



## CIB NEWS ARTICLE

International Council for Research and Innovation  
in Building and Construction

Providing a global network for international exchange and cooperation in research and innovation in building and construction, in support of an improved building process and of improved performance of the built environment.

April 2008

### Around the Task Groups and Working Commissions

### W108 - Climate Change and the Built Environment

## Report of the 6th CIB W108 Meeting on Climate Change and the Built Environment, Terrassa, Spain, October 2007

by

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The creation of CIB Working Commission W108 was agreed in Manchester in April 2002, as a follow-up of the CIB Task Group TG21 on Climate Data, in order to provide a forum for the discussion of the impacts of climate change to the built environment, as well as adaptation measures to mitigate such impacts. CIB W108 aims to exchange and disseminate knowledge on weather data, climate change scenarios and research findings. Previous meetings took place in Győr (May 2003), Toronto (May 2004), Paris (April 2005) and Weimar (June 2006).

#### Aim and Scope of the Meeting

Climate Change and the Built Environment was the title of the sixth meeting of CIB W108. The meeting took place on October 4, 2007 at the Technical University of Catalonia (UPC), in Terrassa (near Barcelona) under the auspices of Prof. Miquel Casals, leader of the Group of Construction Research and Innovation (GRIC).

This event was held in conjunction with the 2nd meeting of the CIB TG66 on Energy and the Built Environment. Representatives from research establishments and professional institutions from Europe, Asia and Australia, as well as the USA, attended the meeting.

The aim was to discuss and disseminate the latest findings and research. Of particular interest were the forthcoming assessment report from the IPCC (Intergovernmental Panel on Climate Change) and recent research results on the analysis and use of weather data in building design.

Topics covered included:

- climate models,
- scenarios and data,
- climate change impacts studies and impact assessment methods and adaptation strategies.

#### Mitigation and Adaptation

The first session focused on the current drivers for considering climate change mitigation and adaptation in building design and construction.

A presentation by Professor Geoff Levermore of Manchester University (United Kingdom) informed participants of the greenhouse gas (GHG) emission trends from buildings and in relation to other sectors as presented in the IPCC report. The presentation highlighted the importance of energy-efficient systems and energy management, renewable technologies and passive measures, and overall good design and operation of buildings in the reduction of GHG emissions. Extra attention was given to the retrofitting of buildings to improve energy performance, by improving insulation, window performance and building services. The presentation also pointed out the significance of existing policies such as building performance codes, energy star labelling, financial incentives, as well as overcoming barriers such as fragmentation of building design.

A presentation from Jean-Luc Salagnac of the Centre Scientifique et Technique du Bâtiment (France) attempted to link mitigation and adaptation of buildings to climate change and presented this as an opportunity for the building industry to technically progress.

Marta Gangoells of the Technical University of Catalonia (Terrassa, Barcelona) examined the impact of the Spanish built environment on climate change. A revision of the existing regulations aimed to content the energy requirements of the built environment highlighted the existing effectiveness gaps, mainly related to the underrating of the embodied energy.

The potential for adapting existing buildings to perform better in the future weather and climate conditions was the focus of the contribution of Gerry Metcalf from the UK Climate Impacts Program (Oxford University, United Kingdom). In particular, it explores the challenges and opportunities presented by considering refurbishment at a neighbourhood scale.

A presentation of Sukumar Natarajan of University of Bath (United Kingdom) informed the participants of various routes to achieve the future carbon emission reduction targets from the UK housing stock using a new demand-side object oriented housing stock and carbon model, DECarb.

### Weather Data Analysis and Next Generation of Climate Change Projections

Weather data generation and analysis for use in building design was the main topic of the second session of the meeting. Dr Kwan-Ho Lee of Ulsan College (South Korea) and Dr Lisa Guan of Queensland University of Technology (Brisbane, Australia) presented an analysis of test reference years (TRY) by comparing them with observed data and global model outputs from the Met Office Hadley Centre (HadCM3 global model). The contribution of Dr. Roman Rabenseifer of Slovak University of Technology (Bratislava, Slovakia) also showed a comparison of two TRYs for Bratislava, the Slovak one and the Had-RM3. Within the second session of the meeting, Dr Lee also presented a method of generating TRY for South Korea.

Luca Pietro Gattoni of Politecnico di Milano (Milan, Italy) presented the Meteolab project. Meteolab is a station for the measurement of the main climate parameters located on the roof of one of the tallest buildings of the Politecnico University Campus. Over the last few years, greater and lesser climate changes have been recorded, which have been perceived to a greater or lesser extent by city users.

Dr Anastasia Mylona from the UK Climate Impacts Program (Oxford University-Centre for the Environment) presented the forthcoming UKCIP08 probabilistic climate change projections (the fifth generation of national climate scenarios to be published for the UK, produced by the Met Office Hadley Centre) to replace the UKCIP02. The importance of having a range of probabilities, as opposed to a single number, in order to make a robust

design decision based on attitude towards risk was highlighted.

### Building Performance predicted for the Future

The third session of the meeting highlighted the importance of using future weather scenarios in building design, in order to assess the impacts of climate change in buildings, and inform adaptation options to increase their resilience to such impacts. Presentations from Dr Rob Marsh of the Danish Building Research Institute (Hørsholm, Denmark), Dr Lisa Guan of Queensland University of Technology (Brisbane, Australia) and Dr David H C Chow of Sheffield Hallam University (United Kingdom), examined how future climate change scenarios could be used with computer based tools (such as thermal models) to assess impacts of climate change on energy demand for heating and cooling and building performance in general.

### Conclusions

Overall, the meeting highlighted the opportunities and challenges that the building industry is increasingly facing due to a changing climate.

Both mitigation of the causes and adaptation to the impacts of climate change should be addressed by the building professionals in order to provide occupants with buildings that offer a comfortable environment.

Weather information based on past observations is not sufficient any more to guarantee a desirable future performance.

Research proves that future knowledge could provide the building industry with a powerful tool towards low energy but high performance buildings.



### National Appreciations

The meeting made its mark on the city of Terrassa and was well received by the community through the local and national media. We were fortunate enough to have one radio interview and some newspaper articles which

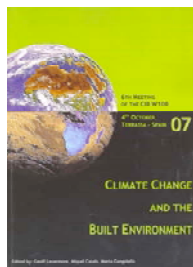
featured the CIB W108 meeting delegates and their innovative research.



Meeting participants

## Proceedings

The proceedings are available as a hard copy A4, 200 pages, and the price is 40 Euro excluding post and packages.



The report can be ordered at the following address:

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(A separate article about the proceedings can be found in CIB Newsletter [7/07](#))

## Additional Information

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You can find more information on the activities of CIB W108 at [www.cibworld.nl](http://www.cibworld.nl).

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