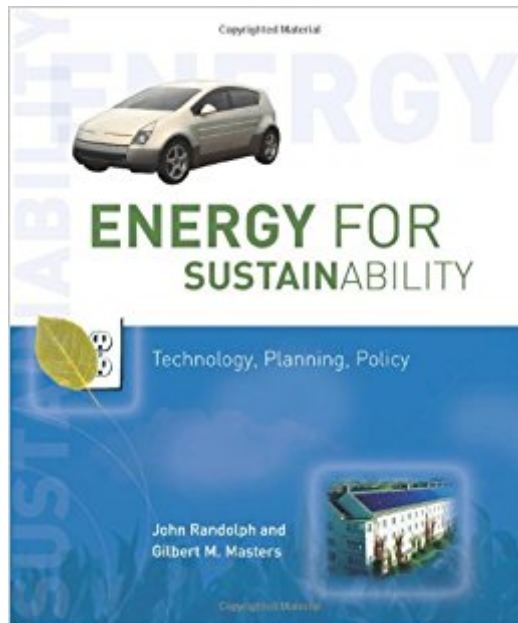




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# Energy For Sustainability: Technology, Planning, Policy



## Synopsis

Energy for Sustainability is the first undergraduate textbook on renewable energy and energy efficiency with a unique focus on the community scale. Written by two of the foremost experts in the field, it is a pedagogically complete treatment of energy sources and uses. It examines the full range of issues from generating technologies to land use planning in making the transition to sustainable energy. The book begins by providing a historical perspective on energy use by human civilizations and then covers energy fundamentals and trends; buildings and energy; sustainable electricity; sustainable transportation and land use; and energy policy and planning. Included in these topical areas are in-depth discussions of all of the most promising sources of renewable energy, including solar photovoltaic systems, wind turbines, and biofuels. In addition, the authors offer a thorough presentation of “green” building design, the impact of land use and transportation patterns on energy use, and the policies needed to transform energy markets at the local, state, and national levels. Throughout, the authors first provide the necessary theory and then demonstrate how it can be applied, utilizing cutting-edge practices and technologies, and the most current available data. Since the dawn of the industrial age, the explosive growth in economic productivity has been fueled by oil, coal, and natural gas. World energy use nearly doubled between 1975 and 2005. China’s energy use has been doubling every decade. The implications for the environment are staggering. One way or another, our reliance on fossil fuels will have to end. Energy for Sustainability evaluates the alternatives and helps students understand how, with good planning and policy decisions, renewable energy and efficiency can support world demands at costs we can afford economically, environmentally, and socially.

## Book Information

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## Customer Reviews

"I've been teaching energy policy in the U.S. and in Sweden for more than thirty years – and have always been looking for suitable text books. The Randolph and Masters book is one of the best that I've seen. I wish that it had been available years ago." (Dean Abrahamson, Professor Emeritus, Energy and Environmental Policy, University of Minnesota)"The right book at the right time! Energy for Sustainability is aimed at technologists and policy-makers, but it ought to be the primary text for a national conversation about the most important issues before the nation. It is the best and most inclusive discussion of the critical choices about energy issues that I know . . . will be the standard for years to come." (David W. Orr, Paul Sears Distinguished Professor, Oberlin College)"[A]n interdisciplinary and encyclopedic approach seeking to inform policy makers and technologists in equal shares." (Reference & Research Book News)"Energy for Sustainability provides two vital services to the rapidly expanding clean energy field: first, it presents the methods and analytic tools needed to evaluate energy choices in their full and modern technical, economic, and environmental context; and second, it offers the latest information on the wide range of innovations that make this field so exciting and dynamic. This book will no doubt fast become the standard for teaching and instruction as clean and efficient energy goes mainstream." (Dan Kammen, University of California, Berkeley)

John Randolph is director of the School of Public & International Affairs and professor of environmental planning at Virginia Polytechnic Institute and State University. He is the author of Environmental Land Use Planning and Management (Island Press, 2003). In 2006, he was awarded the William R. and June Dale Prize for Excellence in Urban and Regional Planning.Ã Â Gilbert M. Masters is professor of civil and environmental engineering (emeritus) at Stanford University. He is the author of six books, including the widely used textbook Introduction to Environmental Engineering and Science.

A comprehensive, easy-to-read book, covering a wide range of renewable energy sources. It's non-complex, barely any math, but technical enough, with excellent color charts and graphics. If you ever take it to any technical meeting, it's a conversation-starter (mostly because it's so dang big).

It's community college level, and it was required for one of my classes, but useful in others.

This book provides a clear, comprehensive and an excellent introduction to the technical basis, systems design, economic analysis, environmental impact and planning/policy of renewable and sustainable energy. Based partly on Prof. Masters' earlier work (Renewable and Efficient Electric Power Systems), this volume is completely redesigned and rewritten from the ground-up taking a multidisciplinary and whole life cycle approach. Entirely new chapters are presented on:

- a. energy analysis - history, future, market, economic, environmental and life-cycle analysis
- b. energy theory - mechanical, thermal, chemical, nuclear, electrical, etc.
- c. green buildings - cradle-to-cradle analysis of the built environment, ZEH, etc.
- d. transportation - well-to-wheels analysis, PHEV, FCEV, etc.
- e. land use planning - transit-oriented development, smart growth models, etc.
- f. policy/planning - regulations, standards, ITC, PTC, FIT, carbon trading, RPS, etc.

The above are in addition to full chapters (with the latest updated material) on various renewables such as:

- a. solar (both photo-voltaic and thermal)
- b. wind
- c. biofuels
- d. microturbines, fuel cells, CHP, etc.

The book provides most anything (nearly 800 pages) one wants to know under the clean-tech sun (at the undergraduate level prior to doing further advanced research on a specific area of interest). The book analyses each topic fairly thoroughly and explains everything very clearly. It is published by a non-profit which proly explains the too-good-to-be-true low price. One thing to note is that the end-of-chapter problems are slated to be online and aren't in the book itself. Reading is a joy with numerous colorful graphs, tables, diagrams, flowcharts, real-world examples and actual photos. If you had to buy only one book in this space, u couldn't go wrong here - it is destined to be a classic.

The book was torn when it got here.

This book was used as the primary texts for a graduate, yet intro-level Alternative energy class. As the class was set up in a survey-type format encompassing a wide variety of different topics from heat transfer equations to sizing wind turbines, to policies that will affect the future of renewable energy practices, this book gives the reader a great start.

**PROS:**-Easy Read. The book flows fluidly and does not read like a textbook. Although being fairly long, I was able to grasp the concepts within each given chapter fairly quickly.

-Comprehensive view of the sustainable engineering practices: The book not only goes into technical details of solar panel sizing and heat loss equations, but spends some time making the reader aware with the economic and political factors that will affect the future renewable energy.

**CONS:**-Few example problems of the mathematical concepts: If you are a "learn

by doing a lot of practice problems" type person, I suggest you supplement this book with another book.-No specific topic is delved into extensively: As I mentioned, this is a survey-level intro textbook that encompasses the entire renewable energy sector. If you are more interested in a specific type (solar, wind, bio, etc.) you should look elsewhere.

Hate this book. The writing is confusing. It has made my class horrible because the professor relies only on this text and the slides that accompany it. My whole class does not like reading this monstrosity of a book. The data is out dated as well.

received it in good condition!

Pretty well written book, I enjoy learning from it. The book is too large and is heavy. The authors or book company should have split the book into two separate books,(Energy for Sustainability I & Energy for Sustainability II). It is a lot of weight to be carrying around.

this is a very informative textbook used for a very informative class- tons of info in it

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