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HOW DOES CONSUMER BEHAVIOUR CHANGE? EXAMPLES FROM ENERGY CONSERVATION

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ABSTRACT – As global consumer society is rapidly overshooting ecological limits, there is a dire need to find new ways to change consumer behaviour. Yet history knows few successful examples of reducing consumption. However, since the 1970s, there is a long legacy of work on energy conservation, which we use to identify three key factors that influence consumer behaviour: consumer awareness, contextual factors and community. Drawing on evidence from a European research project called CHANGING BEHAVIOUR, we discuss where previous efforts to change energy behaviour have succeeded in making a difference. We highlight ways in which sociotechnical systems shaping consumption can be changed and emerging ways in which consumers can join forces to achieve greater power and reach. This analysis has implications for attempts to build a more sustainable consumer society, including, but not limited to, the need to reduce primary energy consumption and greenhouse gas emissions.

INTRODUCTION AND BACKGROUND

Most research on consumer behaviour deals with how consumers choose particular products. In recent years, sociological and historical research has also started to address the reasons behind the current levels of consumption, i.e. the evolutionary dynamics of consumer society[1,2]. However, there is very little research on how to reduce consumption — something that at least rich countries will need to do in the future in order to stay within the carrying capacity of nature.

Social science research on energy conservation is an exceptional field, which has addressed the reduction of consumption since the energy crises of the 1970s. There is a long history of research on individual and contextual factors influencing energy consumption and the uptake of energy conserving practices. This line of research has also matured long enough to become self-critical, for example by examining the dominant paradigms and their ability to address the societal drivers of increasing levels of energy consumption[3,4].

This paper draws on research on energy conservation and energy demand-side management to identify issues that are crucial for adopting more sustainable lifestyles. We do so by first outlining key features and findings of social and behavioural science research on energy conservation and demand-side management. We then summarise the main lessons under three key factors derived from the literature that influence energy conservation and energy demand.

We illustrate the relevance of these factors with examples drawn from an ongoing European research project called CHANGING BEHAVIOUR[5]. This project searches for successful ways to reduce energy demand among small-scale energy users (households, offices, small business, schools and municipalities). In this project (see www.energychange.info) we have collected a database that consists of in-depth analyses of 25 cases of more and less successful energy demand-side programmes and projects. These cases were selected to represent a range of outcomes in terms of success and failure, as well as the available diversity in terms of target groups, countries, initiators, scale, scope, technologies implemented, behavioural change targeted and intervention methodologies used. The cases were analysed to understand "what works where" using a six-step framework tracking the evolution of goals, design, process and outcomes as well as the influence of context and stakeholder networks. The successfulness of the programmes was rated on two dimensions: the effectiveness and efficiency (both internal and external) of the programme, and the number of learning indicators found in the programme. Finally, a meta-analysis was conducted to identify core issues influencing success.

The full results of the analysis are presented elsewhere[6]. Here, we focus on examining the cases on three levels: individual awareness, the broader societal context, and community as an intermediate level between individual and societal context. The concluding section considers the implications of our analysis for the promotion of sustainable consumption.

DECADES OF EXPERIENCE IN ENERGY CONSERVATION

Economic and psychological approaches have been dominant. They primarily highlight factors that relate to information processing and the various aspects that influence energy related behaviour on the individual level. Mainstream neoclassical economics assumes that energy end-users are fully rational, but most economists today would acknowledge a concept of 'bounded' rationality, which means that there are limits to the amount of information we can sensibly deal with[7]. This is close to the view embraced by cognitive psychology, which however focuses in particular on the problems in information processing. Other streams of psychological research have a quite different view of rationality, with behaviourists examining a very narrow but powerful form of learning through the direct consequences of our actions (without any explicit reasoning process), and social psychologists acknowledging the role of social influences on decision-making[8, 9].

Taken together, various disciplines have revealed a range of barriers to reducing our demand for energy. They include 'market failures' such as lack of information on the risks and benefits of new solutions, or lack of access to capital for investments[10,11,12]. They also include psychological barriers like information overload, lack of direct feedback and lack of perceived 'agency' and capability to make a difference[8, 9, 13, 14]. Finally, they include social system barriers[3],[15] such as existing infrastructures and power relations, shared conventions and historically embedded social practices.

