harness wind energy to some extent is reduced.

The final type of conflict situation occurs if an area has been designated as national interest for two different interests: in our case a windmill installation and a park. This situation is explicitly regulated in s. 10, which states that: "where any of the areas in s. 5-8 are of national interest for incompatible purposes, priority shall be given to the purpose or purposes that are most likely to promote a sustainable management of land, water and the physical environment in general." However, explicit or not, the directions for assessment given by this rule are vague; the provision implies the same kind of balancing as the general assessment rule in s. 1, i.e., that social, cultural and socio-economic aspects shall be taken into account.[140] Only one interest is prioritized in s. 10 and that is the military defense; if the military defense needs an area or parts of an area for a total defense installation "priority shall be given to the defense interest."

> In one of the court cases referred to above[141] on the subject of an installation of two windmills in an area that the Swedish Environmental Protection Agency had appointed as national interest for outdoor life and recreation in accordance with s. 6, it was claimed that the area was of national interest for energy production in accordance with s. 8, paragraph 2, as well. However, the Court asserted that the windmill installation would not significantly damage the outdoor life and was hence not prevented by s. 6, and moreover that regardless of whether the area was in fact of national interest for both wind power and outdoor life, the two interests were not incompatible on the proposed location and there were hence no reason to "give precedence to one or the other in the way that is specified in s. 10."

Finally, decisions taken in accordance with s. 10 may not be contrary to *the special resource management provisions* in chapter 4, the Environmental

[140] Prop. 1997/98:45 part II p. 35
[141] Judgement of the Environmental Court of Appeal 2001-10-31 in case M 9540-99

Code (paragraph 2). Accordingly, any competition between the national interests that emanate from chapter 3 and their chapter 4 counterparts will thus in principle end up in favour of the latter.

4.3.2.2 Special Provisions Concerning Land and Water Management in Certain Areas

The special resource management provisions (särskilda bestämmelser för hushållning med mark och vatten för vissa områden i landet) in chapter 4 in the Environmental Code protect areas that are of national interest because of their natural and cultural values. The areas are hence defined geographically and protected from exploitation activities and other interferences in the natural environment. The classification "national interest" implies that the balancing in relation to other interests has already been made and that, in a competitive situation, precedence shall be given the national interest.[142]

Windmills can only be installed in these areas if: a) it *meets no hindrance* by the area provisions in s. 2 - 8, and b) the installation does not *significantly damage* the protected values (s. 1, paragraph 1). In the assessment of whether an activity is likely to cause significant damage or not, it is the *total* natural and cultural values in the entire protected area that are considered. This implies that even if parts of the protected areas were not to be significantly damaged by a proposed activity, the rule may not prevent the activity unless the *total values* of the area are affected.[143]

> To illustrate: The Swedish Road Administration (Vägverket) had established a plan for e.g., several roads and a bridge in an area governed by chapter 4, s. 2.[144] The decision was appealed by a large number of people who claimed that the decision should be revoked. The Government asserted that the road project would have a negative impact on the protected values, i.e., the landscape and the experience of nature in the area, and furthermore that although the impact would be greater near the installations, a larger area would be affected as well. The project would however, at the same time improve the access to the area and hence increase the possibilities for outdoor life and tourism. All in all, the Government asserted that although the installations would indeed seriously affect *parts* of the area, for instance through interference in areas comprising an-

[142] Prop. 1997/98:45 part II, p. 36
[143] Prop. 1985/86:3 p. 171
[144] Road E4 Härnösand-Örnsköldsvik, the part Utansjö-Gullsäter, a new bridge crossing Ångermanälven at Veda, together with several roads in the municipalities of Härnösand and Kramfors.

cient remains, a comprehensive assessment indicates that the installations in respect of: a) the protection for outdoor life and tourism, imply pros and cons, but that *all together*, the installation would not negatively impact these interests, and b) the natural and cultural values of the area, would in fact be negatively affected along the road, but taking the aggregated values of the area into consideration, the area *as a whole* would not be significantly damaged by the bridge. The case was later subject to legal review,[145] but the Supreme Administrative Court judged that in view of e.g., the extensive room for appreciation left by the resource management provisions, the Government had not exceeded its discretion.[146]

The expression "significantly damage" has reference to activities or measures that may cause either a *permanent negative* impact on the protected values, or a *temporary considerable negative* impact on these values, taking into consideration the attributes of the planned activity as well as the characteristics of the area in question; it is possible to require that the shape of constructions is adjusted to the landscape.[147]

Some exceptions from the general "prohibition" in s. 1, item 2 as well as the area provisions in s. 2 – 6 are provided by s. 1, paragraph 2. The first exception applies to "the development of existing urban areas," by which is intended development required to meet normal population growth. Thus, buildings, roads, parks, service etc. that are necessary to meet an increasing population are not subject to any assessment regarding whether the installations cause significant damage or to the area provisions in s. 2 – 6.[148] Windmills may be of interest for these cases if providing electricity to new residential areas, retail trade and smaller industries. Another exception applies to "the development of local industry", which refers to economic growth in either existing or new economic sectors required to meet the need for employment.[149] Since the establishment of wind power provides employment opportunities in both the installation phase (building and construction work) and in the operating phase (monitoring and controlling) windmill installations may thus be subject also to this exception.

[145] Rättsprövning
[146] RÅ 1993 not 550
[147] Prop. 1997/98:45 part II, p. 36, and Prop. 1985/86:3 p. 171
[148] Prop. 1997/98:45 part II, p. 36
[149] Ibid.

Special Area Provisions and Case Law Examples

In addition to s. 1, chapter 4 also includes provisions in relation to the specified areas. The importance of these provisions in connection with wind power implementation varies.

In areas subject to s. 2, for instance, the coastal area and archipelago of Norrbotten from Bondöfjärden to the Finnish border, special consideration "shall be given the interest of tourism and outdoor recreation". Accordingly, windmills may only be installed in these areas if they do not significantly damage the protected interests, i.e., get in the way of tourism interest or hinder outdoor recreation.

> In a case regarding the installation of 4 windmills in an area subject to s. 2, the Environmental Court of Appeal did not consider the windmills either to interfere with the outdoor recreation or to significantly damage the natural and cultural values of the areas in accordance with s. 1 and the Court hence concluded that the installations were not prevented by the special resource management provisions.[150]

Certain unexploited coastal areas are protected in accordance with s. 3. Within these areas, a number of new activities are explicitly prohibited,[151] there among "wind farms consisting of clusters of three of more windmills with at total output of not less than 10 MW."[152] The installation of smaller wind power systems (<10 MW) is thus not explicitly prevented by s. 3, although the fact that larger installations are forbidden is likely to have some effect also on the installation of windmills in general; in other words, the reasoning for prohibiting large windmill installations probably has some bearing also for slightly smaller installations.

Remaining *un*exploited parts of the *already exploited* coastlines are protected from further interference for the benefit of recreational purposes in accordance with s. 4. In these areas "permanent recreation accommodations may only be built as a complement to existing buildings" and certain activities[153] may only be established in locations where such activities already exist. Windmill installations are not prevented by these area provisions the assessment is thus about whether the installation of windmills in an area subject to s.

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[150] Judgement of the Environmental Court of Appeal 2001-02-13 in case M 8782-99

[151] I.e., installations referred to in chapter 17, s. 1, p. 1 and s. 4 a, p. 1-11, the Environmental Code

[152] See chapter 17, s. 4 a, p. 7, the Environmental Code

[153] I.e., chapter 17, s. 1, p. 1 and s. 4 a, p. 1-6, 9 and 10, the Environmental Code

4 will cause significant damage (s. 1, item 2).[154] The provision has been subject to judgment by the Environmental Court of Appeals in three cases from 2001 – 2002.

In the first case,[155] the application concerned the installation of six windmills on an uninhabited island called Skaboholmen, which belongs to the coastline of Bohuslän. Skaboholmen is located a couple of hundred meters away from another island, which forms part of a bird protection area, and has a view over the open sea. The Court asserted that the installation of windmills is not included among the installations that are explicitly prohibited in accordance with s. 4, paragraph 2 and that the matter for the Court to assess thus was if the installation was prevented by s. 1, that is, if the windmills could be installed without causing significant damage to the protected natural and cultural values. In consideration of the area's topographic conditions (flat and scarcely vegetated) and the impression of unspoiled nature that the island presented, the Court came to the conclusion that the installation of windmills would seriously change the landscape in the area; the windmills would dominate the landscape and abolish the impression of unexploited nature in that particular part of the coastline and hence significantly damage the very high environmental values in the area.

The second case[156] concerned the installation of two windmills on a peninsula in a "relatively inaccessible" area, approximately 200 meters from the coastline in Mollösund. In this case, the Court concluded that, although the two windmills would to some extent affect the landscape, the area in question was already relatively exploited (by roads, buildings and an existing windmill) the installations would not significantly damage the protected values in the area and were hence not prevented by s. 1.

A similar assessment was made in the third case[157]; two windmills were to be installed in a small society called Löddeköpinge in the municipality of Kävlinge and the Court asserted that the windmills would to some extent affect the landscape, but since the area taken as a whole was already exploited (e.g., by a nuclear plant), the installation was not likely to cause significant damage and was thus not prevented by s. 1.

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[154] According to the preparatory works (on the subject of windmill installations in areas subject to s. 4), the installation of windmills "must be possible in the parts of the coastline where the wind conditions are sufficient" and as a result windmill installations are prevented by the area provisions in s. 4. Prop. 1985/86:3 p. 101 and 182 and Prop. 1989/90:126 p. 14.

[155] Judgement of the Environmental Court of Appeal 2001-10-31 in case M 8328-99

[156] Judgement of the Environmental Court of Appeal 2001-10-31 in case M 9540-99

[157] Judgement of the Environmental Court of Appeal 2002-01-18 in case M 1391-01

The *unexploited mountain* areas, in principle defined by the absence of roads and railroads are protected in accordance with s. 5.[158] In these areas, installations like windmills may only be established if "they are necessary for the purposes of the reindeer husbandry, the resident population, scientific research or outdoor recreational exercise." Since all of the protected interests may demand electricity, the provision (in connection with the exempted activities) seemingly promotes, rather than obstruct, wind power development. Still, would an unexploited mountain area continue to be unexploited if windmills are installed? According to the preparatory works, roads and railroads are mentioned as examples of such irreversible constructions that are prevented by the provisions in s. 5, which may imply that, although a wind turbine in itself does not cause irreversible damage (it can easily be removed), the installation of e.g., wind farms may well require infrastructural reinforcement in terms of roads, and thus be prevented by s. 5.[159] Further, if a windmill installation cannot be considered necessary for any of the appointed interests in s. 5, it may only be allowed if the windmills do not affect the character of the areas, which, in view of the fact that visual intrusion generally is considered one of the greatest impediments with wind power, may hinder uncalled for installations of windmills in the unexploited mountain areas. As a final point, it should be emphasized that even if the provisions in s. 5 does not prevent the installation, s. 1 might (if the windmills are considered to significantly damage the protected values).

According to s. 6, the Swedish national rivers[160] and their surrounding water areas etc. are protected against construction of hydropower plants, water regulation and diversion for the purpose of power generation. Excepted are only hydraulic operations with a minor impact on the environment (s. 6, paragraph 3), by which is intended e.g., efficiency measures or rebuilding of existing hydropower plants and – as long as the environmental impacts are minor – small scale hydropower.[161] The existence of hydropower may prove significant for a broad implementation of wind power; hydropower is a continuous energy resource, whereas wind energy is fluctuant, which implies that hydropower may serve as a momentary efficiency reserve, i.e., a back up that compensates fluctuations in the electricity supply. The exception from the hydropower prohibition may thus prove to be important vis-à-vis the wind power planning goal provided that the environmental impacts are insignificant.

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[158] Prop. 1997/98:45 part II, p. 39
[159] Ibid.
[160] The National Rivers are: Torneälven, Kalixälven, Piteälven och Vindelälven.
[161] Prop. 1997/98:45 part II, p. 41

National urban parks are protected in accordance with s. 7.[162] This provision is not subject to the exceptions in s. 1, paragraph 2, nor does the damage needs to be significant for the protection to occur. Activities in national urban parks may not interfere with the park landscape or the natural environment, or cause detriment to any natural and cultural values of the historical landscape. The protection for these areas is thus rather strong, although not absolute; complements to existing building areas are considered possible.[163] In relation to the development of wind power, the impact of s. 7 is probably that windmill installations by and large are prevented by the rule; although it may be possible to install single turbines for some restricted purpose (as complements), windmills generally *do* encroach on landscapes and since the law strongly protects the interest to *preserve* the natural and cultural values in the urban parks, windmill installations are likely to be prevented by the rule.[164]

The last of the national interests in chapter 4 are areas protected in accordance with the provisions on protected areas in chapter 7, s. 27, the Environmental Code.[165] Activities that may have a significant impact on these areas require a permit in accordance with chapter 7, s. 28 a, the Environmental Code. Hence it follows that *if* the establishment of windmills is considered to significantly affect the protected areas the installation requires a permit. A permit may in turn only be granted if the installation does not harm the natural habitats in the area or expose the protected species for disturbances that endanger the preservation of the species in the area (chapter 27, s. 28 b). With reference to the environmental impacts of wind power, the protection of natural habitats does not necessarily prevent windmill installations; plants and

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[162] Currently there is only one national urban park in Sweden: the Ulriksdal-Haga-Brunnsviken-Djurgården area

[163] See Prop. 1997/98:45, part II, p. 41

[164] RÅ 1997 Ref 18 is an interesting court case on the subject of national urban parks. The case concerned the building of a tunnel (Norra Länken) in the national urban park area. The construction of the tunnel was discussed in the preparatory works to the Natural Resource Act, which – when the detail plan was appealed – was taken by the Government to mean that the construction of the tunnel was not prevented by the provisions regarding buildings and constructions in national urban parks. The Government said that: "with reference to, mainly statements in the preparatory works, the Government is of the opinion that the location [of the tunnel] cannot be considered to be contrary to the provisions in chapter 3, section 7, the Natural Resource Act." (p.113). The Superior Administrative Court revoked the Government's decision since "the legal *text* does not restraint the protection against interference and damage" (p. 116) (emphasis added).

[165] The Government is obliged to keep a record of areas that should be protected in accordance with Council Directive 79/409/EEC and 92/43/EEC (s. 27, item 1-2) and according to international undertakings or national objectives regarding protection for areas (s. 27, item 3).

many large species are unlikely to be harmed by windmills and hence are not significantly affected by windmill installations. The provisions do however in all probability prevent the installation of windmills in areas listed for the sake of the protection of wild birds; windmills may influence the birds' resting and breeding and sometimes cause their death, which indeed may imply significant disturbance and endanger the conservation of the birds. Moreover, in conformity with s. 7, s. 8 is not subject to the exceptions in s. 1, paragraph 2, which implies that exception from the provision in respect of e.g., the development of urban areas are not possible.

4.3.3 Conclusive Remarks on the Basic and Special Resource Management Provisions Vis-à-vis Wind Power Development

With reference to the above, the chances of an assessment in accordance with the basic resource management provisions assenting to the installation of windmills within areas of national interest for, say, preservation of natural and cultural landscapes is not great; no matter how you put it, large windmills or wind farms are likely to significantly damage areas that are protected due to their valuable landscapes. It is however a different story if, for instance, a water area is appointed national interest for environmental protection of the marine life in accordance with chapter 3, s. 6, or a mountain area is designated national interest due to valuable embedded substances. In these cases a windmill installation may not significantly affect or damage the protected values at all; in the first case, the windmill may be placed on an islet, in which case it might not cause damage to the marine life, and in the other situation, it is probably possible to locate windmills in a pattern that enables future extraction of the valuable substances, which hence would not be significantly obstructed.

The chances for establishment also improves if the area is appointed national interest for wind energy production, in which case the installation is *either protected* against other conflicting interests, i.e., activities or measures that may be prejudicial to the establishment and operation of the windmill installation, such as preservation of landscapes, or, if the area is of national interest also for another purpose, *in competition with* the other interest over what best promote a long-term management resource with natural resources.

Moreover, in consideration of the court cases, the chances apparently improves if at least parts of the area is already exploited; since the environmental impacts of wind power are primarily subjective, in the sense that it is mainly the *perceived* disturbances that make the provisions prevent the installations, already noisy or industrialized areas of national interest for, say outdoor life,

are not as likely to be significantly damaged by the windmills, depending of course on the location of the planned installation; an area may be heavily developed in parts and still enclose, for instance, undisturbed hiking areas, which may be significantly damaged by a windmill installation. The court cases however also reveal a rather strong protection for the landscape in general; even in non-national interest areas the visual intrusion of the windmills appear to have a certain impact on the assessment on the subject of how well suited the areas are for wind power. In other words, the weight given to the wind energy interest in the general assessment seems to have rarely outweighed the interest to protect the landscape, with the exception of one recent case in which the windmill installations' contribute to a sustainable development was considered more important than the landscape values. This development in the Courts' line of reasoning may indeed prove important from the point of view of wind power development; if the benefits of wind power in terms of its promoting of a sustainable development is taken into account in the assessment, the chances for a broad implementation of wind power and hence the possibilities to achieve the wind power planning goal increases.[166]

On the whole, however, the room for discretion left by the basic resource management provisions may imply that national energy policy objectives, like the wind power planning goal, are neglected to the benefit of other concerns, for instance nature preservation and landscape protection. The function of the rules as provisions concerning the management of land and water areas is thus not sufficient to provide for an efficient implementation of political goals (such as the diffusion of wind power); the legal text and preparatory works are weak and ambiguous and the outcomes hence far too unpredictable than what can be accepted in consideration of, not least, the sustainability objective, but also in view of the situation facing a potential windmill operator in terms of the uncertainties regarding the economic outcome of his or her investment it implies.

Still, it cannot be withhold that the provisions in chapter 3 also enable an application in favour of wind power development, especially if areas are designated as a national interest for the purpose, in which case the protection is somewhat stronger, partly in consideration of their stronger position among the basic resource management provisions, and partly due to the implications of the concept in the planning system as a whole,[167] but also due to the fact that vague rules roughly leaves the floor open, which implies that windmill

[166] See further part 1.4.1, 4.3.1 and chapter 6
[167] The planning system is discussed below, see part 4.3.5

installations are in fact thinkable also in areas protected for e.g., preservation purposes.

In conformity with the design of the basic resource management provisions, the special resource management provisions also provide room for discretion in the application, especially in consideration of the possibilities to make exemptions from the provisions, which roughly implies that activities that are in fact likely to cause significant damage to the national interests in s. 2 – 6, are not necessarily prevented by the provisions in chapter 4. A windmill installation in an unexploited coastal area subject to s. 3 may well be prevented by the special resource management provisions in consideration of s. 1, paragraph 1, item 2 (significantly damage) *and* the explicit prohibition against large windmill installations laid down in s. 3. However, since the provisions in s. 1 and s. 3 do not hinder e.g., the development of urban areas or local industry, the installation may still not be prevented by the fact that the area is of national interest for its natural and cultural values. Nevertheless, with reference to the preconditions for windmill installations and the examined court cases, the exceptions in s. 1, paragraph 2 are yet to prove significant for the installation of windmills; instead, it seems as if the environmental impacts of wind power in terms of visual intrusion and noise pollution are the most important factors in the assessment, although they do not necessarily prevent the installation, at least not within already exploited areas.

All in all, the ambiguousness of the provisions makes the outcomes rather unpredictable, which not necessarily work in favour of an increased installed capacity of wind power; instead it might imply that operators refrain from investing in wind power because of the uncertainty of the economic outcome of a proposed project.

4.3.4 The Location Requirement

In connection with the use of land and water areas, the installation of windmills is also subject to the location requirement (lokaliseringsregeln) in chapter 2, s. 4, the Environmental Code, which states that:

> "In the case of activities and measures for whose purposes land or water areas are used, unless on a purely temporary basis, a suitable site shall be selected with regard to the provisions of chapter 1, s. 1 and chapter 3 and 4.
>
> Sites for activities and measures shall always be chosen in such a way that as to make it possible to achieve their purpose with a minimum of damage or detriment to human health and the environment."

The location requirement is one of the Environmental Code's so called *general consideration rules*,[168] according to which different requirements, for instance regarding the choice of technology and products and the selection of sites in connection with the consideration of matters relating to permits and supervision etc., can be brought upon operators, which then are obliged to demonstrate compliance with the requirements: in accordance with chapter 2, s. 1, the Environmental Code it is not the supervising or permit authority or any other person affected by the installation that are responsible to investigate and see to that the obligations that follow from the consideration rules, here among the location requirement, are met, *it is the operator*.[169] A very important starting point for the assessment of the requirements in accordance with chapter 2 is the precautionary principle, which implies that safety measures shall be taken "as soon as there is reason to assume" that the activity may cause damage to the environment.[170] With reference to the location of windmills, the precautionary principle implies that the basis for the requirements brought upon a windmill operator in accordance with s. 4 is the *risks* for damage or detriment. Accordingly, if a proposed location implies a risk for, say, increased bird mortality, it may be rejected on account of the precautionary principle.

On the subject of the particular obligations in connection with the location requirement, two issues are of particular concern. First, for activities and measures other than just temporary, the selected site shall be *suitable* with regards to the objective of the Environmental Code and the basic and special resource management provisions. This implies that a proposed location for a windmill installation shall be suitable in consideration of what promotes a sustainable development and in view of what implies a good management of natural resources. However, it follows from chapter 1, s. 2, the Code, that the resource management provisions are only applicable in issues regarding permits which implies that these provisions are valid only for location assessments in connection with permit trials for e.g., environmentally hazardous activities and water operations, e.g., offshore windmill installations, in accordance with chapter 9 and 11.[171] The resource management provisions are also applied in connection with the Government's permissibility assessment pursu-

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[168] See further below, part 4.5.1

[169] Prop. 1997/98:45 part II, p. 13, see also Westerlund, S. (1990). *Miljöskyddslagen. En analytisk lagkommentar*, p. 168 and below, p. X

[170] In Swedish law, the precautionary principle is explicitly expressed in chapter 2, s. 3 paragraph 2

[171] Prop. 1997/98:45 part I, pp. 19-20

ant to chapter 17. This basically implies that the location rule is applicable to all medium and large scale windmill installations.

Secondly, for *all* activities and measures, sites shall be selected in order to achieve the purpose of the activity with least possible damage or detriment to the environment. The obligation implies an *objective* assessment both regarding the purpose of the activity and the selection of sites, which implies that it is neither the operator's own (subjective) opinion of the purpose of the activity, nor his or her access to a specific site that determines this issue, but rather what is deemed to be the purpose of the activity and the "best" location *from an objective point of view*. Accordingly, the objective assessment of the purpose of the activity aims to determine if the type of activity is best carried out on the selected site, or if another site is preferable. The likely purpose of a windmill installation is to produce wind energy and since the wind blows in almost all places, it is also likely that this purpose may be achieved on more than one location. The assessor thus evaluates if the purpose of the windmill installation is best achieved in the selected site.[172] Moreover, in consideration of that more than one location might be suitable for the installation; the location requirement further implies that the best of these from the viewpoint of the environment shall be chosen. Thus, in order for the selected site to be the most appropriate from an environmental point of view, alternative locations must be presented. Accordingly, on the basis of the reversed burden of proof, s. 4, paragraph 2 obliges the operator to undertake an objective (i.e. irrespective of access to the sites in question) assessment of the alternative sites for the windmill installation.[173]

One issue is of particular concern regarding the obligation to assess alternative sites: The question is related to the scope of the requirement, i.e., shall the obligation to account for alternative locations include the entire country or a smaller geographical area? The guidance on the subject matter is scanty; it follows from the legal text and a statement in the preparatory works that the requirement is restricted through its own prerequisite, i.e., that it shall be possible to achieve the purpose of the activity.[174] This implies for instance that if the aim of installing a windmill is to supply electricity on a local basis, the alternative sites may not be so many, whereas if the purpose with the installation is to supply electricity via the public grid, the installation may be located almost anywhere in respect of the purpose. In case of the latter, the obligation to assess alternative sites will presumably depend on the circumstances in the

[172] See Westerlund (1990), pp. 166-167
[173] See further Prop. 1997/98:45 part II, p. 19-20. For a detailed analysis of the location requirement, see further Westerlund (1990), pp. 164-183
[174] Prop. 1997/98:45 part I, p. 20

individual case, i.e., if the initially proposed location is controversial from an environmental point of view and also the cost and time for the assessment. This would be in line with the cost-benefit assessment pursuant to chapter 2, s. 7, the Environmental Code, according to which the obligation to assess alternative sites may not be unreasonable.

Hence it follows that the location requirement may in some cases imply a very inflexible obstacle towards windmill installations; the operator may not have access to any other site than the chosen one, but if another site is found to better achieve the purpose of the activity from an environmental point of view, installation on the selected site may be prevented by this requirement. However, the location rule, as well as the other requirements that follow form the general consideration rules, are only applicable "where compliance cannot be deemed *unreasonable*." (Emphasis added). In short, this implies that the requirements brought upon the activity in accordance with the location rule must be achievable on the basis of what can be considered practically and economically possible for a typical windmill installation. Thus, if the costs for altering the location of the windmills are found unreasonable, there is a possibility to alleviate the requirements in this respect. This assessment is examined in some detail below.[175] Next, the implications of the location requirement are illustrated by case law.

