

Preface

Encouraging innovation in the energy supply sector is one of the main challenges facing us today. This is set against the background of the fundamental relevance of energy availability for modern living and the related environmental and resource restrictions which have been revealed since 1970. One of the key questions in this context is how to achieve sustainable development while at the same time identifying the diverse approach which must be met in order to do so.

This book series initially took up the discussion of these issues in 2002 with Volume 18 discussing more general options for realising sustainable development and innovation in the energy sector (*Nachhaltige Entwicklung und Innovation im Energiebereich*). An English translation followed in 2005: *Sustainable Development and Innovation in the Energy Sector*. The findings have partially been examined in greater detail in the follow-up studies whose foci were more technical: interdisciplinary analyses of the regulation of electricity networks (*Die Regulierung elektrischer Netze. Offene Fragen und Lösungsansätze*, Volume 32); small fuel cell devices intelligently combined in virtual power plants (*Brennstoffzellen und Virtuelle Kraftwerke. Energie-, umwelt- und technologiepolitische Aspekte einer effizienten Hausenergieversorgung*, Volume 36); the disposal of radioactive waste (*Radioactive Waste. Technical and Normative Aspects of its Disposal*, Volume 38); and options for balancing demand and supply of electricity in situations with a high share produced from renewable energy sources (*Balancing Renewable Electricity. Energy Storage, Demand Side Management and Network Extension from an Interdisciplinary Perspective*, Volume 40). The current volume now concentrates on the question of scientific policy advice as support for policy decisions in the energy sector. It deals with the issues of security and safety which have recently been the focus of increased attention with aims to fundamentally restructure the existing energy systems.

The current study presents the results of the interdisciplinary project group “Secure energy supply—New challenges for the analysis of future energy systems with regard to policy advice”. The group operated from the EA European Academy and was funded by the German Aerospace Center (DLR).

First, I would like to thank the project group members who carried out the work and successfully assembled the various disciplinary views into this book.

Furthermore, I would like to thank the German Aerospace Center (DLR) for funding the project.

The study should provide foundations and initial approaches for improving scientific policy advice so as to cope with the challenge of the expected energy system transitions. Moreover, it will provide insights into current energy system studies and supply tools which will help to reflect upon and interpret these studies. I hope that the results of this meta-analysis will contribute to improving scientific policy advice and, as a result, provide solutions to some of the many challenges arising from the ongoing energy transition processes.

Bad Neuenahr-Ahrweiler, July 2014

Petra Ahrweiler

Improving Energy Decisions

Towards Better Scientific Policy Advice for a Safe and
Secure Future Energy System

Droste-Franke, B.; Carrier, M.; Kaiser, M.; Schreurs, M.;
Weber, C.; Zieseimer, Th.

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