The different disciplines suggest a range of approaches for reducing our demand for energy. Economics focuses mainly on removing barriers to energy efficiency by correcting market failures. This includes providing information (e.g., audits, labels), securing capital for energy efficiency investments (e.g. grants, loans, ESCOs), and supporting research, development and dissemination of energy efficient solutions[11, 12]. Psychological research suggests a range of solutions for addressing psychological barriers[8, 9, 16,17]. This can include behaviourist interventions to change routines (e.g. triggers, feedback) and improvements in energy-related communications, i.e., making information more relevant, vivid and personal. Social psychology offers ways to address the gap between attitudes or values and behaviour through enabling conditions, increased self-efficacy and agency, and supportive norms and co-operation[18, 19,20]. In essence, the psychological research on energy conservation stresses the need for multiple types of interventions that appropriately combine support, information, persuasion and incentives[16, 17, 21].

From a sociological perspective, our patterns of energy use are embedded in our social structure and culture. Sociological research additionally proposes that we should view change programmes in context. Systems of provision need to be transformed — it is not sufficient to deal with individual behaviour, but we also need to change the way energy is supplied and energy-using products are designed and distributed[3]. We need to address issues of timing, because energy use is largely determined by historical decisions and routines — both on the individual and the societal level[3, 22]. We need, further, to focus on ideas and social movements that mobilize and align the interests of different actors[15, 22]. On a more 'grassroots' level, a sociological approach suggests focusing on group rather than individual change processes[20,23] drawing on local practices rather than merely expert knowledge[4], and involving users and groups in design and allowing them flexibility in implementing the changes[24, 25, 26, 27].

FACTORS INFLUENCING ENERGY USE AND ENERGY CONSERVATION

In the following, we explore the practical significance of factors influencing energy use and energy conservation, drawing on case studies from the CHANGING BEHAVIOUR project. We have grouped these factors under three headings: consumer awareness, the broader societal context, and lastly we propose communities as an intermediate level of influence between the individual and society.

Consumer awareness

Most of the attention for decades has been focused on increasing consumers' awareness of their energy consumption and providing information about the benefits and means for energy conservation. Some of this work has been quite successful, but some has been quite disappointing. For example, there is a long history of mass media information campaigns to promote energy conservation, and the general conclusion from these is that campaigns rarely have a large impact on consumer behaviour.

In this context, it is important to differentiate between habitual energy behaviour (such as turning off lights) and one-off behaviour (such as investing in energy efficient appliances or renovations). It is easier to make an impact on high-involvement decisions such as one-off investments[9]. Additionally, communicators need to be clear about end-user motivations to conserve energy (which can be quite diverse), and they also need to frame their messages in ways that are relevant for the energy users[13]. Important lessons from decades of increasing end-users' awareness of energy use include the following:[13, 16, 28]

There is a need to make energy use and energy conservation more visible — the intangibility of energy use makes it difficult to relate energy to everyday activities.

Messages need to be framed in a language that is familiar and relates to the everyday domestic discourse surrounding energy use.

Relevance can be achieved by personalizing and tailoring the message, delivering it at the right time, and by targeting individual needs and circumstances.

Positive experiences have been gained in particular from personalized information, advice and energy audits. Informative energy bills and metering feedback are examples of information measures that help to make energy consumption more visible[29, 30]. These are ways of communicating about energy use that address energy users' concerns and are salient to them.

Our set of case studies includes some successful examples of raising energy end-users' awareness that have led to reduced energy consumption. One is the on-site energy advice provided by the Consumer Association of North-Rhine Westfalia in the German Ruhr area in the SANIT programme[31]. Here, interested households are offered a home energy audit and consultancy by trained architects or engineers. One important skill of a consultant is to explain difficult issues in an easy way. The consultants are constantly trained in communication skills and technological innovations, and they exchange experiences among themselves. The fact that the consultants are working on site and view the object personally enables them to give detailed advice and creates customer confidence. Another factor that creates confidence is the fact that the consumer association is independent of commercial interests. In the first three years, a total of 3070 advice visits were offered, contributing to 55.3 M€ investments in energy efficiency and energy savings of 75 000 MWh per year.

