



Editors:

Assoc. Prof. Azami Zaharim, University Kebangsaan Malaysia, MALAYSIA

Prof. Nikos Mastorakis, Technical University of Sofia, Bulgaria

& Milit. Inst. of University Education, HNA, Greece

Dr. Ioannis Gonos, National Technical University of Athens, NTUA, Greece



# **RECENT ADVANCES in ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT**

**Proceedings of the 6th WSEAS International Conference on  
ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT (EED'08)**

**Cairo, Egypt, December 29-31, 2008**

**Energy and Environmental Engineering Series  
A Series of Reference Books and Textbooks**

**ISBN: 978-960-474-045-1**

**ISSN: 1790-5095**

**Published by WSEAS Press**

**[www.wseas.org](http://www.wseas.org)**

**RECENT ADVANCES in ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT**



# **RECENT ADVANCES in ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT**

**Proceedings of the 6<sup>th</sup> WSEAS International Conference on  
ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT (EED'08)**

**Cairo, Egypt  
December 29-31, 2008**

Energy and Environmental Engineering Series  
A Series of Reference Books and Textbooks

Published by WSEAS Press  
[www.wseas.org](http://www.wseas.org)

ISSN: 1790-5095  
ISBN: 978-960-474-045-1

# **RECENT ADVANCES in ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT**

**Proceedings of the 6<sup>th</sup> WSEAS International Conference on  
ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT (EED'08)**

**Cairo, Egypt  
December 29-31, 2008**

Energy and Environmental Engineering Series  
A Series of Reference Books and Textbooks

Published by WSEAS Press

[www.wseas.org](http://www.wseas.org)

**Copyright © 2008, by WSEAS Press**

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.  
See also: <http://www.worldses.org/review/index.html>

ISSN: 1790-5095

ISBN: 978-960-474-045-1



World Scientific and Engineering Academy and Society

# **RECENT ADVANCES in ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT**

**Proceedings of the 6<sup>th</sup> WSEAS International Conference on  
ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT (EED'08)**

**Cairo, Egypt  
December 29-31, 2008**

**Editors:**

Assoc. Prof. Azami Zaharim, University Kebangsaan Malaysia, MALAYSIA  
Prof. Nikos Mastorakis, Technical University of Sofia, Bulgaria  
and Milit. Inst. of University Education, HNA, GREECE  
Dr. Ioannis Gonos, National Technical University of Athens, NTUA, GREECE

**International Program Committee Members:**

Adrian Rosca, ROMANIA  
Afrim Sylá, MONTENEGRO  
Agelos Papaioannou, GREECE  
Ali Jawarneh, JORDAN  
Andris Buikis, LATVIA  
Bogdan Yosypchuk, CZECH REPUBLIC  
Changcheng Zhou, CHINA  
Dai Limin, CHINA  
Dan Popescu, ROMANIA  
Dimitrios Zissopoulos, GREECE  
Diwan Singh, INDIA  
Dorin Sendrescu, ROMANIA  
Fani Roubani-Kalantzopoulou, GREECE  
Fengze Hou, CHINA  
Filipe Barata, PORTUGAL  
Graúa Brito, PORTUGAL  
Haijun Liu, CHINA  
Hasan Roosta, IRAN  
Homayoun Moghimi, IRAN  
Ionut Resceanu, ROMANIA  
Jose de Jesus Navar Chaidez, MEXICO  
Julian Marshall, UNITED STATES  
Junlian Zhang, CHINA  
K. K. Singh, INDIA  
Kamaruzaman Jusoff, MALAYSIA  
Kanwarjit singh Sandhu, INDIA  
khodarahm bazzi, IRAN  
Konstantinos Kirytopoulos, GREECE  
Kuei-Yang Wu, TAIWAN  
LIjuan Zhang, CHINA  
Limin Dai, CHINA

