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Energy and Seismic Renovation Strategies for Sustainable Cities

Edited by
Giuseppe Margani

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**Energy and Seismic Renovation
Strategies for Sustainable Cities**

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Special Issue Editor

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About the Special Issue Editor

Giuseppe Margani, MEng, Ph.D., is associate professor of Building Construction at the Department of Civil Engineering and Architecture (DICAr), University of Catania, Italy. He received his Ph.D. in “Architectural Engineering: design, production and renovation techniques” from the University of Palermo in 2000. His research interests include sustainable architecture, energy and seismic renovation, integration of renewable energy systems in the building envelope, innovation in building technologies, restoration of historical buildings, history of construction technologies. He is the author of 6 books and the author or co-author of over 60 papers published on national and international peer-reviewed journals or conference proceedings. He has a sound experience in the development and direction of national and international research projects and he is an independent expert of the EC for research and innovation programs. He is serving as guest editor, editorial board member and reviewer of over 10 international journals. As a licensed architectural engineer, he has over 25 years of work experience in detailed design, building refurbishment, and non-destructive tests on cultural assets.

Preface to “Energy and Seismic Renovation Strategies for Sustainable Cities”

Sustainability has become a fundamental requirement for the future of our cities.

This requirement is mostly associated with environmental issues, and a great effort has been made in the past years to build a low-carbon society. However, sustainability must also be associated with safety.

As a consequence, in seismic countries, sustainable cities must be not only low-carbon-emitting but also earthquake-safe.

This concept represents the basic premise of this book.

According to this premise, in earthquake-prone nations like Italy—where most of the building stock is both highly earthquake-vulnerable and energy-consuming—energy renovation actions should be combined with seismic upgrades. Nevertheless, many barriers significantly limit the real possibility of undertaking combined retrofit measures, especially in the case of multi-owner housing and high-rise buildings. These barriers are of different kinds: economic/financial (high renovation costs, insufficient incentives and subsidies, landlord-tenant dilemmas, etc.), technical (ineffectiveness of conventional upgrade solutions, need of regulatory simplification, etc.), organizational (occupants’ dislocation and disruption, consensus to the retrofit expenditure by condominium ownerships, excessive time for getting construction permits, etc.), and cultural/social (insufficient information and skills, lack of adequate policy measures for promoting renovation actions).

This book aims to overcome these barriers and to bridge the gap between sustainability and safety, so to conserve both human and environmental resources. It brings together 11 contributions on different seismic and energy renovation measures, proposing technical solutions at district, building, and component level, for both historic and modern case studies.

Finally, I would like to thank the editorial team of *Sustainability* for inviting me to guest-edit the Special Issue on “Energy and Seismic Renovation Strategies for Sustainable Cities” which has been transformed into this book. I also thank all the authors and reviewers for their fundamental contributions.

Giuseppe Margani
Special Issue Editor