In order to make an impact, communication needs to be continual. Moreover, salience is enhanced by using peer-to-peer communications, i.e., horizontal rather than top-down communications. Among our case studies, the Finnish Energy Expert programme is an example of a communication network building on 'lay experts' working on a voluntary basis in their own apartment building[32]. The programme was developed by the housing association VVO and the Finnish energy agency, Motiva, and it has been ongoing since 1995. Altogether Motiva and the expert trainers' network have trained over 3 000 Energy Experts. The Energy Experts' advice also obviously has an impact on resident behaviour, as electricity consumption is about 10% lower and water consumption is about 20% lower than average in buildings with active Energy Experts.

Yet communication alone is not always enough, because decisions about energy use are often complex and influenced by multiple parties. Our case studies show that some residential energy audits, for example, have failed to result in the implementation of energy saving measures due to complex decision-making processes in housing associations[33]. And the Energy Expert programme mentioned above would be much more effective if there were more co-operation between the Energy Experts and the facility owners and management[32]. This observation leads us to the next topic: can consumers save energy alone?

The broader societal context

Measures to reduce energy demand by raising energy users' awareness build on the notion of individual responsibility and agency. As we saw previously, a more sociological approach would see energy use patterns as embedded in social (and sociotechnical) structures. Today's energy infrastructures are not designed to support an energy-conserving lifestyle. Our current habits and conventions of energy consumption were formed in an age of cheap, abundant and unproblematic fossil fuel supply. And while we have policies to promote energy conservation, society often sends 'mixed messages' by also promoting consumerist lifestyles[15], especially in countries that are aiming to 'catch up with' with Western European and North American levels of material well-being. Additionally, when targeting the end-users energy, we usually only focus on one side of the energy equation. We can also ask, whether it is the consumers who use energy, or the appliances and buildings. Designers, however, design what they expect consumers to want. This brings us to a notion of co-construction of technology and users[34], or to use a more conventional sociological language, the structuration of social action[35].

The interaction between demand and supply has been targeted by energy conservation policy under the heading of 'market transformation'. Market transformation is a strategy that promotes the manufacture and purchase of energy-efficient products and services. As market transformation broadens the focus from the demand-side to the market, a wide variety of actors that participate in the market come into view, from producers and distributors, to vendors, regulators and providers of secondary market services[36].

An inability to shape infrastructures and supply were found to be common barriers to success in our cases[32, 37]. Yet even relatively small players, when well-networked, were able to take steps toward 'market transformation'.

For example, the EcoTopTen (ETT) initiative (www.ecotopten.de) is an innovation and communication system for sustainable products and sustainable consumption started by the Oeko-Institut in Germany[38]. The ETT initiative provides market surveys and lists of ETT recommended products in ten product fields. The criteria for each product group are related to environment, quality and costs. ETT aims to go beyond existing labels and consumer information schemes by integrating environmental and quality aspects as well as annual life cycle costs. Furthermore, it promotes sustainable innovation, as goals are communicated to manufacturers showing which advanced criteria relating to environment, quality and costs should be met by products in a few years.

Another example among our case studies is the Latvian implementation of the European ENERLIn project in the municipality of Jelgava[39]. The aim of this project is to promote the uptake of compact fluorescent lights (CFLs) by engaging a large number of key actors, especially lighting manufacturers, individual consumers, lamp and light retailers, policy makers and politicians. One of the important issues addressed by this project is the perceptions of CFL quality by developing a quality charter for CFL. CFLs were promoted to consumers in retail outlets, but also other aspects of the social environment were emphasised. For example, competitions between schools and information days for pupils and their teachers were organized and parents were involved in the activities. With the co-operation of manufacturers, retailers, schools and the municipality, both the supply and demand for CFLs was increased significantly, leading to increased energy efficiency in lighting.

The market, as illustrated by previous examples, however, is only one part of the social structure, albeit an important one today. And even though successful efforts at market transformation have been made, setting society on a sustainable path needs to address broader issues. As climate change has today become the primary rationale for saving energy, we cannot rely merely on the private financial motives to save sufficient amounts of energy. A broader transformation of societal goals is needed. In the following, we examine the notion of 'community' as an intermediate level between individuals and the social structure that serves as a way for individuals to change the structures that surround them.