4.3.4.1 The Location Requirement in Practice

Also in practice, the location rule has provided an important obstacle to wind power development; the Environmental Court of Appeal has declined applications for permit to install windmills on the basis of the location requirement on several occasions:

> The first case[176] concerned the installation of two windmills in Mollösund in Västra Götaland. Mollösund is located along the coastline of Bohuslän, and the area in question for the location of the windmills is characterized by its intense competition between exploiting and preservation interests. The area in question was thus subject to the basic as well as the special resource management provisions (chapter 3, s. 6 and chapter 4. s. 4), but was not prevented by these. With reference to the location requirement, the Court asserted that strict obligations regarding the location assessment can be brought upon an operator that plan to locate an installation that is likely to significantly affect the landscape in an area with strong preservation interests, and further that an application for per-

[175] See part 4.5.1.2
[176] Judgement of the Environmental Court of Appeal 2001-10-31 in case M 9540-99

mit for such an installation shall include an examination of alternative sites, especially if the location is controversial. The Court came to the conclusion that the operator's assessment of alternative sites was not sufficient (it was in fact lacking), something that, especially considering the intense competition for the area and the fact that the municipality and the county administrative board had recommended a rejection of the application is an imperative demand. The appeal was therefore rejected.

Nearly the exact same circumstances were at hand in another case[177] regarding the installation of two windmills on a real-estate in Löddeköpinge that belongs to the coastline of Häljarp-Lomma. This area is also of national interest in accordance with the special resource management provisions, but since it is already heavily exploited, due to e.g., the presence of Barsebäck nuclear plant, the resource management provisions did not prevent the installations. In this case the operator had in fact accounted for alternative sites for the installations (after being reminded to do so), but the Court considered the assessment to be too scanty to supply the Court with enough support to approve an application to install windmills outside the areas recommended for this purpose by the municipality.

Another case concerned the installation of one windmill on a real-estate in Laholm.[178] The area had been considered particularly suitable for windmill installations in the previous municipal planning and several windmills were already installed. However, according to the Court's assessment, the installation of a windmill on the selected site would nevertheless imply a significant impact on the landscape closest to the siting (which was characterized by low-rise buildings), and in view of the ongoing revision of the municipal overview plan, and the possibility of a location contrary to the new plan, the Court did not approve of the installation.

Laholm was subject to the Court's attention in yet another court case concerning the installation of four windmills.[179] Also in this case the area had been found suitable for windmill installations in the previous municipal planning, although a revision of the overview plan was in progress. In this case the selected site for two of the windmills were approved by the Court and permit for these installations were issued. Regarding the location of the other two windmills the selected sites were however found unsuitable: One of the windmills was to be located on a residential property and in view of the fact that the noise from the installation would exceed what is considered an acceptable level of noise from industrial installation in residential areas, and since the application did not aim at any other location, the Court concluded that an assessment of alternative sites for the installation could not be made. The other windmill

[177] Judgement of the Environmental Court of Appeal 2002-01-18 in case M 1391-01
[178] Judgement of the Environmental Court of Appeal 2003-12-29 in case M 7625-00
[179] Judgement of the Environmental Court of Appeal 2003-12-29 in case M 623-02

was to be located at some distance from five existing windmills and hence imply a significant impact on the landscape due to its diverging location. The application as to the two second windmills was hence declined with reference to the location requirement.

In two more recent cases, however, the Environmental Court of Appeal has made a somewhat different assessment of the location requirement: The first case[180] concerned the installation of six windmills in that had been rejected by the Environmental Court because the operator had failed to account for alternative sites for the installation. However, in spite of this, the Environmental Court of Appeal concluded that an assessment of alternative sites was not necessary with respect to the location requirement. The Court reasoned as follows: the imperative demand to assess alternative sites is valid if the selected site is controversial. In the present case, however, the impact on the landscape is likely to be moderate since the areas in question (the municipalities of Lund and Eslöv) are an already highly exploited agricultural area (roads, high buildings etc.). The operator has furthermore agreed to take precautionary measures to reduce noise pollution and shadow effects. Hence, all things considered the Court did not find it necessary for the operator to assess alternative sites and permit for the installation was granted.

In the other case,[181] regarding a windmill installation in Sotenäs municipality in Västra Götaland, the Court referred only very briefly to the location requirement and stated that: "In consideration of that the proposed location is the only place appointed by the municipality as suitable for wind power, the Court find the operator's examination of alternative sites sufficient to assess the site." The installation was thus permitted.

4.3.4.2 Implications of the Application of the Location Requirement

It is clear that the location requirement may be a determining factor in the context of wind power implementation issues. In the light of the examined court cases, the location assessment circles around three main issues: the character of the area surrounding the location, the presence of planning instruments and the attitudes of authorities engaged in the permitting process, and the environmental impacts of the windmill installation.

With respect to the area that surrounds the location, the installations' impact on the landscape seems to be of vital importance. However, unlike the assessment made in accordance with the special resource management provisions where the overall impact on the area is subject to assessment, the assessment pursuant to the location rule may include also the immediate surroundings of the installation, which may lead to that areas suitable from an

[180] Judgement of the Environmental Court of Appeal 2004-07-05 in case M 9178-02
[181] Judgement of the Environmental Court of Appeal 2005-11-01 in case M 2966-04

energy efficient point of view are neglected to the benefit of small-scale landscape preservation.

> Consider for example the case where the windmills were to be located in Löddeköpinge: the area was in its entirety of national interest in accordance with the special resource management provisions (s. 4), but since the installation was not considered to significantly damage the area *as a whole*, among other things due to the closeness to the nuclear plant Barsebäck with accompanying transmission wires etc., the windmills were not prevented by these provisions. The assessment in accordance with the location rule, however, took a somewhat different stance: the real-estate in question for the installation was located in an agricultural area and the windmills was to be installed on the edge of a field, close to a smaller road and the transmission wires from Barsebäck passed the proposed location at a distance of 800 meters. Hence, the Court found that the windmills were in fact likely to significantly affect the landscape surrounding the proposed location.

In consideration of the presence of a planning instrument, the Court has rather uniformly required some form of municipal consent to the windmill installations to issue permit, typically on the basis of the "municipalities' leading role in matters regarding the allocation and use of land."[182] In three cases, the presence or absence of up-dated overview plans contributed to determine the outcomes (the Laholm-cases and Sotenäs), and in the other cases the municipality's opinion of the location carried great weight (Löddeköpinge and Mollösund). However with one exception: the case concerning two windmill installations, one in Lund and one in Eslöv. In this case the municipality of Lund had approved of one installation and not expressed any opinion about the other, whereas the municipality of Eslöv was willing to accept one installation but not the other. The county administrative board as well as the National Board on Housing, Building and Planning had both recommended a rejection of the installations. Although the Court stated that the municipalities' opinion of the location is of importance, permit to the installations was still granted.

However, notwithstanding this latter case, the general viewpoint seems to be that the presence of municipal overview plans for the installation of windmills is of vital importance also in the assessment in accordance with chapter 2, s. 4, the Environmental Code.

[182] See e.g., Judgement of the Environmental Court of Appeal 2002-01-18 in case M 1391-01 and 2001-10-31 in case M 9540-99

The last assessment issue in relation to the location requirement is the environmental impacts (besides the landscape effects) in connection with a particular site. A few aspects are generally considered: the distance to residential areas or property, and in relation to this, the noise and shadowing effects caused by the installation. The Courts seem to follow the guidelines[183] issued by the National Board on Housing, Building and Planning (Boverket) regarding *noise* from windmills strictly. Thus, although there are no legally binding rules on the subject of noise from windmills as is the case in Denmark, the same standard (40 dB(A)) seems to be applied by the Swedish courts. Also the shadowing effects of a windmill installation seem to have been "standardized" pursuant to the guidelines. The Courts have however deviated from the recommended distance between disturbance-sensitive areas and windmill installations; the basis for the Courts assessments have instead been the acceptable level of nuisance caused by the installation, which have implied that establishments closer to built-up areas than the recommended distance have been accepted by the Courts, although *on condition* that the acceptable noise levels and shadowing effects are not exceeded. For the operator, this may imply the use of a different technology, or that the installation cannot be operated throughout the twenty-four hours etc.

4.3.5 Local and Regional Planning – The Planning and Building Act

The municipal self-governance constitutes a fundamental part of the Swedish form of government and the system for physical planning is no exception. The municipalities (and to some extent also the county administrative board) conduct all planning within the competence set by public law.

4.3.5.1 Overall Objectives

The objectives and main principles of the Planning and Building Act are expressed in the introductory chapter, where the purpose of the provisions is said to be: "[t]hat with regards to the freedom of every individual, promote a social development including equal and good living conditions and a good and long-term sustainable living environment for the people of today as well as for future generations." The Planning and Building Act is valid alongside with the Environmental Code and the overall objectives of the Act are therefore expressed in line with the overall objective of the Code, i.e., to promote a sustainable development. However, while the chapter 1, s. 1 in the Planning and

[183] Boverket (2003). "Planering och prövning av vindkraftsanläggningar."

Building Act stipulates the basic social values on which the law is based,[184] the sustainability objective as it is expressed in the Environmental Code specifies, through its additional paragraph, how the law shall be applied, which indicates a more far-reaching objective in terms of actual impact of the provisions. Thus, although the two laws are partly integrated, there are some important differences that needs to be stressed; besides the more thoroughly expressed promotion for a sustainable development, the Environmental Code is furthermore valid for everyone and for all sorts of activities and measures that may effect the environment in a way that contradict the objectives of the Code, whereas the provisions in the Planning and Building Act are concretized through the physical planning that is mainly carried out by municipal authorities, whose main considerations may not always be in the best interest of the environment.[185] Moreover, the very significant general rules of consideration, laid down in chapter 2, the Environmental Code, are not generally applicable in trials in accordance with the Planning and Building Act.[186]

The Planning and Building Act states that both private and public interests shall be *considered* when applying the law, i.e., in the planning procedure and the making of plans (chapter 1, s. 5), and further that the use of land for building purposes requires that the area is "suitable for the purpose from a general point of view" (chapter 1, s. 6). The latter requirement applies only to new or altered land use and does thus not affect complementary buildings and the like.[187]

4.3.5.2 Consideration Rules

The underlying purpose of the physical planning in accordance with the Planning and Building Act finds expression in chapter 2, s. 1, where consideration rules regarding the use of land and water areas are laid down (allmänna intres-

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[184] Prop. 1985/86:1 p. 230

[185] The municipalities may give precedence to other needs and interests, such as political interests, social concerns, economic growth etc. The fulfilment of these objectives is not necessarily in compliance with the (far reaching) environmental objectives of the Code.

[186] The actual scope of the general consideration rules is however not entirely clear; according to the preparatory works, the scope of the general consideration rules in chapter 2 the Environmental Code should not be understood as directly and generally applicable in trials in accordance with the Planning and Building Act, although "the increasing importance of the environmental issues and the general rules of consideration in the Environmental Code will have an impact also in the application of the Planning and Building Act. Prop. 1997/98:90 p. 156 and pp. 158-159. See further Bengtsson, B. (2001). *Miljöbalkens återverkningar*, pp. 99-100

[187] Prop. 1985/86:1 p. 464-465

sen som skall beaktas vid planläggning och lokalisering av bebyggelse m.m.). Of particular concern is the requirement in paragraph 2, which states that the basic and special resource management provisions of the Environmental Code shall be applied in the planning. The planning authorities are thus obliged to attend to the resource management provisions in the drafting of plans as well as in the building permitting procedure. The physical planning shall further promote a well adapted structure of buildings, constructions etc., as well as a long term management of natural resources, including energy (s. 2). The location of, for instance, energy demanding constructions shall be suitable with regards to energy supply and energy management (s. 3, paragraph 2) and congregated building areas shall be formed in view of the need for energy resource management (s. 4, item 3). The two latter provisions aim to control the location of buildings and constructions that *demand energy for its function*, but not the location of the energy *supplier*, which implies that they are not valid windmill installations.[188]

Chapter 3 contains consideration rules on the subject of e.g., demands for buildings (krav på byggnader m.m.) where s. 1 lays down an *adjustment requisite* that makes it possible to impose requirements on the location and shaping of buildings and constructions in order to ensure an aesthetically acceptable general impression of the environment. The establishment of windmills in built up areas as well as in the open landscape shall therefore be assessed in consideration of how well the windmills go with the surroundings.[189] What claims that can be brought in this respect are thus determined by the character of the environment; locations in the open landscape may for instance require adjustments to blend with the topographical conditions.[190] Vis-à-vis wind power, the adjustment requisite may imply requirements regarding the turbines' form, colour, installation pattern and the like.

The location, shaping or intended use of a building or construction may further not have a "detrimental effect on traffic security or otherwise cause danger or significant inconvenience to the surrounding environment" (s. 2). This provision aims to prevent for instance impaired visibility for drivers or dimmed visibility or otherwise weakened light conditions for neighbours.[191]

[188] See Michanek (1990), p. 101
[189] Prop. 1985/86:1 p. 480
[190] Ibid., p. 481
[191] Prop. 1985/86:1 pp. 483 and 184

4.3.5.3 The Plans

The obligations regarding the use of land and water areas that follow from the consideration rules in chapter 2 and 3 in the Planning and Building Act and the resource management provisions in chapter 3 and 4 in the Environmental Code are realized through different plans. The plans shall specify and concretize the use of areas, in consideration of local conditions. The Swedish physical planning system comprises plans for overarching planning, i.e., overview plans (översiktsplaner) and regional plans (regionplaner), as well as for more specified planning, i.e., detail plans (detaljplaner) and area provisions (områdesbestämmelser). The implications of the plans vis-à-vis wind power development are examined below.

Regional planning with Reference to Wind Power

Questions regarding the overarching use of land and water areas with reference to more than one municipality *may* be coordinated through regional plans (chapter 7, s. 1). Accordingly, the regional authorities are not obliged to establish a regional plan, but they may do so if they consider it suitable. Regional plans are not mandatory; they shall rather function as guidance for the establishment of primarily overview plans, but also for detail plans and area provisions. Hence, the regional plans shall provide the main features for the use of the land and water areas that are of importance for the region as a whole (chapter 7, s. 4). The regional plans may have some implications for the implementation of wind power, mainly on the subject of electricity distribution systems and roads, but also regarding the installation of windmills; constructions for energy production are mentioned in the preparatory works as an issue for regional plans.[192] Windmill installations may also be perceived as a matter for the regional planning in view of the fact that the visual impact of for instance a wind farm does not necessarily stay within the municipal borders, which may call for coordinated planning.

Wind Power Implications Pursuing Overview Plans

In accordance with chapter 1, s. 3, the Planning and Building Act, and in contrast to the optional regional plan, every municipality is required to have an updated overview plan that covers the whole of the municipal area. However, in conformity with the regional plans the overview plans as such, i.e., with regard to their contents, are not legally binding for individuals or for planning

[192] Ibid., p. 189

and permitting authorities, but shall rather function as a basis for decisions in accordance with the Planning and Building Act.

An overview plan shall include "the fundamental features of the intended use of the land and water areas" accounted for national interests laid down in accordance with the resource management provisions in the Environmental Code. In the planning procedure, the municipalities are obliged to consult with the county administrative board, which in turn shall "see to and coordinate the State's interests" and "strive to implement the national interests" (chapter 4, s. 5, item 2). The board shall also function as advisor and provide basis for decisions on matters concerning environmental issues of importance for decisions regarding land use (chapter 4, s. 5, item 1). The proposal for a new plan or amendments to an existing plan shall be publicly announced during a period of at least two months (s. 6). During that period, the county administrative board shall make a statement regarding whether the proposed plan is in compliance with the resource management provisions of the Environmental Code (s. 9).

Overview plans may be considered an important instrument for implementing the national wind power goal given that areas suitable for wind power/of national interest for wind energy production are in fact laid down in the plan.[193] Although overview plans are not binding, the courts seem to attend to them as decision guidance in their assessments: In several cases on the subject of windmills installations, the Environmental Court of Appeal has stressed the municipalities' leading role in the physical planning and the guidance given by the overview planning have had influence on the location assessment.[194]

However, the absence of legal effect of overview plans implies that there are no guarantees that the guidance provided by the plan will be attended to in trials for permits or in the establishment of legally binding detail plans or area provisions. As an instrument to promote a broad implementation of wind

[193] In the Committee Report "*Rätt plats för vindkraften*", the overview planning is considered as the main planning instrument for the implementation of wind power in the Swedish energy system and the municipalities are exhorted to account for their attitudes towards wind power together with how they intend to attend to questions regarding the use of land and water areas for wind energy extraction purposes in the overview plans. Even though overview plans are not binding, the report concludes that thorough guidance and recommendations for localization of wind turbines in the overview plan may be enough to serve as basis for decision in the trial for building permits. Additional planning in the form of detail plans or area provisions may not be necessary unless the overview plan "is more perspicuous." See SOU 1999:75, chapter 4

[194] See for instance the following Judgements of the Environmental Court of Appeal: 2001-10-31 in case M 9540-99; 2002-01-24 in case M 7416-00; 2002-01-18 in case M 1391-01; and 2001-10-31 in case M 8328-99. See also Michanek (1990), p. 130-132

power, the overview plan must therefore be considered insufficient. Furthermore, if the municipalities or the county administrative board fail to attend to designated national interests for wind power in the overview plan, courts' and other authorities' application of the resource management provisions will lack specification in relation to the local conditions, which increases the uncertainties (and hence the costs) in connection with wind power investments.

Wind Power Implications of Detail Plans and Area Provisions

Detail plans and area provisions are regulated in chapter 5, in the Planning and Building Act. Accordingly, certain activities and installations, like windmills, *require* a detail plan if the installation is likely to, for instance: a) have a significant impact on the surroundings, b) forms part of "new collected buildings," or c) will be located in an area where the competition for land is intense. Thus, if any of this is the case, the building or installation may not be established without a detail plan for the purpose (s. 1, item 1-3). The plan requirement is valid also for installations that require a building permit in accordance with chapter 8, s. 2. This implies that a windmill installation is found to have a significant impact on the surroundings may not be granted a permit unless the installation is laid down in a detail plan. In consideration of windmills' often significant visual environmental impacts, it is likely to assume that windmill installations in general will become subject to the detail plan requirement. Moreover, the installation of windmills also typically requires a building permit, which thus cannot be issued without the presence of a detail plan covering the installation.

For limited areas that are not covered by detail plans, area provisions may be implemented in order to guarantee that the purpose with an overview plan is achieved or to ensure that national interests designated in accordance with the resource management provisions in the Environmental Code are attended to (s. 16). Area provisions aim to control the establishment of buildings and installations in thinly populated areas although there is no sharp distinction between detail plans and area provisions.[195]

In contrast to regional- and overview plans, detail plans and area provisions are legally binding for individuals and authorities who are directly affected by the content of the plans/provisions. This implies that users of land and property owners may not conduct e.g., building activities that may counteract the area provisions or the detail plan, and that authorities may not give permission to such activities. For instance, if the Environmental Court receives an application for permit to install, say, a combustion plant in an area

[195] See Michanek (1990), p. 118

subject to a detail plan for wind power, the court is prevented to grant the permit (chapter 16, s. 4, the Environmental Code.)

However, even if the establishment of windmills is laid down in a detail plan, there are no guarantees the installation will actually occur; detail plans do *prevent* activities that may counteract the wind power production, but they do not explicitly *promote* that the windmills are actually installed in accordance with the plan; a detail plan thus have the power to steer away activities that are contrary to the content of the plan (for instance building of houses in an area appointed for windmills), but it cannot guarantee that the windmills will ever be installed since there are no legal instruments to enforce the implementation of a detail plan or area provisions.

Moreover, certain functions in the planning system are only valid for application in accordance with the Planning and Building Act, for instance the building right in accordance with chapter 8, s. 11. The building right implies a principle "right" (there are a few exceptions) to establish a windmill installation *provided that* such an installation is in compliance with the detail plan for the area. However, since the building right is valid only in relation to the Planning and Building Act and thus not for trials in accordance with for instance the Environmental Code, the "right" is not a right at all for the case the installation is prevented by, say, the location requirement.

With reference to wind power, a detail plan may establish the highest allowed altitude for buildings and installations (s. 7, item 2), and, if particular reasons are at hand, rules regarding highest allowed level of e.g., noise (s. 7, item 11). Accordingly, a detail plan for the installation of windmills may include provisions regarding the size of the turbines as well as the acceptable level of noise. Area provisions may correspondingly regulate the location, shaping and construction of a windmill installation (s. 16, item 4).

If it is considered necessary, a detail plan shall be based on a program, declaring the basis for and objectives of the plan (s. 18). Moreover, if the implementation of a detail plan for, say, a wind farm, can be assumed to have a significant impact on the environment, an environmental impact assessment (EIA) of the plan shall be conducted. The EIA aims to enable an overall assessment of a planned installation's environmental impacts.[196] The adoption of a program or plan shall further be preceded by a consultation process aiming to improve the basis for decision and to enable public participation in the planning process. Included in the consultation process are different authorities, other municipalities, residents etc., who are affected by the content of the plan, as well as organizations and private persons who has a significant interest in

[196] See further below part 4.5.5, see also chapter 6, the Environmental Code

the plan (s. 20 – 21). The county administrative board plays a role also in the detail planning process, although not as prominent as in the overview planning, and shall during the consultation process "see to and coordinate the State's interests" and "strive to implement national interests designated in accordance with the resource management provisions in the Environmental Code" (s. 22).

4.3.5.4 Building Permits

In addition to a detail plan, a windmill installation also requires a building permit (bygglov) in accordance with chapter 8, s. 2, item 6, the Planning and Building Act if: a) the diameter of the rotor blades is greater than two meters, or b) the distance between the installation and the "boundary"[197] is less than the height of the windmill, or c) the windmill is installed *on* a building. The municipalities may however decide that the windmill installation does not require a building permit, *unless* such a permit is necessary with regards to public interest or the interests of the neighbors (s. 5, paragraph 1 and 3).

An application for permit to establish windmills in an area comprised by a detail plan shall be approved, if the installation is not prevented by the area's detail plan, or if the installation only implies *minor deviations* from the plan that are not contrary to the purpose of the plan (s. 11, paragraph 1 and 6), for instance alterations of the height of the windmills or the installation pattern, if necessary for, say, technical reasons.[198]

For areas *not* comprised by detail plans the preconditions to issue building permits are somewhat different (s. 12). Since the suitability of these areas have not yet been evaluated through the detail planning process, the starting point for the permit assessment is the consideration rules in chapter 2 (including the resource management provisions of the Environmental Code) and the adjustment requisites and (traffic) security aspects in chapter 3. Thus, to receive a permit, the planned installation may not be contrary to these requirements. A building permit may further not be issued if the windmill installation requires a detail plan in accordance with chapter 5, s. 1 and such a plan has not yet been established for the wind power purpose (s. 12, item 2). In that case, the permit cannot be granted until a detail plan for the installation is adopted. Finally, a building permit for windmills may not be issued if the installation is contrary to area provisions (s. 12, item 3).

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[197] On the basis of the wording of the former Building Statute, s. 54, p. 6, the word "boundary" means *property line.*

[198] Prop. 1985/86:1 pp. 713-714

4.3.5.5 The State Control

The State (represented by the county administrative board) shall, under certain circumstances, reject certain municipal decisions on plans. Accordingly, areas of *national interest* for wind energy production designated in accordance with the resource management provisions of the Environmental Code are subject to some State control (chapter 12, s. 1, item 1). Hence it follows that if, for instance, a windy valley has been designated national interest for wind power and the adopted detail plan does not comply with the interest, the county administrative board is required to reject the plan, and reverse: the board shall also reject a detail plan for a windmill installation if the plan in fact refer to an area of national interest for, say, nature protection (chapter 12, s. 3). The timeframe for objections is set to three weeks from the date of which the board receives the municipality's decision. The somewhat short time period was initially justified by the necessity of speediness in the planning process and the presumption that the deeper consultation process (in which it is the duty of the board to strive to implement the national interests in the planning) in all probability normally would leave no remaining conflicts between the State and the municipalities.[199]

As a part of the State's control over the municipal planning, the Government may issue a plan injunction (planföreläggande) to force the municipalities to implement the national interests in detail plans or area provisions (chapter 12, s. 5 and 6). A requirement to issue an injunction may be put forward by sector authorities.[200] Accordingly, if an area of national interest for wind power is about to be neglected in the forthcoming detail plan, the Government may place an injunction on the municipality to change the plan within a certain time. However, although it may appear as if the possibility to issue plan injunctions imply a fairly strong legal instrument, the application of the rule point in a totally different direction; in point of fact is that this rule has yet to be applied in accordance with the 1987 Planning and Building Act and very rarely before that.

4.3.6 Concluding Remarks on the Local and Regional Planning

The Swedish planning system has a significant influence on the possibilities for a broad implementation of wind power and in turn the possibilities to ac-

[199] Prop. 1985/86:1 p. 335

[200] The county administrative board's and the Government's possibilities to *reject* and correspondingly *issue injunctions* if national interests are neglected are valid for detail plans and area provisions (the injunction may be used also on regional plans). An overview plan may thus not become subject to the State control in the Planning and Building Act.

complish the wind power planning goal, not least since the system *in principle* implies that the municipality must assent to (i.e., plan for) the establishment of windmills on a certain location for the installation to actually take place, i.e., as a result of the plan requirement in chapter 5 s. 1. Also in practice the strong municipal influence on the use of land and water areas in connection with physical planning has shown to be of central importance for the prerequisites for wind power implementation. The plans are of central importance in the permission trial for windmill installations in accordance with the Planning and Building Act as well as the Environmental Code. On certain conditions, the Courts are restricted by the content of the plans and in other cases the plans serve as important basis for decisions. Irrespective of which, it can be concluded that the Courts do pay attention to the municipal planning when deciding upon permits, especially if the competition about land areas is intense. A statement by the Environmental Court of Appeal strengthens the conception of a municipal monopoly in the field of physical planning:[201]

> "In the light of the leading role played by the municipalities in the physical planning process, the position taken up by the municipalities carries great weight in the adjustment made by the courts in accordance with the management provisions and reasons to make other priorities regarding the use of land and water areas should normally only be the case if opposite regional or national interests make themselves felt."