Mansour Hajihosseini, IRAN  
Margarita Ufimtseva, RUSSIA  
Martin Kijazi, CANADA  
Masoomah Sohrabi-mollayousefi, IRAN  
Minoru Ueda, JAPAN  
Mohamed Shahin, LIBYA  
Mohan Krishnamurthy, UNITED STATES  
Peep Miidla, ESTONIA  
Petr Hájek, CZECH REPUBLIC  
Petronilla Fragiaco, ITALY  
Petros Axaopoulos, GREECE  
Philotheos Lokkas, GREECE  
Pierluigi Mancarella, ITALY  
Reza Sarkandizaji, IRAN  
Ruixiang Liu, CHINA  
Saeid Kamyabi, IRAN  
Selma Celikyay, TURKEY  
Seyyed Nezameddin Hosseini, IRAN  
Sima Yuzhou, CHINA  
Song Cheng, CHINA  
Sri Sudadiyo, INDONESIA  
Tomas Navratil, CZECH REPUBLIC  
Valentina Koliskina, LATVIA  
Vassilis Gekas, GREECE  
Wang Jinggang, CHINA  
Xin-zhuang Cui, CHINA  
Xiuling Ji, CHINA  
Yang Yuanming, CHINA  
Yan-Ju Liu, CHINA  
Yoshiyuki Kaneda, JAPAN

## **Preface**

This book contains most of the papers presented at the conference on ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT (EED'08) held in Cairo, Egypt, December 29-31, 2008.

The conference provides a platform to discuss the theory and applications of environment, ecosystems and development.

In the last few years the focus has been on topics such as Environmental protection, pollution control, environmental modeling, biodiversity, rural development, thermodynamics of ecosystems, solar energy systems, cogeneration systems etc.

This important 3 days multiconference offered to the colleagues 2 banquets (60 different courses -self-service buffet-, live music and live dances with more than 30 dancers and 18 folklore appearances) and one great excursion, (WSEAS offered free buses for the conference excursions and the English speaking tour guide for free. Dec, 31, 2008: Tour in Cairo (Pyramids of Giza, Sun Boat, Sphinx, Papyrus museum, Bazaar), Memphis and Sakkara (Stepped pyramid of Sakkara, Tombs of Nobles, Tombs of ministers, Memphis museum, TiTi pyramid). The 2 banquets were superb and they included oriental dance in 18 different appearances: <http://www.wseas.us/reports/2008/cairo/index.html> as well as Sofi dance and many Egyptian singers.

After the excursion of 31/12/2008, we continued with the Session/Symposium: E-Learning with 18 important papers. The International Scientific Committee met during the Conference in a Cairo restaurant well known for the standards of its cuisine and its friendly atmosphere.

Ways to improve the Conference were discussed over dinner: in particular the topics were revised and new ones were suggested. In addition, a few nominations for new committee members were proposed. Following the meeting, the decision was taken to relocate the Conference, and a few locations were suggested.

The WSEAS Conference Division will investigate these so that the dates and location of 2010 are finalized as soon as possible.

Each paper was reviewed at least by 3 independent reviewers. The WSEAS Secretariat sent each paper to 5 reviewers. Some papers received reviews from 5 different referees. The WSEAS Secretariat forwarded these comments by personalized emails to the responsible for the correspondence author. The full list of the reviewers will be available in the web page: <http://www.worldses.org/reviewers.htm>

The best papers of this multiconference are available now

<http://www.wseas.us/reports/2008/best2008.htm#december2008b>

We thank you for your feedback about the WSEAS Conferences:

