# Table of Contents

Preface.................................................................................................................................................. xiii

## Section 1

### Renewable Energy and Energy Applications and Concepts

#### Chapter 1
Encouraging the Development of Renewable Energy: The Role of Cooperatives......................... 1  
*Eric Viardot, EADA Business School, Spain*

#### Chapter 2
Productive Use of Renewable Energy (PURE) for Economic Development in Developing Countries....... 16  
*Phillip Olla, Madonna University, USA*  
*Nkemdilim Onwudinjo, Madonna University, USA*

#### Chapter 3
Energy Management System Concepts.................................................................................................. 31  
*Adam Bedford, UCLAN, UK*

#### Chapter 4
Review of Energy Efficiency Adoption Literature from a Demand Side Management Perspective: Taxonomy of Research Approaches .................................................................................. 54  
*Ibrahim Iskin, Portland State University, USA*  
*Tugrul U. Daim, Portland State University, USA*

#### Chapter 5
Renewable Energy Scenario of Pakistan for Sustainable Development............................................ 79  
*Asif A. Shah, Mehran University Institute of Science & Technology Development (MUISTD), Pakistan*  
*Arabella Bhutto, Mehran University Institute of Science & Technology Development (MUISTD), Pakistan*  
*S. M. Qureshi, Mehran University Institute of Science & Technology Development (MUISTD), Pakistan*  
*Ambreen Shah, University of Sindh, Pakistan*  
*A. A. Shah, Mehran University of Engineering and Technology (MUET), Pakistan*  
*Wajiha Shah, Mehran University of Engineering and Technology (MUET), Pakistan*
Section 2
Sustainable Development Concepts

Chapter 6
Approaches for Measuring Sustainability
Evangelos Grigoroudis, Technical University of Crete, Greece
Vassilis S. Kouikoglou, Technical University of Crete, Greece
Yannis A. Phillis, Technical University of Crete, Greece

Chapter 7
The Drivers for a Sustainable Chemical Manufacturing Industry
George M. Hall, University of Central Lancashire, UK
Joe Howe, University of Central Lancashire, UK

Chapter 8
Are Biofuels a Factor of Sustainable Development in a Food Insecurity Context in Africa?
Case Study of Burkina Faso
Marie-Hélène Dabat, Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Burkina Faso
Joël Blin, Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Burkina Faso & 2iE, Institut International d’Ingénierie de l’Eau et de l’Environnement, Burkina Faso
Elodie Hanff, 2iE, Institut International d’Ingénierie de l’Eau et de l’Environnement, Burkina Faso

Chapter 9
Sustainability Assessment Approaches: Towards a Global Sustainability Development
Gonzalo Fernández Sánchez, Universidad Europea de Madrid, Spain

Section 3
Renewable Energy Technologies Innovations

Chapter 10
Impacts of Wind Generators on the Dynamic Performance of Power Systems
M. Jahangir Hossain, The University of Queensland, Australia
H. R. Pota, The University of New South Wales, Australia
M. A. Mahmud, The University of New South Wales, Australia

Chapter 11
Genomics Perspectives of Bioethanol Producing Zymomonas Mobilis
S. Sheik Asraf, Madurai Kamaraj University, India
K.N. Rajnish, Madurai Kamaraj University, India
P. Gunasekaran, Madurai Kamaraj University, India
Chapter 12
Counter-Rotating Type Power Technologies to Exploit Offshore Energies ........................................ 234
  Toshiaki Kanemoto, Kyushu Institute of Technology, Japan

Chapter 13
Stability Analysis of Grid-Connected Photovoltaic Systems................................................................. 254
  M. A. Mahmud, The University of New South Wales at Australian Defence Force Academy, Australia
  M. Jahangir Hossain, The University of Queensland, Australia
  H. R. Pota, The University of New South Wales at Australian Defence Force Academy, Australia

Chapter 14
Energy from Waste: Present Scenario, Challenges, and Future Prospects towards Sustainable Development ......................................................................................................................... 271
  Kalpana Arora, Indian Institute of Technology, India
  Ashwani Kumar, Indian Institute of Technology, India
  Satyawati Sharma, Indian Institute of Technology, India

Compilation of References ......................................................................................................................... 297

About the Contributors ............................................................................................................................... 327

Index ......................................................................................................................................................... 334