The Swedish Committee Report[202] on the subject of planning and building in Sweden does very little to change the overall impression of the planning system in relation to wind power implementation issues. With the intention to facilitate the implementation process, the Committee recommends that only large windmill installations, i.e., wind farms (> 3 windmills) with a total effect of more than 10 MW, shall be subject to the obligatory permit trial in accordance with chapter 9, the Environmental Code.[203]

In addition to the recommendation to eliminate one permit requirement, the Committee suggests that it shall be possible to add areas suitable for windmill installations to the existing overview plans in order to avoid a situation

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[201] Judgement of the Environmental Court of Appeal 2001-06-21 in case M 1125-99. This particular case concerned a permit to install a new hydropower plant in the water area of Svågan in the municipality of Ljusdal, but similar writings can be found in cases regarding windmill installations. See for instance the following Judgements of the Environmental Court of Appeal: 2001-10-31 in case M 9540-99; 2002-01-18 in case M 1391-01; and 2003-12-29 in case M 623-02

[202] SOU 2005:77

[203] See further below, pp. 98-99

where the planning for a new windmill area implies that the entire overview plan has to be reformed. However, a suggestion that enables supplements to non-binding plans, like overview plans, does not imply anything unless the municipality plans for wind power, in which case the overview plan still would not have to change since it is not legally binding.

4.4 Specific Energy Related Legislation

In addition to the previously examined land use related laws, there are laws and legal rules that explicitly deal with energy related issues, such as energy planning, access to the distribution system and electrical installations. The implications of these rules vis-à-vis wind power implementation will be described next, however only in short.

4.4.1 Municipal Energy Planning

On top of the responsibility that follows from the Planning and Building Act, the Swedish municipalities are also confronted with the Municipal Energy Planning Act (Lag om kommunal energiplanering).[204] The law states that: "Municipalities shall in their planning promote energy conservation and strive for a secure and sufficient energy supply" (s. 1). Every municipality is hence obliged to have a current energy plan that covers the municipality's energy use, energy supply and energy distribution. The plan shall also include information about the environmental impacts of the covered energy activities (s. 3). The room for discretion left by this law is however extensive; the municipalities are free to make other priorities than energy conservation in the planning decisions and the law does not provide rules to enforce compliance with the requirements of the law. Hence, if the municipality choose to ignore the requirement to have a current energy plan or if the established plan is inappropriate with regard to e.g., national energy policy objectives, there are no legal instruments available to "correct" the municipality. Moreover, even if a municipality has in fact established an ambitious energy plan, the plan itself has no legal effect and may thus be neglected in future decisions. In addition, but not least important, the Act can hardly be interpreted in a way that cover the implementation of windmill installations that deliver electricity to the public grid, since this is not an issue that is related to the specific municipal energy system, as for instance central heating.

[204] For a more extensive examination of the law, see Michanek (1990), pp. 417-424

Thus, from the perspective of productive respectively contra-productive legal factors, the law on municipal energy planning vis-à-vis wind power implementation is not important.

4.4.2 Grid Connection Issues

An essential precondition to increase the share of wind power in the Swedish electricity system is the possibilities for grid-connection. However, in areas particularly suitable for wind power production, such as in the mountains or at sea, grids are often lacking. Accordingly, installations in such areas require grid-reinforcement. The legal prerequisites to draw out new or utilize existing high tension wires are given by the Electricity Act (Ellag). In addition to the requirements that follow from the Electricity Act, wiring is also subject to two other acts: the Electric Wiring Act (Ledningsrättslagen) and the Continental Shelf Act (Kontinentalsockellagen), according to which permit is required to install wires in the ground or in the air, and to submarine cables on the continental shelf. The legal preconditions regarding complementary installations to windmill installations are however not analyzed in this study.

4.4.2.1 The Electricity Act

To construct or utilize a high-tension transmission line, a network-concession (permit) from the Government is required (chapter 2, s. 1). The requirement does not include installations for electricity production or use; in practice only installations for electricity transmission (i.e., lines) require concession.[205] Network-concession may be granted for *line* (nätkoncession för linje), in which case a permit is granted to construct a transmission line with a "mainly determined line direction" or for *area* (nätkoncession för område), in which case a permit to construct a network supply mains within a certain area is granted. The main condition for network-concession is that the installation as well as the operator is *suitable* from a public point of view (chapter 2, s. 6 and 10, respectively). According to the preparatory works, the suitability requirement aim to avoid non-economic installations and unnecessary damage for third parties and is mainly applicable in concession-trials for lines.[206]

In a concession-trial for *line*, a large part of the overarching provisions in the Environmental Code shall be applied[207] (chapter 2, s. 8a) and a concession

[205] Prop. 1996/97:136 p. 119
[206] Ibid., p. 123
[207] I.e., the general rules of consideration in chapter 2, the resource management provisions in chapter 3-4, chapter 5, s. 3 concerning environmental quality standard implementation, and chapter 6: environmental impact assessment provisions

may not be granted contrary to detail plans or area provisions established in accordance with the Planning and Building Act (chapter 2, s. 8). The preconditions for network-concession for *area* are that the area forms a *suitable unit* with regard to the grid-activity and that it does not coincide with another concession area (chapter 2, s. 9).

A network-concession shall entail the necessary conditions to protect e.g., public interests, private rights, peoples' health and the environment as well as the conditions needed to promote a good management of natural resources etc (s. 11). Accordingly, it may probably be asserted that it is possible to reject applications for network-concessions that counteract such energy policy objectives like the wind power planning goal, and reversely, that concession that promote, for instance, windmill installations is supported by this act.

4.5 Additional Environmental Requirements

Although the rules that govern the use of land and water areas are essential in connection with wind power implementation issues, the Swedish Environmental Code includes also other rules of importance with reference to windmill installations that needs to be attended to. Next, the impact of the relevant parts of the overarching provisions (chapter 2, 5 and 6) and the activity related provisions (chapter 9, 11 and 17) in the Environmental Code are examined. It should be kept in mind that the application of these provisions are subject to the overall objective of the Code, and hence shall be applied in a way that promotes a sustainable development.

4.5.1 The General Rules of Consideration

The General Rules of Consideration (Allmänna hänsynsregler) in chapter 2 are a fundamental cornerstone of the Environmental Code. The consideration rules lay down obligations regarding activities and measures vis-à-vis the environment and are applicable in connection with, for example, issues relating to permissibility, permits and supervising in accordance with the Code (s. 1). In addition, the general consideration rules are applied in connection with proceedings pursuant to chapter 32, s. 12, according to which private persons can take legal action against activities that do not require a permit, in order to prevent the activity, or to enforce the operator to take precautionary measures.

An operator who wishes to install windmills has to demonstrate compliance with the obligations that follow from the consideration rules. In other words, the operator has to prove that he or she has undertaken the precautionary or protective measures necessary to protect peoples' health and the environment from damage and nuisances caused by the installation (s. 1).

With the exception of the localization requirement in s. 4, which is analysed above,[208] the main implications of chapter 2 in relation to the implementation of wind power are discussed next.

4.5.1.1 Rules of Obligation

An obligation to obtain the *knowledge* necessary to carry out the planned activity without causing environmental damage follows from s. 2. *Necessary* in this context implies that the degree or type of knowledge required depends on the nature of the activity; the more likely it is that an activity or measure has consequences for peoples' health or the environment; the more knowledge can be required.[209] It is thus possible to insist on more thorough or active knowledge-acquirement for such industrial activities as windmill installations. The provision is however generally formulated, and exactly what kind of knowledge that can be required is difficult to assess. The preparatory works points, in this context, at the more specific obligations that follow from chapter 26 s. 19 in the Environmental Code, for instance that the operator is obliged to "continuously plan and monitor" the activity in order to prevent environmental damages, and further, that the operator shall keep informed about the environmental impacts of the activity, e.g., by initiating and carrying out investigations on the matter.

The chief provision related to precautionary measures is s. 3, which e.g., states very broadly that protective and precautionary measures shall be implemented "to prevent or hinder damage or detriment to human health or the environment." In fact, s. 3 covers all precautionary measures in s. 2 and 4-6, which all may be seen as specifications of s. 3 indicting what is especially important to consider.

As for the operation of windmills, noise pollution is explicitly mentioned in the preparatory works as a potential detriment to human health, against which precautionary measures may need to be taken. The turbine's visual intrusion may also require precautionary measures in order to prevent deprivation of valuable natural or cultural environments.[210] The obligations laid down in s. 3 are however generally held and the precautionary measures necessary to avoid damage must be decided on a case to case basis in consideration of the impact of the activity in relation to the environment in question, i.e., the

[208] See part 4.3.4

[209] Prop. 1997/98:45 part II, p. 14

[210] Prop. 1997/98:45 part II, p. 15. Although windmill installations does not *irreversibly* affect valuable natural or cultural areas, it may still be argued that the occurrence of windmills prevent the present generations from receiving their due of the value.

environment's specific prerequisites. In the case of windmill installations, this implies that the precautionary measures necessary to prevent or reduce e.g., noise pollution and visual intrusion shall be decided in view of such factors as the distance to populated areas and the area's topographic prerequisites and so on.

Chapter 2, s. 3 has been subject to assessment of the Environmental Court of Appeal on two occasions concerning windmill installations: In the first case[211] the Court was to decide whether the inconvenience caused by the shadow effects from a windmill implied that the operator should be obliged to discontinue the activity or if restraints for the installation should be imposed. According to guidelines issued by the National Board of Housing, Building and Planning (Boverket) on the subject of planning and trials for windmill installations, the shadow effects measured in real-time in a disturbance sensitive area should not exceed eight hours per year. The Court asserted that it shares the assessment of the Board and concluded the relatively moderate shadowing (approximately 3 hours per year) caused by the windmill in question did not call for an injunction to restrain the activity. The windmill was planned to be located in the municipality of Laholm.

The other case[212] concerned the acceptable level of noise from a windmill installation that the operator wanted to locate in the municipality of Motala. Due to the specific character of noise from windmills and the uncertainties in connection with the impact of such noise, the precautionary principle in chapter 2, s. 3, paragraph 2 was brought to the fore. The Court as well as the inquired authorities considered that the current uncertainty regarding the inconvenience of noise from windmills should imply stricter requirements than for other industrial noise, and hence not exceed 40 dB(A) in residential areas. Hence, the installation was permitted on condition that the noise level did not exceed the accepted level.

In the latter case, the Court discussed the Swedish Environmental Protection Agency's (SEPA) guidelines from 1978 for industrial noise pollution vis-à-vis the noise pollution caused by windmill installations. The Court concluded that the special character of the noise from windmills implied that the SEPA guidelines could not "without further notice" be analogically applied for windmill installations. Hence, in keeping with the opinions expressed by SEPA, the National Board on Housing, Building and Planning as well as the Sahlgrenska Academy at Gothenburg University, the Court made the assessment that 40 dB(A) was an acceptable level of noise pollution in residential areas.

[211] Judgement of the Environmental Court of Appeal 2003-09-16 in case M 3554-02
[212] Judgement of the Environmental Court of Appeal 2003-11-02 in case M 9282-02

For the same reason as in the above, but with reference to *professional activities*, s. 3 requires that *the best possible technology* is used in connection with e.g., construction, design, operation, liquidation etc. According to the preparatory works "the [best possible] technique should, from a technical and economic viewpoint, be industrially possible to use within the branch in question."[213] The assessment of what in fact is the best possible technology, thus include two explicit criteria: 1) that the technology is in fact *available* somewhere in the world, which implies that, to qualify as "the best possible" the technology has to be *functional* in the sense that it cannot not exist merely on the experimental stage, and 2) that the costs associated with the use of the technology are bearable from the point of view of the activity in general, which implies that the branch in question *typically* shall be able to meet the expenses of using the technology.[214] With reference to wind power, a considerable part of the environmental impacts typically caused by windmill installations may be hindered or prevented by means of various technical solutions[215], and unless the costs associated with the best available technology are considered unbearable for the wind industry in general, it can be required.

The strongest legal support for wind power is found in chapter 2, s. 5, which lays down a requirement to conserve, and "wherever possible" reuse and recycle energy. Hence, all activities and measures are subject to a general obligation to save and make the use of energy more efficient. In addition, the last sentence of s. 5 states that: "Preference shall be given to renewable energy sources." The provision thus reflects the recycling/reusing principle, but the legal implications, at least as regards the renewable energy statement, are rather scarcely developed in the preparatory works, which merely states that the principle aims for both energy production and energy use.[216] The provision may imply, for instance, that a prospective farmer in the need for electricity supply is obliged to choose wind power as energy source if the property is suitable for this, for example encloses a field with good wind conditions etc.

4.5.1.2 Cost-Benefit Assessment

The obligations that follow from s. 2-6 are applicable unless compliance with them is "deemed unreasonable"; the benefits of the preventive and protective measures required shall thus be viewed in relation to their costs. The rationale for the assessment is thus basically that there is a point where the marginal

[213] Prop. 1997/98:45 part II, p. 17
[214] Prop. 1997/98:45 part I, p. 232
[215] See further chapter 3 above
[216] Prop. 1997/98:45 part II, p. 21

benefits of a protective or preventive measure simply not balance the costs of that measure and hence the requirement shall be considered unreasonable.[217] The obligations may however not be set too low; according to the preparatory works, all "meaningful" measures in relation to the objectives of the Code shall be undertaken.[218] Still, in view of the brief contents of the provision, what is *meaningful* is likely to equal what is considered *reasonable* as a result of the cost-benefit assessment.

In view of the fact that s. 7 cannot increase the obligations that follow from the consideration rules, only weaken them, the cost-benefit assessment may take some of the edge of the obligations that a windmill operator stands facing in terms of various protective and precautionary measures.

4.5.1.3 The Remediation Responsibility

The consideration rules do not only oblige persons to undertake measures to prevent environmental damages, they also lay down a responsibility to remedy any damage or detriment that they have caused (s. 8). The provision reflects the Polluter Pays Principle (PPP), which basically implies that the polluter, i.e., the person that causes damage, is obligated to prevent and remedy damage and nuisances.[219] Although damage from pollution is the core, the provision applies also to other kinds of damages to health or the environment. For a windmill operator s. 8 implies that he or she is responsible – not only to prevent that the windmill installation causes damage or detriment to human health or the environment, according to s. 2-7 – but also to remedy any damages caused by the installation, for instance damage caused by tossing ice. Besides measures to remedy the damage done, the remediation responsibility in s. 8 can also imply a liability to pay damages, if certain preconditions in chapter 32 of the Code are fulfilled.[220] This implies that it may be possible to claim damages for reduced real-estate values as a result of e.g., visual intrusion and noise from windmill installations.[221] The issue of the legal preconditions for

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[217] Prop. 1997/98:45 part I, pp. 231-233

[218] Ibid., p. 232

[219] For a thorough examination of the remediation responsibility, see Darpö, J. (2001). *Eftertanke och förutseende. En rättsvetenskaplig studie om ansvar och skyldigheter kring förorenade områden*.

[220] Prop. 1997/98:45 part II, pp. 25-26. See also chapter 32, the Environmental Code

[221] In a court case from 1988 (NJA I 1988:376) concerning the installation of a transmission wire across private property, the property owner claimed damages for e.g., aesthetic degradation and psychical disturbances (due to the perceived risks involved in living near the wire's electromagnetic field). The Supreme Court however decided that the disturbances were within acceptable limits in view of the local conditions, and did not impose damages

damages in connection with windmill installations falls however outside the scope of this study.[222]

It is possible that the risk for a future requirement to remedy or, more likely, to pay damages, occasionally can have some negative impact on the willingness to invest in wind power in certain areas. However, in consideration of the relatively small environmental impacts of wind power in general and the fact that the installations are not considered to cause significant damages, this legal obstacle is deemed to be of minor importance in practice

To conclude, the broad field of application as well as the actual content of the consideration rules imply that they are indeed important in the context of wind power implementation issues; some of the provisions explicitly promote an increased capacity of wind energy, such as s. 5, whereas others, such as s. 4 may well prove to hinder such development.

4.5.2 Environmental Quality Standards

Through the adoption of the Environmental Code the position for so called environmental quality standards (miljökvalitetsnormer), was moved forward.[223] Accordingly, chapter 5 in the Code lays down rules on environmental quality standards and environmental quality management.

The main difference between the instrument of quality standards compared to e.g., the traditional command-and-control system is a difference in perspective; the basis for a quality standard is the *reactor*, i.e. the status of the

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for reduced real-estate value. In another case (NJA I 1999:385) disturbances in terms of noise pollution and aesthetic degradation were caused by a heavily trafficked road. The noise pollution caused by the traffic was considerable (65-82 dB(A) outside the buildings during summertime) and the Supreme Court decided that the reduced value of the property as a result of the heavy noise and the aesthetic degradation exceeded the acceptable limits and imposed compensation corresponding to 5 percent of the properties' previous value.

[222] It is difficult to assess to what extent there will be claims for damages for disturbances caused by windmills, and if such claims will actually result in compensation; the standard for noise pollution from windmills is 40 dB(A) in residential areas (thus well below what was the case in NJA I 1999:385), but on the other hand windmill installations are yet to become common phenomenon across Sweden.

[223] Before the adoption of the Environmental Code, the rule type was found in e.g., the Health Protection Act (Hälsoskyddslagen) where standards for "sanitary nuisance" and "significant nuisance" were laid down. Environmental quality standards have however been a common occurrence outside of Sweden since the 1970s, first and foremost in the USA and later within the European Community. See Gipperth, L. (1999). *Miljökvalitetsnormer. En rättsvetenskaplig studie i regelteknik för operationalisering av miljömål*, p. 24-27 and 29-33

environment itself, rather than the *actor*, for instance the operator undertaking an environmentally hazardous activity, which is typically the case in a system based on command-and-control.[224] Quality standards shall thus be based on knowledge on what the environment can bear (without considering technical and economic circumstances) and function as a means to manage current environmental problems as well as to prevent future damages to the environment,[225] but also as a way to achieve the Swedish Environmental Quality Objectives.[226]

Thus, chapter 5, s. 1, the Environmental Code, states that the Government may prescribe standards for the quality of the environment in particular areas or for the country as a whole. The government may thus lay down a standard that specifies for instance the level of pollution that can be allowed without causing significant nuisances to the environment.

According to chapter 5, s. 2, item 2, quality standards for levels of disturbance that shall be *aimed at* or that *must not be exceeded* after a certain time or during a period of time may also be imposed, which has direct implications for the establishment of windmills, since an operating wind turbine typically cause noise pollution.

Authorities and municipalities are responsible for the accomplishment of environmental quality standards (s. 3). This implies e.g., that in the presence of a quality standard, the permit authority cannot, in principle, approve of any new activity that will lead to a violation of the standard. Hence, if a quality standard for noise is laid down for an area (as a result of widespread occurrence of heavy industry), and the Environmental Court receives a permit application for the installation of a wind farm in the area, the Court may not, as a main rule, give permission to the installation.[227]

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[224] Ibid., p. 49

[225] Prop. 1997/98:45 part II, p. 42

[226] Ibid., p. 43. The Swedish Environmental Quality Objectives are: Reduced Climate Impact, Clean Air, Natural Acidification Only, A Non-Toxic Environment, A Protective Ozon Layer, A Safe Radiation Environment, Zero Eutrophication, Flourishing Lakes and Streams, Good-Quality Groundwater, A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos, Thriving Wetlands, Sustainable Forests, A Varied Agricultural Landscape, A Magnificent Mountain Landscape, A Good Build Environment, A Rich Diversity of Plant and Animal Life. Swedish Environmental Protection Agency, more information available on the internet:
In English see: http://www.internat.naturvardsverket.se/documents/objectiv/objectiv.htm

[227] However, if the windmill operator takes measures that imply that damage caused by other activities is terminated or reduced to the extent that "materially improves" the possibilities to comply with the quality standard, a permit for the installation may still be granted (chapter 16, s. 5). Thus, a windmill operator who wishes to install a wind farm in an area

The presence of environmental quality standards for e.g., highest acceptable level of noise may thus hinder the development of wind power. On the other hand, since it is possible to impose environmental quality standards for large area, i.e., for regions and even for the country as a whole, wind power may also turn out a favourable option as a result of other quality standards; consider a scenario were quality standards for sulphur dioxide are imposed in several parts of Sweden (as a result of heavy acidification) and the standards are already exceeded. This would in principle rule out the establishment of certain energy installations, like coal-fired plants, whose emissions would add to the acidification. As a result, the standards would indirectly pave the way for increased installed capacity of sulphur-free energy technology, like wind power.

4.5.3 The Permit Process – Implications for the Diffusion of Wind Power

4.5.3.1 Wind Power as an Environmentally Hazardous Activity

Activities that involve the use of land and that cause emissions or detriment to the environment are often regarded as environmentally hazardous. In the Swedish Environmental Code, environmentally hazardous activities (miljöfarlig verksamhet) are defined in chapter 9, s. 1 as:

1. the discharge of wastewater, solid matter of gas from land, buildings or structures onto land or into water areas or groundwater;
2. any use of land, buildings or structures that entails a risk of detriment to human health or the environment due to discharges or emissions other than those referred to in subsection (1) or to pollution of land, air, water areas or groundwater; or
3. any use of land, buildings or structures that may cause a nuisance to the surroundings due to noise, vibration, light, ionizing, non-ionizing radiation or similar impact."

Accordingly, wind power is *per definition* an environmentally hazardous activity; the noise pollution, the shadowing effects, the possibilities of tossing ice and the landscape impacts etc. caused by operating windmills makes the activity environmentally hazardous in accordance with item 3 above.

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already enclosing a number of windmills and that is subject to a quality standard for noise (that is exceeded) may receive a permit if a new technology that implies less noise is applied to the new windmills and the operator somehow manages to implement this also for the existing installation and hereby reduces the total noise impact in the area.

The main consequence of an activity being defined as environmentally hazardous in the meaning of the Environmental Code is the possibility for the Government to impose a permit requirement, implying that the activity may not be undertaken without prior permission from the permit authority (s. 6). Accordingly, the installation of wind farms or single (larger) windmills shall typically be tried for permit by the Environmental Court or the county administrative board, or announced to the municipal board in accordance with the Code.[228] A permit gives the operator right to e.g., install and run windmills and is usually connected to certain conditions for the activity, for instance regarding noise levels, shadows etc. In this way, the permit, or rather the conditions for the permit, concretizes the general rules of consideration in chapter 2, the Environmental Code.[229]

> According to precedent court cases *the level of noise* for operating windmills in residential areas shall not exceed 40 dB(A)[230] and the shadowing effects in shadow-sensitive areas, i.e., close to residents, measured in real-time, shall be no longer than maximum 8 hours per calendar year.[231]

The legal effects of a permit to, say, operate a wind farm, is regulated in chapter 24, s. 1, the Environmental Code which states that: "the permit shall be valid against all other parties as far as the matters examined in the judgement or decision are concerned." The possession of a valid permit thus basically implies that the operator can carry on with his or her activity *continuously*, on condition that the terms of the agreement are not violated. The possibilities to reinforce the environmental requirements already decided on in the permit are thus somewhat limited: in accordance with chapter 24, s.1, sentence 4 and 5, legal requirements pursuant to other laws may restrict the rights that follow from a valid permit, as may certain ordinances issued by the Government or governmental authorities. Hence it follows that – notwithstanding the existence of a permit to pursue the environmentally hazardous activity, the

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[228] According to *the Ordinance on Environmentally Hazardous Activity and Health Protection* (1998:899), s. 5, the following windmill installations are subject to an *obligatory* trial for permit in accordance with chapter 9, s. 6: a) wind farms consisting of ≥ 3 turbines with a joint effect of no less than 10 MW (tried by the Environmental Court) and b) other wind farms or single turbines with a joint effect of > 1 MW (tried by the county administrative board).

[229] See Michanek and Zetterberg (2004), p. 253

[230] Judgement of the Environmental Court of Appeal 2003-11-02 in case M 9282-02 and 2004-07-05 in case 9178-02

[231] Judgement of the Environmental Court of Appeal 2003-09-16 in case M 3554-02 and 2004-07-05 in case 9178-02

installation of windmills may require additional permits, for instance a building permit in accordance with the Planning and Building Act.[232]

Moreover, under certain circumstances it is possible for the permit authority to withdraw a valid permit or parts of a permit and to prevent the activity to continue (chapter 24, s. 3), e.g., if the activity prove to "cause significant adverse effects" that was not foreseen at the time of the issuance of the permit (s. 3, item 3), or if it is necessary to comply with EC-law (s. 3, item 7) etc. Hence it follows that unforeseen environmental impacts of a windmill installation, for instance in relation to the turbines' adverse effects on bird life, may imply that the permit is withdrawn.

