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energie.wenden

Energy Transitions as Chance
and Challenge in Our Time



Deutsches Museum 

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Foreword by the Director General

In the exhibition “energie.wenden”, the Deutsches Museum once again takes on one of the most important issues facing societies all over the world today—the energy transition—and makes it accessible to a broad audience. This time, it is even designed to go on tour after its run at the Deutsches Museum is finished. The tremendous success of our previous special exhibition (“Welcome to the Anthropocene: The Earth in Our Hands”) convinced us that it is possible to do justice to such a complex topic, which affects every one of us. The *Energiewende* currently under way in Germany will mean dramatic changes for both our technological systems and our social structures in order to bring about a planned transition from the fossil-fuel age to a more sustainable energy system. It is an enormous *global* challenge as well, for not only climate change, but also the increasing pressure on resources mean that this transition will be necessary everywhere in the world. At the Deutsches Museum we feel a duty to contribute—through projects like this exhibition—to ensuring the energy transition is a success.

Naturally, the exhibition will throw light on the historical background of our current energy system and the foundations of modern technology and its worldwide effects—just as our visitors have come to expect from our exhibitions. They will not be disappointed. In the best Deutsches Museum tradition, visitors can explore the triad of energy generation, distribution and consumption with the help of unique objects and exciting demonstration models. The items on display will include both important historical artefacts and examples of the latest technological innovations.

But energy is not just a matter of technology; it is a political and social issue as well. We have therefore come up with a new and innovative exhibition concept that encourages visitor participation to an unprecedented degree. Visitors can assume the role of policy makers and explore the complex interdependencies

at play in our *Energiewende*, learning through game-like scenarios about the numerous factors that make the energy transition necessary and discovering what options are available for solving this difficult problem, both for us as a society and as individuals. The exhibition encourages us to reflect on our social responsibility, and aims to motivate each of us to take action. This approach is mirrored in the original title of the exhibition “energie.wenden”, which literally means: turning energy around. Thus, the main focus of the exhibition is the question: “Let’s make the energy transition happen—but how?”

The topic of energy has been an omnipresent theme in the exhibitions at the Deutsches Museum since its beginnings, for without energy the technology that our society is based on would not be possible in the first place. This is of course particularly true for the digital age we are living in today. Thus, energy features at every turn in our exhibitions on topics such as physics, power systems engineering, electrical machinery, hydraulic engineering, and many others. But in addition to the technical aspects familiar to visitors to the museum, the project we refer to as the *Energiewende* includes social, political, and economic aspects that we feel are just as important to incorporate into our exhibitions, in the spirit of our mission to educate and inform. This helps contextualize the physical and technical facts that—looked at in isolation—are not always easy for visitors to make sense of.

This is why we were determined to make this a participatory exhibition. With these novel ways of presenting ideas, the Deutsches Museum aims to break new ground—and has explicitly designed the exhibition to travel and serve as inspiration elsewhere. The special exhibition is also an important milestone in the Deutsches Museum’s Future Initiative, our project to comprehensively update and redesign the museum, as the new approaches and the experience gained from this exhibition will serve us well in the future.

The global importance of the topic, and Germany’s leading role in attempting to find solutions to the energy problem—we are, after all, in the midst of a huge national experiment that is without precedent anywhere in the world—were key factors in our decision

to that this project in particular should take the form of a travelling exhibition so that it could reach audiences in other countries. With “energie.wenden”, the Deutsches Museum has created a travelling exhibition that will be in great demand by major museums of science and technology around the world. Designing an exhibition with this in mind posed great challenges in terms of form, organization, and curatorial management, which the exhibition team has solved with creativity and determination.

A transition from fossil fuel energy to alternative energy sources and a more responsible stewardship of resources can only be successful if science, the broader public, business, and politics work together in the pursuit of common goals. It will also require close disciplinary collaboration. We therefore gathered a committee of experts from many different disciplines to provide advice on the content and design of the exhibition. In addition to natural scientists and engineers it included historians, sociologists, and other specialists. At a workshop entitled “Globale Energiewenden” (“Global Energy Transitions”) on 5–7 March 2015, these experts convened for the first time and discussed with one another and with the curators how such a complex and multifaceted topic could best be presented in a museum context. They made their knowledge and experience available in discussions and additional workshops throughout the development of the exhibition.

This volume documents the exhibition and supplements it with an introduction and essays that further explore this complex topic. Experts in various fields provide clear explanations of different aspects of sustainable energy provision. The catalogue opens with a historical overview of energy transitions of the past and traces the development of the term *Energiewende*. This is followed by in-depth discussions of the technological challenges posed by a sustainable energy system, and of the possibilities opened up by the latest developments in science and technology. The essay section concludes by examining questions of moral responsibility, social acceptance of the *Energiewende*, and how to implement new technologies while minimizing negative effects on local citizens. The second section of the catalogue presents ten major aspects of the energy transition, as

displayed in each of the “thematic rooms” of the exhibition. These cover the entire scope of the energy system, from production to distribution and consumption, and are illustrated using objects from the exhibition. In the final section, you can learn more about the concept behind the design of the exhibition and explore selected highlights from among the items on display.

Finally, we would like to express our gratitude to the public and private organizations who, recognizing the urgent relevance and significance of the topic, responded by providing donations and financial support. These include not only government bodies such as the German Federal Ministry for Economic Affairs and Energy in Berlin and the Bavarian Ministry of Economic Affairs and Media, Energy and Technology in Munich, but also supporters from the business community such as Linde AG and the innogy Foundation for Energy and Society.

Our heartfelt appreciation also goes out to the many departments here at the Deutsches Museum—exhibition design, graphic design, and photography, as well as educational outreach, communications, and publications—without whom this project would not have been possible. We are similarly indebted to our curators, an interdisciplinary team from the fields of engineering, natural sciences, sociology and anthropology, and food sciences, as well as to the project manager. We also want to acknowledge our external designers, the company Space4 from Stuttgart and teamstratenwerth from Basel, who were committed and inspiring partners in this project.



Professor Dr Wolfgang M. Heckl
Munich, November 2016