Community as an intermediate level

As part of the social context, community relations influence energy conservation in a number of ways that extend beyond the kinds of products offered in the market. Firstly, much of our behaviour is socially learned from other people, and shaped by socially shared conventions. Secondly, if we are asked to save energy for the sake of the environment, we are asked to make a personal sacrifice for a common good. Yet individual decisions to save energy in order to conserve common natural resources are framed by a social dilemma: individual efforts are useless unless others participate. Moreover, energy-related behaviour is shaped by socially shared conventions and sociotechnical infrastructures that are largely beyond individual control. Finally, these problems, together with the invisibility of the consequences of our action, lead to a sense of helplessness and disempowerment that is a major obstacle to low-energy lifestyles.

In terms of the supporting role of communities, one of the most successful examples in our database is the case of Samsø island[40], which became a renewable energy island in less than 10 years, largely due to the support of the community the organizers managed to mobilize. As a result of an initiative by an engineer and the mayor's office, the island of Samsø won the contest to be "Denmark's Renewable Energy Island" in 1997. This meant that Samsø was expected to convert all its energy supply to 100% renewable energy within 10 years, which they managed to achieve in 8 years. At first, the islanders (about 4100 people) were not very responsive to the idea, but as the organizers persevered and managed to win over the most important opinion leaders in the community, so then slowly everyone became enthusiastic and contributed to success. Although the conversion to renewable and local energy sources was achieved, it must be noted that the project had important objectives in terms of energy consumption reduction, too, which were not reached.

Another interesting initiative is the case of Carbonarium in Hungary[41]. Carbonarium is a not-for-profit association that was founded in 2005 with the overall aim of decreasing its members' CO_2 emissions. The goal of the association is to create a voluntary community of its members who believe that it is their responsibility and task to reduce the CO_2 content of the atmosphere. Members thus undertake to use a certain part of their material and other resources to reduce their emissions and/or mitigate impacts. Members also agree to record their monthly energy consumption, send it to the administrator of the programme, and pay membership fee based on their calculated CO_2 emissions. Carbonarium prepares statistics on its members's consumption and emission data and publishes some of the statistics on its website, accessible to the general public. The initiative was successful in creating a community and through it providing support for people working towards reducing their consumption. At the same time, however, it has to be recognized that Carbonarium has not managed to grow much beyond its initial membership for several reasons, one of them being the largely unsupportive context. In other countries, for example in the UK, similar initiatives appear to be more successful.

The UK offered still another example, which was analysed in the Changing Behaviour database. Manchester is my Planet (MIMP)[42] is a city-regional partnership programme aimed at transforming the level of action on climate change by local authorities, universities, businesses and citizens. The programme includes a climate change behavioural change work stream spearheaded by a Climate Change Pledge Campaign encouraging citizens across Greater Manchester to reduce their CO_2 emissions by 20% by 2010. The pledge campaign was identified as a 'quick win' to change attitudes and ultimately behaviour as well as build receptivity and support in the community for the changes needed to move towards a low-carbon economy. By encouraging citizens to make their own pledge and thus feel part of a wider 'movement' of personal, social and organizational change, the organizers managed to create a supportive community. The campaign was very successful as it resulted in more than 10,000 pledges. To build on the momentum thus created, the project was carried on in various ways, e.g. the pledgees were provided information as to how they could put their pledge in practice.

The above described cases illustrate that communities can help to solve the problems of agency and structure — at least partially — by functioning as an intermediate level between the macro-context

and the micro actors. As an intermediate level, communities also have better chances to shape infrastructures: even if they are small, they are still more powerful than individuals. Samsø is a good example of this and it represents just one of a large number of 'sustainable energy communities' — municipalities and cities — that are emerging today. Communities provide agency that allows individuals to change the context in which they operate.

IMPLICATIONS FOR PROMOTING SUSTAINABLE CONSUMPTION

Sustainable consumption has become a topical catchword that can refer to many things. Widely known definitions of sustainable consumption and production emphasise resource efficiency, the 'delinking' or 'decoupling' of economic development from environmental degradation, as well as the provision of quality of life for current and future generations.[43] From a global perspective, there is an urgent need to reduce the throughput of energy and natural resources — and resultant impacts such as climate change — in order to maintain a livable planet.