On certain conditions, the permit authority may also *revise* a valid permit for an environmentally hazardous activity (e.g., a windmill) and determine new or altered permit conditions.[233] This is possible when ten years have elapsed since the permit was issued, or earlier if necessary to comply with EC-law (chapter 24, s. 5, item 1). Changes can be obtained even before these time limits are exceeded if certain preconditions are at hand, e.g., if the activity proves to cause unpredicted significant damage to the environment (s. 5, item 5); if the conditions in the area have significantly changed (s. 5, item 6) or, if significantly improved protection can be obtained with new technology, for instance reduced noise pollution (s. 5, item 7). Accordingly, new or altered permit conditions may be introduced in terms of for instance the accepted noise levels, if the nearby area is built with houses, notwithstanding that the windmills were installed before the houses were built.[234] However, since the possession of a permit as a matter of fact implies that the permitted activity may be carried out, the permit authority is not allowed to impose conditions or lay down rules in accordance with chapter 24, s. 5, that imply that the activity is significantly hampered or can no longer be pursued (chapter 24, s. 5, paragraph 4).[235]

Revision of permits in accordance with chapter 24, s. 3 – 5 can only be initiated by certain authorities[236] or by a holder of a permit, in the latter case

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[232] See further Michanek and Zetterberg (2004), pp. 355-357

[233] If a permit is limited in time, revision occurs when the permit has expired; otherwise an eventual revision has to be initiated on the basis of the provisions in chapter 24, the Environmental Code.

[234] See further Michanek and Zetterberg (2004), p. 259

[235] See further Prop. 1997/98:45 part II, p. 259

[236] I.e., the Swedish Environmental Protection Agency, the Legal, Financial and Administrative Services Agency, the competent administrative board, and in some cases municipalities, if the municipality have taken over the supervisory responsibility from the county administrative board.

on condition that it is obvious that the terms of the existing permit are stricter than necessary or no longer needed (chapter 24, s. 7 and 8, respectively). Accordingly, private individuals and NGOs that might be affected by the activity are excluded from the possibility to instigate revisions of permits.

All things considered, the main consequence that follows from holding a valid permit to operate a windmill installation *from the point of view of the operator* is a certain degree of *certainty*; roughly as long as the terms of the permit is not violated, and no extraordinary and unpredicted events occur, the activity may proceed.[237] The value of holding a permit is thus mainly the safety it implies. For the point of view of individuals who perceive themselves as negatively affected by the activity, on the other hand, the certainty that the permit implies may well be viewed as an obstacle towards a desired change, with reference to windmill installations, for instance in terms of reduced noise pollution or improved view; the permit precludes the application of chapter 32, s. 12 and thereby the right for neighbours to bring a civil law suit in order to improve the environmental protection. The neighbours are in this situation completely in the hands of the supervising authorities' good will.[238]

4.5.3.2 Legal Implications of Windmill Installations without Permit

All windmill installations do not require a permit; the installation of smaller windmills (with a total effect of more than 125 kW but less than 1 MW), is instead subject to a notification procedure in which the operator notifies the municipal board about the planned activity in accordance with chapter 9, s. 6.[239] Hence it follows that even smaller installations, i.e., with a total effect of less than 125 kW, require neither permit nor notification in accordance with the rules on environmentally hazardous activities.[240] However, even if a wind-

[237] In relation to chapter 24, s. 1, i.e., that a permit is valid as far as the matters examined in the judgement or decisions are concerned, chapter 26, s. 9 implies that matters not examined in the permit process may well be subject to injunctions. Hence, if the terms of a permit for a windmill installation do not include accepted noise levels, the injunction may refer to such levels and thus oblige the operator to take precautionary measures to reduce the noise pollution from the installation. See further Prop. 1997/98:45 part II, pp. 272

[238] Chapter 24, s. 1 does however not exclude the right to claim for damages.

[239] In conformity with the permit procedure, the Government has prescribed that activities indicated with a C in the appendix to the ordinance on environmentally hazardous activity and health protection (1998:899) may not be installed without prior notification to the municipal board (s. 21)

[240] The installation may still require a building permit in accordance with the Planning and Building Act, if the diameter of the rotor blades exceeds 2 meter or if the windmill is placed on a shorter distance from the border than the height of the turbine, or if the windmill is set up on a building (chapter 8, s. 2, p. 6).

mill installation is not subject to the permit procedure for environmentally hazardous activities, there are ways of enforcing environmental requirements in accordance with the Environmental Code, mainly by means of the supervising functions (foremost according to chapter 26, s. 9), but also through the right for individuals to take legal action against environmentally hazardous activity pursued without permission in accordance with chapter 32, s. 12.

4.5.3.3 The Government's Permissibility Assessment and the Municipal Right of Veto

In addition to the permit required in accordance with chapter 9, windmill installations may also be subject to the Government's permissibility assessment (regeringens tillåtlighetsprövning) in accordance with chapter 17, the Environmental Code. The rationale to have a political body assessing the permissibility of certain activities was originally that only the Government was considered to have the ability to undertake a comprehensive assessment of all the aspects of an activity, including political and environmental such. However, as a result of a more far-reaching and detailed environmental law a large part of the permissibility assessment was eventually covered by other trials for permits and the Government was in time left with a lot less room for discretion in the assessment; the basis for the Government's permissibility and the permit trial for, for instance, environmentally hazardous activities is basically the same (both trials imply e.g., an assessment in accordance with the general rules of consideration and, as for windmill installations, the resource management provisions).[241] Thus, in August 2005, the rules regarding e.g., the Government's obligatory permissibility assessment were amended, but as for the kind of activities for which it is possible to launch such an assessment, they still have in common that they represent important social interests that are likely to become subject to competition, and at the same time involve significant environmental impacts.[242]

As a result of the amendments, windmill installations are no longer included in the obligatory assessment of new activities in accordance with s. 1. The Government may however *reserve the right* to assess the permissibility of a windmill installation *if* the activity requires a permit in accordance with the Code (paragraph 2) and on condition that "the scope of the activity is likely to be substantial or intrusive" in view of the objective of the Code (paragraph 2, item1), or that the installation is likely to cause damage to specially protected

[241] See further Prop. 2004/05:129 p. 80
[242] Prop. 2004/05:129 p. 80

areas (paragraph 2, item 2)[243]. Trials in accordance with s. 3 is furthermore not restricted to new activities; extensions of existing installations, such as additional turbines to an already existing wind farm, may thus also be permissibility assessed on condition that the expansion require a permit in accordance with the Code. Windmill installations that require a permit in accordance with chapter 9, may thus become subject to the permissibility trial as well.

The Government shall further reserve the right to assess the permissibility of certain *new* activities, here among the installation of wind farms (≥ 3 turbines with at total effect of at least 10 MW), *if* the municipal council requires it and on condition that such an assessment is possible with regard to what is stated hereof in s. 3. The Government may turn down such a requirement from the municipality only if "special circumstances" are at hand, for instance that the selected area is already exploited and the installation therefore will not be intrusive.[244]

Thus, on initiative of the municipal council, a windmill installation may become subject to the Government's permissibility assessment provided that the installation is new and large enough for s. 4 a, item 7 to apply *and* that the environmental impacts of the installation are likely to be substantial or intrusive in consideration of the objective of the Environmental Code, in which case s. 3, *item 1* is valid. Hence, a prerequisite for a trial in accordance with s. 4 a, item 7 is that s. 3 is applicable, which implies that the municipal council may not require a permissibility assessment solely on the basis of the size of the installation; the conditions to reserve the right to assess an activity laid down in s. 3 (for instance item 1), *must also be met*. A permissibility assessment may also be required by someone else than the municipal council provided that the circumstances in the individual case are such that s. 3, item 1, 2 or 3 is applicable. If such an assessment is initiated by another party than the municipal council, the Government is not obliged to consult the council on the subject.[245]

The purpose of the Government's permissibility trial is to the assess whether the installation may in fact come about or not in view of e.g., the objective, the consideration rules and the management provisions of the Environmental Code. Finally, if the Government find that a windmill installation is

[243] I.e., valuable areas listed in accordance with chapter 7, s. 27

[244] Prop. 2004/05:129 p. 95

[245] Ibid. However, in view of the municipal right of veto, the preparatory statement that the Government is not obliged to consult the municipal council regarding whether an activity shall be permissibility assessed or not if the trial is initiated by another party, does not really seem to matter; the municipality still has more or less unlimited power to prevent the activity.

in fact permissible, it may lay down conditions to protect the interests of the public (s. 7), for instance by obligating the operator to financially participate in reinforcement of the road network (if the installation will increase transports) or perhaps in necessary reinforcements of the grid.[246]

For certain activities, the municipal council has a right of veto. This means that the Government may only give permission to a windmill installation that is assessed in accordance with chapter 17, s. 3 item 1, if the municipal council has given their consent (chapter 17, s. 6, paragraph 2). The municipality thus has the power to prevent the development of wind power in the municipality, since the right of veto only very occasionally may be overruled by the Government; the windmill installation has to be considered "of the utmost importance with regard to the national interests" for the Government to be able to overrule the municipal right of veto (s. 6, paragraph 3), and even *if* the installation is deemed to be "utmost important", the exception from the right of veto does not apply if another place is found more appropriate for the installation, for instance by providing better wind conditions, *or* if an equally appropriate place has been designated within a municipality that is likely to approve of the establishment (s. 6, paragraph 4).

All in all, the municipal right of veto in connection with the government's permissibility assessment is yet another example of the extensive decision power provided to the municipalities in accordance with Swedish law.

4.5.4 Legal Preconditions for Offshore Windmill Installations

In addition to the requirement that pursue the consideration rules and the resource management provisions, installations of windmills *offshore* are subject to the special provisions regarding hydraulic (water) operations in chapter 11 in the Environmental Code (s. 2, item 1). As a main rule, all water operations require a permit, unless the law explicitly says otherwise (s. 9). However, according to chapter 11, s. 9 a, the Environmental Code, the Government may issue regulations with the purpose to replace the permit requirement for certain (smaller) water operations by a notification procedure, according to which the operator is obliged to notify a designated authority before the activity commences.[247] Still, it is possible for the supervising authority, i.e., the county administrative board, to enjoin upon an operator whose activity "only" is sub-

[246] Prop. 1997/98:45 part II, p. 222

[247] In the preparatory works, the addition of s. 9 a is referred to as (titled) "notification duty for *smaller* hydraulic operations" (emphasis added). Accordingly, *certain* hydraulic activity probably correspond to *smaller* such. Prop. 2004/05:129 p. 68

ject to the notification obligation to apply for a permit in accordance with certain directions from the Government thereof (s. 9 a, paragraph 2).[248] Another exception from the main rule that permit is required for water operations is given by s. 12, which states that a permit or a notification is *not* required if it is obvious that neither public nor private interests will be damaged as a result of the activity's influence on the water conditions. With "water conditions" is first and foremost intended the depth and level of the water, but also other water related activities like navigation and fishing etc. The exception from the permit requirement shall however be restrictively applied and the operator's burden of proof in terms of showing that it really is obvious that no damage is done by the installation is very strict.[249]

In view of the fact that the notification procedure for water activities are relatively new, it is difficult to determine whether windmill installations will ever be considered "small" water operations and hence "only" require a notification. However, in consideration of the degree of interference and thus possible environmental impacts in connection with the installation and operation of windmills offshore, a reasonable presumption is that wind power establishments are unlikely to become subject to neither the notification procedure in s. 9 a nor the general exception from the permit requirement in s. 12.

The special conditions applying to water operations in s. 6 states that: "Hydraulic operations may only be undertaken *if the benefits* from the point of view of public and private interests *are greater than the costs and damages* associated with them." (Emphasis added). The purpose of this social cost-benefit rule is to prevent installations or activities in water which are not justified from an economic point of view. According to the preparatory works, the reason for this somewhat extensive room for discretion is to initiate a "relatively free and therefore comprehensive assessment of the water activity" based on "reasonable economic analyses."[250]

> The social cost-benefit rule was applied by the Environmental Court of Appeal in a case regarding an offshore installation of seven windmills at Utgrunden in Kalmarsund in the municipality of Mörbylånga.[251] The main question at issue was what were to be included in the cost-benefit assessment. The Court came

[248] According to the preparatory works, the Government will decide in which cases it is possible for the authority to impose a permit obligation for the activities subject to the notification obligation. Ibid., p. 93
[249] Prop. 1997/98:45 part II, p. 134
[250] Ibid., p. 129
[251] Decision and statement from the Environmental Court of Appeal to the Government 2000-01-17 in Case M 833-99 together with the decision of the Government 2000-03-09

to the conclusion that the state subsidies granted to wind power, i.e., the investment subsidies and the environmental bonus, should be regarded as benefits from a public point of view (i.e., an adapted economic value) in the weighting process. The subsidies reflect, the Court argued, the implicit value of attaining an increased share of renewable energy. The area in question was however protected in accordance with s. 3 and possibly also s. 6 of the basic resource management provisions due to its importance as a bird migration track and seeing that the case involved balancing between, on the one hand, the exploitation interest, and on the other hand the interest of protecting the ecological values, the Court handled the case over to the Government in accordance with chapter 21, s. 7, the Environmental Code.[252]

The Government did however share the opinion of the Court and concluded that the increased supply of renewable energy as a result of the establishment was in compliance with the environmental objectives of the Code and that the benefits of the installation would in this case exceed the costs and damages that the activity may cause. The Government as well as the Court was of the opinion that the risks of negative impact on the bird life was difficult to assess with reference to the current knowledge about the (offshore) environmental impacts of windmill installations, but that the facts at hand on the subject matter still indicated that the impacts of windmills on the life of birds in most cases were minor. In addition, both the Court and the Government noted that, as a consequence of the previous permit trial in accordance with the Environmental Protection Act, it was possible to prevent continued operation if the installation should prove to cause significant adverse effects that were not predicted when the permit was issued.[253]

The above statements by the Court and the Government could prove to be important for the future offshore wind power in Sweden. The case illustrates how the wind power interest – as a mean to achieve important national (and global) energy policy goals – can be visualized at the implementation stage and weighted against any local damages caused by the development.

Nevertheless, the lack of general knowledge about the environmental impacts of offshore wind turbine installations may imply (uncalled for) time consuming assessments and increased investments costs, which may hamper the

[252] According to chapter 21, section 7, paragraph 2, the Environmental Code, the Environmental Court shall refer a case to the Government, together with its own opinion, if the case "relates to a public interest of great importance other than those referred to in chapter 1, section 1."

[253] See Chapter 24, s. 3 p. 3, the Environmental Code

implementation process.[254] If the general knowledge-base regarding environmental impacts of offshore installations increases, the operators would have to assess only the site specific aspects of the establishment, which, from a wind energy implementation perspective, would be preferable.[255]

4.5.5 Environmental Impact Assessments

With the intention of making a comprehensive assessment of the environmental consequences of, for instance a wind farm, possible, every permit application for windmill installations in accordance with the Environmental Code shall include an environmental impact assessment (miljökonsekvensbeskrivning) (EIA) (chapter 6, s. 1, the Environmental Code). The purpose of an EIA is twofold: a) to identify and describe the possible impacts that a planned activity may have on the surroundings (including impact on humans, animals, plants etc.) and on the management of natural resources (including energy) and the interaction among these factors[256], and b) to enable an overall assessment of these environmental impacts on human health and the environment.

An EIA thus form a basis for decisions about e.g., permits, permissibility, conditions etc. in accordance with the Code and as such it functions an essential component in the overall environmental assessment (miljöprövningen) of an activity; the direct and indirect environmental consequences of, say, the establishment of a wind farm, that are described in the EIA-document, add up to the knowledge of wind farms vis-à-vis the environment that the authorities base their decisions on.

The EIA *procedure* includes consultations with the county administrative board, the supervising authorities and private persons who are likely to be affected by the activity, i.e., foremost neighbours, but also others who can be assumed to be particularly affected by the activity. The preparatory works mentions organizations as a possible "others" in this context, provided that it is likely that the organization is particularly affected by the planned activity.[257] If the activity is likely to "have a significant impact on the environment" the consultation group is extended to include also other authorities, municipalities, NGOs etc., as well as the parts of the public that are likely to be affected by

[254] See Strategic Plan of IEA R&D Wind, 1 November 2003 – 31 October 2008 p. 11 and Wind Directions, Focus on Offshore, EWEA document 2004 ("Dutch Presidency Leads Offshore Policy Debate"). http://www.ewea.org/
[255] Ibid.
[256] This broad assessment may in other words include aspects that falls beyond the specific permit considerations
[257] Prop. 2004/05:129 p. 89

the activity (s. 4). The consultations shall precede the permit application and the establishment of the EIA and aim at the localization and scope of the activity as well as the outline and contents of the forthcoming EIA (s. 4, paragraph 2). The possibilities to participate in the early stages of the permit process for the installation of windmills are thus relatively good; everyone has a right to acquaint with the documents and every opinion shall be attended to (s. 8 and 9, respectively).

According to s. 4 a, the Government is authorized to issue regulations indicating that certain activities *always* shall be assumed to have a significant environmental impact and that thus must follow the extended consultation procedure, here among wind farms with ≥ 3 windmills with a joint effect of 10 MW and other wind farms or single turbines with a joint effect of > 1 MW.[258] For the case the Government has not decided that an activity always shall be assumed to have a significant impact on the environment, the county administrative board shall, during the consultation procedure, assess the planned activity and, on a case to case basis, decide whether the activity is likely to have a significant environmental impact or not and hence if necessary increase the consultation group (s. 5).[259]

An EIA shall include the information necessary with respect to the purpose of the assessment (s. 7). In other words, the information about the environmental impacts of the planned activity shall be sufficient to make a comprehensive assessment possible.[260] However, if it is decided that the activity is likely to have a significant environmental impact, the law specifies that the following information must be included in the EIA (s. 7 item 1-5):

1. A description of the activity including planned location and design
2. A description of the measures planned to avoid, mitigate or remedy damage to the environment
3. The information necessary to determine and assess the planned activity's impacts on human health, the environment etc.
4. "A description of possible alternative sites and alternative designs, together with a statement of the reasons why a specific alternative was chosen and a description of the consequences if the activity or measure is not implemented." I.e., the so called zero-alternative
5. A non technical summary of the information in item 1-4

[258] See Förordning om miljökonsekvensbeskrivningar (1998:905), appendix 1
[259] Prop. 2004/05:129 p. 91
[260] According to the preparatory works "it is important *not* to insist on more far-reaching obligations on the environmental impact assessment than what is necessary in every single case." (emphasis added) Prop. 2004/05:129 p. 92

Of particular interest in the context of the installation of windmills is the requirement referred to in s. 7, item 4, which implies that the operator is obliged to partly account for alternative locations for the installation when such locations are possible[261] and partly for alternative designs. The latter requirement implies that the county administrative board, suitably in conjunction with the Government, in matters regarding the environmental impact assessment for activities that are likely to have a significant impact on the environment, may require that the operator examines for instance alternative *ways* to meet its energy demand (s. 7, paragraph 2).[262] Accordingly, it may be possible to require that, say, a large farm, instead of meeting its electricity demand by use of the public grid (which transmits all sorts of electricity, not only "green" such), installs windmills to reduce the overall environmental impacts of the activity. The implications of the requirement to examine alternative sites in relation to the environmental impact assessment are illustrated below by case law examples.[263]

4.5.5.1 Case Law

In two court cases from 2001 and 2002 regarding windmill installations the operators' appeals against declined permit applications was rejected because the operators' had failed to prove that the proposed locations could achieve the purpose of the activity with a minimum of damage or detriment and without unreasonable costs. In both cases the Environmental Court of Appeal emphasized the necessity of examining alternative locations for the installation as well as the environmental impacts of these, *especially* when the proposed location is strongly questioned.

> In the first case,[264] the operator had failed to account for alternative locations altogether with the explanation that the company did not have access to any other estate, and the Court hence rejected the appeal. In the other case[265] the operator completed the insufficient EIA with respect to the account for alternative locations, but the Court considered the assessment too scanty and declined the appeal.

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[261] I.e., if the character of the activity implies that alternative locations are not at hand, i.e., very site-specific activities such as extraction of minerals etc. However, according to the preparatory works, the account for alternative sites is necessary for the EIA to serve its purpose and should be possible in most cases. Prop. 1997/98:45 part II, p. 63

[262] Prop. 1997/98:45 part II, pp. 63-64

[263] This requirement is also examined above, see part 4.3.4

[264] Judgement of the Environmental Court of Appeal 2001-10-31 in case M 9540-99

[265] Judgement of the Environmental Court of Appeal 2002-01-18 in case M 1391-01

In a decision made by the Environmental Court of Appeal[266] regarding a permit application for a windmill installation, the Court found the EIA insufficient to serve as a basis for the permit assessment since the company had neglected to call for (extended) consultation in accordance with directions of the county administrative board. The Environmental Court in the district court of Växjö, had declined the application and the Environmental Court of Appeal found the judgement of the inferior court to be correct.

However, in a more recent case on the subject of the installation of 6 windmills, the Environmental Court of Appeal approved the application for permit even though the EIA did not account for any alternative location for the windmills. According to the Court's line of reasoning, the earlier statements regarding the imperative demand for an examination of alternative locations referred to cases where the proposed location was strongly questioned. In this case, the landscape impact of the windmills was considered to be moderate and the company had assumed the responsibility for reduced noise pollution and limited shadow effects. In respect of this, the Court concluded that: "the proposed location is not prevented by s. 4, the Environmental Protection Act and an examination of alternative sites is hence not necessary in accordance with s. 13, the Environmental Protection Act."[267]

Accordingly, it might be argued that the Court with the last case has in fact modified case law: It appears as if the earlier statements made by the Court regarding the obligation to examine alternative sites implied that the Court considered such an examination as *typically* being required, and thus not only in cases where the siting was controversial. However, in the last case, the Court seems to deviate from its former interpretation of what is to be considered in the assessment of the environmental impacts of an activity.[268]

In sum, the legal rules on environmental impact assessments are thus to a large extent applicable for windmill installations; as soon as the capacity of the installation is greater than 1 MW, a permit in accordance with chapter 9, the Environmental Code is required and hence also an EIA following the procedure for activities that are always assumed to have a significant impact on the environment.

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[266] Decision of the Environmental Court of Appeal 2002-02-13 in case M 4563-01

[267] Judgement of the Environmental Court of Appeal 2004-07-05 in case M 9178-02

[268] All cases were decided in accordance with the former Environmental Protection Act. However, as far as the assessment and examination of alternative sites is concerned, both the location rule and the requirement to account for alternative sites in the assessment of the environmental impacts of an activity. See further Westerlund (1990), pp. 168-171 and p. 270

4.6 Final Comments on the "Additional Environmental Requirements"

The implementation of wind power is strongly effected by various rules in the Environmental Code. To begin with, the sustainability objective of the Code is double-barrelled; one the one hand, an increased installed capacity of wind power clearly tailors the objective, chapter 1, s. 1, paragraph 2 explicitly points out that the Code shall be applied in a way that ensures energy resource economizing through measures of conservation, reusing and recycling. On the other hand, the Code also aims to protect the environment from all sorts of damage and detriment and to preserve valuable natural and cultural environments, all of which may get into conflict with an interest to promote the development of wind power.

On the subject of the general rules of consideration, s. 5, on the one hand, clearly pushes for an increased use of renewable energy, while for instance the requirement to use the best possible technology may hamper windmill installations by significantly increasing the costs for the operator; if for instance the selected location causes conflicts with neighbours and/or local environmental considerations, more advanced technology may be required for the installation to stay within the acceptable disturbance levels.

> A situation like this was the case in a court case where the proposed location a windmill installation was subject to opposition on behalf of the concerned parties and authorities.[269] The Court did approve of a location closer to a residential property than what is recommended by the National Board on Housing, Building and Planning, but imposed on the operator to undertake measures to reduce the environmental impacts in the form of noise and shadows to acceptable levels.

Environmental quality standards are, as stated above, unlikely to constitute an obstacle to wind power implementation at this time; the primary field for the quality standards seems to be air and water quality. Hence, although it is theoretically possible to implement standards for noise pollution, it has not been done so far. In contrast, the trend in view of the present quality standards is likely to work in favour of wind power; non-emitting energy production is a large step on the way of achieving several of the Swedish Environmental Quality Objectives.

With the exception of the environmental quality standards, which form a category of its own in terms of legal instruments, the provisions and guidelines for application laid down in the first chapters of the Environmental Code

[269] Judgement of the Environmental Court of Appeal 2004-07-05 in case M 9178-02

may be referred to as *substantial* provisions; the rules involve environmental requirements and typically imply (although to various extents) a certain degree of balancing between different interests.

