

BIOENERGY FROM SUSTAINABLE FORESTRY: GUIDING PRINCIPLES AND PRACTICE

edited by J. Richardson, R. Björheden, P. Hakkila, A. T. Lowe, and C. T. Smith

Kluwer Academic Publishers, Dordrecht, The Netherlands.
2001. 343 + xiv pages. ISBN 1-4020-0676-4

Two hundred and fifty years ago the dwindling forest resources of Britain caused by the Industrial Revolution hastened the switch from wood to coal as a fuel. In the past 25 years increasing concern about the undesirable side effects resulting from burning fossil fuels has reignited an interest in wood as a fuel in developed countries. This book brings together the results of much of the resulting research. The keen awareness of Nordic peoples on environmental issues, together with their excellent forest research organisations, means that this book has a decided Nordic bias. Coverage is strongly, but not exclusively, focused on solid fuel production from conventional forests in developed economies. While the ideas expressed need evaluation in the light of the wide diversity of economies and forest practices among nations, the authors are to be congratulated on providing a compact summary of the present state of knowledge and political thinking.

Chapter 1 provides the geopolitical framework within which the use of forest products for fuel must be considered. International issues such as the conventions on biological diversity, and climate change, the Kyoto protocol, air pollution conventions are discussed with a view to answering the question “Why biomass for energy?”. Readers wanting an “easier” entry to the book might choose to turn first to the highly readable final chapter on a “framework for conventional forestry systems for sustainable production of bioenergy”.

Chapter 2 summarises information on fuel resources from the forest in terms of types, quantities, and fuel characteristics. There is a vast world literature on the quantity and distribution of organic matter within forests that has been developed over the past 50 years. Readers will need to explore this literature to determine the relevance of this book to their own particular circumstances.

Chapter 3 discusses the production of forest energy and the interrelations between “conventional” forestry and harvesting of fuel. It illustrates the results of innovative thinking within the context of Nordic forestry and thereby presents a challenge to those of us in other, different, environments.

Chapter 4 covers the dollar costs of wood energy and discusses the profitability of fuel wood operations as they are related to costs of alternative fuels. Reading this chapter may tempt one to look forward to Chapter 7 which considers policy and institutional factors. Dollar profitability is strongly dependent on distance from sources of supply and such costs as carbon emission taxes, air pollution, and the like. It would be interesting to see this subject discussed in terms of energy balance. How does net energy “return” decrease as transport distance increases? What is the energy cost of harvesting compared with energy yield for different forest fuel types?

Chapter 5, comprising about one-third of the book, deals with environmental sustainability of forest energy production. Topics covered have universal application irrespective of the

“goods” being harvested from forests. The authors state that “sustainable forest management is an evolving concept”. “Sustainability” is such a fundamental concept for the survival of human civilisation, let alone the survival of the wide diversity of other life forms, that it needs precise definition. Consequently, I would have preferred the authors to have given a much more rigorous definition of sustainability. Why, for instance, is biodiversity an integral part of sustainability in *commercial* forestry when it is clearly not so for other forms of exploitative land use? What specifically should be, or is being, sustained? If, for instance, average carbon content of the forest ecosystem falls to a lower but stable level (as is likely), is that a failure of sustainability? Should biodiversity be “sustained” using forest parks maintained in their “natural” state rather than in production-based ecosystems?

Such criticism aside, this chapter provides a useful summary of the complex ecology of managed forests, whether used as a source of fuel or not. It provides a well-written summary of environmental impacts which should be of concern to non-foresters (engineers, energy planners, environmentalists, and the like) who may become involved in forest-based energy production.

Chapter 6 deals with social implications. In contrast to the remainder of the book, a third of the chapter is devoted specifically to conditions in a wide variety of developing countries. Reading these accounts suggests a need for a companion volume covering sustainable bioenergy in developing countries.

Chapter 7 covers policy and institutional factors affecting forest energy. Interactions of energy policies, forestry laws, labour laws, tax policies, air pollution regulations, and international agreements conspire to make or break the use of forest fuels. The author of this chapter states that “good energy policies should be transparent, cost-effective ... and fair”. Whether this is achievable, given the prediction of a forest bioenergy industry which will depend more on market forces, remains to be seen.

Like any substantial text this volume requires attentive reading. It provides an entry into a wide range of topics of concern to commercial forestry. I hope that it will stimulate its readers to think in innovative ways so that the potential for forests to yield significant amounts of renewable energy may be achieved.

H. A. I. Madgwick
36 Selwyn Rd
Rotorua