<http://www.worldses.org/feedback.htm>

The Editors





# Table of Contents

|  |     |
|--|-----|
| <b><u>Economic Analysis of Solar Combisystems</u></b>  | 9   |
| <i>Nikolaos Taousanidis</i>  |     |
| <b><u>Adaptive PID Controller Based on Reinforcement Learning for Wind Turbine Control</u></b>   | 15  |
| <i>D. Arzaghi-Haris</i>  |     |
| <b><u>Open Loop Control of Doubly-fed Machine with Improved Wind Turbine</u></b>   | 22  |
| <i>Hengameh Kojooyan Jafari</i>  |     |
| <b><u>Marketing Industry in the Digital Era</u></b>  | 28  |
| <i>Liliana Duguleana, Constantin Duguleana</i>   |     |
| <b><u>On the Removal of Hexavalent Chromium from Wastewater: A Comparative Study between Photocatalytic and Chemical Reduction Processes</u></b>                               | 32  |
| <i>Sampa Chakrabarti, Basab Chaudhuri, Sekhar Bhattacharjee, Binay Kanti Dutt</i>  |     |
| <b><u>Intermittent Operation of UASB Reactors as a Strategy to Enhance Anaerobic Degradation of Dairy Wastewaters</u></b>  | 38  |
| <i>H. Nadais, M. Barbosa, A. Almeida, A. Cunha, I. Capela, L. Arroja</i>   |     |
| <b><u>The Effect of the Addition of Salt in the Sample Matrix in MEKC</u></b>  | 44  |
| <i>Sharain Liew Yen Ling</i>   |     |
| <b><u>The Essence of Dead Cattle Organs in producing Biogas - A Sustainable Solution to the Energy Problem in Rural Areas in Bangladesh and other Developing Countries</u></b> | 48  |
| <i>Adnan Jamil, Bjorn Hassler, Mostofa-E-Jamil</i>   |     |
| <b><u>Malaysian Public Attitude Towards Several Modern Biotechnology Applications</u></b>  | 54  |
| <i>Latifah Amin, Jamaluddin Md. Jahi, Abd. Rahim Md Nor, Mohamad Osman, Nor Muhammad Mahadi</i>  |     |
| <b><u>Factors Influencing Malaysian Public Attitude Towards Agro-Biotechnology: Analysis Using Structural Equation Modeling</u></b>  | 63  |
| <i>Latifah Amin, Jamaluddin Md. Jahi, Abd. Rahim Md Nor, Mohamad Osman, Nor Muhammad Mahadi</i>  |     |
| <b><u>Cation Exchange in Zeolites Placed in an Electrokinetic Cell</u></b>   | 82  |
| <i>Omar H. Elsayed-Ali, Tarek M. Abdel-Fattah, Hani E. Elsayed-Ali</i>   |     |
| <b><u>New Energy Marketing</u></b>   | 86  |
| <i>Bruno Grbac, Dusko Radulovic</i>  |     |
| <b><u>A Supply Chain Approach for a Sustainable Decommissioning of an Offshore Oil Platform</u></b>  | 92  |
| <i>Salem Y. Lakhal, M. I. Khan, M. Rafiqul Islam, Souad H'Mida</i>   |     |
| <b><u>Analysis of Traffic Noise in Vicinity Area of Motorway with Plan View and Cross-section Visualized Noise Mapping</u></b>   | 100 |
| <i>Pichai Pamanikabud</i>  |     |
| <b><u>Nanomaterials for Water and Environmental Remediation</u></b>  | 106 |
| <i>Tarek M. Abdel-Fattah</i>   |     |
| <b><u>Evaluation of Sustainability of the Regional Ecological Economic Development by the Modified Ecological Footprint Model</u></b>  | 110 |
| <i>Hongbing Deng, Guohua Liu, Jingzhu Zhao</i>   |     |



|   |     |
|---|-----|
| <b><u>Simulation Solar Hydrogen System under Climate of Malaysia</u></b>  | 116 |
| <i>M. Yahya, S. L. Cheow, M. A. Alghoul, K. Sopian, A. Zaharim</i>  |     |
| <b><u>The Contribution of Solar Energy to Dehumidification System for Drying Heat Sensitive Products</u></b>                  | 121 |
| <i>M. Yahya, K. Sopian, W. R. W. Daud, M. Y. Othman, B. Yatim, M. A. Alghoul, A. Zaharim</i>                                  |     |
| <b><u>An Analysis of the Economic Models and Instruments for Environmental Policies</u></b>                                   | 126 |
| <i>Mihai Roman, Gabriela Prelipcean, Monica Roman, Mircea Boscoianu, Gabriela Cioban</i>                                      |     |
| <b><u>Evaluation of Aerosol Optical Depth on Harvesting of Solar Radiation</u></b>  | 134 |
| <i>Wirat Ai Him, M. A. Alghoul, Syamsyir Akmal Senawi, K. Sopian, M. Y. Sulaiman, M. Yahya, B. Ali, Sohif Mat, A. Zaharim</i> |     |
| <b><u>Impact of Ozone Thickness on Solar Energy Harvesting</u></b>  | 141 |
| <i>M. A. Alghoul, Muzamir Azmi, K. Sopian, M. Y. Sulaiman, M. Yahya, B. Ali, Sohif Mat, A. Zaharim</i>                        |     |
| <b><u>Lessons from an Overlooked Pioneer: Observations Applied to Planting Design</u></b>                                     | 145 |
| <i>Annaliese Bischoff</i>   |     |
| <b><u>Urban Thermal Energy Efficiency Economic and Climate Impact</u></b>   | 150 |
| <i>Mircea Grigoriu, Mihaela Iliescu, Antoniu Beioglu</i>  |     |
| <b><u>Authors Index</u></b>   | 154 |