Attempts to shape the future consumer society into a less-consuming one can benefit from the experience — both positive and negative — gained during more than three decades of promoting energy conservation and reducing energy demand. One of the important lessons is how to successfully target 'ordinary'[44] and 'invisible' consumption. Energy use in the household and energy use in transport are two of the largest contributors to the environmental impacts of consumption. The third largest category is food.[45] All these consumption categories share many similar features. They are 'ordinary' daily activities, which we perform without much attention or reflection. Feedback and personalized communications, which show how much *you* (or you and your friends) are consuming, can be an effective way to make these invisible consequences visible for ordinary people.

Our framework has shown that in addition to consumers' awareness, we also need to work on their physical environment and on the social and community aspects of sustainable consumption in order to have a significant impact on consumption patterns. This is a lesson that it has taken the 'energy conservation' community a long time to learn.

In the broader context of sustainable consumption, the SCORE Network has built on a framework that addresses many of the broader structural issues. In this context, Tukker et al.[45] argue that the burden for change should not be placed solely on 'green' consumers and businesses, but that mutual reinforcement should be supported in a 'triangle of change', consisting of (1) business, which is good at improving the efficiency of products, and can be stimulated to do so via voluntary action, standards or regulations setting minimum standards, but has limited interest in changing consumption patterns or consumption levels, (2) consumers, who can make sustainable choices when stimulated by informative instruments and campaigns, but are to a large extent locked-in to existing patterns by infrastructures, social norms and habits and (3) governments, which must stimulate sustainable products and the availability of sustainable choice for consumers, but should also encourage debate and action in how to use markets to realise equitable and sustainable development.

Our analysis, supported also by research conducted elsewhere[46, 47, 48, 49], however, shows that markets and nation-states are not the only social environment for consumption — in fact, we might argue that it may be counterproductive for the goals of sustainable consumption to conceptualise individuals merely as consumers. Our approach to examining energy and resource users in the context of communities (which may be local, or interest-based, or workplace communities) can empower people to become environmental citizens and take action and change their own social environment. Communities can also be crucial for overcoming social dilemmas by showing that others, too, are taking action. Moreover, as conventions are socially shaped, they can also be re-shaped be communities of mutually interacting people[50, 51].

If the mass media can be seen as one driving force behind the nation-state, social media can be seen as one driving force behind the community. In the same way as the press and the TV broadcasting companies made the nation-state viable, blogs, Facebook, Twitter, MySpace, etc. make it possible for consumers with shared interests to join forces and become collective actors on the markets.

Communities are not, however, a panacea for sustainable consumption. They help to overcome certain problems, but not all of them. For example, the experience with energy conservation shows that the invisibility of the impacts of our consumption patterns is a severe obstacle to changing them. The experience also shows that people need appropriate and personalized feedback on both their own and others' conservation achievements. All in all, proponents of sustainable consumption need to combine a good understanding of economic, psychological, micro-sociological and macro-sociological factors influencing consumption. Here, evidence and ideas can be drawn for decades of experience in reducing energy demand.

