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Smart-ECO Buildings Towards 2020/2030

Innovative Technologies for Resource Efficient Buildings

POLITECNICO DI MILANO

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Foreword

This book intends to contribute reference knowledge on sustainability in building and construction and is designated to any reader interested in the topic. A prime identified group of readers is students in Building Engineering and Architecture, i.e. in short those that will have the most significant impact on the values, attributes and the performance of our future built environment.

The essential knowledge platform to the book is provided by the European Strategic Support Action project "Sustainable Smart-ECO buildings in the EU," *Smart-ECO*, which was performed in the period 2007–2010. With funding from the EU FP6, DG TREN, 12 partners representing research, industry and the international R&D association, CIB undertook the challenging tasks to develop and anchor a Vision on Sustainable Buildings for the period 2010–2030, to scrutinise research and market to determine what Innovations (technical and nontechnical) that could be useful for realising this Vision, and to identify those elements that have the highest potential impact, all while anchoring the work and all findings with a carefully selected wide-ranging international group of expert stakeholders involved in various aspects of the built sector.

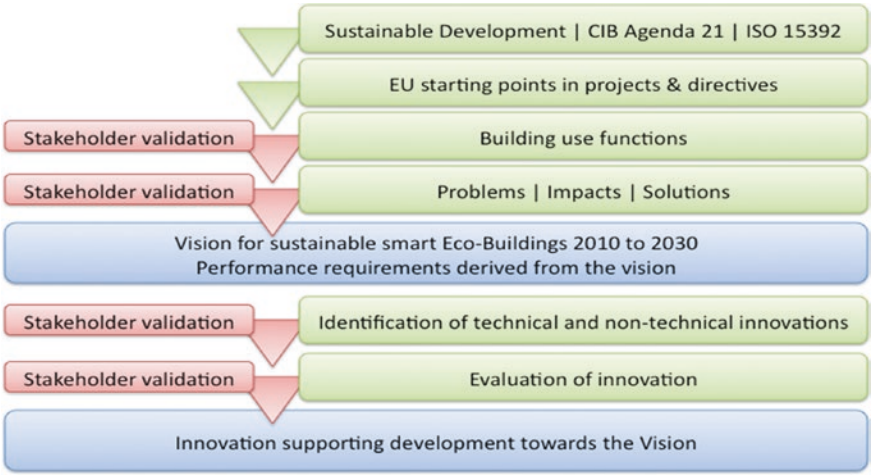
The *Vision* for sustainable Smart-ECO buildings outlines an ambitious direction of development for the time-frame up to 2030. It is based on the state of the art in international standardisation as the situation appeared during the completion of the project, together with findings of other performed R&D activities. With internationally agreed documents such as the CIB Agenda 21 on Sustainable Construction, the ISO General Principles of Sustainability in Building Construction as important background documents, and with evaluation and assessment of the international stakeholders the Vision gained supportive attention of the international standardisation community as well as the UNEP-SUN programme.

The Vision and the resulting requirements were in a defined process condensed to an approach to identify the *Innovations* to support the implementation of the Vision. Also in a foreword, it may be vital to signal the awareness of the project group of the utmost challenge imposed by the task to at a given slot of time identify Innovations that may impact on at least a 20-year period. However, when doing this we did the best possible, also with an awareness that this in fact mirrors

the natural effects of the long-lived nature of buildings; what we realise and build today will have due consequences many years to come.

The *Evaluation of the Innovations* intended to identify those innovations understood to have the largest potential for a development in line with the Vision. The *Evaluation* was a multi-criteria approach.

In the Evaluation process, the *Anchoring with stakeholders* was essential. Some 230+ technical experts, industrialists, property developers, material experts, architects, builders, demolition companies and educationalists were engaged in following, guiding and scrutinising the work. This was a tedious but rewarding process. The below figure seeks to describe the project framework and the process specially focussing the involvement of stakeholders.



Dear reader, welcome to engage in the great challenge, *Sustainable Construction*. As the Co-ordinator of Smart-ECO, former President of CIB during the period when CIB established the Agenda 21 on Sustainable Construction, and former chairman of the ISO standardisation activities on Service Life Planning in Building Construction I sincerely hope your views and opinions, ambitions and actions will take this important subject area to new levels.

KTH, Sweden

Christer Sjöström
Professor Emeritus

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This book is an evolution of the work carried out by the research group of Politecnico di Milano coordinated by Marco Imperadori in the framework of the European funded project Smart-ECO. We were privileged to be part of the Smart-ECO consortium, a cluster of researchers and professionals who work internationally in the field of the design and construction of sustainable buildings and built environment. In particular our thanks go to: Christer Sjöstrom of KTH (Project Coordinator), Wolfram Trinius of Buro Trinius (Project Manager) and Stefano Saldini of Mace (WP3 leader). Moreover, we would like to thank: Jean-Luc Chevalier and Alexandra Lebert of CSTB, Amber Stevens of PricewaterhouseCoopers, Hywel Davies of CISBE, Gian Carlo Magnoli Bocchi of Mission Carbon Zero, Gurvinder Singh Virk of KTH, Roode Liias of Tallinn University of Technology, Leo Bakker of Tno, Guri Krigsvoll of Sintef, Santiago Gonzalez Herraiz of European Commission, Bill Porteous and Wim Bakens of CIB.

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We could not have started our interest in sustainable building design and the related innovative technologies without the teachings of Ettore Zambelli, passionate designer and professor at Politecnico di Milano, whose work is also reflected in these pages.

Last but not least, the time and effort we dedicated to the writing of this book are the result of the love and support of our families: Gian Piero and Claudia Imperadori, Pietro and Libera Masera, Ciro and Carla Iannaccone, Daniela, Sergio and our beloved little Brayan, Irene and Maia, Irene.

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