In addition to these rules, the Code also includes a system for environmental trials (miljöprövning), consisting e.g., of the environmental impact assessment rules and the permit system, all of which have are important in the context of wind power implementation, on land as well as offshore. The installation of a large wind farm may thus be subject to several "trials" in accordance with the Code. *First of all*, all windmill installations that require a permit in accordance with the Code is also subject to the environmental impact assessment procedure, which, apart from drafting of the actual EIA document, includes consultations with concerned parties as well as the public. *Secondly*, medium or large land-based windmill installations require permit in accordance with chapter 9 on the subject of environmental hazardous activities and if certain circumstances are at hand, also the Government's permissibility in accordance with chapter 17. If case of the latter, the municipalities have possibilities to stop the project, using a veto, which may only be overruled by the Government if the installation of the windmills is of "utmost important with regard to the national interest." *Thirdly*, if the installation is planned offshore, it will require an additional permit for water operations in accordance with chapter 11. *Finally*, if windmills are planned in special protection areas the installation may also require a permit in accordance with chapter 7.[270]

In sum, a large windmill installation may thus require as many as four permits only in accordance with the Environmental Code, and in addition the installation requires other authorization in accordance with the Planning and Building Act, i.e., a building permit and normally also a detail plan. Thus, in spite of the recent efforts aiming to simplify and make the system for environmental trials more efficient, windmill installations are still subject to a rather extensive and often time-consuming set of obligations.[271] All in all, the

[270] Areas protected in accordance with EC-law. See further part. 4.3.2.2

[271] In 2003, the Government decided that the Committee appointed to evaluate the Environmental Code, the so called Environmental Code Committee, should give precedence to the evaluation of the possibilities to simplify and make the system for environmental trials more efficient, i.e., abridge the handling process without setting aside the environmental protection obligations or the possibilities for public participation. Accordingly, in August 2005, new rules for the environmental trial were implemented and, in short, the new rules implied: a) that the extent of the consultation procedure in accordance with chapter 6, s. 4 was reduced; the consultation process now includes only one consultation instead of the previous *early* and *extended* consultations; b) that larger windmill installations no longer are subject to the Government's *obligatory* permissibility assessment; and finally c) that

amendments do not seem to imply any considerable changes in terms of the preconditions for wind power implementation; the main gain seems to be the time saved as a result of a less bureaucratic EIA procedure. The different permit processes however still provide for participation and for appeals in higher instances, which implies that the duration of time between the investment decision and the issuance of a permit may be considerable; five years or more is not uncommon, something that indeed might deter operators from investing in wind power.[272]

If the windmill installation does not require a permit, the situation is rather different; certain smaller installations are instead subject to a notification procedure and for some installations, no permit at all is required. In these cases, the environmental requirements in accordance with the Code (primarily chapter 2) are enforced by other means than via the permit procedure. Accordingly, the supervising authorities may issue injunctions to force the operator to e.g., take precautionary measures to reduce the environmental impacts of the installation, and private persons has the right to take legal action to prohibit the installation or to make the operator take measures to reduce disturbances etc. Thus, windmill installations that do not require a permit are still subject to the basic environmental obligations pursuant to the Code.

In consideration of this discussion, it might be reasonable to argue that at least one of the trials for permit should be removed. What consequences would the abolishment of, say, the permit requirement in accordance with chapter 9 have? For the operator, one less permit would probably imply that the duration time between the decision to investment in wind power and the installation of the windmills is reduced, which in turn decreases the costs involved in the investment. On the other hand, he or she would not be able to operate his installation under the same secure circumstances; neighbours may file law suits to prevent the installation, or force him/her to take precautionary measures in order to reduce for instance the noise from the windmills. With the same intention, the supervising authority may issue injunctions on the basis of the general consideration rules. Still, the operator may always apply for a permit even if that is not required.

For the public, the abolishment of the permit would imply fewer possibilities to participate in the installation process; the environmental impact assessment is connected to the permit, and the consultation in accordance with

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windmill installations offshore may (although it is unlikely) be subject to a notification procedure instead of requiring a permit. See Prop. 2004/05:129

[272] See Söderholm et.al. (2005), p. 19

these rules would hence be lost. However, although fewer consultations probably would reduce the time consumed in connection with the environmental trial for the installation, a lack of consent (or even aggravation) on behalf of the public may increase the risks for appeals and law suits, which in turn is likely to increase the time-consumption.

Finally, for the environment, the elimination of the permit requirement for environmentally hazardous activity would imply a less thorough pre-trial since an environmental impact assessment is no longer required. However, environmental authorities still has a right to intervene (even before the windmills are installed) and may hence force the operator to apply for permit in accordance with chapter 9, s. 6, paragraph 2, or issue injunctions to enforce environmental requirements in accordance with chapter 26, s. 9.

From the perspective of the possibilities to increase the Swedish wind power capacity, a removal of the obligatory permit for environmentally hazardous activity in accordance with chapter 9 may thus be desirable.

> An elimination of the permit for smaller windmill installations is in fact suggested by the Swedish Committee Report[273] on the subject of planning and building in Sweden. With the intention to facilitate the implementation process, the Committee recommends that only large windmill installations, i.e., wind farms (> 3 windmills) with a total effect of more than 10 MW, shall be subject to the obligatory permit trial in accordance with chapter 9, the Environmental Code. The difference from today would thus be that windmill installations that has a total effect of more than 1 MW but less than 10 MW would become subject to the notification procedure instead of requiring a permit from the county administrative board. The potential implications of the proposal on the overall development of wind power is difficult to predict; on the one hand, the exclusion of the permit requirement is likely to work in favour of wind power, i.e., contribute to an increased installed capacity, as a result of a less time-consuming and far-reaching procedure. On the other hand, large installations are unaffected by the proposal, and the installation of substantial additional capacity is hence still subject to the permit requirement, which may imply a lesser overall impact of the proposal in relation to the rather considerable wind power planning goal.

[273] SOU 2005:77

Chapter 5

THE CASE OF DENMARK

5.1 Introduction: Danish Wind Energy Policy and Development of Wind Power

In conformity with many other countries, the energy policy in Denmark over the last three decades has shifted from the oil-crises driven intentions to diversify and secure energy supply towards the environmentally motivated objective to promote a sustainable energy use. However, irrespective of which, the Danish energy strategies have always included the promotion and development of wind power and as of today, roughly 18 percent of Denmark's electricity demand is covered by wind power.[274]

Although Denmark is a densely populated, fairly small country whose land resources are limited as well as subject to rather intense competition, the Danish wind power development is, in sum, a success story: while large parts of the world abandoned wind power in favour of cheap and efficient fossil fuels during the industrialization era, Danish wind power survived; with no other natural energy sources, wind energy remained a somewhat favourable option during the World Wars and although the overall technological developments decelerated, the Danish windmill industry did not die away during the 20 century, and by the time of the environmental awakening and the oil-crises, the accumulated knowledge was sufficient to constitute the basis for a broad wind power development.[275]

In the fourth energy strategy for Denmark, Energy 21, the energy policy agenda up to the year 2030 is laid down. Energy 21 is the fourth Danish energy strategy and includes planning for additional windmill installations on land, but is based on the expectation that the *long-term* development of wind power will take place offshore. As of 2004, two new offshore wind farms, each of 200 MW, are planned to start up in 2007/08.[276] The energy strategy also takes account of a scheme for renovating (old) wind turbine areas, by re-

[274] International Energy Agency: IEA Wind 2004 Annual Report, p. 83
[275] See e.g., Danish Energy Authority (1999) "Wind Power in Denmark: Technology, Policies and Results"
[276] The proposed locations are Horns Rev and Rødsand

moving or replacing existing wind turbines, the so called re-powering scheme.[277] The reason for dismantling old windmills is twofold; a large number of turbines are poorly sited with regard to energy efficiency and the surrounding landscape. The purpose with the dismantling procedure is thus partly to "restore" the landscape and partly to increase overall wind energy production by installing new, improved wind energy technology, in short to increase the capacity using fewer turbines. The government will call for the (regional and municipal) planning authorities to designate areas for re-establishment of windmills in accordance with the scrapping scheme.[278]

Since the mid 1990s more than 300 MW wind capacity has been installed every year in Denmark with the exception of the year 2004 during which only a small number of new windmills were installed (mainly as a result of the re-powering scheme).[279] In total, Denmark produces X TWh wind power every year, to be compared with the corresponding Swedish production of X TWh per year. The vast differences in wind power development between Sweden and Denmark are however not (wholly) explained by variations in e.g., the economic support for wind power; the result of economic studies show that the differences in installed wind power capacity only to a limited extent "are the result of the design of the implemented policy instruments."[280] Thus, although the wind power support schemes in Sweden and Denmark are somewhat divergent, these differences cannot by themselves explain the different outcomes. The differences can nor be explained by difference in resource supply; wind conditions are just as good in Sweden as in Denmark.

However, at least in part, the Danish dominance is likely to stem from its early – or rather *continuous* – development of wind power: the lack of other domestic energy resources together with a shortage of fossil fuel supply during the 1st and 2nd World Wars provided a powerful incentive to harness wind energy for electricity production.[281] Denmark's use of wind energy as a basis for electrification thus goes back to the early 20th century, which implies that windmills has been viewed, planned for and installed in Denmark for a very long time, which in turn implies that the institutional framework, in terms of

[277] IEA Wind 2004 Annual Report, pp. 83, 86 and 90
[278] Danish Energy Authority (2004) Energy Policy Statement by the Minister for Economic and Business Affairs pursuant to the Act on Energy Policy Measures
[279] IEA Wind 2004 Annual Report, p. 83
[280] Quote from Söderholm, P. et.al (2005). "Paving the Way for Carbon-Free Energy: The Case of Wind Power," p. 23
[281] Danish Energy Authority (1999)

e.g., laws, traditions, practice, perceptions etc., has been adapted to the existence of wind power.[282]

The differences in installed wind power capacity between Sweden and Denmark may thus to some extent be explained by differences in the institutional framework governing wind power development, for instance different legal preconditions for siting and assessing windmill installations. Hence, an in-depth study of the Danish legal framework vis-à-vis wind power may provide some important implications as to how to increase the rate at which wind power is implemented in the Swedish energy system.

5.2 Law on Land Use and Planning in Denmark

Much like Sweden, Denmark experienced a considerable economic growth in the 1960s and 1970s. The Danish cities grew fast, and as a consequence, the pressure on the environment increased. The need for comprehensive planning was obvious by the end of the 1960s and between 1969 and 1975 several laws in the field of physical planning were adopted through the so called planning law reform.[283] The reformation work aimed to protect the environment and achieve a considerate use of land and other natural resources, among other things through the adopting of a law on national and regional physical planning, which made an instrument for inclusive planning and hence implementation of national planning objectives available.

The planning reform laid down the basic principles for physical planning: first and foremost, the planning reform *as such* aimed for a *decentralized* planning system, implying that extensive decision making power were left with the municipal authorities. Secondly, in connection with the legal effect of plans, a principle of *rammestyring* was established. The rammestyring principle implies that the different levels of physical planning, i.e., regional, municipal and local planning, are, notwithstanding the decentralisation objective, subject to a hierarchic implementation structure that aims to ensure that due attention is paid to national interests, political objectives etc.[284] Thirdly, the importance of transparency in the planning process, i.e., openness vis-à-vis the public, was emphasized and provisions stating that the public shall be engaged in the planning process were laid down.[285]

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[282] On the subject of institutions and institutional changes, see chapter 2 above.
[283] Arealudvalget (1985) "Planlægningen på miljøministeriets område," p. 9
[284] See further below, pp. 104-105
[285] FT 1990-91 tillæg A, p. 1759

5.2.1 The Danish Planning Act

In 1991 a new Planning Act was adopted by the Danish parliament. In this piece of legislation several of the laws adopted in the 1970 planning law reform were incorporated.[286] The new law was part of a large reformation work on the subject of environmental law, and took a stance in the so called Brundtland report[287] and the Danish follow up "Action plan for environment and development." The structural aim of the reformation work was to turn 21 environmentally related laws into four main Acts; The Environmental Protection Act[288], the Natures Protection Act[289], the Planning Act[290] and the Water Act[291]. According to the preparatory works, the joint purpose of all four of the laws was e.g., to strengthen the environmental interest and to reinforce the efforts to prevent environmental damage. The basic principles of the laws are that the balance of interests in environmental issues shall be attended to from a comprehensive perspective and that the legal application shall be derived from a "cohesive authoritative structure with a well defined allocation of competence between the State, the Amts and the Municipalities."[292] Since the adoption in 1991, the Planning Act has however been amended several times, with the most recent changes laid down in the Planning Act of 2004.[293]

5.2.1.1 Overall Objectives

The purpose of the Danish Planning Act is given by chapter 1, s. 1, which states that "The [Planning] Act shall ensure that the overall planning bring together the interests of the public in matters of land use, and contributes to protecting the nature and environment as to ensure a sustainable development of society---". Thus, in accordance with the main objective of the environmental law reform, the Planning Act – as well as other environmental laws, shall be

[286] I.e., the existing planning laws: lov om lands- og regionplanlægning (lrpl), lov om regionplanlægning i hovestadsområdet (lhpl), lov om kommuneplanlægning (kmpl), by- og landzoneloven, lov om ekspropriation til byudvikling and chapter 2 of lov om sommerhuse og campering m.v. (These are the main planning laws originating from the planning reformation in the 1970s). At the same time, two laws were cancelled; lov om tillbudspligt and lov on parcelsalg.
[287] I.e., "Our Common Future" by the World Commission on Environment and Development, chaired by Gro Harlem Brundtland
[288] Miljøbeskyttelsesloven (mbl)
[289] Naturbeskyttelsesloven (nbl)
[290] Planloven (pl)
[291] Lov om Vandløb
[292] FT 1990-91 tillæg A, pp. 1756-1757
[293] Lovbekentgørelse nr 883 af 18/08/2004 (Planloven)

used as instruments to achieve a sustainable development. Although the sustainability objective is shared by all four of the 1991 enacted laws, there are some specifics as regards the Planning Act. Accordingly, emphasis is put on the need for comprehensive and economic planning with reference to national, regional and local development (s. 1, paragraph 2, item 1). The Act further highlights the importance of: e.g., creating and preserving valuable environments and landscapes (item 2), preventing pollution (item 4), and public participation in the planning process (item 5).

In sum, the objectives of the Danish Planning Act thus tailor the international environmental aim to integrate different social sectors in order to achieve a sustainable development.

5.2.1.2 The Danish Planning System

The planning system in Denmark has two main characteristics: firstly, the system of *plans*, i.e., national plans, regional plans, municipal plans and local plans, that specifies the use of land for various purposes, and secondly, the *zone system*, according to which areas of the country can be divided up into three categories; summer cottage areas, urban zones and rural zones. The purpose of the zone categorization is to protect the open land from uncontrolled exploitation and to ensure the implementation of different plans. The first part of the Planning Act deals with the system of plans and the second part with regulations regarding the zone system.

Yet another important part of the Danish planning system is constituted by the Miljøkonsekvensvurdering (VVM), or *Environmental Impact Assessment* (EIA), that shall be produced prior to the commencing of certain activities and serve as the basis for decision making.[294]

The Chain of Command: "Rammestyring" and "Strive For" Provisions

As noted above, the planning responsibility in Denmark is decentralized, implying that the planning and decision making to a large extent is left with different authorities. Nevertheless, the Danish planning system has a hierarchical construction that includes:

- National planning (Landsplanlægning)
- Regional planning (Regionplanlægning),
- Municipal planning (Kommuneplanlægning)
- Local planning (Lokalplanlægning)

[294] See further part 5.2.2.2

From an administrative viewpoint, one of the main purposes with the 1991 Planning act was to create a clearer distribution of competence, mainly between the County Councils and the municipalities, with the overarching responsibility still on the Ministry level.[295] Hence, the four different levels of planning involve three authoritative levels: *Firstly*, the Board on Forestry and Nature (Skov- og Naturstyrelsen) under the Ministry of Environment,[296] which is responsible for the production of national planning reports (landsplanredegørelser) and national planning directives (landsplandirektiver). The Ministry of Environment is also responsible for supervising the regional planning and has a right of veto in relation to the regional planning. *Secondly*, the County Councils (Amtsråd) and the Greater Copenhagen Authority (Hovedstadens Udviklingsråd, HUR) are responsible for the regional planning, the environmental impact assessments and the administration of the rural zone provisions and have the authority to make complaints about the municipal planning. *Thirdly*, the Municipal Board (Kommunalbestyrelsen), which produces both municipal and local plans and administrates the rural zone provisions within local planned areas.[297]

The overall competence structure (there are exceptions) thus implies that the national planning authorities deals with overarching planning issues and implementation of national planning objectives, whereas the regional and municipal planning authorities handle planning of the open land and the town areas respectively.

The function of the Danish hierarchical system is built up on two characteristics; the principle of *rammestyring* and the connected "strive for" (virke for) provisions. These special features in the Danish planning system are of central importance as regards the prerequisites for the administrative as well as actual implementation of national interests/objectives in matters of land use, for instance the installation of windmills.[298]

> The concept of rammestyring implies that a framework of rule(s) within which decisions can be made is established, i.e., a principle – or set of principles, is used as basis for decisions. The Danish law on physical planning is constructed as a rammestyring-system, which means that each level of plan-

[295] FT 1990-91 tillæg A, pp. 1762

[296] The national planning was previously conducted by the Department of National Planning (Landsplanafdelningen) under the Ministry of Environment; the Department is now a part of the Board on Forestry and Nature.

[297] See the legal text, see also See Tegner Anker, H. (2001) "Planlovgivning," p. 119

[298] The rammestyring principle is expressed in e.g., chapter 3, s. 6, paragraph 2, chapter 4, s. 11, paragraph 2, chapter 5, s. 13 chapter 6, s. 29, paragraph 2.

ning set the framework within which the lower level planning may be conducted. For example, regional planning authorities shall respect the framework set by the national planning directives and municipal plans shall be in compliance with regional planning guidelines an so on[299]. In this way, overarching planning objectives may be implemented through the national level plans and all the way "down to" local level (detailed) plans which have a direct legal effect towards individuals and regulate their right of disposal etc. In other words, the different plans are *vertically integrated.*[300]

The fact that the Danish planning system is subject to the rammestyringsprincip hence implies a sort of assurance that due consideration is paid to the national interests as regards land use since it basically give rise to an obligation for the planning authorities to pay due attention to the upper level plans[301]. In other words, one can say that the principle of rammestyring *constrains* the planning authorities' freedom of action by forcing them to respect the decisions made in higher level plans.

The basic idea behind the principle of rammestyring is to secure a certain degree of governmental control within the decentralized system. The applicability of the rammestyring principle regarding the national control is however limited; only the planning directives or specific provisions regarding national planning laid down in the Planning Act (i.e., planning for coastal areas or retail trade) are subject to the principle and thus have implications vis-à-vis lower level planning and plans.[302] Correspondingly, regional planning *guidelines* and certain provisions laid down in the municipal plans may not be contradicted by lower level plans.[303]

The rammestyring is connected to the so called "strive for" provisions,[304] which obliges the planning authorities to *strive to* implement the adopted plan or planning guidelines. This implies for example that the Municipal Board shall strive to implement the provisions laid down in the municipal plan when exercising authority in accordance with the Planning Act and correspondingly that the County Council are obliged to strive to implement the adopted regional planning guidelines. Hence, if the regional planning guidelines include wind turbine installations, it is the duty of the County Council to strive to attain the establishment.

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[299] See Revsbech, K. (2002). *Lærebog i miljøret*, p. 13

[300] The expression is used by Ellen Margrethe Basse. See Basse, E. M. "Forvaltningens efterfølgende prøvelses- og ændringsmuligheder," p. 447

[301] See Boeck, A. B. (1994). *Lov om planlægning kommenteret av Anne Birthe Boeck*, p. 73

[302] See Tegner Anker (2001), p. 128

[303] The rammestyringsprincip is further elaborated below in relation to the different levels of planning

[304] The "strive for" provisions is expressed in chapter 3, s. 9 and chapter 4, s. 12

All in all, the chain of command consisting of the rammestyring on the one hand and the "strive for" provisions on the other hand implies a certain degree of assurance when it comes to actually implementing national planning objectives in Denmark.

5.2.2 Planning for Wind Power in Denmark

Opposite to Sweden, Denmark has, and has had for a long time, a substantial amount of windmills supporting their electricity production. From a legal point of view, the planning system that specifically governs the establishment of windmills is thus presumably *on the one hand* a result of continuing experience in planning for, installing and operating windmills. *On the other hand*, the significant installed capacity is in all probability also a result of the planning system itself. Hence it follows that – in matters of legal prerequisites for wind power – the rules about planning and installation of windmills are of great importance.

5.2.2.1 Planning for Wind Power I: National Planning and the Wind Power Planning Directive(s)

The Danish national physical planning does not imply that there exists a congregated plan for the allocation and use of land for the country as a whole. Instead, the national planning provisions is said to "have the character of procedural rules and framework provisions, which, within the scope of the objective of the law, can be fleshed out in accordance with the current needs and political opinion."[305] Accordingly, the Planning Act provides a legal framework for national planning that primarily consists of rules of competence and implementation regulations that may be completed with more or less detailed national planning provisions aiming to achieve the ultimate objective of a sustainable development. The national planning provisions are laid down in chapter 2 in the Planning Act.

The overarching responsibility for the physical planning in Denmark lies with the Ministry of Environment, who accordingly has certain legal powers as well as obligations aiming to ensure implementation of national planning objectives. To begin with, the Ministry shall regularly submit national planning reports (landsplanredegørelser) that reveals the state of the environment and the environmental politics in Denmark to the Folketing Environment and the Regional Planning Committee (s. 2, paragraph 2 and 3). The national planning reports start out from political objectives and development strategies

[305] FT 1990-91 tillæg A, p. 1760

and may include general planning objectives as well as focus particular subject matters.

Besides the planning reports, the Ministry of Environment also has the authority to establish *mandatory* rules on the subject of the application of the Planning Act as well as the actual planning (s. 3, paragraph 1).[306] The mandatory rules are issued in the form of national planning *directives*[307] that aims to concretize certain public interests or overall planning- or environmental policy objectives. The national planning directives are used as regular planning instruments, which implies that – depending on the legal basis for the issuance – the planning directives has the same legal effect as either regional or local plans. Accordingly, the legal effect of national planning directives issued in accordance with s. 3, paragraph 2, first line, is equal to the legal effect of *regional plans*, which implies that the directive's provisions shall be observed by the planning authorities and implemented via the regional, municipal and local plans which' provisions thus may not counteract the provisions of the directive.[308] In addition, the Ministry of Environment may issue national planning directives with an extended legal effect (s. 3, paragraph 2, second line), similar to that of a local plan, which implies that the provisions of the directive are directly applicable and hence valid also for individuals.[309] The extended version of the national planning directives may however only be established for the completion of buildings and installations if it is necessary for the implementation of a national planning directive and *only in exceptional cases*. According to the preparatory works, directives with extended legal effect shall

[306] FT 1990-91 tillæg A, p. 1772

[307] The Danish planning directives are mainly enacted as cirkulære, which implies that they are directed towards authorities and submitted as administrative orders. Cirkuære are not valid for individuals and may thus not be legally referred to by private citizens. On occasion, directives are enacted as bekendtgørelser, i.e., ordinances, which have a higher significance than cirkulære. The Planning directives shall not to be mistaken for EU-directives, which for the sake of clarity are spelled with a capital D.

[308] The question whether the planning authorities are obliged to change existing plans that are contrary to the provisions of a national directive, or if the directive applies only to future plans is not entirely resolved. According to Anker, it is assumed that a national planning directive "not by it self obligates the municipal authorities to *change* an existing plan." See Tegner Anker (2001), p. 132 and not 62. Revsbech, on the other hand, assumes that the municipal authorities are in fact required to change the existing regional, municipal and local plans if they do not harmonize with an admitted national directive, but acknowledges that in practice, amendments are implemented when the time has come to revise the plan. See Revsbech, K. (2002). *Lærebog i miljøret*, p. 16.

[309] See Revsbech (2002), p. 17

be issued only "if overarching interests make it necessary to go against the general distribution of authority."[310]

In addition to the adoption of national planning directives, the Ministry of Environment may also, in exceptional cases, oblige the planning authorities to establish *specific* plans, i.e., plans that hold a certain contents, if that is considered necessary in view of superior interests, for instance in order to implement projects that are deemed important from a social point of view (s. 3, paragraph 3).[311]

In exceptional cases, the Ministry may also *take over* the powers of the planning authorities in matters of "greater importance" (s. 3, paragraph 4), by which is intended issues that are important from the perspective of national planning or social development.[312] Accordingly, such powers as the right to issue zone permits, or the supervisory function or even the planning competence may be taken over by the Ministry of Environment, but only if the basis for the take-over is necessary with respect to superior interests. The Ministry's authority in accordance with s. 3, paragraph 4, further implies a right to "call-in" plans that has already been announced, in which case the plan may not be finally adopted until it has been approved by the Ministry of Environment.[313] In this connection it should be noted that when, or if, the Ministry takes over the powers of the planning authorities, it does not only obtain a right to, say, produce a plan, but it also takes over the duties that come with the powers, which implies that the Ministry may be obliged to produce an environmental impact assessment or the like.[314]

The final authority provided to the Ministry of Environment is a right of veto that implies that the Ministry has a possibility to prevent implementation of regional plans that counteract national planning objectives (s. 29, paragraph 1). Accordingly, if a proposal for a regional plan or amendments to such a plan implies that national interests are overlooked, the Ministry has the right to reject the plan, which thus cannot be finally adopted until consensus regarding the contents of the plan has been reached. According to the preparatory works, the Ministry shall use the right of veto "on behalf of all central authorities whose interests are affected by the regional planning."[315] Moreover, in conformity with other central authorities, the Ministry of Environment may also object towards local plans if the contents of the plan are contrary to the

[310] FT 1990-91 tillæg A, p. 1760
[311] Vejledning om planloven, part V, p. 3
[312] See Tegner Anker (2001), p. 134
[313] FT 1990-91 tillæg A, p. 1773
[314] See Tegner Anker (2001), p. 134
[315] FT 1990-91 tillæg A, p. 1783

interests the authority is set to oversee (s. 29, paragraph 4). A corresponding right of veto does not exist for municipal plans, which are instead controlled by the regional planning authorities.

The competence provided to the Ministry of Environment with the intention of making sure that national planning interests are attended to in the physical planning are, all things considered, rather extensive, not least compared to the corresponding situation in Sweden. The most striking and important difference with reference to policy implementation is probably the possibility to lay down mandatory provisions in the form of national planning directives. The function of the directives as "regular" plans (regional or local) implies that the planning authorities are, although to various extent, bounded by the provisions of the directives which thus are likely to significantly enhance the possibilities for the State to actually implement national planning objectives, like an increased installed capacity of wind power or the like.

