

Portugal SB07

Sustainable Construction

Materials and Practices

Challenge of the Industry for the New Millennium

edited by

Luis Bragança

Manuel Pinheiro

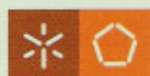
Said Jalali

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Part 1



Universidade do Minho



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PORTUGAL SB07
SUSTAINABLE CONSTRUCTION,
MATERIALS AND PRACTICES
Challenge of the Industry for the New Millennium

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Foreword

The international conference “Portugal SB07: Sustainable Construction, Materials and Practices - Challenge of the Industry for the New Millennium” is organised in the scope of the International Initiative for Sustainable Built Environment (iiSBE). This event is supported by the Portuguese Presidency of the European Union during the second half of 2007 and by a range of international organisations such as CIB, UNEP, SD-MED and COST / European Science Foundation.

This international conference is part of the SB07 regional/national event series and as such constitutes also a preparation for the 2008 World Sustainable Building Conference to be held in September 2008 in Melbourne, Australia. The venue of this conference is also relevant, as it is the first international conference on this topic to be held in Portugal. The organisers hope that this initiative will promote further the sustainability of construction industry and the built environment, consequently, contributing to further sustainable development of Portugal and the other participating countries.

The construction industry is a vibrant and active industry representing approximately 10% of Portuguese GDP. The building sector is responsible for creating, modifying and improving the living environment of humanity. On the other hand, construction and buildings have considerable environmental impacts, consuming a significant proportion of limited resources of the planet including energy, raw material, water and land. Therefore, the sustainability of the built environment, the construction industry and the related activities is a pressing issue facing all stakeholders in order to promote Sustainable Development.

The new millennium is challenging practitioners and researchers with the sustainability of the built environment and the construction industry. Hence, the main purpose of this conference is to discuss these challenges and look for solutions that actively facilitate and promote the adoption of policies, methods and tools to accelerate the movement towards a global sustainable built environment.

The intention of the organizers is to give an opportunity to practitioners, academics, scientists, engineers, architects, contractors, manufacturers, owners and users from all over the world to come together in a pleasant location to discuss recent developments in the field of sustainable construction, materials, practices and construction sustainability assessment.

The conference main topics cover a wide range of up-to-date issues and the contributions received from the delegates reflect critical research and the best available practices in the Sustainable Construction field. The issues presented include:

- Building sustainability assessment tools
- Indoor environment quality and benchmarks
- Sustainable resources and materials use
- Use of non-conventional materials
- Use of industrial waste
- Eco-materials and technologies
- Sustainable management of existing building stock
- Innovative sustainable construction systems
- Design for climate change
- Design and technologies for energy efficiency and conservation
- Design for minimizing and using construction and demolition waste
- Design for service-life
- Design for deconstruction

- Design for flexibility
- Use of IT in design
- Closing the loop
- Actions and policies to implement sustainable construction
- Designing the sustainable city of tomorrow and Urban Sustainability
- Planning aspects for sustainable construction (construction site, procurement and commissioning)
- Integrated decision making process
- Biomimicry and design with nature
- Teaching sustainable construction
- Case Studies

All the papers selected for presentation at the conference and published in these Proceedings, went through a refereed review process and were evaluated by, at least, two reviewers.

We want to thank all the authors who have contributed papers for publication in the proceedings. We are also grateful to the reviewers, whose effort and hard work secured the high quality of papers expected for this conference. Their efforts reflect their commitment and dedication to Science and Sustainable Construction.

We want to thank the support given by InCI (Instituto da Construção e do Imobiliário) that sponsored and made possible the international edition of these Proceedings.

Finally, we want to address a special thank to iiSBE, CIB, UNEP, Ordem dos Engenheiros and SD-MED and wish great success for all the other SB07 events that are taking place all over the world.

The Organizing Committee and Proceedings Editors

Luis Bragança (University of Minho)
Manuel Pinheiro (Instituto Superior Técnico)
Said Jalali (University of Minho)
Ricardo Mateus (University of Minho)
Rogério Amoêda (University of Minho)
Manuel Correia Guedes (Instituto Superior Técnico)



Welcome

The strategy defined by the Portuguese Government for construction and real estate is based in sustainable concepts, optimizing the State regulatory functions in view to reduce bureaucracy, improve processes transparency, strengthening cooperation and guarantying an effective coordination in the definition and implementation of Government Program policies.

As a result of the above mentioned strategy, the Portuguese Government recently assigned a new mission and new challenges to InCI - Instituto da Construção e do Imobiliário, I.P. (Institute of Construction and Real Estate).

The mission of InCI, I.P. comprehends the regulation of the construction and real estate markets being the new challenges the promotion and implementation of solutions that achieve sustainability priorities, reduce environmental impact, enable energy efficiency in buildings, contribute to energy and environment certification, improve the rational use of materials and the construction waste management in Portugal. Summarizing, InCI, I.P. has an ambitious and challenging aim that is the modernization of the Portuguese construction sector contributing to the efficiency and sustainability of construction in general and of buildings in particular.

The aims of InCI, I.P. are fully in line with the scope of the conference “Portugal SB07: Sustainable Construction, Materials and Practices - Challenge of the Industry for the New Millennium” and, therefore, participating in the edition of these Proceedings is a contribution to positively changing the construction industry towards the adoption of sustainable and efficient building practices.

InCI’s support will also promote the opportunity to increase awareness and interest among the economic operators to the issues related to sustainable construction, through the exchange of practices, experiences and information.

It is with a great pleasure that InCI, I.P. warmly welcomes all the participants and wishes a great success to the Conference Portugal SB07.

The Executive Board

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