REFERENCES

1   Heiskanen, E. & Pantzar, M. (1997) Toward Sustainable Consumption: New Perspectives. Journal of Consumer Policy Vol. 20, pp. 409–442.
2   Shove, E. (2003) Converging conventions of comfort, cleanliness and convenience. Journal of Consumer Policy Vol. 26, pp. 395–418.
3   Wilhite, H., Shove, E., Lutzenhiser, L. & Kempton, W. (2000) The Legacy of Twenty Years of Energy Demand Management: we know more about Individual Behaviour but next to Nothing about Demand. In Jochem, E., Sathaye, J. A. & Bouille, D. (eds.) Society, Behaviour, and Climate Change Mitigation. Dordrecht, Kluwer Academic Publishers. pp. 109–126.
4   Guy, S. & Shove, E. (2000) The Sociology of Energy, Buildings and the Environment: Constructing Knowledge, Designing Practice. Taylor & Francis Ltd. 176 p.
5   CHANGING BEHAVIOUR is co-funded by the European Commission 7th Framework Programme (contract 213217). The European Commission (EC) is not responsible for the information presented in this paper.
6   Mourik, R. (2009, forthcoming). Meta analysis of case studies to identify and analyse factors underlying success and failure in DSM energy programmes. Available after July 31st 2009 at http://www.energychange.info/.
7   March, J.G. & Simon, H. A. (1958) Cognitive Limits on Rationality. New York, John Wiley & Sons. pp. 136–171.
8   Kurz, T. (2002) The Psychology of Environmentally Sustainable Behaviour: Fitting Together Pieces of the Puzzle. Analysis of Social Issues and Public Policy Vol. 2, No. 1, pp. 257–278.
9   Abrahamse, W., Steg, L., Vlek, C. & Rothengatter, T. (2005) A review of intervention studies aimed at household energy conservation. Journal of Environmental Psychology Vol. 25, pp. 273–291.
10   Golove, W. H. & Eto, J. H. (1996) Market Barriers to Energy Efficiency: A Critical Reappraisal of the Rationale for Public Policies to Promote Energy Efficiency. California, Lawrence Berkeley National Laboratory, LBL-38059. 66 p.
11   Geller, H. & Attali, S. (2005) The Experience with Energy Efficiency Policies and Programmes in IEA Countries. Learning from the Critics. International Energy Agency. 47 p.
12   Sorrell, S. (2006) The economics of energy service contracts. Energy Policy Vol. 35, No. 1, pp. 507–521.
13   Parnell, R. & Popovic-Larsen, O. (2005) Informing the Development of Domestic Energy Efficiency Initiatives. An Everday Householder-Centred Perspective. Environment and Behavior Vol. 37, No. 6, pp. 787–807.
14   Van Vliet, B., Chappells, H. & Shove, E. (2005) Infrastructures of Consumption. Environmental Innovation in the Utility Industries. London, Earthscan. 130 p.
15   Biggart, N. W. & Lutzenhiser, L. (2007) Economic Sociology and the Social Problem of Energy Inefficiency. American Behavioral Scientist Vol. 50, No. 8, pp. 1070–1087.
16   Stern, P. C. (1999) Information, Incentives and Proenvironmental Consumer Behaviour. Journal of Consumer Policy Vol. 22, pp. 461–478.
17   Stern, P.C. (2000) Toward a coherent theory of environmentally significant behaviour. Journal of Social Issues Vol. 56, No. 3, pp. 407–424.
18   Kaiser, F.G., Wölfing, S. & Fuhrer, U. (1999) Environmental Attitude and Ecological Behaviour. Journal of Environmental Psychology Vol. 19, pp. 1–19.
19   Olli, E., Grendstad, G. & Wollebaek, D. (2001) Correlates of Environmental Behaviors: Bringing Back Social Context. Environment and Behavior Vol. 33, pp. 181–208.
20   Lucas, K., Brooks, M., Darnton, A., Jones, J.E. (2008) Promoting pro-environmental behaviour: existing evidence and policy implications. Environmental Science and Policy Vol. 11, pp. 458–466.
21   Kempton, W., Darley, J.M. & Stern, P.C. (1992) Psychological Research for New Energy Problems. American Psychologist Vol. 47, No. 10, pp. 1213–1223.
22   Rohracher, H. (2001) Managing the Technological Transition to Sustainable Construction of Buildings: A Socio-Technical Perspective. Technology Analysis & Strategic Mangement Vol. 13, No. 1, pp. 137–150.
23   Jackson, T. (2005) Motivating sustainable consumption - A review of models of consumer behavious and behavioural change. A Report to the Sustainable Development Research Network. London. 170 p.
24   Aune, M., Berker, T. & Sørensen, K. H. (2002) Needs, Roles and Participation: A Review of Social Science Studies of Users in Technological Design. A report within the research program Smart Energy-Efficient Buildings. Trondheim, NTNU, Department of Interdisciplinary Studies of Culture. 44 p.

25 Cohen, W. M. & Levinthal, D. A. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation. Administrative Science Quarterly Vol. 35, pp. 128–152.

26 Midden, C.J.H., Kaiser, F. & McCalley, T. (2007) Technology's Four Roles in Understanding Individuals' Conservation of Natural Resources. Journal of Social Issues Vol. 63, No. 1, pp. 155–174.

27 Rohracher, H. (2003) The Role of Users in the Social Shaping of Environmental Technologies. Innovation Vol. 16, No. 2, pp. 177–192.