The Wind Power Planning Directives

Several national planning directives on the subject of wind power have been issued since the beginning of the 1990s. Of particular interest for this study is the current *Directive on Planning and Land Zone Permission for the Establishment of Windmills* from 1999.[316] The wind power planning directive is issued in accordance with s. 3, paragraph 2, first line, the Planning Act, which implies that it has the same legal effect as a regional plan and it lays down planning guidelines for the installation of windmills addressed to the Danish planning authorities.

The wind power planning directive (WPPD) from 1999 replaced the previous wind power directive from 1994.[317] The purpose of the, very concise, 1994 directive was to promote an increased installed capacity of wind power through the municipal planning. The directive obliged the municipalities to amend existing plans or to propose new ones, determining if and to what extent further windmills may be installed within the municipality. Exceptions from the wind power planning requirement could only be granted if the municipality already had a plan for further windmill installations, or if there were in fact no reasonable possibilities for establishments within the municipal area.

[316] Vindmøllecirkulæret: Cirkulære om planlægning for og landzonetilladelse til opstilling af vindmøller

[317] Cirkulære nr. 21 af 28. januar 1994 om planlægning för vindmøller

The 1999 directive is more extended; its overall purpose is to ensure implementation of national energy objectives, such as reduced emissions of carbon dioxide through for example an increased use of renewable energy in the form of wind power. The directive thus emphasizes the fact that wind power produced electricity is an important part of the Danish energy (electricity) mix and the main focus of the directive is to further develop the wind energy resource. However, an increased installed capacity of wind power also add to the perceived environmental impacts of wind power, predominantly the visual disturbance and the noise pollution; Denmark has a large number of windmills installed already and every additional wind farm reduce the amount of open land. Hence, the 1999 wind power planning directive strongly recognizes and takes into account the visual impacts of wind power, and lays down – as a necessary condition for further development of the wind energy resource, that due attention is paid to the surrounding environment in the planning for wind power (s. 1, WPPD).[318]

As a general rule, the wind power planning directive states that "Windmills shall foremost be positioned in groups" and "placed in an easily comprehended geographical pattern corresponding to the landscape" (s. 2, WPPD). Accordingly, the starting point for the siting of the turbines shall be the landscape characteristics in the selected area. The importance of preventing a negative impact on the landscape is evident also in the subsequent paragraphs (3 – 4); with the exception of smaller windmills (household mills: ≤ 25 meters) and windmills planned for before the directive was enacted, new installations shall be located as to ensure that they are perceived as detached constructions and not closer to buildings (i.e., neighbourhoods) than four times the height of the turbine. If the distance is less than 500 meters, the extent of the neighbours' discomfort shall be especially attended to.[319]

In addition to the more general wind power planning directives examined above, a rather specific directive concerning the construction of a test station

[318] The environmental considerations were not as explicit in the first draft of the new directive; it was instead amended to reach compliance with the revised EC-Directive on environmental impact assessment of certain projects. See Landsplanafdelningen (1999) "Oversigt over de væsentligste ændringer i udkast til cirkulære om planlægning for og landzonetilladelse til opstilling av vindmøller."

[319] The guidelines for the planning directive recognizes the fact that the size of windmills tend to steadily increase with modern technology and that the proportion of the windmills vis-à-vis the landscape therefore is likely to increasingly deviate from "other elements in the landscape", and that the distance between the windmills must be considered in view of these aspects. Ibid.

for large windmills in the region of Ringkøbing has been issued to the regional and municipal planning authorities (the test-station directive).[320] In short, the directive was established to enable testing of new offshore windmills under realistic conditions, i.e., in an environment as similar as possible to an actual offshore installation. Specific provisions in relation to the planning for the installation were laid down in the directive, e.g., the number of turbines that could be operating at the same time, the maximum height of the installed windmills, how to avoid shadowing from the rotor blades and so on. The legal basis for the issuance of the test-station directive is s. 3, paragraph 2 *first line* in the Planning Act, which implies that the directive has the legal effect of a regional plan. The directive was however issued in accordance with s. 3 paragraph 4 *as well*, and hence it follows that the Ministry of Energy and Environment has taken on the responsibility to produce a local plan and a supplement to the municipal plan as well as an environmental impact assessment (chapter 4, s. 5, the test-station directive).

The wind power planning directives are foremost directed towards the regional and municipal planning authorities and hence the implications of the wind power planning directives in relation to the different levels of planning are subsequently examined.

5.2.2.2 Planning for Wind Power II: Regional Planning

The rationale for the regional planning is to establish guidelines for the balancing between different interests connected to the use of land. The purpose with the regional planning is threefold: firstly, to reflect the national planning interests; secondly, to outline the main use of land in each county to serve as the basis for the authorities' exercise of powers in accordance with the Planning Act and thirdly, to determine the boundaries for the municipal planning.[321] A regional plan shall be present for the capital areas[322] and for the different counties (Amtskommuner) of Denmark[323] (s. 6, PA). The regional plan is thus the overarching instrument for the land use planning within the differ-

[320] Cirkulære om planlægning for etablering af en national prøvestation til afprøvning af store vindmøller ved Høvsrøre i Lemvig Kommune, Ringkøbing Amt
[321] See Boeck (1994), p. 68 and Tegner Anker (2001), p. 144-145
[322] I.e., the greater Copenhagen, which consists of: Københavns, Frederiksbergs og Roskilde Amter samt Københavns og Frederiksbergs Kommuner.
[323] The counties (Amtskommuner) of Denmark are: Nordjylland, Vestjylland, Østjylland, Sydøst- and Sønderjylland, Fyn, Langeland & Aerø, Bornholm, Sydsjælland, Møn, Lolland and Falster, Nordsjælland, Vestsjælland, København, Roskilde/Køge

ent counties of Denmark.[324] Regional plans consist of two parts: the regional planning guidelines (regionplanretningslinjer) (s. 6, paragraph 3-4, PA), which may include designation of areas suitable for the installation of windmills[325], and a supplementary report (regionplanredegørelse) that lays down e.g., the preconditions for the regional plan.

Regional planning guidelines for a windmill installation may be expressed as follows:[326]

1. The use of wind power within the County shall be energy efficient, and on a level that does not cause inconvenience for the neighbours or ruin the view of the landscape.
2. The installation of new large turbines or replacement of old ones shall result in fewer turbines and an increased output and an improved localization in the landscape.
3. Large turbines may only be established in areas designated for this purpose in the regional plan.
4. Large wind turbines shall be installed in groups. The turbines in the group shall be placed on a straight line, the hub (navet) starting at the same level and with the same distance between every turbine. The difference between the diameter of the rotor blade and the hub may not exceed ten percent.

The guidelines may thus be rather detailed, at least as far as the visual appearance is concerned, which seems to be in compliance with the strong emphasis on the protection of the view of the landscape in the Danish planning in general.

Legal Effect of Regional Plans

From the perspective of legal effect, regional *planning* shall be separated from regional *plans*. While the former refers to the planning *process* (i.e., the making of the plan), the latter refers to the actual *plan*, i.e., the documentary result of the planning process, including the regional planning guidelines. The guidelines have legal effect corresponding to the "strive for" rule, which imply

[324] In Copenhagen and Frederiksberg the municipal plan also serve as the regional plan, see chapter 3, s. 6

[325] Paragraph 3, p. 2 states that: "The localization of --- larger technical constructions" shall be laid down in the regional planning guidelines.

[326] See Western High Court, Verdict in case B-1197-01, where the regional planning guidelines nr. 31 for windmills are quoted from the regional plan, nr. 2000-2012, of Viborg Amt, adopted in November 13, 2000

partly a *right* for the authorities to draw on the guidelines in the municipal and local level planning, and partly an *obligation* to pay them due consideration (s. 9, PA). Property owners/users are however not bound by the guidelines; they imply no obligation to take action.[327]

Hence, the County Councils (Amtsråd), the Capital Development Council (Hovedstadens Udviklingsråd) and the Municipal Board (kommunalbestyrelsen) are obliged to *strive to* implement the regional plan. Accordingly, their activities, measures or planning may not be contrary to the plan (s. 9). This implies that the planning authorities may not plan for or initiate activities that may obstruct, for instance, wind power production, within areas designated for this purpose. Nevertheless, the general principle of (Danish) public law *as not being subject to extensive appreciation*, implies that the actual (i.e., in practice) impact of the guidelines with reference to a certain situation cannot be resolved beforehand, but must rather be assessed on a case to case basis. The "strive for" rule thus leaves room for the authorities to make exemptions from the guidelines.[328] However, and due to the particulars required concerning the planning for windmill installations, the designation of wind power areas in regional plans is unlikely to be subject to the "balancing" or discretion to any significant extent.[329]

The Wind Power Planning Directive's References to Regional Planning

In accordance with the rammestyring principle, regional plans must not contradict the wind power planning directive. According to the directive, the County Council may designate areas suitable for windmill installations in the regional plan (s. 3 WPPD), although they are not obliged to do so. Nevertheless, to ensure that areas suitable for (very) large windmill installations i.e., wind farms, are protected from buildings and constructions that may interfere with a future wind farm, a comprehensive planning to reserve areas suitable for this purpose may be required.[330]

When areas have been designated for wind power purposes, the directive stipulates that the size of the area shall be *adequate* in relation to the calculated number of turbines, the height of the turbines and the distance between them. The size of the selected area shall further be *sufficient* from a wind en-

[327] See Boeck (1994), p. 68
[328] See Tegner Anker (2001), p. 146
[329] The more specific the guidelines are the less room is left for the authorities to play in. See Ibid., pp. 146-147. Recall also the regional planning guidelines example in the above.
[330] See Vejledning om planlægning for og landzonetilladelse til opstilling af vindmøller, part 3.1

ergy efficiency perspective. The more in detail specified number, design and location of the windmills are left with the local planning, but since the height of the turbines is strongly related to the visual disturbance of a windmill installation and hence the impact on the landscape, the maximum height shall be specified at an early stage in the implementation process.[331] In addition to the designation of areas that are suitable for wind energy production, the County Council shall assess the possibilities to renovate existing wind power areas in the county (s. 3, paragraph 3, WPPD). The renovation assessment shall primarily focus on areas with potential for energy efficiency improvements or landscape recovery.[332]

The impact of windmills vis-à-vis neighbours, landscape, agricultural interests etc. together with the wind energy potential of the area shall be included in a supplementary report to the regional planning guidelines (s. 3, paragraph 4, WPPD). The supplementary report shall however not be mistaken for an environmental impact assessment in formal meaning, but shall rather correspond to the overall considerations stipulated in the directive *in the absence of an EIA requirement*. This implies for one thing that the assessment does not include a so called visualization requirement on the regional level, which would be required if the installation was subject to an actual EIA.[333]

Environmental Impacts Assessments for Windmill Installations

According to the Planning Act (s. 6c), "larger constructions that are expected to have a significant impact on the environment may not commence prior to the establishment of regional planning guidelines completed with an environmental impact assessment." The provision is based on supplementary rules to the Planning Act on the subject of environmental impact assessments (EIA[334]); the so called samlebekendtgørelse. In accordance with this ordinance certain activities or changes in activities shall be enclosed with an EIA (s. 3), here among the establishment of large windmills (> 80 meters) or wind farms with 3 or more turbines.[335]

In addition to the obligatory assessment for large windmills or wind farms, other windmill installations may also require an EIA if, for instance, the installation "due to its character, dimensions or location is assumed to

[331] See Vejledning om planlægning for og landzonetilladelse til opstilling af vindmøller, part 3.2
[332] Ibid., part 3.3
[333] Landsplanafdelningen (1999), s. 3.
[334] In Denmark: VVM; *Vurdering af Virkninger på Miljøet*
[335] Samlebekendtgørelsen, appendix 1, number 37

have a significant impact on the environment".[336] The assessment criteria include e.g., the environmental impacts of the planned installation in combination with already existing windmill installations, i.e., the accumulative effects of wind power in the area, and the impact of the installation's location in relation to the area's environmental vulnerability in terms of e.g., present land use, landscape values, population density etc. The potential significant environmental impacts of a windmill installation shall thus be assessed in terms of the *scope* of the impact of the installation, the *degree* and *complexity* of the impacts as well as the *reversibility* of the environmental impacts of the installation.[337] In other words, the size of the area and the number of people affected as well as how severe and irreparable the potential damage is likely to be are important factors in the assessment of a planned windmill installation's potential significant environmental impacts.

The environmental impact assessment is a part of the regional planning in so far that it is a *complement to the regional planning guidelines* (redegørelse til regionplanretningslinierne) and the main responsibility for the production of EIAs thus lies within the competence of the regional planning authorities, i.e., the County Councils. Hence it follows that the regional planning guidelines for windmill installations shall be accompanied by an EIA report that describes the environmental impacts of the installation. The report shall, as appropriate, "demonstrate, describe and assess" the direct and indirect environmental impacts of the planned installation with reference to, for instance, the climate and the landscape.[338]

With reference to windmill installations, and as a minimum requirement, the EIA shall include:[339]

1. A description of the project in terms of design, land claims, material use, possible noise pollution, vibrations, reflexes etc.
2. A summary of alternative locations for the installation, including the zero-alternative and the motives for the selected site

[336] See samlebekendtgørelsen, s. 3, paragraph 2, which refers to installations listed in appendix 2, where wind turbines are found under part 3 (i)
[337] Ibid., annex 3
[338] Ibid., s. 5
[339] The requirements are laid down in Samlebekendtgørelsen, appendix 4, although the particulars with reference to windmill installations are partly drawn from Hovedstadens udviklingsråd (2004). Regionplantillæg till Regionplan 2001

3. A description of the overall impact on the surroundings, for example the landscape impacts
4. A report of the short and long term environmental impacts as a result of the project, for example noise pollution
5. A report of the precautionary measures considered to prevent or mitigate environmental damage or nuisance
6. A non-technical summary of item 1 – 5
7. An overview of the shortcomings in the EIA, if any

To illustrate, the environmental impact assessment for an installation of demonstration-turbines in Kyndby, Denmark, included partly a description of the impacts of the windmills concerning, for instance, noise, shadows and reflexes, bird-life, seals and the view of the landscape, and partly an assessment of these impacts, wherever applicable together with the planned protective/preventive measures.[340]

In addition to the provisions regarding noise pollution that are laid down in the Samlebekendtgørelse, the installation, amendment and operation of windmills are also subject to a specific ordinance on the subject of noise from wind turbines.

> The ordinance on noise from windmills is applicable for "installation, amendments and operation of windmills" (s. 1). Accordingly, the noise pollution from windmill installations in the open land that are located in direct connection with residential property (that belongs to somebody else than the windmill owner), may not exceed 45 dB(A), and in residential or other noise sensitive areas, such as summer cottage areas and the like, the noise level may not at any point exceed 40 dB(A) (s. 2, paragraph 1-4). The windmill owner is responsible for the noise pollution and is hence obliged to demonstrate to the County Council that the planned installation will keep within the noise limitations, for instance via documented measurements and calculations of the noise pollution and by presenting a map over the planned installation pattern complete with distance to residential properties and areas etc. (s. 6). If the County Council receives noise reports referring to the installation of single windmills in an area appointed for wind power purposes, and thus in time will enclose numerous windmills, the Council may impose additional noise requirements on the individual windmill installations to ensure that the total noise level does not exceed 45 dB(A) (s. 7, paragraph 4). The provisions regarding noise-level calculations are very precise and non-compliance with the ordinance is penalized.[341]

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[340] See the non-technical summery of Hovedstadens udviklingsråd's (2004) Regionplantillæg till Regionplan 2001

[341] See further Bekendtgørelse nr. 304 af 14. maj 1991 om støj fra vindmøller

The presence of a specific ordinance on noise from windmills is a good illustration of how the present institutions in a society has developed out of the past; In Denmark, wind power has always played some part in the country's energy history and the current institutional framework hence reflects this for instance via the presence of specific legislation on the subject of wind power, like the wind power planning directives and the ordinance on noise from windmills.

Regional Plan Revision

Every four years, Danish regional plans are revised. Prior to the revision, the Government submits a report (*statslige udmelding til regionplanrevision*) concerning national interests in relation to regional planning, for example on the subject of the further development of wind power in Denmark. The report serves as the basis for the Government's assessment of the proposal for regional plans; if a proposed regional plan contradicts the general political objectives or development strategies established in the report, the Government may use their right of veto to hindrance adoption of the plan.

On account of the 2005 regional plan revision, the Ministry of Environment published an overview of national interests in the regional planning, there among guidelines for regional wind power planning.[342] Accordingly, new areas for windmill installations in the open land shall only be designated in connection with the evaluation of already designated but still unexploited areas, or if the purpose is to enable the replacement of old, poorly sited windmills as a part of the wind power renovation scheme.[343]

5.2.2.3 Planning for Wind Power III: Municipal and Local Planning

Municipal Planning

In relation to other plans, the municipal plan functions as a link between, on the one hand, the national and regional more or less "sweeping stroke of the brush" and, on the other hand, the much in detail established local plans. The purpose of the municipal planning is twofold: firstly, to establish the main structure and overall objectives concerning development and land use within the municipality (hovedstrukturdelen), and secondly, to provide an outline (rammedel) for the content of the local plans, for instance on the subject of windmill installations (s. 11, paragraph 4 and 5, PA). The main structure of a

[342] See Miljøministeriet, Denmark (2002) "Overblik over statslige intresser i regionsplansrevision 2005"
[343] Ibid., pp. 24-25

municipal plan may be valid for a very long time (up till 12 years), an order that implies that the installation of unplanned new windmills may require the adoption of a supplement to the municipal plan (kommunplanetillægg). However, every four years the municipal plan is subject to some reconsideration; in the middle of the mandate period, the Municipal Board shall present a strategy for the physical planning in the municipality that encloses information on the municipal planning together with a decision of whether to revise the current plan as a whole or in parts, or to keep the existing plan for another four years (s. 23 a, PA).

Legal Effect of Municipal Plans

The Municipal Board is obliged to strive to implement the municipal plan (s. 12, PA), which justifies the Board's exercise of authority corresponding to the content of the plan, but also implies a duty for the Board to pay due attention to the municipal plan. In other words, the authorities has a right to, for instance, reject permit applications and local plan proposals for, say, windmill installations if the installation is contrary to the municipal plan, but the authority also has a duty to pay due attention to the objectives and guidelines laid down in the municipal plan when assessing permit applications or local plan proposals.[344] Hence, if an area suitable for a windmill installation is laid down in the municipal plan, the Municipal Board shall strive to execute the plan, for instance by adopting a local plan for the installation.

Municipal Planning Pursuant to the Wind Power Planning Directives

Municipal planning authorities may plan for windmill installations within areas designated for this purpose in the regional plans (s. 4, WPPD). The main rule is thus that municipal plans for windmill installations only may be established for areas already designated for this purpose in regional plan. Exceptions from this main rule can be made *if* the adjustments contribute to increased energy efficiency, or if they are necessary to comply with for instance a revised regional plan. In other words, the Municipal Board may change the guidelines for the location or size of the planned windmills if it will increase the energy output, or alter the appointed area if the designation no longer complies with the regional plan. Amendments of this kind may also be undertaken due to changes in the wind power planning directive.[345]

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[344] See Boeck (1994), p. 116-118

[345] See Vejledning om planlægning for og landzonetilladelse til opstilling af vindmøller, chapter 4

When the municipal plan is subject to revision, any inconsistencies with the regional planning guidelines and the wind power planning directives shall be addressed by the Municipal Board (s. 11 a, PA).

> The obligatory nature of the wind power planning directives vis-à-vis the municipal authorities is well illustrated by a letter from the Ministry of Environment and Energy addressed to every municipality in Denmark. The Ministry concluded that the lack of effective municipal planning for wind mill establishment (due to many and sometimes long delays) was not satisfactory in view of the central position the municipal planning holds in environmental and planning matters. The Ministry therefore found it necessary to point out to the municipalities the binding character of the wind power planning directive issued in accordance with chapter 2, s. 3, the Planning Act.[346]

Local Planning

Within the framework provided by the Planning Act, including national, regional and municipal plans, as well as other relevant laws and general principles of public law[347], legally binding local plans may be produced. Local plans regulate – sometimes in great detail – how land areas or real estates subject to the plan shall be used. However, in conformity with the Swedish system for detail plans,[348] the mere existence of a local plan does not imply that the planned activities are in fact carried out. Hence, even if a local plan for a windmill installation is adopted, there is no guarantee that the windmills will actually be installed. However, once a local plan is finally announced, "no situation, legally or in fact, may be established that contradicts the provisions of the plan", unless exceptions is granted in accordance with the law (s. 18, PA). Property owners, property users, permit authorities etc. may thus not undertake activities or grant permits that may counteract the provisions of the local plan. It thus follows from the presence of a local plan for the installation of windmills that use of the area for purposes that may hinder or obstruct the wind energy production may not be granted permit.

Local Plan Requirement and the Legal Effect of Local Plans

In conformity with regional and municipal planning, local plans are subject to the principle of rammestyring and may thus not contradict e.g. national plan-

[346] Auken, S. and Jensen, E. (1996). "Brev till kommunerne: Vindmølleplanlægning haster."
[347] See Tegner Anker (2001), p. 156
[348] See above, part 4.3.5.3

ning directives, regional planning guidelines or municipal plans, for instance on the subject of windmill installations. The local plan shall in fact be enclosed with a report that describes how the plan associates with the "higher level" plans for the area (s. 16, PA). On a concrete level this implies that a local plan for windmill installations may only be established for areas designated for this purpose in the municipal plan. If this is not the case, a supplement to the municipal plan (kommunplantillæg) must be adopted before a local plan may be established.[349]

Under certain circumstances a local plan *shall* be produced. This plan requirement is valid for "the establishment of large buildings or construction-work necessary for the fulfilment of the municipal plan" (s. 13, paragraph 2, PA). According to the guidelines for the Planning Act the installation of windmills within urban areas as well as wind farms in the open land are typically subject to the plan requirement.[350] Decisive for the plan requirement is however if the planned activity is likely to cause *significant changes* in the environment, which implies that the installation of large windmills in the open land also may well trigger the local plan requirement.[351] In the assessment of what is to be considered a significant change, cultural and environmental aspects as well as other factors shall be taken into account, here among the character of the area:

> In a court case from 1998, a local plan was required for the installation of 8 additional (single-standing) windmills in an area with 14 existing turbines. The additional windmills were considered to further increase the wind power dominance in the area and hence cause significant changes in the natural landscape. As a result the Court decided that the additional installations required a local plan in accordance with s. 13, paragraph 2, PA.[352]

The purpose with the plan requirement is to ensure that the consequences of an activity or measure are objectively assessed and that the public is given the opportunity to express their opinion on the subject matter.[353] The establishment of a local plan thus requires objective considerations based on the overall objectives of the Planning Act, in terms of environmental concern,

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[349] To exemplify, in a supplement to a municipal plan for Jelling Kommune, the Municipal Board required the turbines to have cone-formed towers and three rotor-blades that was rotating with the sun. See Naturklagenævnet, Decision 97-31/600-0110 (MAD 2000.462)

[350] Vejledning om planloven, part V, p. 40

[351] Ibid., p. 39

[352] See, Naturklagenænet, Decision 1998, j.nr. 97-31/800-0029, 0034 og 0035, (MAD 1998.1496)

[353] Vejledning om planloven, part V, p. 39

public participation etc. In this way, the use of local plans to enforce activities that do not comply with the overarching objectives and higher level plans, for instance in favour of economical interests in the municipality, is prevented.[354]

As for the contents requirement, a local plan shall state the objectives of the plan and the legal effects that follow from it (s. 15, PA). Since a local plan, unlike the regional and municipal counterparts, are binding for individuals and thus have an immediate legal effect for property owners and users, it is necessary that the area subject to the plan is clearly specified and that the plan outlines e.g., the right of disposition for the property owner. Other than this, a comprehensive catalogue of provisions that may be included in the local plan is provided by the Planning Act, including for instance the location of infrastructural elements for electricity supply (s. 15, paragraph 2, PA).[355]

Local Planning and the Wind Power Planning Directives

The wind power planning directive stipulates that – as a main rule – local plans for windmill installations may only be established within areas specifically designated for this purpose in the regional or municipal plan (s. 5, WPPD). A local plan for windmill installations shall include provisions about the turbines' exact location, total number, minimum and maximum height plus appearance (s. 5, paragraph 2, WPPD). With reference to the appearance requirement it is not sufficient to solely state that the turbines are going to be identical; the plan must include information about colour, form etc. As for the size of the windmills the aim of the requirement is partly to reduce the impact on the surroundings by making the installations proportionate and partly to ensure an efficient use of the wind energy resource by regulating the installation pattern.[356] A local plan for windmill installations shall furthermore be enclosed with a report that accounts for the visual impact of the installations, in terms of how they will affect the landscape as well as how energy efficiency interests are managed, *unless* the installation is assumed to have a significant impact on the environment in which case the assessment is made in accordance with the provisions regarding environmental impact assessments (s. 5, paragraph 3 and 4).[357]

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[354] See Boeck (1994), p. 125

[355] According to subsection 6, "The Minister of Environment may establish regulations that allow local plans to contain provisions on matters other than those mentioned in subsection 2. Nevertheless, the catalogue is considered to be exhaustive. See Tegner Anker (2001), p. 160

[356] See Vejledning om planlægning for og landzonetilladelse til opstilling af vindmøller, chapter 5, part 5.2, p. 9

[357] See further above, part 5.2.2.2

To illustrate: A local plan for a windmill installation within an area designated for wind power purposes included the following in terms of size and location requirements for the installation[358]:

1. The maximum number of wind turbines in the area may not exceed 3
2. Every single turbine shall have an effect of minimum 400 kW and maximum 900 kW
3. The minimum hub-height of the turbines may not go below 45 meters and the maximum may not exceed 50 meters. The height of the turbines shall be equal from a visual point of view, in the sense that the centre of the rotor lies on a straight line at maximum 50 meters above the lowest ground.
4. The diameter of the rotor shall be the same for all three wind turbines. The deviation between the rotor-diameter and the hub-height may not exceed 10 percent. The rotor-diameter for a turbine with a hub-height of 50 meters may thus be minimum 45 and maximum 55 meters.

