

Guillaume Habert, Arno Schlueter (eds.)



EXPANDING BOUNDARIES

Systems Thinking in the Built Environment

Sustainable Built Environment (SBE) Regional Conference Zurich 2016





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Preface

Consuming over 40% of total primary energy, the built environment is in the centre of worldwide strategies and measures towards a more sustainable future. To provide resilient solutions, a simple optimisation of individual technologies will not be sufficient. In contrast, whole system thinking reveals and exploits connections between parts. Each system interacts with others on different scales (materials, components, buildings, cities) and domains (ecology, economy and social). Whole-system designers optimize the performance of such systems by understanding interconnections and identifying synergies. The more complete the design integration, the better the result.

System thinking theory is referring back to the early work of Donella and Dennis Meadows at MIT in the group created by Jay Forrester on System Dynamic. These theories have then been applied with success in many contexts. The application to the built environment is relatively new but is promising as buildings become more and more complex as well as interconnected.

System thinking is inherently linked to system boundaries. Spatial boundaries raise question such as where does the building stop and where does the neighbourhood start? Should we consider buildings as singular objects or as part of an infrastructure? Is it more effective to improve single buildings or entire districts? Temporal boundaries considerations can promote the use of dynamic assessment methods, which at each moment consider the real production and consumption of a system in order to calculate the environmental impact of energy positive neighbourhoods. Finally, expanding system boundaries also involves considering more than one single aspect of sustainability. Recent work focuses on a better description of the positive economic impact that new approaches and technology might have. Embracing the complexity of a socio-technical system such as the built environment is then difficult but seems to be required in order to propose grounded solutions for designers, planners and policy-makers.

In this book, the reader will find the proceedings of the 2016 Sustainable Built Environment (SBE) Regional Conference in Zurich. Papers have been written by academics and practitioners from all continents to bring forth the latest understanding on systems thinking in the built environment.

The editors would like to thank all participants for the inspiring conversations and extensive exchange of experience during the conference. We thank the authors of the papers for their efforts to provide outstanding and rigorous contributions. Finally, the editors are grateful to the various organisations and companies as well as the organising team for making this conference and these proceedings a success.

With kind regards,

Guillaume Habert, Arno Schlueter

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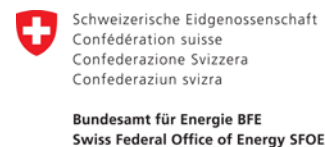
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