

# Contents

## Part I Multi-Criteria Foundations and Applications

<b>1 Sustainability Assessment of Solar Technologies Based on Linguistic Information . . . . .</b>	<b>3</b>
Fausto Cavallaro and Luigi Ciraolo	
<b>2 Photovoltaic Plants Selection on an Insular Grid Using Multicriteria Outranking Tools: Application in Corsica Island (France) . . . . .</b>	<b>27</b>
Pascal Oberti, Marc Muselli and Pierrick Haurant	
<b>3 Assessment of Green Energy Alternatives Using Fuzzy ANP . . . .</b>	<b>55</b>
Başar Öztayşi, Seda Uğurlu and Cengiz Kahraman	
<b>4 Decision Criteria for Optimal Location of Solar Plants: Photovoltaic and Thermoelectric . . . . .</b>	<b>79</b>
J. Miguel Sánchez-Lozano, M. Socorro García-Cascales and M. Teresa Lamata	
<b>5 A Multi-Attribute Model for Wind Farm Location Combining Cloud and Utility Theories . . . . .</b>	<b>93</b>
José Ramón San Cristóbal	
<b>6 Territorial Design for Matching Green Energy Supply and Energy Consumption: The Case of Turkey . . . . .</b>	<b>107</b>
Seda Uğurlu, Başar Öztayşi and Cengiz Kahraman	
<b>7 A Cumulative Belief Degree Approach for Prioritization of Energy Sources: Case of Turkey . . . . .</b>	<b>129</b>
Özgür Kabak, Didem Cinar and Gulcin Yucel Hoge	

<b>8</b>	<b>MCDA: Measuring Robustness as a Tool to Address Strategic Wind Farms Issues. . . . .</b>	<b>153</b>
	Maria de L. Vazquez, Jean-Philippe Waaub and Adrian Ilinca	
<b>9</b>	<b>Assessment of Energy Efficiency Technologies: Case of Heat Pump Water Heaters . . . . .</b>	<b>183</b>
	Tugrul U. Daim, Craig Kensel and Kenny Phan	

## **Part II Fuzzy Inference, Artificial Neural Net, Algorithm Genetics**

<b>10</b>	<b>A Fuzzy Paradigm for the Sustainability Evaluation of Energy Systems . . . . .</b>	<b>205</b>
	Evangelos Grigoroudis, Vassilis S. Kouikoglou and Yannis A. Phillis	
<b>11</b>	<b>Artificial Neural Networks and Genetic Algorithms for the Modeling, Simulation, and Performance Prediction of Solar Energy Systems. . . . .</b>	<b>225</b>
	Soteris A. Kalogirou	
<b>12</b>	<b>Artificial Neural Network Based Methodologies for the Estimation of Wind Speed . . . . .</b>	<b>247</b>
	Despina Deligiorgi, Kostas Philippopoulos and Georgios Kouroupetroglou	
<b>13</b>	<b>The Use of Genetic Algorithms to Solve the Allocation Problems in the Life Cycle Inventory . . . . .</b>	<b>267</b>
	Maurizio Cellura, Sonia Longo, Giuseppe Marsala, Marina Mistretta and Marcello Pucci	
<b>14</b>	<b>Design and Implementation of Maximum Power Point Tracking Algorithm Using Fuzzy Logic and Genetic Algorithm . . . . .</b>	<b>285</b>
	Adnane Messai and Adel Mellit	

## **Part III Simulation Models and Approaches**

<b>15</b>	<b>Simulation and Renewable Energy Systems . . . . .</b>	<b>311</b>
	H. Kutay Tinç and C. Erhan Bozdağ	
<b>16</b>	<b>Combining Mathematical Programming and Monte Carlo Simulation to Deal with Uncertainty in Energy Project Portfolio Selection . . . . .</b>	<b>333</b>
	George Mavrotas and Olena Pechak	

<b>17 Value Stream Maps for Industrial Energy Efficiency . . . . .</b>	<b>357</b>
Cem Keskin, Umut Asan and Gulgun Kayakutlu	
<b>18 Assessment of Energy Efficiency in Lean Transformation: A Simulation Based Improvement Methodology. . . . .</b>	<b>381</b>
Serdar Baysan, Emre Cevikcan and Şule İtir Satoglu	
<b>19 Socio-Effective Value of Bio-Diesel Production. . . . .</b>	<b>395</b>
Ayca Altay, Secil Ercan and Yasemin Ozlman	
<b>Index . . . . .</b>	<b>423</b>

Assessment and Simulation Tools for Sustainable  
Energy Systems

Theory and Applications

Cavallaro, F. (Ed.)

2013, XXV, 427 p., Hardcover

ISBN: 978-1-4471-5142-5