In a court case from 2003, a local plan was found invalid due to inconsistency with the local plan requirements in the wind power planning directive. Naturklagenævnet concluded that since the plan did not comply with the requirements regarding distance to neighbours or accounted for the visual impacts of the installation, the plan was invalid.[359]

5.2.2.4 Planning for Wind Power IV: The Zone System

To reiterate, the entirety of Denmark is divided in zones: urban zones, rural zones and summer cottage areas. The zone division – each zone subject to different rules, aims above all to protect the open land in Denmark. The purpose with the zone provisions is thus to control the use of land and to prevent uncontrolled (and unwanted) development in the open land and an unlimited and unplanned growth of the urban zones.[360] The zone division and the rural zone administration are regulated in chapter 7, the Planning Act. Accordingly, *urban zones* are primarily areas that are given this status via a local plan in accordance with the present or previous planning legislation. *Summer cottage areas* are likewise allocated through local plans or through a building statute (ordinance) or a town planning statute (s. 34, paragraph 2 and 3, PA). Finally, *rural zones* are areas *not* designated as urban zones or summer cottage areas (s. 34, paragraph 4, PA). The transfer of land areas from the rural zones to ur-

[358] See Western High Court, Verdict in case B-1197-01, where the local plan for Viborg municipality (nr. 184) for the windmill area at Kvosted is cited.
[359] Naturklagenævnet, Decision 2003 03-33/760-0025 (MAD 2003.763)
[360] FT 1990-91 tillæg A, p. 1763

ban zones or summer cottage areas is thus made through the local planning, which – in accordance with the rammestyring principle, shall reflect national-, regional- and municipal planning.

The close relation between the zone system and the planning system is evident also in connection with the prerequisites for activities and measures within the rural zone areas; the rural zone permit and the local plans together constitute the permit system for e.g., buildings and installations, such as windmills. The relationship between on the one hand the local plan and on the other hand the rural zone permit is in short that an installation may require both, but where a local plan may substitute a zone permit the other way around is not possible. The installation of windmills may thus require a zone permit and/or a local plan, depending on whether the installation will cause significant changes in the environment, for which a local plan is required, or not, in which case a zone permit may be enough.[361]

Rural Zone Permits

As a main rule, new constructions or changed use of existing buildings or areas may not take place within the rural zone without a zone permit and windmill installations are no exception.[362] However, buildings and constructions, such as windmill installations etc., that are subject to the environmental impact assessment requirement or that are conditional on the establishment of local plan may only be granted a zone permit once the necessary regional planning guidelines together with the EIA have been finally adopted and the local plan has been publicly announced (s. 35, paragraph 2).[363] Further, rural zone permits for installations in the coastal areas "may only be granted if the matter for which the permit was applied is of negligible importance in relation to the national planning interests in the coastal areas" (s. 35, paragraph 3).[364]

In accordance with the rammestyring principle, the rural zone authority shall strive to implement the regional and municipal plans when assessing

[361] See Tegner Anker (2001), p. 188
[362] Vejledning om planloven, part V, p. 85
[363] Although the regional planning guidelines have legal effect "only" in accordance with the "strive for" provisions and deviations hence are possible, it seems to be a general opinion that such deviations require a specific motivation. According to Anker, the guidelines shall after all be attended to in the permit assessment and the permit authorities has the right to draw on them in their decisions although they are not obligated to do so and if the guidelines are not decisive for the permit "it may depend on a lack of preciseness of the guidelines, but also a lack of association between the guidelines and the subject matter or other especially motivated reasons." See Tegner Anker (2001), p. 192
[364] See further below, part 5.2.2.5

permit applications for rural zone permits (s. 9 and 12, PA). The basis for the case-to-case based permit assessment is thus the regional and municipal planning guidelines, local plans and otherwise relevant planning considerations together with e.g., environmental and landscape considerations as well as social and economic implications of a planned installation.[365] Accordingly, the permit assessment for a windmill installation takes account of partly the establishment's correspondence with the overall planning (including the WPPD), and partly the landscape conditions etc. on the planned site.[366] The permit authority thus has the possibility to reject a zone permit application for a windmill installation on the basis of landscape impacts even if the installation is planned for.

> In a court case from 2000 regarding the installation of two identical windmills, only one installation (the first application) was granted a zone permit with the motivation that the impact on the landscape of each windmill viewed separately was acceptable, but that the installation of both windmills, mainly as a result of the long distance between them "would be perceived as randomly sited" and hence unsuitable from a landscape point of view.[367]

The importance of a specific assessment[368] of the landscape conditions in matters of zone permits for windmill installations is strongly emphasized in a number of cases regarding small as well as larger windmills and the seemingly most common reason to decline zone permit applications for windmill installations is thus the installations' negative impact on the landscape.[369]

Rural Zone Permits and the Wind Power Planning Directive

As a main rule, it follows from the wind power planning directive that zone permits for the installation of windmills only may be granted if the establishment is designated for this purpose in the regional planning guidelines or if a local plan for the purpose is adopted (s. 6, paragraph 2, item 1 and 2, WPPD). However, under certain circumstances it is possible for the land zone authority to immediately grant a zone permit for the installation of a windmill (irrespec-

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[365] See Vejledning om landzoneadministration Planlovens §§ 34-38, p. 5
[366] See Tegner Anker (2001), pp. 192-193
[367] Naturklagenævnet, Decision 2000 31/600-0104 (MAD 2000.441)
[368] Commonly referred to as a "konkret landskabelig vurdering" (vurdering af landskapelige hensyn/forhold)
[369] See e.g., Naturklagenævnet, Decision 2000 97-31/760-0123 (MAD 2000.1092) and 2000 97-31/600-0110 (MAD 2000.462); in both cases the necessity of a special assessment regardless of the presence of regional or municipal guidelines cases were emphasized.

tive of the main rule and without consulting authorities or the public) and that is if an existing windmill installation crashes due to for instance turbine breakdown, stroke of lightning or the like (s. 6, paragraph 4).

The wind power planning directive further emphasizes the importance to individually assess every planned windmill installation with regard to neighbours, landscape and other activities with specific interest in the open land, such as agriculture (s. 6, paragraph 1) even if the current area is in fact designated for wind power purposes in the regional or municipal planning guidelines. It is only if possible to moderate the assessment requirements if the windmill installation has been laid down in a local plan and hence has been thoroughly assessed already.[370]

5.2.2.5 Planning for Wind Power V: Coastal Areas

The coastal areas of Denmark are of national interest for natural and landscape values as well as for recreational purposes. Planning in these areas are regulated in chapter 2, s. 5a and 5b in the Planning Act. Accordingly, the coastal areas of Denmark "shall be kept as free as possible of development and installations that do not need to be located near the coast" (s. 5a). The regional planning authorities have the main responsibility for the planning in the coastal areas and shall accordingly produce specific regional planning guidelines for the coastal areas (s. 6a, PA) in view of the objective to keep the coastal areas as free as possible from interfering activities. Thus, the guidelines for the coastal areas shall be produced with the intention to e.g., avoid exploitation within the unexploited parts of the coastline and to establish the location of technical constructions and the like on the basis of functional considerations and preferably near already exploited areas.[371]

With reference to wind power, the provisions governing the coastal areas implies that windmill installations in these areas are only possible if the installation is based on planning- or functional considerations and does not interfere with the purpose of the protection (s. 5b, item1). The interest to locate windmills within the often functionally suitable, i.e., windy, coastal areas shall thus be balanced against the nature- and landscape interests in the areas.[372]

> In a court case from 1996, the County Council had granted a zone permit for the replacement of a small windmill (41 meters) located within the coastal area

[370] See Vejledning om planlægning for og landzonetilladelse til opstilling af vindmøller, chapter 6, part 6.1, p. 10
[371] Vejledning om planlægning og administration af kystområder, pp. 7-8
[372] Vejledning om planlægning og administration af kystområder, p. 15

with a larger turbine (62 meters). The neighbours appealed against the decision and argued that the landscape values should be protected. Naturklagenævnet concluded that the installation of a large single windmill in the area would seriously damage area's high landscape values and the replacement of the windmill was hence not permitted.[373]

5.2.2.6 Planning for Wind Power VI: Public Participation

One of the overall objectives of the Planning Act is to encourage citizens to participate in the regional and municipal planning process (s. 1, paragraph 2, item 5).[374] Although it is mainly the planning authorities' responsibility to accomplish this objective, chapter 6 in the Planning Act includes rules on the subject of producing and repealing plans and hence the basic requirements regarding announcements of plans and plan proposals. However, with reference to the development of wind power, the public is involved in several stages in the planning process, primarily for the installation of larger windmills or wind farms; before drafting regional planning guidelines for a windmill installation, the planning authorities shall solicit for ideas, suggestions etc. on the proposed plan (s. 22, paragraph 2, PA). In view of the response from the solicitation and the type of installation, the environmental impacts of the planned installation are assessed and a proposal for regional planning guidelines together with an EIA report for the windmill installation is prepared. The proposal for guidelines, completed with the EIA for the installation is then once more announced and sent for hearing to before the final plan is adopted and yet again stated publicly (s. 30, PA).[375]

Municipal plans for windmill installations may be announced when the strategy for municipal planning is presented, i.e., every four years. As stated above the review of the municipal planning may imply that the plan as a whole or in parts is revised, for instance to comply with the regional planning, or that the current plan will continue to be valid for another four years (s. 23a, paragraph 1 and 2). After the proposed planning strategy has been presented to various authorities and they have commented on it, the strategy is announced and a time limit of at least eight weeks is set for the public to submit ideas, suggestions etc. If amendments to the strategy are made, the final product is announced and sent to the previously consulted authorities (s. 23a, paragraph 3-6, PA).

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[373] Naturklagenævnet, Decision 1996 j nr. 31/650-0142 (MAD 1996.787)
[374] See also FT 1990-91 tillæg A, p. 1766
[375] See also Tegner Anker (2001), p. 174

Contrary to the drafting of regional and municipal plans, the planning authorities are not obligated to consult the public when preparing a local plan for a windmill installation, although the final product shall be announced with a time limit of at least eight weeks for submitting objections etc. to the proposal (s. 24, paragraph 3, PA).[376] In connection with the announcement of a local plan for windmills, the owners, users and tenants of property that is covered by the plan, or substantially affected by the plan, shall be notified in writing of the content of the plan. Associations and organisations etc. may also be notified of a local plan if they have made a written inquiry hereof (s. 26, PA). When a local plan for the windmill installation is finally adopted, it shall be publicly announced and a copy of the plan shall be sent to: the owners of property covered by the plan, those who have objected to the plan, the Ministry of Environment and other authorities whose interests are affected by the windmill installation and finally the previously notified associations and organisations (s. 31, PA).

The publicity procedure in accordance with the Danish Planning Act may thus be rather time consuming, especially in view of the twofold announcement procedure in connection with windmill installations that require an environmental impact assessment, and as a result the actual installation of the windmills may well be delayed. However, the involvement of the public as well as various authorities etc. in the planning process aims to secure quality in the planning.[377] Moreover, early and continuous participation in the planning process may also reduce the number of appeals against the installation of windmills since the people and interests affected by the installation to a large extent already have had the opportunity to make suggestions and comment on e.g., the location of the installation.[378]

> The importance of participation at an early stage in the decision-making process can be illustrated by a court case from 2001.[379] The case concerned the installation of four windmills in an area subject to a local plan. One person, E, did not oppose to the local plan in the public participation process, but instead chose to instigate legal proceedings and claimed compensation for neighbourly damage (e.g., noise, lights). The owner of the windmills, N, asserted that the presence of a local plan implied that the environmental impacts of the installa-

[376] See further FT 1990-91 tillæg A, p. 1766
[377] See also Tegner Anker (2001), p. 187
[378] In order to reach out to as many interested parties as possible; the Danish planning authorities commonly use the internet to publish plan proposals and plans.
[379] Western High Court, Verdict 2001 in case BS-1395-00 (MAD 2001.112)

tions were already considered. The district court affirmed that the possibilities for compensation based on neighbourly law in the presence of a local plan are small (in exceptional cases only) and that windmills are not a rare element in the surroundings. E appealed to the high court which concluded that the local plan had essentially considered the environmental impacts of the windmills and confirmed the district court's decision.

The importance of providing the public with adequate information about the consequences of a plan or a planned installation to is illustrated by a case concerning the adoption of a national planning directive for the installation of a test station for large windmills: In 1999, the Ministry of Environment and Energy decided (in accordance with s. 3, paragraph 4, PA) to take over the powers of the regional and municipal planning authorities with the intention to adopt a national planning directive for the installation of a test station for large windmills.[380] The test station was preceded by the establishment of regional planning guidelines, guidelines for land zone administration, a local plan and a supplement to the municipal plan as well as an environmental impact assessment report for the installation. All of which to various extents are subject to the participation rules. Still, a property owner claimed to the Chairman (ombudsman) that the Ministry had e.g., misinformed the citizens about the compensation possibilities in connection with the installation of the test station. Since the legal situation regarding compensation for windmill installations on the basis of neighbour law was unclear (statements from e.g., the High Court, indicated that the developed case law regarding other installations, for example roads, not without a specific assessment may be used analogically on windmills) and the Ministry had not sufficiently attended to this issue, the Ministry was subject to critique from the Chairman for not providing the public with enough information about the possibilities to gain compensation for inconveniences as a result of the test station and for not responding to the citizen's compensation claims in time.[381]

5.2.2.7 Planning for Wind Power VII: Offshore Installations

Denmark plays a leading role in offshore wind power development; by the end of 2004, Denmark had 418 MW wind power capacity operating offshore through a total of eight wind farms and in Mars 2004 the political parties agreed to the installation of two additional offshore wind farms of 200 MW each.[382]

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[380] Cirkulære om planlægning for etablering af en national provestation til afprøvning af store vindøller ved Høvsøre i Lemvig Kommune, Ringkøbing Amt

[381] Forvaltningsret 115.1-123.1. – Miljøret 1.1. J.nr. 2000-2742-129. Etablering af national prøvestation for store vindmøller

[382] IEA Wind 2004 Annual Report, p. 83

Legal Preconditions for Offshore Windmill Installations

According to the Electricity Supply Act,[383] the right to exploit energy from the wind within the territorial waters and the Danish economic zone belongs to the Danish Government (s 13). The Danish situation as regards the right to the wind energy resource thus differ from the corresponding situation in Sweden, where the right to harness wind energy offshore is not subject to any explicit regulation. Approvals to pre-investigate and exploit offshore wind energy in Denmark are handled by the Ministry of Transport and Energy who represents the Government and hence has the authority to grant rights to the wind energy resource (s. 13). However, due to the many interests that have to be accounted for in this process, the Government has decided that approvals in accordance with s. 13 will be granted according to a tendering procedure, for which the Ministry may specify certain circumstances or conditions that will be viewed as particularly important in the assessment of the proposals (s. 14-15).

The actual installation of such electrical installations as windmills does however require a permit, which is granted by Ministry of Transport and Energy who may state conditions hereof on the subject of e.g., construction, operation, safety etc. (s. 16, paragraph 2). If, however, the installation is likely to have a significant impact on the environment, a permit may only be granted on the basis of an assessment of these impacts, and only after the public has been given the opportunity to comment on the installation (s. 18).

Environmental Impacts Assessments of Offshore Wind Power

Windmill installations offshore that are likely to have a significant impact on the environment require an environmental impact assessment in accordance with the ordinance on environmental impacts of offshore electrical installations.[384] Whether a planned offshore windmill installation shall in fact be considered to have a significant impact on the environment is decided by the Energy Board in accordance with the following criteria: a) the characteristics of the project, i.e., for instance the size of the windmills and the cumulative effects of the installation, b) the location of the windmills in consideration of e.g., nature and landscape protection, and c) typical features of the potential impacts, in other words, e.g., the extent, complexity and irreversibility of the potential environmental impacts of the installation.[385]

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[383] Bekendtgørelse af lov om elforsyning

[384] Bekendtgørelse om vurdering av virkninger på miljøet (VVM) af elproduktionsanlæg på havet

[385] See furher Bekendtgørelse om vurdering av virkninger på miljøet (VVM) af elproduktionsanlæg på havet, appedix 2

If the Energy Board, based on the assessment of these criteria, finds that the windmill installation is likely to have a significant environmental impact, an EIA has to accompany the application for permit. The EIA shall include the direct and indirect environmental impacts of the windmill installation, here among: the area claimed for installation and operation of the windmills, an account of the examined alternative locations for the installation and a motivation for the selected site, how the installation will affect flora, fauna, landscape etc. and a non-technical summary of the contents of the EIA.[386] Thus, in all essentials the same aspects that shall be considered in an environmental impact assessment for land based windmill installations.

The Energy Board is obliged to announce and send the application together with the environmental impact assessment to affected authorities and organisations for hearing with a time limit of at least eight weeks for submitting comments on the material (s. 4).

5.2.3 Summary: Planning for Wind Power in Denmark

The establishment of new windmills in Denmark is almost without exceptions regulated within the legal framework of physical planning. The Danish planning system has a hierarchical structure involving three authoritative levels (national, regional and municipal) and four different types of physical plans (national, regional, municipal and local). The overall competence structure implies that the national planning authorities deal with overarching planning issues as well as the implementation of national planning objectives, whereas the regional and municipal planning authorities handle the planning of the open land and the town areas, respectively. The function of this hierarchical system is built upon two, closely related, characteristics; "rammestyring" and "strive for" provisions. These special features are of central importance as regards the prerequisites for implementation of national planning objectives, such as increased wind power.

The concept of rammestyring implies that a framework of rules, within which decisions can be made, is established. In the context of physical planning this means that each level of planning set the framework within which the lower level planning may be conducted. For instance, the regional planning authorities shall respect the framework set by national planning and municipal plans shall be in compliance with regional planning guidelines and so on. In this way, overarching planning objectives may be implemented through the national level plans and all the way "down to" the legally binding local

[386] Ibid., appedix 3

level plans. In other words, the different plans are *vertically integrated*. The rammestyring is closely connected to the so called "strive for" provisions, which obliges the planning authorities to *strive to* implement the plans or planning guidelines that they have adopted when exercising authority in accordance with the Planning Act.

In order to ensure implementation of the national energy policy objective to reduce the emissions of carbon dioxide through an increased use of renewable energy resources, a national wind power planning directive was issued in 1999. These provisions of the directive are implemented by means of regional and municipal planning, and it stipulates that areas suitable for windmill establishments in terms of environmental impacts and energy efficiency shall be designated and laid down in regional planning guidelines. It follows from the provisions in the directive that, as a main rule, areas for windmill purposes may only be laid down in municipal and local plans if the areas are already designated for this purpose in the regional planning guidelines. The regional planning authorities thus have the primary responsibility for the wind power planning in Denmark, including the construction of environmental impact assessment reports.

Offshore windmill installations in Denmark are however subject to specific regulations which imply that the operator must make a request for the right to exploit the wind energy offshore as well as apply for a permit to install the windmills. The Government, represented by the Ministry of Transport and Energy, is responsible for the authorization. The environmental impacts assessments of offshore windmill installations are made by the Danish Energy Board and include by and large the same assessment criteria as the EIA:s for land-based installations.

The public is involved in the planning process for windmill installations in several stages: *Firstly*, before the drafting of regional plans and once more before the regional plan is adopted, *secondly*, prior to the proposal for a new municipal plan and previous to its announcement and *thirdly*, in connection with the announcement of a local plan.

The main structure of the Danish planning system (with reference to the implementation of wind power) is illustrated by figure 5.1 below. Accordingly, the Planning Act provides possibilities to implement national planning objectives via so called national planning directives, like for instance the wind power planning directive (WPPD). The national planning directives are subsequently implemented via the regional and municipal planning in accordance with the principle of rammestyring and the "strive for" provisions, which basically implies that every plan level has to take account of and strive to imple-

ment the provisions of the higher level plans. Finally the windmill installation is laid down in a binding local level plan.

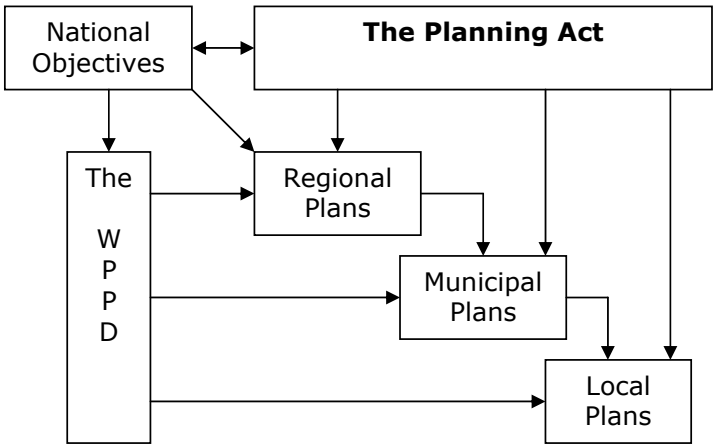

Figure 5.1: The Danish Planning System

5.3 A Planning System in Change

The above described Danish system for physical planning is presently subject to what is commonly referred to as a municipal reform, which will imply radical changes, not least regarding the responsibilities left with the County Council and the preconditions for regional planning. The proposal for a new Planning Act roughly implies e.g., that a new plan type, the so called regional development plan (regionale udviklingsplan), will be introduced in 2007. These plans shall be drawn up (mainly) by the County Councils (regionsråd) and cover general and overarching aspects of the regional development. According to the proposition,[387] the regional development plan shall "describe a desirable development for the region" as regards for instance environmental objectives (s. 10 a, paragraph 3), and furthermore include a report that illustrates the content of the plan via "non-precise designations" (s. 10 a, paragraph 5), to which the rammestyring will apply, which implies that the municipal plan shall reflect the regional development plan. However, in consideration of that the content of the regional development plan only shall be described in overarching and non-precise terms, together with the fact that the plans will not have legal effect in accordance with the strive for rules, the overall impact of the regional development plans will probably be limited. The municipal planning

[387] Lov om ændring af lov om planlægning (Udmøntning af kommunalreformen)

will by and large take over the former regional planning, including the establishment of guidelines for the overall allocation and use of land. The new municipal plan shall hence include concrete provisions vis-à-vis the use of land in both urban areas and in the open land.[388]

All in all, the impending far-reaching changes in the Danish planning system will probably imply significant changes also in the preconditions for wind power implementation, not least since the main responsibility for the implementation of the wind power planning directive and hence the development of wind power currently rests with the regional planning authorities. The real effect of the amendments of the law vis-à-vis the Danish wind power development is however yet to be seen in view of the fact that the major changes of the Planning Act do not enter into force until 1 January 2007. Some transitional regulations that significantly affect the framework for physical planning did however enter into force already on 1 January 2006. Accordingly, the planning possibilities for the County Councils (Amterna and HUR) are henceforth limited.[389]

The importance of the changes with reference to the purpose of this study is however minor; the Danish system are examined with the intention to highlight a system which presumably has been more fit in respect of the possibilities to implement national planning objectives. From that perspective, the Danish municipal reform does not take away the result of this study.

[388] Lov om ændring af lov om planlægning (Udmøntning af kommunalreformen)
[389] Miljøministeriet, Skov- og Naturstyrelsen, writ to the County Councils and the Municipal Boards, J.nr. SN2001-lpa229-0004 (LPO), 4 January 2006.
Available on: http://www.skovognatur.dk/

Chapter 6
DISCUSSION AND CONCLUDING REMARKS ON THE PRECONDITIONS FOR WIND POWER IMPLEMENTATION IN SWEDEN

6.1 Introduction

To reiterate, the purpose of this thesis has been to analyse certain functions of the law with reference to wind power implementation issues. The research question has in other words been: what are the legal preconditions for wind power development and in what respects does the law facilitate respectively hinder an increased installed capacity of wind power? The basis for the examined legal functions is the characteristics of wind power production, i.e., resource claims (foremost access to land and water areas for windmills) and other environmental considerations in connection with windmill installations, as well as legal rules about the planning and authorization of windmill installations, including questions related to public participation in these processes. The underlying motive for this study is the Swedish wind power planning goal that was adopted by the Swedish Government in 2002, requiring a substantial increase in the yearly Swedish wind power generation. The primary purpose of the study has thus been the legal preconditions to achieve this goal from the perspective of Swedish law

Although the Swedish development of wind power has been relatively slow, this has not been the case in our neighbourhood country Denmark, which on the contrary has experienced a considerable growth in wind power generation over at least the last two decades. Hence, based on the assumption that the development of wind power at least in part is conditional on the requirements of the law, a comparison between the legal rules that governs the installation of windmills in Sweden and the corresponding Danish system might probably provide fruitful implications as for how to increase the installed capacity of wind power in Sweden. This is thus the basis for the following discussion on the legal preconditions for wind power implementation in Sweden.

6.2 The Issue of Sustainability

When the Swedish Environmental Code entered into force in 1999, it mainly brought with it two substantial changes as regards the relationship between the laws that were brought together in the Code and their main target, the physical environment: a) the objective to promote a sustainable development, and b) the function of the general consideration rules. It follows from the Code's first chapter, the initial section that the objective of the Environmental Code is to promote a sustainable development. The concept of sustainable development has been previously considered in this study and now serve as the basis for the discussion about how the objective may be interpreted as a means to promote the overarching Swedish energy policy objective to increase the share of renewable energy, especially wind energy.

