Introduction to Panel 8
Dynamics of consumption – connecting the consumers to socio-technical systems

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Introduction

The 2009 selection of papers on dynamics of consumption includes 25 papers, all based on empirical data drawn from many different countries (Sweden, Denmark, United Kingdom, Belgium, Switzerland, Germany, Austria, Portugal, US and Japan, as well as Italy and Slovenia, included in a European project). One short paper compares the diffusion of some appliances in nearly all the countries of the world (Letschert and McNeil).

One of the papers in this session (Janda) concludes so her comparison of research initiatives on energy and social research: "During the course of our research on research, we became interested in the opportunities of doing further content analysis of texts in the field of energy efficiency. In particular, we would like to take up the idea of incumbents and outsiders in social science and energy research. To do so, we might examine ACEEE and eceee proceedings as longitudinal representations of an incumbent community pursuing energy efficiency research. How have ACEEE and eceee researchers been engaging in the 'new' field of energy and social research? How have the conceptions of the role of behaviour and human agency changed in the efficiency literature compared to the broader academic literature?"

Inspired by this paper, our overview of the eceee 2009 papers on dynamics of consumption attempts to give some answer to these questions by showing the diversity of topics that are addressed and by stressing a common and thus new dimension appearing in most papers: research on dynamics of consumption is now broadening its scope beyond households (or more rarely in this panel, the enterprises) by studying households either within their social network or within their technical context or both. This is not completely new for since more than a decade, several authors opened this path of research (Shove, Lutzenhiser, Guy, Hackett and Wilhite, 1998) – the novelty is its dissemination between more and more studies, with different entries, as we will detail below.

Diversity of topics

Households' relations to technology are the topic of seven papers, of which three are about *households' investments in renewables or in lower energy consumption*. Stieß, Zundel and Deffner focus on how and when house owners choose to make energy renovations of their home, Tengvard and Palm analyse their interviews with house owners interested in installing renewable technologies such as small scale windmills on their property while Mahapatra, Gustavsson and Nair focus on homeowners' perceptions of innovative heating systems. Furthermore, four other papers include *the infrastructure or grid perspective*. Pyrko and Darby compare UK and Sweden from an electricity system approach, Mert, Watts and Tritthart investigate consumer acceptance of smart appliances that would partly be controlled by utilities and Jensen, Gram-Hanssen, Røpke and Christensen discuss possible futures of electricity consumption related to information and communication technologies and systems. Meier describes how an Alaskan city cut its electricity consumption over 30% because of a breakdown in supply caused by an avalanche.

Another group of papers deals with *understanding and changing energy-consumption patterns*. Karlsson and Ellegård use time studies to visualize patterns of energy use in households, Bartiaux investigates how children bring home information on energy savings from activities in school or elsewhere whereas Bennich, Lopes, Öfverholm and Kadic present detailed measurements of households' electricity consumption and raise the

question whether heat comfort consumption is the main reason for increased consumption.

Other papers deal with households *as stakeholders or with other stakeholders*. Lüthi and Stø present a survey among key actors in politics, business and NGOs on how to overcome barriers to energy efficiency in relation to cooking in the residential sector. Prignot and Wallenborn analyse how users and practices are standardised and represented in the EU-ecodesign directive, and Pett discusses to what extent benefits addressing low income households and fuel poverty are resulting in rebound effects and thus conflict with carbon savings. Thomas and his co-authors explain how to motivate homeowners to make "Whole House" energy saving improvements by organising for them contests and workshops displaying energy-saving products and services, with the support of local TV channels.

Several authors illustrate that there are e*nergy stakes in non energy sectors*, such as research, labour and in the construction sector. Janda explores how recent research initiatives deal with the social dimensions of energy use, Nässen, Larsson and Holmberg use micro-data sets to discuss time and income effects in the correlation between work duration and energy use. Yamaguchi and Shimoda explore historical transitions in the Japanese construction sector and how it has adopted energy measures.

Finally, several papers may be related to the ever expanding amount of *initiatives aiming at raising awareness* among householders. A first step before starting to discuss how to change routines is to understand them: Maréchal proposes a theoretical framework that includes individual habits. In addition, Huber, Sharp and Martin review the best practice cases of energy-awareness services that they found across all EU member States. Their selection includes the "Eco-Familias" project in Portugal, a project that is dealt with by two papers – one more technically oriented (Ferreira, Antunes, Alves and Ramos) and one more sociologically oriented (Fonseca and Nave). Several web-based carbon calculators are reviewed and compared by Gunnarsson, Kivioja and Pyrko while van Elburg reports on and compares different types of smart metering and their possibility of giving feedback to consumers. Finally, Rasmussen and Kirkeby describe the introduction of a new energy label: the Danish Energy Saving Label.

