



Book reviews

Renewables-Based Technology: Sustainability Assessment, J. Dewulf, H. Van Langenhove (Eds.). John Wiley & Sons Ltd., Chichester, West Sussex, England (2006). 370 pp., Price: US\$ 135.00, ISBN: 0-470-02241-8

The area of “Sustainability” is receiving, and deservedly so, much attention from scientists in academia, government and industry. Not the least of the reasons for this interest is found on the back cover of the book: “With the current rate of consumption we have fossil oil reserves left for 40 years.” This attention-grabbing statement is sure to attract readers to this book which is the second in Wiley’s series in *Renewable Resources*.

The book is not an “easy read.” Instead, it is a very well written, technically based discussion of sustainability and an evaluation thereof. The book has 20 separate chapters published under the following major section titles:

1. Renewables as a resource and sustainability performance indicators;
2. Relevant assessment tools;
3. Case studies;
4. Conclusions.

The various chapters were authored by no fewer than 35 scientists from seven different European countries as well as Canada and the United States. As noted above, the book has three major sections plus a concluding chapter described by the publisher thusly: “Part one introduces the quantitative assessment of renewables, their potential as feed stock for industry, and an overview of sustainability performance indicators. Part two introduces the key sustainability methods and techniques that are currently used. Part three contextualises these methods by providing case studies that are set within the major industries benefitting from renewables.”

This book is one in a new Wiley series dealing with *Renewable Resources*. One book, *Wood Modification*, has already appeared. Forthcoming books include: (1) *Starch Biology*, (2) *Structure and Functionality*, and (3) *Biofuels*.

In a chapter written by the book’s editors, sustainability is defined as follows: “Sustainable development is a development that meets the needs of the present generation without compromising the needs of the future.” At the end of the chapter, the authors note the use of thermodynamics can serve as a strong

basis to assess sustainability of technology, including the role of renewable resources in this perspective.

Not surprisingly, biofuels, especially ethanol, are the topic of several sections in this book. The analysis is intriguing, especially since it involves calculations of net energy balancing, which has become the accepted practice for measuring and comparing the energy efficiency and sustainability of various renewable energy sources. The foregoing chapter notes that ethanol production yields more energy than is used to produce it.

But discussion of alternative (to gasoline) fuel supplies is not limited to ethanol. Duffield et al., of the U.S. Department of Agriculture discuss the production of biofuel from oil-bearing crops such as soybeans, rapeseed, canola, mustard seed, palm oil, coconut oil, peanuts, and sunflower seeds.

Currently there is much interest in a better way of solid waste disposal. Already in place are methods for collecting methane gas at many landfills. However, direct treatment of organic wastes is being seriously studied. That is the topic of Chapter 15 which is entitled “Assessment of organic waste treatment.” The concluding line of this chapter is as follows: “The results show that organic waste has the potential as a renewable energy source with respect to environment, energy and economy.”

I have not done justice to this book in this review. There were just too many well-written chapters to discuss all of them in detail. Each was unique and well written and was a scientifically based analysis of energy production processes.

In my opinion, this book will provide a valuable research tool for scientists interested in renewable technologies.

Gary F. Bennett*

*The University of Toledo, Department of Chemical and
Environmental Engineering, Mail Stop 305, Toledo,
OH 43606-3390, United States*

* Tel.: +1 419 531 1322; fax: +1 419 530 8086.
E-mail address: gbennett@eng.utoledo.edu

19 August 2006

Available online 28 September 2006

doi: 10.1016/j.jhazmat.2006.08.084