A sustainable development implies a development where natural resources are not depleted to a level that put their continuing growth at risk.[390] Energy resources are without a doubt one of the most essential components of human life and the supply of energy has been (and still is) a fundamental prerequisite for the development of the modern society. However, like many other natural resources, some sources of energy run the risk of being exhausted. Hence it follows that the promotion of sustainable development also implies a promotion of renewable, rather than non-renewable, energy resources. Nevertheless, and in spite of the Swedish national planning goal for wind power, the installation of windmills with the intention to harness energy is often prevented by legal rules, for the most part with reference to the windmills' impacts on the surroundings.

6.2.1 Implications of the Trial System

The accomplishment of the Swedish wind power policy is thus to some extent hindered by the rules surrounding the implementation process; the system for authorizing windmill installations is a comprehensive one. Depending on the location, effect, size and design of the windmills a number of permits may be brought to the fore. To illustrate, a large land-based windmill installation is typically subject to the following legal procedure:

[390] From the point of view of biologists, ecologists, geologists and the like, it is probably a difficult task to try to determine e.g., the number of species required to ensure regrowth or how much of a mineral is left in the ground etc. From the point of view of a legal scholar, however, determining the natural prerequisites for a sustainable development is not the main issue; rather it is a matter of examining the role of law in achieving a sustainable development.

- As an environmentally hazardous activity, the installation of medium and large windmills requires a permit in accordance with chapter 9, the Environmental Code and since the installation requires a permit, it also requires an environmental impact assessment in accordance with chapter 6, the Code.

- The trial for permit includes an assessment of the installation in relation to the basic and special resource management provisions in chapter 3 and 4, the Environmental Code. With respect to the *basic* provisions the result of the study indicates that the rules – for the most part – imply an extensive room for discretion, which in turn implies that the impact of the rules vis-à-vis wind power development is unpredictable both regarding the possibilities to promote such development and to avert obstructive activities. The provisions are however applied in favour of an implementation of wind power when areas are in fact considered to be of national interest for wind energy extraction, and solely for that purpose.

  The purpose of the *special* resource management provisions is to protect areas of national interest for their natural and cultural values against activities that may significantly damage the protected values. The installation of windmills are in many cases hindered by the provisions, while in other situations the outcome is more unpredictable, partly as a result of the imprecise rules and partly due to the exemptions.

  Furthermore, the purpose of the protection in accordance with the special resource management provisions to a large extent reflects a traditional (prior to the Environmental Code) "environmental protection" perspective; the areas' natural values are protected *against* interference and exploitation. Accordingly, the rules as such are not representative from a sustainability perspective that might well imply that areas are worthy of protection because they contain resources which use/exploitation promotes a sustainable development. Like for instance wind.

- The installation is furthermore assessed in accordance with the location rule in chapter 2, s. 4, the Environmental Code. The court case analyses clearly indicate that the requirements pursuant to this rule to a serious extent may hinder the implementation of wind power. The operator is obligated to select a location for the installation that implies the least damage and detriment to the environment. Hence, the

Court typically makes sure that the operator has assessed and accounted for alternative sites for the installation in order for the "best" location from an environmental point of view to be selected. This requirement may prove a serious obstacle to an increased installed capacity since the operator may not have access to any other location than the proposed one. Furthermore, a non-accepted location is equal to a denied permit and the process have to restart; in itself a significant obstacle.[391]

Connected to this is also the assessment of the selected location in relation to the surroundings (sometimes the immediate surroundings), which implies that an installation that in itself is not hindered by, say, the special resource management provisions because the area where the windmills are to be installed is already exploited, still may be hampered by the location rule if the immediate landscape is negatively affected by the installation of windmills.

Yet another important criterion to be considered in the location assessment is the selected location's compliance with the municipal physical planning; if a windmill installation on the selected site would counteract the purpose of a detail plan or area provisions for the location, permit cannot be granted (chapter 16, s. 4, the Environmental Code). However, even if that is not the case, the courts seem to take the municipal planning into great consideration when assessing the selected location and are reluctant to approve of installations in areas that are lacking an overview plan in support of the installation. In keeping with this, due attention is also paid to the opinion about the installation expressed by the municipality, various authorities as well as the public. The location is thus assessed also in consideration of whether the municipality is for or against the installation.

- In addition to the requirements in connection with the location rule, claims to take precautionary measures in order to reduce noise pollution or shadowing effects of the windmills can be brought upon the operator in accordance with chapter 2, s. 3. Especially heavy demands in this respect can be made if the location of the installation is controversial or otherwise subject to conflicts with e.g. neighbours. The precautionary measures can include for instance requirements regarding

[391] However, a judgement to choose another location does not necessarily have to imply that the operator has to move the entire installation to another area completely; it may also imply a slightly different location in respect of for instance neighbourhood properties or the like.

the use of a certain "quiet" technology, or that the operating hours are reduced not to exceed the accepted limits of shadowing etc. All in all, the precautionary measures may increase the costs of running the installation and thereby hamper windmill investments.

- Moreover, under certain circumstances, the Government may reserve a right to assess the permissibility of the installation. Accordingly, if the installation in view of the interests promoted by the Code "is likely to be substantive or intrusive" the Government may initiate a permissibility assessment (chapter 17, s. 3 item 1). If the establishment, as in this case, involves a large windmill installation, a permissibility trial may also be instigated by the municipal board, provided that this is possible on the basis of s. 3 and that there are not special circumstances at hand that refrains the Government from making the assessment (s. 4 a, item 7). The purpose of the permissibility trial is to assess the *very occurrence* of the installation, which implies that, although the (other) permit authorities are not by any legal rule explicitly confined by the Government's decision, it is in practice not challenged; the activity as such and its location is accepted. The basis for the Government's permissibility trial is the same as for other permit trials in accordance with the Code, i.e., the substantial rules in chapter 2-4. Hence it follows that the resource management provisions and the location rule are determining factors in the assessment.

  Windmill installations that are caused to undergo the permissibility trial also run the risk of being subject to the municipal right of veto, which implies that the municipality has the power to prevent the installation altogether (s. 6).

- On top of the trial in accordance with the different rules in the Environmental Code, the installation is also conditional on requirements pursuant to the Planning and Building Act. First of all, windmill installations typically give raise to the detail plan requirement, due to their often significant impact on the surroundings or if they form part of new collected buildings or is to be located where the competition about land is intense (chapter 5, s. 1, item 1-3, the Planning and Building Act). Usually, the installation also requires a building permit in accordance with chapter 8, s. 2.

If the installation is to be located at sea rather than on land, within the Swedish territory, there are a few additional rules to take into account:

- As a main rule offshore windmill installations require an additional permit for water operations.[392] However, a forthcoming ordinance may imply that smaller offshore installations become subject to a notification procedure instead of the permit requirement (chapter 11. s. 9 a), but even if that will be the case, the supervising authority may still order operators in individual cases to apply for a permit. The additional permit trial for water operations implies that the installation *in addition to* the assessment in accordance with the resource management provisions and the general rules of consideration also is tried with starting point in the specific requirements for water operations. Hence it follows that an installation that in itself is not prevented by the provisions in chapter 2-4, still may be declined a permit if its ”benefits from the point of view of public and private interests” is not considered to exceed the costs and damages associated with the installation.

If the operator plan to install the windmills outside the Swedish territory, within the Swedish economic zone,[393] a different authorization is required; according to s. 5, paragraph 3, the Act on Sweden's Economic Zone, the establishment of installations with the intention to exploit natural resources requires a permit. However, unlike the situation in connection with the installation of windmills on Swedish territory, installations within the economic zone only require this one permit. In conformity with the permit trials in accordance with chapter 9, 11 and 17, the Environmental Code, the Code's resource management provisions and general consideration rules in chapter 2-4 shall be applied in the trial for permit to install windmills within the economic zone.

At last, the installation of windmills may, if certain circumstances are at hand, also become subject to other authorization procedures:

Firstly, windmill installations within special protection or preservation areas, i.e., areas that has been listed pursuant to chapter 7, s. 27, the Environmental Code, require a permit in accordance with s. 28 a if the installation may have a significant impact on the environment within the protected area.

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[392] Exceptions from the permit requirement are only provided if the operator can prove that “it is obvious that neither public nor private interests are damaged by the installation's impact on the water conditions.” The burden of proof is thus forceful and the exceptions shall only be very restrictively applied.

[393] The Swedish economic zone comprises certain areas of the sea outside the territorial border. The areas are specified by the Government. See F (1996:531) om Sveriges ekonomiska zon. (Ordinance on Sweden's Economic Zone).

Secondly, if the location of the windmill installation counteracts prescriptions issued for nature reserves, culture reserves, natural monuments or certain biotopes, the county administrative board must grant exemption for the windmill operator to install the turbines.

Thirdly, if the proposed location for the windmill installation contains ancient remains, the operator must notify the county administrative board and if the installation will imply that the remains are moved, changed or removed, a permit from the board is required (chapter 2, s. 10-12, the Law on Ancient Remains) (Kulturminneslagen).

Fourthly, if the windmill installation will intervene in the airspace, the operator must apply for a license (hindersprövning) to the Swedish Board of Civil Aviation (Luftfartsverket).

Finally, other parts of the installation than just the windmill may require permit; this is the case for, for instance, the installation of submarine cables and electric wiring in accordance with the Electricity Act, the Electric Wiring Act and the Continental Shelf Act.

It is thus a rather complex set of substantial as well as procedural rules that confronts the potential windmill investor in Sweden, regardless of where the installation is planned. The environmental trial as a whole implies that the duration of time from the first draft of the environmental impact assessment to the issuance of the final permit may stretch over many years. During this time, the operator is placed under a veil of – not ignorance – but well uncertainty; there are lots of factors involved in the process that may hamper or hinder the investment to pay off even if the operator makes a strong effort to comply with the requirements. Hence, from the point of view of a potential investor, a windmill installation in Sweden may not be considered the best choice.

In view of the potential environmental benefits of an increased use of wind power: a reasonable question is whether it is rational to cause a windmill installation to experience the entire spectrum of environmental trials? The legal system for environmental trials is *uncompromising* insofar that it does not to a sufficient extent distinguish between, on the one hand activities that might cause significant and irreversible environmental damage, like for instance pulp industries or coke-oven plants, and on the other hand activities that may significantly contribute to the sustainability objective by preserving the prerequisites for development, like wind power production.

An additional component in the context of environmental trials is the issue of participation. Different authorities, stakeholders as well as the public are all encouraged to participate in the decision making process via the consul-

tations pursuant to the EIA procedure, the planning process and the permit trials. Participation is however a time-consuming business which may seriously prolong the implementation process. Hence, from the perspective of the individual investor, the encouragement of participation may well be viewed as an additional obstacle in the way of the pay-off. However, involvement in decision making processes is also a matter of democracy and it is liable that a high degree of participation at an early stage in the process reduces the occurrence of appeals.[394]

In addition to the rules related to the environmental trial process referred to above, the Swedish windmill investor also faces other impending obstacles, like the Swedish municipal planning monopoly.

6.2.2 Implications of the Planning System

Among all the legal rules that in various ways influence the development of wind power, the system for physical planning is of the uttermost important. In Sweden, the physical planning is mainly a matter for the 290 municipalities; the municipal self-governance is extensive in Sweden and the notion of a "municipal planning monopoly" is in many ways a reality. Also the Danish system gives proof of a decentralized system for physical planning, although with the important difference that the presence of control on the part of e.g., the Government is noticeable. A relatively large part of this study is dedicated to the planning provisions in the two countries, and to make the comparative description more intelligible, the similarities and differences with respect to the basic components of the planning systems are brought to light in the following: The different frameworks of rules governing the wind power planning process are seemingly comparable in Sweden and Denmark; both systems are decentralized in terms of far-reaching distribution of competence and several planning levels. Nevertheless, some apparently crucial differences are to be found in the implementation process.

First of all, the vertically integrated Danish planning system essentially implies that each level of planning provides a framework of rules within which the lower level planning may be conducted (rammestyring). Accordingly, the regional planning authorities shall strive to implement the rules set by the national planning and the municipal plans shall - again according to the "strive- for" requirements - be in compliance with the regional planning guidelines. In this way, overarching planning objectives are implemented through the national level plans all the way down to the legally binding local level

[394] See further Söderholm et.al. (2005), p. 32 and (2006), pp. 18-19

plans. The Swedish system is quite different; the municipalities – although confronted with rules about implementation of national interests and energy planning – are left with an extensive room for discretion in the planning, which implies that the actual (local level) implementation of the national planning goal to a large extent is up to the municipalities notwithstanding the possibility for the Government to issue plan injunctions (as regards detail plans and area regulations), since this instrument has never been used in accordance with the present Act.

This brings me to the following general conclusion. With exemption of certain situations when areas of national interests are involved, the Planning and Building Act on one hand provides good possibilities for Swedish municipalities to promote the development of wind mills in the planning, while they on the other hand, supported by the act (chapter 2), can chose to ignore the wind power planning goal. So, the Swedish planning system, unlike what is the case in Denmark, implies a great uncertainty as regards the possibilities to achieve the wind power planning goal.

Secondly, the precise regulations and specified preconditions in the Danish laws and ordinances in relation to the installation of windmills probably imply a more efficient implementation of wind power. The presence of for instance the specific ordinance regarding noise from windmills containing standards for noise and measuring of noise implies a certain security for the potential investors in wind power; provided that the requirements in the ordinance are complied with, the risk of having to face additional demands in that area decreases. The same is in principle valid for issues regarding e.g., the construction of windmills, the connection of windmills to the grid, technical requirements for wind turbines and so on, which points to the fact that *wind power* to a large extent is *explicitly* regulated in Denmark.[395] Similar rules in the field of energy can in Sweden only be found for nuclear power, and previously, hydropower, which is indicative of how the institutional framework reflects e.g., the natural resource supply as well as previous concentrations.

Thirdly, the most striking and important difference between Sweden an/d Denmark with reference to the implementation of wind power is in all prob-

[395] For instance: Lovbekentgørelse nr. 837 af 7 oktober 1992 om udnyttelse af vedevarende energikilder m.v; Bekentgørelse nr. 1148 af 13 december 1996 om vindmøllers tilslutning til elnettet; Bekentgørelse nr 270 af 2 maj 1991 om typegodkendelse og certifiering af vindmøller; Bekentgørelse nr 1268 af 10 december 2004 om teknisk godkendelseordning for konstruktion, fremstilling og opstilling af vindmøller; Bekentgørelse nr 815 af 2 juni 1999 om vurdering af virkninger på miljøet (VVM) af elproduktionsanlæg på havet; Bekentgørelse nr 1365 af 15 december 2004 om nettilslutning af vindmøller og pristillægg for vindmølleproduceret elektricitet m.m.

ability the presence of the Danish wind power planning directive(s). The 1999 wind power planning directive functions as a "regular" regional plan which implies that the planning authorities are bound by its provisions in accordance with the rammestyring principle and the "strive for" provisions. The directive shall thus be implemented by means of the regional and municipal planning and it stipulates that areas suitable for wind energy production in terms of energy efficiency as well as in consideration of e.g., landscape impacts shall be designated and laid down in regional planning guidelines and subsequently also in the municipal and local plans for windmill installations.

Thus, while the Swedish system is unproductive in terms of the content (design) of the rules as well as the legal application and hence lacks confidence for a consistent implementation of the wind power planning goal, the Danish system creates a better potential for implementing national objectives; the rammestyring system, together with the possibility to adopt partly mandatory planning directives, implies that the national level policy objective to increase the share of wind power may not be overlooked either in the planning process or in the implementation of an adopted plan. The legal preconditions for wind power implementation thus differ considerably between Sweden and Denmark. In Sweden, the "gap" between national policy objectives on the one hand and local implementation decisions on the other, seems to be substantial, whereas the vertically integrated Danish planning system prevents such a "gap."

6.2.3 Summing Up: Legal Functions and Potential Obstacles

With reference to the core legal functions in connection with the development of wind power, it appears as if the Swedish laws and legal rules indeed may serve as a hinder to an increased installed capacity of wind power. To sum up, operators who wish to install windmills in Sweden stand in front of the following potential legal obstacles:

- In connection with the use of land, the installation is confronted with substantial rules that leave a considerable room for discretion and that appear to be designed in a way that favours *preservation* rather than sustainable *utilization* of the land resources. Additionally, heavy demands are made upon the operator in relation to the selected site for the installation
- The strongly decentralized system for physical planning basically implies that the installation of the windmills is in the hands of the munici-

palities, who have a significant freedom of choice when it comes to planning for wind power.

- The precautionary requirements in terms of technology choice and operating hours that can be brought upon the operator in accordance with the general rules of consideration may significantly increase both investment- and operational costs.
- Depending on the size and location of the windmills, the wind power project faces various and sometimes overlapping authorization requirements that might significantly prolong the implementation process.
- The procedures involved in the implementation process provide for different forms of participation for the public. In relation to the development of wind power the issue of stakeholder participation is an intricate one; in the short run, extensive participation procedures may delay the permitting process and hence hamper the installation, but on the other hand, participation is often considered necessary to increase the legitimacy for wind power and facilitate implementation in the long run.

6.3 Concluding Remarks and Policy Implications

The installation of windmills is thus mainly prevented on the basis of the environmental impacts caused by operating windmills. Yet, the most prominent environmental impacts of wind power are *local* in character, i.e., the main issues seem to be the landscape impacts, the shadowing effects and the noise pollution in the vicinity of the installation. Notwithstanding the importance of preventing such impacts, the lingering question is, if it is really reasonable that the diffusion of a renewable energy resource like wind power is hindered by limited and predominantly *temporary* environmental impacts? With a view of preserving the prerequisites for development; would it not be more important to economize with energy resources than to protect the neighbours to a windmill installation from visual intrusion? From a sustainability perspective the answer would probably speak in favour of the conversion of the energy system and hence an increased use of wind energy. From a *legal* perspective the main question is thus what importance shall be attached to the objective of the Environmental Code? Should it imply a new way of looking at things, or should it merely be interpreted as nothing but a political pamphlet?

The main source of law – the legal text – seems to be in support of the former; it states that the purpose of the Environmental Code is to promote a sustainable development (s. 1, paragraph 1). Hence it follows that the long-term energy policy objective to convert from the use of non-renewable energy resource to an increased use of renewables is in fact supported by the Code.

Moreover, some interests are considered to be particularly important from the point of view of the sustainability objective and are therefore specified in s. 1, paragraph 2. Accordingly, the Code: "*shall* be applied in such a way as to ensure that:

1. human health and the environment are protected against damage and detriment, whether caused by pollutants or other impacts;
2. valuable natural and cultural environments are protected and preserved;
3. biological diversity is preserved;
4. the use of land, water and the physical environment in general is such as to secure sustainable management in ecological, social, cultural and economic terms; and
5. reuse and recycling, as well as other management of materials, raw materials and energy are encouraged with a view to establishing and maintaining natural cycles." (Emphasis added)

The second paragraph is thus clearly directed to the legal application and cannot be misinterpreted to imply anything but that the judiciary and other authorities shall apply the provisions of the Code e.g., in a way that ensures a long-term management of natural resources.[396] Nevertheless, paragraph 2 encloses several interests that may be counteracted by the installation of windmills, for instance the protection of valuable natural and cultural environments and possibly also human health that may be negatively affected by the visual intrusion and noise pollution associated with wind power. The question is thus how to handle conflicts between e.g., landscape protection and wind power development? In combination with s. 1 and the implications of the sustainability objective, this should however not be a problem; rather, it may probably be asserted that in a situation where the national (and global) benefits of an increased installed capacity of renewable energy is balanced against a local interest to protect the view of the landscape, judgments in favour of the latter should rarely be possible.

In keeping with this, a more substantial interpretation of the objective in relation to the provisions of the Environmental Code is evident in a few recent court cases in the Environmental Court of Appeal:

> In two cases,[397] on the subject of conditions for handling chemicals, the Court introduced the judicial decision by asserting that s. 1, paragraph 2, in the Code

[396] Support for this view is found e.g., in Bengtsson, B. (2001) and Bengtsson, A. (2005).
[397] Judgement of the Environmental Court of Appeal 2005-03-30 in case M 9408-03, and 2004-06-30 in case M 10499-02

implies "a specification of how to interpret the concept of sustainable development and includes a direction about how the substantial provisions in e.g., chapter 2 shall be applied."

Of specific interest in the context of this study is another recent court case[398] from the Environmental Court of Appeal concerning the installation of tree windmills in Sotenäs. In this case, the Court actually used the concept of sustainable development in the balancing between opposite interests and stated that: "The Environmental Court of Appeal finds that the public interest to increase the share of wind power to promote a sustainable development speaks in favour of approving the installation (…) The opposite interests are not of such importance that they prevent an installation on the selected site."

These court cases clearly illustrates that the objective of the Environmental Code *can* be applied in a court of law; as a basis for the judicial decision, but also to counterbalance opposite interests that carries less weight from the perspective of a sustainable development. The Environmental Code may thus imply a new way of thinking after all.

Even so, the accomplishment of the wind power planning goal is likely to require some improvements as regards the legal implementation process. Several implications follow from the result of this study.

First of all, severe obstacles to an increased installed capacity of wind power are found in relation to the use of land. The main strategy in view of the existing regulations seems to be to strengthen the wind energy interest in relation to e.g., landscape preservation interests first and foremost by means of the possibility to designate areas as national interest for wind power production in accordance with chapter 3, s. 8, the Environmental Code. Although designations in accordance with the basic resource management provisions are not legally binding, they are in practice normally accepted in connection with both physical planning and permit trials.

In view of the overarching sustainability objective in chapter 1, s. 1, it may also be considered to expand and modernize the objective of the special resource management provisions to include, not only conservation interests in the form of areas that contain important natural and cultural values, but also areas that are important for energy conservation interests. This would formally strengthen the legal protection in relation to chapter 3, s. 8, and imply that the wind power interest would prevail in a competitive situation with national interests designated in accordance with the basic resource management provi-

[398] Judgement of the Environmental Court of Appeal 2005-11-01 in case M 2966-04

sions. Obviously, this would require changes in the legislation and thus a prior political consideration.

Secondly, to break through the planning monopoly and make certain that the municipalities and the county administrative board really do respect the designated national interests, heavier claims must be brought upon the municipalities to actually implement national planning goals, for instance by putting into practice the existing rules on the subject of State control of national interests. If the Government is serious about increasing the diffusion of wind power, there really are no good reasons not to make use of the existing legal instruments to enforce the local authorities to implement the planning goal, not least in consideration of the obligations that follow from international commitments in respect of an increased use of renewable energy.

In the light of the importance attached to the development of renewable energy resources from the perspective of Swedish energy policy, the legislator should perhaps also consider to include the use of renewable energy, maybe even wind power, among the "general interests" that the planning authorities shall attend to in the planning in accordance with chapter 2, the Planning and Building Act. Presently, the municipalities shall certainly "promote a long-term management of (…) energy resources" (chapter 2, s. 2), but the room for making other priorities are very extensive, which does not correspond to the pertaining national priorities in terms of energy development.

Hence, a planning system with a little bit more resemblance to the Danish rammestyring system might be possible if the substantial planning provisions were sharpened and if the competence provided to the three "authoritative levels" i.e., the Government, the county administrative board and the municipalities, was made clearer. The Swedish legislator may also consider the possibility to combine a more stringent planning system with rules that to some extent correspond to the Danish "strive for" provisions, in order to restraint the freedom of choice for the Swedish planning authorities.

A planning system of Danish model is however likely to require a very different perspective on physical planning and the municipalities' role in that context than what seems to be the case in Sweden. An examination of the preconditions to further implement the Danish model is however beyond the scope of this study.

In addition, if areas are designated as national interests and thus subsequently laid down in physical plans, a large part of the often decisive assessment in accordance with the location requirement would have already been made; the permit authorities pay considerable attention both to the presence of planning instruments and the overarching provisions regarding the use of land. Moreover, *if* the legal development increasingly brings the objective of the

Code into play, the location assessment should, as said, imply that conversion of the energy system in principle is prior to avoiding noise and shadows in the immediate surroundings and landscape interests.

Thirdly, one strategy to facilitate and make the permit process less time-consuming may be to take away the permit requirement for environmentally hazardous activity in keeping with the proposal of the Committee Report.[399] The consequences of such a removal have been previously discussed[400] and indicate that the benefits in terms of time saved in the permit process are likely to exceed the losses that might be a result of the exclusion.

As a final point, the Government's permissibility assessment and the recent amendments made in this respect deserves a few words. It is, from the point of view of the possibilities to achieve the wind power planning goal, *favourable* that the compulsory trial for large windmill installations has been removed. However, a reasonable question still seems to be why windmill installations are subject to the Government's permissibility trial *at all*? Among the other mostly very heavy industries (oil-platforms, airports, hydropower plants etc.) that might be tried on initiative of the municipal board, a windmill installation with a total effect of 10 MW seems to be somewhat out of the ordinary, not least in view of the relatively small-scale environmental impacts of wind power. The consequences of being on the list for trials is however not minor; the municipal right of veto once again put the faith of the wind power development in the hands of the municipality.

All told, the main conclusion of this study is that an accomplishment of the Swedish wind power planning goal might be possible, but that it will require a new way of thinking; if the law is to manifest the present environmental objective of a sustainable development and not merely be a reflection of the past, institutional changes are required.

[399] SOU 2005:77
[400] See above part 4.6

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