28 Darby, S. (1999) Energy advice — what is it worth? Proceedings of the 1999 eceee Summer Study, Panel III. Europea Council for an Energy Efficient Economy. 13 p. Available http://www.eceee.org/conference_proceedings/eceee/1999/Panel_3/p3_5/. Cited 2nd June 2009.

29 Fischer, C. (2008) Feedback on household electricity consumption: a tool for saving energy? Energy Efficiency Vol. 1, No. 1, pp. 79–104.

30 Martiskainen, M. (2007) Affecting consumer behaviour on energy demand. Sussex: SPRU — Science and Technology Policy Research. 81 p.

31 Maier, P. (2009) Sanit Programme, Germany. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

32 Anttonen, M. (2009) Energy Expert Programme, Finland. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

33 Kamenders, A. (2008) Building Energy Audits Programme, Latvia. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

34 Oudoschoorn, N. & Pinch, T. (2003) How Users Matter. The Co-Construction of Users and Technologies. Cambridge, M.A. & London, UK, The MIT Press. 334 p.

35 Giddens, A. (1984) The Constitution of Society. Berkeley: University of California Press. 417 p.

36 Blumstein, C., Goldstone, S & Lutzenhiser, L. (2000) A theory-based approach to market transformation. Energy Policy Vol. 28, pp. 137–144.

37 Heiskanen, E. (2009). Green Office Programme, Finland. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

38 Bürger, V. & Bern, M. R. (2009) EcoTopTen, Germany. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

39 Kamenders, A. (2009) EnERLIn Programme, Lativa. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

40 Saastamoinen, M. (2009) Samsø — renewable energy island programme, Denmark. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

41 Vadovics, E. (2009) Carbonarium, Hungary. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

42 Robinson, S. (2009) Manchester is My Planet Pledge Campaign, Greater Manchester, UK. Case study for WP2 (Analysis of success factors, underlying models and methods of target group interaction) of the EC FP7 project Changing Behaviour. Available http://www.energychange.info. Cited 2nd June 2009.

43 WSSD (2002) World Summit for Sustainable Development, Johannesburg Plan of Implementation. Available http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf .Cited 2nd June 2009.

44 Gronow, J. & Warde, A. (2001) Ordinary Consumption. London, Routledge. 272 p.

45 Tukker, A., Charter, M., Vezzoli, C., Stø, E. & Munch Andersen, M. (2008) System Innovation for Sustainability 1. Perspectives on Radical Changes to Sustainable Consumption and Production. Sheffield, Greenleaf Publishing. 470 p.

46 Vadovics, E. (2007) Alulról jövő kezdeményezések („kreatív közösségek") tanulsága és üzenete a fenntartható fogyasztást meghatározó politikák és kutatás számára. Lehetséges kisebb ökológiai lábnyommal magasabb szintű jólétet elérni? In Vadovics, E. & Gulyás, E. (eds.) Fenntartható Fogyasztás Magyarországon 2007 (Sustainable Consumption in Hungary 2007). Conference Proceedings.

47 Vadovics, E. (2008) Emerging sustainable consumption pattens in Central and Eastern Europe, with a specific focus on Hungary. In Tukker, A., Charter, M., Vezzoli, C., Stø, E. & Munch Andersen, M. (eds.). System Innovation for Sustainability 1. Perspectives on Radical Changes to Sustainable Consumption and Production. Sheffield, Greenleaf Publishing. pp. 301–317.

48 Mulder, K., Constanza, R. & Erickson, J. (2006) The constribution of built, human, social and natural capital to quality of life in intentional and unintentional communities. Ecological Economics Vol. 59, pp. 13–23.

49 Ornetzeder, M., Hertwich, E.G., Hubacek, K., Korytarova, K. & Haas, W. (2008) The environmental effect of car-free housing. A case in Vienna. Ecological Economics Vol. 65, pp. 516–530.

50 Seyfang, G. (2006) Ecological citizenship and sustainable consumption: Examining local organic food networks. Journal of Rural Studies Vol. 22, pp. 383–395.

51 Ornetzeder, M., Hertwich, E.G., Hubacek, K., Korytarova, K. & Haas, W. (2008) The environmental effect of car-free housing. A case in Vienna. Ecological Economics Vol. 65, pp. 516–530.