CITIES IN A CHANGING WORLD: QUESTIONS OF CULTURE, CLIMATE AND DESIGN

• Paper / Proposal Title:
“Analyzing the impact of climate change on social dwellings in L'Aquila: a case study”

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• Abstract (300 words):
The use of environmental and energy resources is one of the main challenges of society. Pollution, environmental disasters, and climatic variations are making society aware of the need to preserve the planet.

Currently, the building sector has clear objectives related to energy saving and sustainable development. Buildings are often inefficient and design strategies should be used to resolve this issue. Thus, sustainable architecture and efficient design can be an opportunity to ensure a lower impact of buildings.

At this point, climate change can have a major impact on the effectiveness of design strategies. This can become very important in cold areas due to the decrease in effectiveness of heating strategies. For this reason, this study analyzes the impact of climate change on social dwelling in a cold zone: the city of L'Aquila, the capital of the Abruzzo region, located in central Italy in a valley 700 meters above sea level and which climate is slightly continental.
The case study belongs to the “Progetto C.A.S.E.”, a reconstruction project that in 2010 allowed to house, in just 9 months, 15,000 people, left homeless after the earthquake of April 6th, 2009. This case study was analyzed with EnergyPlus with the aim of finding out whether the architectural solutions adopted in 2010 continue to be effective today and especially if they will be effective in the future scenarios that consider climate change. The results showed the progressive decrease in the heating energy demand and the need for greater consideration of the cooling energy demand.

In conclusion, since L’Aquila is a predominantly cold city, global warming would transform the performance of the built environment reducing heating strategies but at the same time, refrigeration, which is currently not essential, will become so in the next future.

• Author(s) Biography (200 words each):

Krizia Berti graduated in Architectural Engineering at the Università degli Studi dell’Aquila and now she is researcher in the Department of Building Construction II at the Universidad de Sevilla. Her research is focused on climate change and energy efficiency in the building sector as well as fuel poverty.

David Bienvenido-Huertas is researcher in the Department of Building Construction II at the Universidad de Sevilla. He is Visiting Professor at the University of Seville and the University of La Coruña. His area of expertise covers climate change in the building sector, adaptive thermal comfort, heat transfer, fuel poverty, energy conservation measures, and design of nearly zero energy buildings. He is an author of more than 50 research papers and he is a recognized reviewer of various international indexed journals.

Carlos Rubio-Bellido is a Professor in the Department of Building Construction II at the University of Seville. His research is focused on energy efficiency in the building sector as well as building performance simulation. He is a Visiting Professor at Bio-Bío University (Chile). He is a member of the International Scientific Committee of various international conferences. He is the author of more than 50 research papers. He is a recognized reviewer of various international indexed journals and international research projects.