

Editors: Thomas Panagopoulos, Teresa Noronha, Jose Beltrao



Advances in Urban Rehabilitation and Sustainability

**3rd WSEAS International Conference
on URBAN REHABILITATION AND SUSTAINABILITY (URES '10)**

University of Algarve, Faro, Portugal, November 3-5, 2010

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CENTRO DE INVESTIGAÇÃO SOBRE
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Preface

This year the 3rd WSEAS International Conference on URBAN REHABILITATION AND SUSTAINABILITY (URES '10) was held at the University of Algarve, Faro, Portugal, November 3-5, 2010. The conference remains faithful to its original idea of providing a platform to discuss algorithms, automata, programming languages, software engineering, computer graphics, computer networks, artificial intelligence, wireless sensor networks, human computer interaction, machine learning and pattern recognition, image processing, quantum computing, mobile computing, power systems, automation, telecommunication systems, speech processing etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be indexed by ISI. Please, check it: www.worldses.org/indexes as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

A Conference such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Economic Viability of Passive Houses and Low-Energy Houses



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Applied Engineering & Technology: construction

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Abstract: As the energy demand used for space heating accounts for 78% of EU15 household delivered energy consumption, significant reductions in energy demand can be achieved by promoting low-energy buildings. Our study investigates three building types: the standard house, the low-energy house and the passive house. As more far-reaching measures concerning energy savings usually lead to higher investments, the aim of our study is to perform an economic analysis in order to determine the economic viability of the three building types.

Brief Biography of the Speaker: Amaryllis Audenaert is assistant professor at the Artesis University College of Antwerp and at the University of Antwerp. She is head of education applied engineering: construction. Her area of expertise is the economic and ecological impact of low energy houses and passive houses in relation to standard buildings. The research incorporates the laws of building physics to describe the energetic behaviour of buildings and combines these fundamentals of heat, air and moisture with the thermal comfort of the inhabitants. She authored or co-authored many scientific papers published in reviewed journals or presented at international conferences.

Plenary Lecture 2

Creating Disaster Resiliency in Tropical Storm Regions: Re-Building for Flood Resilient and Sustainable Coastal Louisiana Communities and the Mexican Gulf Coast



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Abstract: The objective of this paper is to present a set of sustainable strategies for guiding the rebuilding of coastal marsh and wetland habitat. These strategies consist of a non-structural approach toward achieving community resiliency from tropical storms and severe weather events occurring in Louisiana and the Mexican Gulf Coast. The strategies build on work by the author during the past five years including funded research projects in Louisiana and field studies conducted in the Netherlands over a six-week period in Spring 2007. There is a well-founded reliance of coastal dwellers and nations on structural defense systems designed to keep out or to minimize flooding from severe storm events such as tropical storms. Substantial financial investments in the construction, maintenance, and monitory of these defense systems have become enormous in fiscal scale. While these systems of concrete barriers, built up earthen levee systems have proven their value, the benefits of non-structural approaches such as constructed wetlands and marshes provide additional protection and in many cases become the first line of defense. This paper will explore flood storm defense strategies that in essence harness the inherent storm mitigation attributes of natural environmental systems, particularly wetlands and marshes. Through the presentation of case studies—projects initiated and carried out by the author—a number of innovative approaches to creating a more sustainable flood hazard defense or resiliency system will be presented. The significant underlying ideas presented in this paper are:

1. There is a role for non-structural approaches as part of a comprehensive approach to flood and storm protection (such as a system of reconstructed wetlands and greenway corridors with water detention capacity).
2. Non-structural approaches are not intended to replace but rather to provide redundancy or backup to structural infrastructure systems (such as canals, pumps, and levees).
3. These non-structural approaches to flood management are sustainable over a long time period requiring minimal to no maintenance.

By incorporating non-structural approaches in comprehensive storm protection communities within tropical and severe storm regions would also be creating more sustainable approach to storm and flood protection. Rebuilding the natural defense systems of a region would also result in greater resiliency from storms by providing redundancy or backup systems that in essence remove building structures directly out of harm's way.

Brief Biography of the Speaker: Professor Sharky is a graduate of the Department of Landscape Architecture, University of California, Berkeley. Was chair and now is professor at Louisiana State University, Robert S. Reich School of Landscape Architecture. Previously taught at Cal Poly Pomona and visiting faculty at Cal Poly San Luis Obispo; The Technion, Haifa, Israel; Southern University, Temuco Chile, Fulbright Distinguished Chair at the University of Algarve, Portugal. Fifteen years of private practice in Anchorage, Alaska. Research interest: informing design through culture and environment and non-structural approaches of planning natural disaster resilient communities and regions. Professor Sharky is a Fellow of the American Society of Landscape Architects.

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