Energy Research & Social Science 10 (2015) 72–89

Contents lists available at ScienceDirect

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss

Review

Examining the decision-making processes behind household energy investments: A review

Ingo Kastner [a,*], Paul C. Stern [b]

[a] Otto-von-Guericke-University Magdeburg Institute for Psychology Department of Environmental Psychology Universitätsplatz 2 D-39106 Magdeburg, Germany
[b] U.S. National Research Council, 500 Fifth Street, N.W., Washington D.C. 20001, USA

ARTICLE INFO

Article history:
Received 17 November 2014
Received in revised form 22 May 2015
Accepted 10 July 2015

Keywords:
Investment decisions
Households
Retrofit measures
Renewable energies

ABSTRACT

Major energy-relevant investment decisions by households remain a large but underdeveloped opportunity for reducing energy consumption globally. Research into these decisions, however, has not been cumulative. We reviewed 26 empirical studies, which examined a variety of such decisions in multiple investment domains, examining a variety of explanatory variables, using various methods. We distinguished 17 domains of energy-relevant investment decisions covering retrofit measures (e.g. insulation) and renewable energy systems (e.g. photovoltaic energy). We identified six types of explanatory variables considered in the studies: demographic/housing characteristics/location of residence (I), decision-maker dispositions (II), beliefs about consequences for (III) and beyond (IV) the household, social influences (V) and policy measures (VI). Energy-relevant investment decisions were often associated with beliefs about consequences for and beyond the household and with receiving energy consulting and financial incentives, although the effectiveness of financial measures appears to depend on how they are implemented. Associations between energy relevant investments and several other explanatory variable categories were rare or ambiguous.

© 2015 Elsevier Ltd. All rights reserved.

Contents

* Corresponding author. Fax: +49 391 67 11963.
E-mail addresses: ingo.kastner@ovgu.de (I. Kastner), PStern@nas.edu (P.C. Stern).

http://dx.doi.org/10.1016/j.erss.2015.07.008
2214-6296/© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

There is no doubt that current energy consumption causes global problems. Burning fossil fuels causes greenhouse gas emissions resulting in global warming. The use of nuclear power leaves the question of permanent waste disposal. These problems can be alleviated in two ways: reducing energy consumption, and shifting energy provision toward renewable sources. Ideally, both approaches should be pursued at the same time.

Promising technological progress has been made in both areas. Energy efficiency of technical devices increases and renewable energy systems improve constantly. When it comes to energy consumption there is still a fundamental "human factor", though. Ultimately, people decide about consumption and about whether or not to adopt new technology. Thus, several researchers demand that social and behavioral science should be better integrated in energy research [1]. Our investigation is meant to contribute to that integration.

We focus on major energy-relevant investment decisions made by households, which constitute one of the top energy consumption sectors in Western countries [2,3,4]. Among household activities, major energy-relevant investment decisions (e.g., choice of a heating system or a car) have an especially high impact on overall energy consumption [5]. We consider all kinds of major energy-relevant investments causing physical alterations in residential buildings, where *major* investments are defined as exceeding € 1000.

1.1. The "human factor" in households' energy consumption

Major energy-relevant investment decisions by households can include purchasing more energy-efficient household equipment (e.g., retrofitting the home with insulation or replacing the present heating system with a more efficient one) and investments in renewable energy systems (e.g., solar thermal energy, pellet heating; see [6]). Both kinds of investments can be combined and may overlap (e.g., replacing an old gas heating with a more efficient one being supported by solar power). In this investigation investment types will be considered namely energy efficiency, which reduce overall energy consumption, and the adoption of renewable energy systems, which reduce consumption of fossil fuels.

Research on energy-relevant investments focuses on two main issues: explaining how the investment decisions are made and identifying means of how these investments may be promoted (see Section 3 for an overview). Research approaches, however, differ substantially –between and within scientific disciplines – reflecting different concepts of human decision making and behavior. In the following it will be outlined how the "human factor" is integrated in research approaches in economic and behavioral science.

1.1.1. The human factor in economic science

In economic science investment decisions are a central topic. In early approaches economists assumed humans to make rational decisions (*homo oeconomicus*). implies decision makers to retrieve

Download English Version:

https://daneshyari.com/en/article/6558535

Download Persian Version:

https://daneshyari.com/article/6558535

Daneshyari.com