

Review: Sustainable Energy: Choosing Among Options

By Jefferson W. Tester ...[et al.].

Reviewed by [Umar Karim Mirza](#)

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Jefferson W. Tester, Elisabeth M. Drake, Michael J. Driscoll, Michael W. Golay and William A. Peters. *Sustainable Energy: Choosing Among Options*. Cambridge, MA: MIT Press, 2005. 872 pp. ISBN: 0-262-20153-4, US\$78.00 (cloth). Alkaline paper.

All the authors of *Sustainable Energy* are associated with MIT. Jefferson W. Tester is H. P. Meissner Professor of Chemical Engineering, Elisabeth M. Drake is Associate Director of the Energy Laboratory, Emeritus, Michael J. Driscoll is Professor of Nuclear Engineering, Emeritus, Michael W. Golay is Professor of Nuclear Engineering, and William A. Peters is Executive Director of the Institute for Soldier Nanotechnologies.

The book gives a detailed overview of energy resources available today, their economic evaluation and the technologies to exploit them. Some of the emerging technologies are also presented. A detailed account of the effects of energy use on environment and energy sustainability is given as well.

Chapter 1 defines sustainable energy as the engine of sustainable development. The second chapter gives an idea about estimation and evaluation of energy resources. Units of measurement are discussed and difference forms of energy are compared as well. Chapter 3 elaborates thermodynamics and transport of heat energy. Local, regional, and global environmental effects of energy are described in Chapter 4. Adverse effects as well as benefits are discussed. Economic evaluation of energy projects is provided in Chapter 5. The next chapter gives an account of energy systems and sustainability metrics. Chapter 7 focuses on fossil energy while Chapter 8 gives a description of nuclear energy. Chapters 9 through 15 discuss renewable energy in general as well as various specific types. The following chapter treats energy storage, transportation, and distribution. Electric power sector description is discussed in Chapter 17. Chapters 18 through 20 present energy use in transportation, industry, and commercial and residential buildings. Synergistic complex systems are illustrated in Chapter 21. The last chapter describes the options we have and offers a few questions as well. Lists of conversion factors and acronyms, and a useful index follow.

While mostly descriptive in nature, this book does touch the mathematical side of things when necessary. Every chapter is followed by references for

further reading, and a list of problems and relevant Internet resources where applicable.

This book is for diverse audiences. It can be used as a textbook for advanced courses in engineering, public policy, or environmental science. Outside academics, it can be treated as a sustainable energy reference work by government, industry and NGO personnel.

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