After having shortly presented all the papers, we now discuss two topics that appear to be especially important when looking across the papers. The first one is how the dynamics of consumption is woven into the socio-technical context, and the second one is related to the new questions that this insertion raises to energy policy makers.

Dynamics of consumption in socio-technical contexts

As already mentioned, these 2009 papers show an interest in studying households either within their social network or within their technical context or both: this interest furthermore calls for an extended coordination between different disciplines and different sectors.

STUDYING HOUSEHOLDS WITHIN THEIR SOCIAL NETWORKS

Thanks to a comprehensive literature review, Maréchal points to the importance of habits and routines and insert them in an economic model, which is quite original in economy. As habits are socially built and maintained, their insertion in economic reasoning could challenge the paradigm of the individual consumer. Furthermore, several papers describe the relationships that households have with various types of actors. So Pett stresses the network of actors, such as officials, charity organisations, low-income households and public opinion, when combining social and energy policy. Bartiaux includes other type of actors (schools, media, pairs) when studying the everyday life of families. And Tengvard and Palm include innovative enterprises in the social network of households that are considering buying renewable technologies.

The scope of other papers is before or beyond the final consumer: Prignot and Wallenborn, Lüthi and Stø, Mert, Watts and Tritthart, all are studying the representations *about* the consumers that are encompassed or could be so in policy instruments and it is quite useful to acknowledge the weak transmission of social research on energy uses as well as the representations of consumers as rather deficient ones (as already shown be Devine and Devine, 2005) if one wishes to change this situation.

STUDYING HOUSEHOLDS WITHIN THEIR SOCIO-TECHNICAL CONTEXTS

Several papers are inserting the households within different parts of their socio-technical contexts. This is done in the broadest sense when Pyrko and Darby compare the Swedish energy system to the energy system in United Kingdom and discuss how differences in the system might influence households' conditions for behavioural change. The paper by Jensen, Gram-Hanssen, Røpke and Christensen enlarge the scope by the combination of the electricity and the telecommunication systems and they usefully contextualise the energy consumption at the household scale by taking into account often neglected dimensions: infrastructures and technologies. Analyses of the system relations between the household and the grid or the utilities are also included in this panel. Mert, Watts and Tritthart focus on how new relations might develop between consumers and utilities, had the utilities the possibility of partly controlling the timing of each household's consumption, through smart appliances. Another socio-technical change in the relation between consumers and suppliers is provided by van Elburg in his comprehensive review of smart metering and feedback system.

A CALL FOR EXTENDED COORDINATION

In 2003, Shove was concluding her famous book on "Comfort, cleanliness and convenience" by calling for less individual modes of temporal coordination of activities in order to diminish households' energy consumption. This call can be extended to other types of coordination as shown by several papers of the panel and in continuation of the above description of how households are interwoven in social networks and socio-technical contexts. Thus, more coordination is called for between agents of socialisation such as schools, families and media (Bartiaux) or between enterprises focused on energy in the construction and housing sectors (Stieß, Zundel and Deffner, Thomas *et al.*, Yamaguchi and Shimoda). And maybe first

of all, there is a need for more coordination between scientific disciplines to explore the social dimension of energy use, as called for by Janda when concluding her review of new research initiatives on energy.

New questions to energy-policy makers

This overview of the articles raises the following question: how can these insights be formulated into policies that help reduce energy demand in a sustainable way? The most relevant input from this panel is that it once again establishes that households are part of many different social, technical and socio-technical networks: thus, to change energy consumption also requires changes in these socio-technical networks. The energy sector has to be coordinated and should cooperate with all other sectors that are dealing with energy demand or consumption. Most of the papers have taken the households' points of view and have together shown that the sectors surrounding households' energy consumption include as different sectors as education, construction, social policy, private enterprises and research and development.

When dealing with households, another relevant question is which types of households energy policy should approach. To take the two extremes of the social pyramid that are dealt with in the papers: should energy policy address the very rich, who spend lots of money and time in buying and creatively using ICT (Jensen, Gram-Hanssen, Røpke and Christensen) or should it address "people who receive measures to reduce their fuel costs under a fuel poverty scheme" (Pett)? She concludes "that reducing the carbon emissions for households in fuel poverty through energy efficiency schemes is unlikely to lead to indirect rebound effects". Following her, the question that then should be raised is: does addressing carbon savings among the 'fuel rich' produce greater indirect rebound effects than it does among the fuel poor? A related question, asked by Jensen, Gram-Hanssen, Røpke and Christensen, is that there could be increased consumption of electricity if the habits of the 'fuel rich' were disseminating to the rest of the population.

References

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