

# Preface

A secure supply of energy resources is generally agreed to be a necessary but not sufficient requirement for development within a society. Furthermore, sustainable development demands a sustainable supply of energy resources. The implications of these statements are numerous, and depend on how “sustainable” is defined. One important implication of these statements is that sustainable development within a society requires a supply of energy resources that, in the long term, is readily and sustainably available at reasonable cost and can be utilized for all required tasks without causing negative societal impacts.

Energy sources and their utilization are intimately related to sustainable development. For societies to attain or try to attain sustainable development, much effort must be devoted not only to discovering sustainable energy sources but also to increasing the energy efficiencies of processes utilizing these resources. By increasing the energy efficiencies, society maximizes the benefits it derives from utilizing its energy resources, while minimizing the negative impacts associated with their use. This implication acknowledges that all energy resources are to some degree finite, so that greater efficiency in utilization allows such resources to contribute to development over a long period of time, i.e., to make development more sustainable.

Since sustainable energy technologies appear to be a primary path for sustainable development, it is a critical area where the conference series on Sustainable Energy Technologies was initiated and focused. The conference, since 2002, has been running successfully under the title of “International Conference on Sustainable Energy technologies (SET).” The conference has a multidisciplinary nature and aims to provide a forum for researchers, scientists, engineers, and practitioners from all over the world to exchange information, to present high-quality research results and new developments in the wide domain covered by sustainable energy technologies, and discuss the future direction and priorities in the field.

This unique volume contains, in addition to some invited contributions, selected papers from the 11th International Conference on Sustainable Energy technologies (SET-2012), September 2–5, 2012, Vancouver, Canada. The primary theme of the

book is sustainable development depending on sustainable energy technologies. It covers a broad range of topics on sustainable energy, sustainable environment, sustainable buildings, sustainable development, energy and exergy analysis, entropy generation, energy strategy, energy savings, waste management, hydrogen production, fuel cells, heat pumps, heat and mass transfer applications, low energy buildings, etc.

In conclusion, the editors of this volume gratefully acknowledge the assistance provided by Dr. Ugur Akbulut in reviewing and revising several chapters, checking for consistency and finalizing them for publication. The editors also register their sincere appreciation to the authors for their contributions which have made this unique book possible. Furthermore, Dr. Dincer acknowledges the support provided by the Turkish Academy of Sciences in Ankara, Turkey.

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Progress in Sustainable Energy Technologies Vol II

Creating Sustainable Development

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2014, XI, 726 p. 314 illus., 192 illus. in color., Hardcover

ISBN: 978-3-319-07976-9