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Wind Power in Europe: Politics, Business and Society

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Relevant Legal & Academic Areas: Wind Energy, Environmental Law, Technology, and Property Law.

Summary: This book provides an overview of the policy and legal aspects of wind power in Europe, through the illustration of case studies in Denmark, Germany, Spain, United Kingdom and France.

About the Author: Joseph Szarka's research and teaching concentrates on political renewal in Western democracies, with a focus on economic and environmental policy making. He also is a reader in European Studies at the University of Bath, UK.

Chapter 1 – Contextualizing the Wind Power Debate

- **Chapter Summary:** This chapter introduces the wind power debate, and sets the framework for the book, which relies on case studies from Denmark, Germany, Spain, the United Kingdom and France.
- **Chapter Review:** Following the oil crisis of the 1970s and 1980s, awareness arose regarding the risk of reliance on imported energy.² Countries began exploring their options with a focus on alternative energy. Wind energy emerged as a positive source of alternative energy in the electricity field. Most countries followed the three-bladed Danish concept of wind turbines. However, debates arose over the use of wind as a sustainable energy alternative in place of fossil fuels such as oil and coal. Throughout the

¹ Cristin Cavanaugh, Syracuse University College of Law, J.D. Candidate, May 2009.

² JOSEPH SZARKA, WIND POWER IN EUROPE: POLITICS, BUSINESS AND SOCIETY 7 (2007).

illustrations presented and data collected, there is no one way to resolve the debate over wind energy. However, success in different countries has allowed for possible solutions to the problems in the wind sector.

Chapter 2 – Diagnosing the Wind Sector

- **Chapter Summary:** Chapter two focuses on the rise of wind power in the early 1970s and 1980s through improvements in technology and community ownership.
- **Chapter Review:** Wind energy has grown over the past three decades from “its provincial and agricultural origins to a global, high-tech industry.”³ Currently, Denmark, Germany and Spain produce enough wind energy to meet nearly 80 percent of world demand.⁴ For example, Denmark’s success in the wind industry is attributable to its bottom-up approach, which favored incremental improvements of small machines. The ‘Danish Concept’ of the wind turbine became the icon of green power and throughout the years has dominated the turbine market.⁵

Success in the wind industry also relates to the ownership of the wind turbines. The best example of community ownership and acceptance comes from Denmark. At the beginning of the wind industry boom, ownership of wind turbines occurred mostly through cooperatives. Stringent legal requirements required the owners to live locally. However, later modifications led to less stringent rules. Currently, “around 80 percent of capacity [is] owned by individuals and cooperatives.”⁶ The Danish government also

³ SZARKA, *supra* note 2, at 22.

⁴ *Id.* at 25.

⁵ *Id.*

⁶ *Id.* at 30.

contributed to the support of wind by making it mandatory for utilities to invest in wind power. Therefore, technological innovations and community involvement in the purchase and development of wind projects created one possible solution to the problem of wind development.

Chapter 3 – Mobilising for Wind Power

- **Chapter Summary:** Chapter three explores the development of associations on a national and international level for the wind industry. These associations promote growth of the wind industry.
- **Chapter Review:** Szarka writes: “The development of viable markets for wind turbines and the identification of common interests in an emergent and fragile sector led industrialists to form associations at national and international levels.”⁷ Well-known associations in the wind sector include the Danish Wind Industry Association, the European Wind Energy Association, and the Global Wind Energy Council. International NGOs have been influential in the wind sector, in addition to the national and international associations. Greenpeace, Friends of the Earth and Worldwide Fund for Nature have been successful in rallying support for the use of wind. Advocates for the use of wind stress that fossil fuels “produce pollution and waste; are subject to depletion, leading to higher costs in the interim; [and] cause insecurity of supply, because of the need to import from producer countries prone to political tensions.”⁸ On the other hand, advocates stress the importance of renewable energy by stating that, “[it is] ‘green’, ‘clean’, and ‘friendly’, since in use [it produces] no atmospheric pollution or hazardous waste; [is] inexhaustible and ‘free’, leading to stabilization of costs; [and] increases

⁷ SZARKA, *supra* note 2, at 47.

⁸ *Id.* at 51.

security of supply, due to indigenous production.”⁹ The associations and the NGOs have teamed up to make wind energy a core technology aimed at reaching targets for the reduction of greenhouse gases under the 1997 Kyoto Protocol.¹⁰

Chapter 4 – Promoting Wind Power through National Policies

- **Chapter Summary:** This chapter discusses several reasons why policy support for wind energy is necessary. The chapter focuses on the use of subsidies, taxation and regulations as a source of policy support.
- **Chapter Review:** A number of factors lead to the need for policy support for renewable energy. First, cheap conventional energy sources in the 1990s and early 2000s made it difficult for renewable energy to compete in price.¹¹ Second, conventional sources often have received subsidies from the government. Third, “the ‘external costs’ for the environment and society associated with conventional energy sources are not fully included in market prices.”¹² Fourth, lower prices for conventional electricity existed due to ‘sweating assets,’ which existed because there was no need to install new equipment.¹³ Fifth, the price of renewable energy is more expensive than conventional energy, and one possible way to make the renewable energy more competitive is through subsidies.

Several sources encouraged the growth of the wind industry. The most common sources include subsidies, taxation, feed-in tariffs, and regulations. Feed-in tariffs and subsidies proved to be most successful in the wind industry. For example, “With a feed-in system,

⁹ *Id.*

¹⁰ SZARKA, *supra* note 2, at 52.

¹¹ *Id.* at 63.

¹² *Id.*

¹³ *Id.*

a tariff per kilowatt hour is imposed by government or agreed by stakeholders, and the market decides on the quantity.”¹⁴ Denmark’s success in the wind sector showed its government’s support. In 1979, the Danish government provided a 30 percent subsidy to owners of wind turbines in order to encourage the production of renewable energy. In addition, Denmark until 2001 prescribed to the use of feed-in tariffs, which allowed Denmark to become a preeminent leader in wind energy. Support for wind energy in Spain also came through subsidies and feed-in tariffs. Therefore, the illustrations demonstrate that government support encourages the growth of the wind sector, which allows for a decrease in reliance on fossil fuels.

Chapter 5 – Drawing Policy Lessons from Cross-National Comparisons

- **Chapter Summary:** Capacity and planning for its implementation are two important policy issues in the wind sector. The two dominant forms for resolving capacity issues are the renewable feed-in tariff and the renewable portfolio standard.
- **Chapter Review:** Renewable feed-in tariffs differ from the renewable portfolio standard, in that renewable feed-in tariffs support addition of endless capacity, while the renewable portfolio standards cap market share in relation to a time period. Countries such as Denmark, Germany, and Spain, which favor the use of feed-in tariffs, are closer to meeting their marks for renewable energy, compared to those countries that use the renewable portfolio standards. Experience shows that the advantage to the use of feed-in tariffs for wind energy are “guaranteed and predictable prices together with a power purchase obligation creates a low risk investment environment; the instrument thereby encourages a wide range of new entrants and dependence on utilities is decreased; a cost

¹⁴ SZARKA, *supra* note 2, at 67.

reflective approach is achieved by differentiation between technologies; degressive rates stimulate competition between manufacturers, and reduce costs for customers; expansion of the wind turbine manufacturing sector is stimulated; [and] no implications for the government budget, as subsidies are paid by customers.”¹⁵

Chapter 6 – Integrating Wind Power into the Electricity Supply Industry

- **Chapter Summary:** Chapter six focuses on the electricity supply industry and the battle to integrate renewable energy forms into the electricity sector, in order to replace fossil fuels.
- **Chapter Review:** Fossil fuels, such as coal, remain the dominant producer of electricity. Data shows that “coal provides approximately half of the electricity generation in Denmark and Germany, and a third in the UK and Spain.”¹⁶ However, coal usage in Denmark and the UK has decreased by forty to fifty percent since the 1980s. Wind power would be the most positive substitute for the use of coal to produce electricity, since coal is the most polluting energy source, while wind energy is emission free. For example, Denmark began to phase coal out in the 1980s. After the oil scare in the 1970s, Denmark switched to coal as its dominant source of energy. However, the switch to coal “aggravated the problem of atmospheric emissions.”¹⁷ Wind energy became a friendly atmospheric substitute to the use of coal, and the Danish people were receptive to the idea of wind energy. In addition, the government encouraged the use of wind through purchase obligations requiring utility companies to purchase wind power.

¹⁵ SZARKA, *supra* note 2, at 104.

¹⁶ *Id.* at 111.

¹⁷ *Id.* at 113.

However, the problem of integrating the electricity supply industry goes beyond finding acceptance, to convert from fossil fuel to wind energy, within a particular country.

Another problem with the conversion to wind energy as a producer of electricity lies in the electric grid. “Conventionally-sourced electricity is ‘dispatchable’, meaning that programmed quantities can be delivered by increasing or decreasing generation at will.

However, wind energy is one of several renewable sources based on natural ‘flows’ rather than artificial ‘stocks’.”¹⁸ The uncertainty in the flow of wind leaves many people to doubt that wind energy would be able to stand alone as the sole source of electricity.

Although there are several barriers that stand in the way of wind energy becoming the dominant source of electricity, wind energy has the ability to provide many positive benefits to the environment such as reducing global warming by cutting greenhouse gas emissions. Studies reveal that “for wind power to reduce atmospheric emissions by substitution, the following conditions must be met: 1) electricity from wind energy must directly displace generation from a fossil-fuel source (rather than substitute for a non-GHG [greenhouse gas]-emitting source); 2) the recourse to balancing power due to intermittence should not result in a net increase in fossil-fuel emissions; [and] 3) an increase in electricity demand, where it occurs, should be lower than the increase in electricity supply from wind (and other non-GHG sources).”¹⁹

Chapter 7 – Siting, Planning and Acceptability

- **Chapter Summary:** Chapter seven focuses on siting through the use of zoning as a critical component to the development of wind and social acceptance.

¹⁸ SZARKA, *supra* note 2, at 120.

¹⁹ *Id.* at 129.

- **Chapter Review:** Siting is one of the key critical factors in gaining social acceptance for the use of wind turbines in a particular area. Several legal rules, such as zoning guidelines, have been implemented to gain social acceptance. Conflicts in values and interests arise and these are resolved during the planning process. For example, Denmark and Germany illustrate different planning procedures implemented by their governments. First, during the 1970s Denmark had no official zoning or planning restrictions for wind turbines. By 1997, the Ministry of Environment and Energy “coordinated national planning, regional planning in the counties and local planning in the municipalities....”²⁰ The Danish government encourages public involvement in the planning of wind turbines through public hearings. Currently, several siting requirements are in place. First, there are local plans that specify the height, color and construction of wind turbines. Second, “[n]oise levels are set nationally, with limits of 45 dB(A) for dwellings in rural areas and 40 dB(A) in residential areas.”²¹ Further, designated zones for the construction of turbines exist, which prescribe minimum separation distances for housing, monuments and churches, and for coastlines, lakes and forests. The Danish planning approach fostered community acceptance, which allowed Denmark to become a preeminent leader in the wind industry.

Along with Denmark, Germany achieved success through their planning strategy. For example, German local authorities designate, “on a ‘bottom-up’ basis, areas deemed suitable or unsuitable for wind power deployment.”²² This zoning process, allows the local community and authorities to designate areas, which it deems unsuitable for

²⁰ SZARKA, *supra* note 2, at 145.

²¹ *Id.* at 146 (citation omitted).

²² *Id.* at 147.

turbines, therefore encouraging public acceptance. Therefore, studies revealed that overall social acceptance could arise from three causes: “(1) societal participation in strategic locational guidance; (2) community ownership and (3) wider socio-economic advantages.”²³

Chapter 8 – Contesting Wind Power

- **Chapter Summary:** Although, wind energy is a renewable resource, which would be beneficial to the environment, there are those who oppose the use of wind energy. Protestors to wind energy argue that the construction of wind turbines lacks the ability to compete with fossil fuels, interferes with conservation and interferes with personal enjoyment of the countryside.
- **Chapter Review:** Along with those who support the use of wind energy, as a renewable resource, there are those that oppose the use of wind. Protestors to the use of wind argue three main issues including, technology choice and energy policy, environmental issues and amenity issues.²⁴ First, protestors argue that wind turbines will not be able to compete with fossil fuels in production output due to lack of capacity. Second, protestors oppose wind energy because the construction of wind turbines interferes with the conservation of certain areas. Third, protestors argue that the construction of wind turbines interferes with enjoyment of the countryside, causes nuisance by visual impacts and noise, and contributes to depressed house values. These anti-wind groups find the most power in opposing planning applications, which in turn slows down the construction of proposed wind projects.

²³ SZARKA, *supra* note 2, at 154.

²⁴ *Id.* at 164.

Chapter 9 – Reviewing the Outcomes: Policy Learning and Path Choices

- **Chapter Summary:** Chapter nine recaps the costs and benefits of implementing wind energy as a substitute for the use of fossil fuels in the production of electricity.
- **Chapter Review:** Several costs and benefits arise in the introduction of wind into the electricity sector. One possible way to increase acceptance is to lower the costs, while raising the benefits. Major support of the wind industry came from government's support through subsidies. Another factor that increased support was the use of indicative planning and spatial planning at the community level. Community acceptance goes far in the future development of wind projects. Those who are not satisfied with the local planning can cause serious delays by protesting the planning applications. Therefore, in order to promote the use of wind as an emission free alternative to the use of fossil fuels such as coal, governments must continue to encourage wind projects through financing incentives and community involvement.

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