



Alexander Schlüter
Juan Bernabé-Moreno

**SUSTAINABLE AND
SMART ENERGY SYSTEMS**
for Europe's Cities
and Rural Areas



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**Sustainable and Smart Energy
Systems for Europe's Cities and
Rural Areas**

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Foreword by Fabrizio Rossi

Fabrizio Rossi, Secretary General of the Council of European Municipalities and Regions (CEMR)



We live in exceptional times, where changes happen at a pace just not imaginable only a few decades ago. The constant movement of transformation across Europe we are witnessing reflects trends and innovations often coming from other parts of the world, sometimes being conceived and developed in our continent. This great transformation has modified the way we interact and communicate, move people and transport goods, make payments, produce and stock energy. And in turn, this

silent revolution has become increasingly evident in the space we live in, our cities, towns, villages.

If today there is an element that more and more unites large metropolises with small rural centres, it is precisely this transformation. All our communities want to be smarter in the way they use their resources and provide services to their citizens. This is a silent revolution not only because electric buses produce less noise pollution than petrol ones or because an e-mail is less noisy than fax! It is silent because through a transversal approach, we are transforming our economies and, therefore, our communities.

In fact, being a smart city or a smart rural area today means trying to obtain an integrated approach to services. It is a triple gain if it improves the quality of life of citizens, increases the competitiveness of our economies, and pave the way for a sustainable low-carbon economy. The local transport system cannot ignore the way the energy necessary to make it work is produced, just as public buildings or the house in which we live must respect energy criteria that are growingly attentive to sustainability, and productive activities are reconverting towards a model with a lower impact on the environment and natural resources. And all this would be impossible without the ability to store, analyse and manage huge amounts of data that allow us to optimise production processes and provide more accurate and rapid services to citizens.

The role of municipalities has therefore become crucial to manage and steer a change that is as profound as it is irreversible. A good local administration is, in fact, what can make the difference between a territorial development without order and growth for the benefit of all. For these reasons, the

book edited by Alexander Schlüter and Juan Bernabé-Moreno represents a rare opportunity to learn more about the state of the art of this transformation in Europe and how the municipalities across the continent face this great challenge.

All people living in the European territory today should enjoy what Henri Lefebvre called the 'right to the city', which perhaps today we should call the 'right to the community', since cities and rural areas are united by similar problems and solutions. The right to the community is, therefore, not only the right of every person to access the resources and services of their own territory but also, and possibly above all, to contribute to this transformation so that it takes place in a way that is respectful of all. In fact, no change can make sense for European municipalities if not aimed at the well-being of their citizens, the inclusion of disadvantaged ones, the development of everyone's potential. This is probably the real and pivotal challenge that awaits all of us, both citizens and public administrators.

Brussels in February 2022

Fabrizio Rossi

Foreword by the Editors

Congratulations! You are one of the few people who read and pay attention to forewords. For this book, it makes sense to do so because we explain how you can use it most effectively to your advantage. This is because we don't just want to report on technologies and challenges but encourage you and give you tangible recommendations for action.

But who are we – over 40 established international experts – actually writing this book for? It is, of course, intended for all those interested in smart cities and rural areas. We are directing it in particular to those responsible in cities, towns, villages and districts. They are crucially important to ensure that further development in energy, mobility and digitalisation succeeds. They have begun to gather experience in their local areas. We want to supplement this with scientific insights and forecasts while explaining technical terms and contexts in detail. Our aim throughout these chapters is to make you realise the challenges and take interesting approaches on board to enrich the lives of residents. Your municipality can contribute to the success of the energy transition while benefiting from it at the same time. Of course, experts in the field, students and those in the issues

covered are invited to advance their education by reading this publication.

But what makes the transformation into a smart municipality worthwhile at all? It's because smart municipalities permit a more sustainable way of living and are therefore an answer to the major challenges, such as climate change, facing our society. Our environment is changing at an extraordinarily rapid pace – unfortunately, to our disadvantage. The systematic destruction of our planet worsens living conditions and increases the risks to human health, entailing high economic and social costs and leading to species extinction. We are currently living through some of the dangers that face us when the relations between humans, nature and wildlife are thrown off balance – for example, an increased risk of pandemic.

Wouldn't it be clever to combine the necessary changes with an improvement of our quality of life? And that's precisely what smart city projects are all about. In this book, we start off with the basics and encourage you to create your own vision and strategy for your smart municipality of the future and to understand your own role and responsibility in shaping it. After that, you will read about the numerous challenges and opportunities presented by energy systems and digitalisation. For the focus areas you will have formulated on this basis, we will point you toward selected funding and subsidy options.

Last but not least, we want to thank all those involved in this project, which has been driven and implemented with great enthusiasm right from the start by E.ON internally as well as by the many external authors. We hope you enjoy the book and the subsequent implementation.

Munich in spring 2021

Alexander Schlüter and Juan Bernabé-Moreno

Foreword to the European Edition

The feedback on the first book has shown that we seem to have hit the spot with the subject and type of presentation. For this reason, and in response to further climate-linked disasters, we have decided to publish an English edition to cater for a European framework. Compared with the first book, which contained many examples and data from Germany, we have replaced these with references to Europe and the European Union in this edition. And of course we have updated the information in general wherever possible. What's more, the team has been expanded, and Greenwich, London has made itself available for interview. We are very grateful for this. OK, enough of the foreword. Now it's time to read, plan and act!

Munich in February 2022

Alexander Schlüter and Juan Bernabé-Moreno

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