

Preface: When Less is More

Climate change and energy security represent two of the most pressing problems for current and future generations. As residential buildings account for around 30 per cent of final energy demand in Germany, this sector has been receiving increasing public attention. At the moment, policy makers rely on two strategies for reducing the emission of carbon dioxide (or CO₂, a greenhouse gas) while meeting the energy demands of private households.

The first strategy raises the proportion of renewable energies in the production of electricity and heat for households. The second strategy seeks to make energy use in residential buildings more efficient. (Often these strategies are used in combination.) Studies have yet to be conducted on German household preferences for particular technologies or services to reduce energy consumption. And studies on households in other countries have yet to consider trade-off preferences regarding, say, heating systems and thermal insulation.

The research project Social, Ecological and Economic Dimensions of Sustainable Energy Consumption in Residential Buildings (SECO@home, Website: www.zew.de/seco) closely examined decisions on energy consumption made by private German households.

The aim of the empirical study was to answer the following questions:

- What are the determinants of the diffusion of energy-efficient household appliances and what is the impact of the energy label design?
- What factors determine investment in energy modernisation measures for heating and what role does gender play specifically?
- What are promising strategies for policy makers' and companies to help improve energy efficiency in German households?
- What is the impact of specific regulatory and company strategies to improve energy efficiency in households and reduce CO₂ emissions?

Several methods inform the empirical analysis. SECO@home conducted a representative survey using innovative questioning and statistical techniques to identify tenants' and property owners' preferences for specific low carbon products. Survey analysis provided insights into consumers' behaviour regarding more sustainable energy consumption, and is viewed as a substantial contribution to the field. The study also analysed survey information on observed technology choices econometrically. Furthermore, a qualitative study approached the topic of home heating from a social practices perspective, focusing on the dual role of gender and technology.

The inter- and transdisciplinary project ran from March 2008 to November 2010 and was supported by the funding initiative From Knowledge to Action -

New Paths Towards Sustainable Consumption (see the Federal Ministry of Education and Research [BMBF] at the Website: <http://www.sozial-oekologische-forschung.org/de/947.php>). The consortium was co-ordinated by the Centre for European Economic Research (ZEW), and included the University of St. Gallen, the Fraunhofer Institute for Systems and Innovation Research (ISI), the Öko Institut and the German Institute for Economic Research (DIW). The project team received regular and valuable feedback from an advisory board made up of leading specialists in the field of consumer behaviour and energy saving.

The members of the advisory board were:

- Bödeker, Jan Maurice, senior researcher, ifeu Institute for Energy and Environmental Research, Heidelberg GmbH
- Denkhaus, Dr. Ulrich, Germanwatch, Bonn/Berlin
- Geißler, Michael, director, Berlin Energy Agency GmbH
- Gutzwiller, Lukas, Bundesamt für Energie, Switzerland
- Helfrich, Matthias, board member, Accera Venture Partners AG, Mannheim
- Hellmer, Roland, team director, Strategy, New Products in Heating and Cooling, Vattenfall Europe Berlin AG & Co. KG, Berlin
- Jäger-Waldau, Dr. Arnulf, director, Renewable Energies Unit, European Commission, DG JRC, Institute for Energy
- Litzka, Vera, board member, Working Group for Energy and Water Savings in the Association of Local Energy Suppliers
- Meixner, Dr. Horst, head, hessenENERGIE GmbH, Wiesbaden
- Münch, Dr. Wolfram, director, Department of Research, Development and Demonstration, EnBW AG, Karlsruhe
- Operto, Gianni, Good Energies Inc.
- Paradeis, Christoph, former director, Solar-Fabrik AG, Freiburg
- Peters, Dr. Aribert, director, Association of Energy Users, Rheinbreitbach
- Praetorius, Dr. Barbara, Verband Kommunaler Unternehmen e.V. VKU
- Schuele, Dr. Ralf, senior researcher, Wuppertal Institute for Climate, Environment and Energy
- Sieverding, Udo, energy director, Consumer Agency NRW e.V
- Weigl, Fred, Association of Energy Consultants (Bundesverband Gebäudeenergieberater, Ingenieure, Handwerker - GIH), Stuttgart

The project's final workshop took place at the Evangelische Akademie Loccum in late September 2010 and provided an opportunity to present the project findings to a broader audience. Numerous experts from the fields of politics, administration, business and professional associations, as well as from research and science attended the event and took part in the lively discussions. Points of debate ranged from funding instruments and energy market liberalisation to the German government's current energy plan. On the basis of the project results, all experts agreed that the road to more sustainable energy consumption in residential buildings was not hampered by a lack of will on the part of the consumers. Still, we should note the additional costs that often accrue for households when improving a building's thermal performance. Even though the building sector offers large energy saving

potentials, energy saving measures are not always associated with a positive cost-benefit-ratio, especially in the short term.

Effective policies are those that improve security for planning and investing in CO₂ saving measures and services in private households, and strengthen companies' ability to offer products (and services) that meet consumer preferences. Effective policies should also help policy makers and companies gear their strategies to consumer needs.

This book includes the core findings of the SECO@home project. Though each contribution stems from different authors and institutes, all follow the common conceptual approach described in chapter 1. This approach may be characterised as an attempt to integrate the economic, social and psychological aspects of more sustainable consumption. Chapter 2 presents findings from econometric analyses of factors driving adoption of energy-efficient household appliances based on observed behaviour data already collected in a large representative survey. Chapter 3 presents the results of the new SECO@home household survey alongside the findings of two different conjoint experiments: on TVs and on heating and insulation. On the basis of these empirical analyses, chapter 4 develops strategies for firms and policy makers to improve energy efficiency in residential buildings. Chapter 5 estimates the environmental impacts of selected strategies. Chapter 6 presents the results of a qualitative study on the gender aspects to home-heating choices.

We have just begun to understand how households make decisions about sustainable consumption; much remains to be studied at the theoretical and empirical level. A well-developed theory of sustainable energy consumption must be able to explain learning processes, habitual behaviour, lock-ins and path dependency.

Our work would not have been possible without the support of the project advisory board. We would like to thank its members for their valuable and constructive comments, and we look forward to working with them again when we elaborate the findings of SECO@home. We also would like to give special thanks to Beatrix Immig and Patrick Pilarek for assistance in the editing process and to the SECO@home research assistants Caroline Bulla, Laura Piötter and Philipp Baltes for their technical assistance and fine work in formatting this book.

The Editors

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