

# **Sustainable Consumption** Towards Action and Impact

# **Abstract Volume**

International scientific conference  
November 6<sup>th</sup>–8<sup>th</sup> 2011  
Hamburg – European Green Capital 2011,  
Germany

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# imprint

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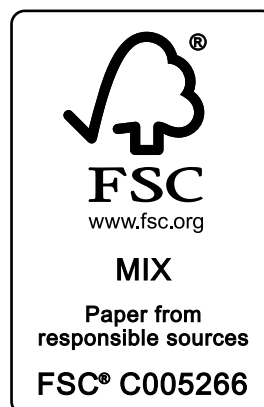


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# introduction

This volume contains the abstracts of all oral and poster presentations of the international scientific conference „Sustainable Consumption – Towards Action and Impact“ held in Hamburg (Germany) on November 6th-8th 2011. This unique conference aims to promote a comprehensive academic discourse on issues concerning sustainable consumption and brings together scholars from a wide range of academic disciplines.

In modern societies, private consumption is a multifaceted and ambivalent phenomenon: it is a ubiquitous social practice and an economic driving force, yet at the same time, its consequences are in conflict with important social and environmental sustainability goals. Finding paths towards “sustainable consumption” has therefore become a major political issue. In order to properly understand the challenge of “sustainable consumption”, identify unsustainable patterns of consumption and bring forward the necessary innovations, a collaborative effort of researchers from different disciplines is needed.

In this context, new social solutions are just as necessary as technological innovations. That is why the BMBF focuses on the promotion of socio-scientific approaches in addition to the technological research. Since 2001, the “Social-ecological Research (SÖF)” and the “Economics for Sustainability (WIN)” programmes have been awarded a yearly budget of about 9 million Euros. The objective of this inter- and transdisciplinary research is to study social transformation processes towards sustainability, and to support policy-makers, companies, intermediaries and the population through evidence-based recommendations for action.

The Sustainable Consumption Conference 2011 is one of the highlights of the focal topic “From Knowledge to Action – New Paths towards Sustainable Consumption” of this society-related sustainability research. In this focal topic, between 2008 and 2013, ten project groups and an accompanying research project were awarded a total of 10.6 million Euros in funding. The basis for the funding was the discrepancy between the awareness of the problems and the possibilities for solutions on the one hand, and a slow implementation on the other. The central questions were: how can this discrepancy be reduced? What are the conducive and problematic aspects for sustainable consumption to prevail?

The scholars of the focal topic invited the international and interdisciplinary scientific community to present and discuss new research findings on sustainable consumption. The focus of the conference is on consumer behaviour, its social and cultural embeddedness, and its interdependencies with institutional, economic, physical and political frameworks. Researchers from different disciplines (e.g. Sociology, Psychology, Economics, Political Science, Business Administration, Environmental Sciences, Ethics), studying different fields of consumption (e.g. residence, mobility, nutrition, clothing, leisure) were invited to present and discuss new research findings on sustainable consumption. More specifically, the following topics were covered.

1. *Determinants of consumer behaviour.* Key questions: What are the key psychological, socio-cultural, economic and physical factors that influence consumer behaviour? Which conditions facilitate or inhibit sustainable consumption? What motivates sustainable consumer behaviour (e.g. Why do people buy fair-trade products? What trade-offs are made between product attributes?)?
2. *Steering consumer behaviour.* Key questions: What are the most promising ways to promote the transformation of consumption patterns towards sustainability? Which designs and mixes of policy instruments are effective? How can new consumer roles (e.g. change agents, lead users, prosumers) lead to more sustainable consumption?

3. *Effects and evaluation of consumption patterns.* Key questions: What are the social, cultural, institutional, ecological and economic impacts of different consumption patterns in different fields of consumption, and how can they be assessed? What can modified consumer behaviour patterns contribute to a sustainable development of society?
4. *Theoretical and methodological issues of research on sustainable consumption.* Key questions: What are adequate theoretical and methodological research approaches to gain solid knowledge on sustainable consumption? What is the added value of particular mixes of qualitative and quantitative methods? In what ways do different action theories apply to different phenomena of consumer behaviour? What are the special challenges of interdisciplinary and transdisciplinary research in the field of sustainable consumption?
5. *Conceptual and normative issues related to sustainable consumption.* Key questions: What theory of needs and/or of good life is especially forward-looking and promising for the field of sustainable consumption? What type of consumption can be referred to as "sustainable"? What criteria must be used to assess the level of sustainability of consumption and consumer behaviour? What issues about responsibility and justice are raised in the context of sustainable consumption?
6. *Gender issues in connection with sustainable consumption.* Key questions: How are gender relations and sustainable consumption linked to each other? What is the relevance of these links, especially for the design of interventions aiming to promote sustainable consumption? Are there gender-related responsibilities for different types of consumption activities (e.g. investments vs. daily shopping)? Are there gender-specific responses to intervention strategies?
7. *Thematic symposium: "Do households save electricity through feedback based on Smart Metering systems?"* Based on the findings of different Smart Metering research projects in different countries, the goal is to draw conclusions about the lessons learned and to analyse the need for further research.
8. *Thematic symposium: "Interactive value creation, participation and open innovation - drivers towards sustainable consumption?"* Key questions: Do lead users in open innovation projects on consumption generate sustainable products? Do processes of interactive value creation increase the success, i.e. diffusion, of sustainable goods and services?

More than 250 abstracts were submitted from all over the world. They were reviewed by two independent reviewers each and thoroughly examined within the Scientific Committee. As a result, the conference programme lists 105 oral presentations in 38 sessions, two round tables, and 28 posters that are commented in six guided poster tours. Several highly distinguished and internationally known scholars in the field deliver keynote addresses. The Pre-Conference for Young Researchers, which was planned and organised by young researchers in the focal topic, focuses on the perspectives of young academics in the field of Sustainability Research. The conference also features the "Lab of Ideas and Cooperation" which offers activities to stimulate the advancement of inter- and transdisciplinary research on sustainable consumption and the collaboration within the community.

The volume is organised in the following way: In the first section the abstracts of the keynotes are presented in alphabetical order of the speakers. The subsequent sections contain the abstracts and posters of each topic, each beginning with track sessions followed by round tables and continuing with the abstracts of open sessions and posters. In the final section, the abstracts of cross-topic issues are found (the round table on transatlantic dialogue and collaboration in sustainable consumption and production and the presentations of synthesis results of the focal topic). The volume closes with an alphabetical index of all authors.

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*Caring about sustainability? Farmers' markets in post-socialist Prague*

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***Needs, consumption and sustainability - the conceptual system developed in the focal topic***

Fischer, Daniel; Michelsen, Gerd; Blättel-Mink, Birgit; Di Giulio, Antonietta

***Deliberations on how to assess sustainability in consumption***

Jaeger-Erben, Melanie; Schäfer, Martina; Dalichau, Dirk; Dehmel, Christian; Götz, Konrad; Fischer, Daniel; Homburg, Andreas; Schulz, Marlen; Zundel, Stefan

***Combining qualitative and quantitative methods in sustainable consumption research***

Kaufmann-Hayoz, Ruth; Bamberg, Sebastian; Defila, Rico; Dehmel, Christian; Di Giulio, Antonietta; Jaeger-Erben, Melanie; Matthies, Ellen; