



# Natural Resources Journal

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45 Nat Resources J. 1 (*Winter*)

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Winter 2005

## Small Wind Systems for Rural Energy Services, by Smail Khennas, Simon Dunnett & Hugh Piggot

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### Recommended Citation

Ebitsam Seoudi Wilkins, *Small Wind Systems for Rural Energy Services, by Smail Khennas, Simon Dunnett & Hugh Piggot*, 45 NAT. RESOURCES J. 264 (2005).

Available at: <http://digitalrepository.unm.edu/nrj/vol45/iss1/12>

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seemingly endless array of external threats posed by relations with other residents of the West, government policies, and even nature. As such, we are reminded that the statement of purpose in the TGA—to stabilize the western livestock industry—was not as ironic as it is often assumed. At the same time, Merrill portrays the bureaucrats with an equally even hand, adding much needed detail on Farrington Carpenter's efforts to implement the TGA.

Having said this, I was a bit disappointed in Merrill's use of property as a focus. I think her main point—that property is not a "thing" but a set of relationships—is both right on the mark and useful. Nevertheless, it seemed to me that property issues end up being more the wrapping on Merrill's package than part of its content. This, however, is a small flaw that does not detract from the strength of her analysis.

I recommend Merrill's book for anyone wanting a new or refocused understanding of an important period in western public land history. Merrill presents her narrative in a marvelously relaxed but confident voice. Overall, Merrill's book is a welcome addition to the literature in the field.

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*Small Wind Systems for Rural Energy Services.* By Smail Khennas, Simon Dunnett & Hugh Piggot. ITDG Publishing, 2003. Pp. 61. \$33.00 paperback.

Wind energy, a mature renewable source of energy, is in use in Holland and other windy areas of the world to provide small-scale electric power for rural areas where no other alternative exists. *Small Wind Systems* describes in its introduction why wind energy is an attractive alternative to use as well as how wind energy can be made more attractive for users. The book answers the question of why the dissemination of small wind generators is still limited. It also addresses the understanding of the technology involved with the use of permanent magnet generators, detailing the design of its components: the blades; the tail vane mechanism; the tower, which raises the system components to a height that is above all the surrounding structures and to where the wind is stronger; the requirements for batteries able to store the electricity; and electrical controls to preserve and protect the life of the system.

*Small Wind Systems* includes a discussion about wind potential, how do you measure wind speed? what is the most optimum place for the generator?, as well as safety considerations to ensure the protection of life and how much power is needed and how much will be generated

in order to design an adequate system for intended use. It is necessary to calculate individual household energy need and use for cooking, refrigeration, heating, and cooling from the battery supply in order to accommodate the number of households connected to the energy supply, taking into account different types of discharge for different types of batteries and then calculating the energy need and designing the system to accommodate such a need. Equations describing the calculations for the size of the battery are provided.

The economics of small wind systems must also be considered. If such systems are to be available commercially, they must be able to make a profit; however, the people who will use the wind system are low- or middle income people in remote areas. The system must be affordable, and establishing mechanisms to finance capitals for such systems is crucial. To estimate manufacturing costs and the possible selling price, the authors visited a diverse range of workshops in the field of wind energy, along with the manufacturers and/or the distributors of different material technologies used. Table 8 lists the itemized costs for individual countries.

*Small Wind Systems* is easy to read, with the contents described in a methodological sequence as to how to go about the assessment of why wind energy should be used. The concept of how wind generation creates power is described in a simple, clear way that is easy to understand and follow. The book describes how to calculate the household energy use and energy management by determining the number of households connected and how to calculate the total energy needs and how to size the battery for the energy generated to be stored as well as matching the needs with the generator and battery capacities. The cost of production and the selling price for profit margin are discussed. Information on financing and battery ownership, as well as battery charging services, is also provided.

The book then goes on to describe the development of a wind energy sector: the factors involved in scaling up from a pilot project to a large-scale sustainable industry; how to seek institutional support from organizations established to offer services such as regulatory environment, funding or technical support; how to go about business development for the long term; and the best situation for manufacturer to be in to have the product bought by at least a minimum number of customers year-to-year, enabling the business to continue to be viable. It is unlikely that generous external support will be available in the medium and long term. It is therefore important that manufacturers use available support at the early stages of production when the business is most vulnerable. Technology transfers from a university or government department that wishes to take a prototype design a step further can be

invaluable. The manufacturer may be asked to produce a number of different designs, or a batch of a proven design. It is important that the manufacturer understands its role from the start and is paid adequately. Training of manufacturers on both technical and business matters can be of great benefit. It is difficult for small manufacturers to keep abreast of the technical developments and new products. General courses on the benefits/constraints of wind energy, as well as courses covering design and construction, should be considered.

The best help for manufacturers would be a healthy market for wind generators. Although this might exist in theory, which means there are sufficient wind resources, low electrification rates, current use of car batteries, sufficient resources or credit available to buy generators, and a lack of feasible alternatives, not much will happen unless the consumer is aware of the product and the manufacturer is aware of the market. Marketing is usually low on a small manufacturer's list of priorities. Help with marketing can come in several forms, such as help with market research, production of marketing literature, securing advertising space, improving the company image, and better product design. Some marketing can be coordinated through trade associations to keep costs down or focused on individual manufacturers with the marketing experts. For any small wind system, the sharing and disseminating of information is crucial.

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*Crude Power: Politics and the Oil Market.* By Øystein Noreng. London: I.B. Tauris & Co. Ltd., 2002. Pp. 1254. \$65.00 cloth.

*Crude Power: Politics and the Oil Market*, by Norwegian Øystein Noreng, is an ambitious book. Noreng openly reveals his scholarly intentions: to prepare a comprehensive examination of the interaction of economic and political forces in the world oil market. The functioning of the world oil market remains unexplained and unpredictable, largely because of the shortcomings of applying traditional economic theories to the complexities of oil. Economic theories typically make assumptions about markets without adequate consideration of institutions, politics, ideologies, and social conditions. These factors, says Noreng, must be considered, or international relations surrounding the production and use of oil will continue to be marked by volatility, unpredictability, and violence.

The importance of oil to world politics and economics cannot be overstated. Oil is prized and needed by all governments, yet, by accidents of geology, oil is produced in large quantities by a relatively