*Recomended by Ognjen Perišić, Big Blue Genomics*

***ENERGY: SOURCES, UTILIZATION, LEGISLATION, SUSTAINABILITY, ILLINOIS AS MODEL STATE***

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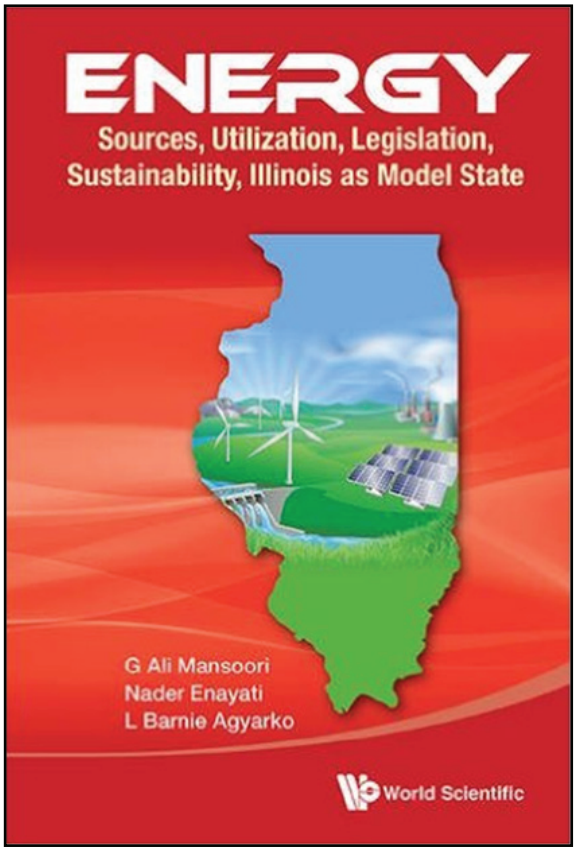


The human civilization and its development strongly depend on energy utilization and production. Ancient Egyptian, Greek, Roman and Chinese civilizations (to name just a few) relied heavily on cheap animal and human labor (slaves often), and the power of wind. Although being able to create remarkable achievements in culture, as well as in philosophy, science and technology, the development of these civilizations was limited by the means and methods they applied to utilize energy. The materials they used were mostly limited by the amount of thermal energy single individual, or a small group of people, could produce and utilize. Furthermore, the transport of goods and information took weeks and often months. Under such circumstances, the development of civilization stalled, and even reversed (Dark ages in Europe). The stagnation was truly overcome only when new and advanced types of energy were introduced (more advanced sailing ships and the introduction of steam power, for example). This tells us that the nature and fate of human societies are strongly related to the types of energy they produce and employ (it would be difficult to imagine steam powered computers running our businesses or wind powered space ships putting man on the Moon). The present day human civilization reached a critical point. Its sustainability is not yet under peril and its growth has not stalled yet, but the time and space for maneuvers are becoming dangerously limited. With fossil fuels becoming heavily depleted, nuclear energy relying on “dirty” fission processes and nuclear fusion at least a couple of decades in the future, we are facing a crisis not many people are fully aware of. At this critical moment Professor G.A. Mansoori and his co-authors wrote an excellent book aimed to provide a road map through energy production, conversion, conservation, sustainability, and storage, environmental issues associated with energy, and economics and future trends of energy technologies. The book can be of great help and assistance to both policy makers and energy professionals, and may be of interest to scientific and engineering communities as well. It can also be a great educational resource for students and scholars interested in energy production and consumption and it can ease the understanding of the above-mentioned issues to the general public. The 800-page book is excellently written, and its language is easily accessible to both technical and non-technical individuals.

This comprehensive book on energy is timely published after the COP 21, Conference of Parties, 2015 United Nations Climate Change Conference held during December 2015 in Paris, France. Nearly 200 countries signed the COP21 climate agreement on December 12, 2015. The historic agreement was aimed to reduce, or even prevent, environmental effects of global warming by reducing release of greenhouse gases into the atmosphere.

It is generally accepted, and the book follows that paradigm, that the increase in greenhouse gas production over the last few centurie has been the result of industrial revolution and the societies’ thirst for energy. To alleviate the release of greenhouse gases and their adverse effects on environment, new challenging ideas for more efficient methods of energy conversion have been developed.

The book by Prof. Mansoori and his coauthors presents and discusses them all. While the efforts by scientists and innovators to surmount these challenges are certainly admirable, the book emphasizes that the collective effort of citizens and the society at large is necessary to truly achieve a meaningful result. The full participation of the public can be achieved only when people learn about the principles behind energy production and use, realize the extent of the problem in hand and become aware that their involvement can make longer-lasting positive effects. This book is, therefore, an excellent medium for providing data and information to scientists and engineers about more efficient energy consumption, energy sustainability and environmental protection. The book argues that those should be among the main agendas of public policy.

All the major (nonrenewable and renewable) energy sources including fossil fuels (coal, petroleum, natural gas), nuclear, geothermal , wind, solar, and biomass are discussed in the book. Furthermore, the book also describes the storage methods developed to handle different types of energy. The descriptions in the book are also followed by real-world examples of energy conversion and storage. The book describes various examples of government, municipality, and private businesses involvements in promoting energy efficiency and environmental protection and uses them to illustrate the effectiveness of collective action. Considering that the State of Illinois, USA (the home state of the authors), had a pioneering role in all aspects of energy productions and application, it is used as a model state in this book. For example, the first peaceful application of nuclear energy was achieved in the State of Illinois, at the University of Chicago, where the first nuclear reactor able to reach criticality and produce electricity was developed. Illinois is also a state with largest coal consumers, biggest underground fossil fuel reservoirs and a pioneer in biofuel technologies and the application of renewable sources of energy.

This book consists of eleven chapters and a long glossary of energy-related technical and scientific terms and definitions. One can get a glimpse of this excellent book and read its Preface, and Chapters 1 and 2, and the detailed qualifications of the authors at the book's electronic site: https://www.amazon.com/Energy-Utilization-Legislation-Sustainability-Illinois-ebook/dp/B0179ECP70/

I recommend this book to students and scholars interested in energy production and consumption, practicing energy professionals and scientists, policy decision makers, and general public interested to know what to do about energy: sources, utilization, legislation, and sustainability.

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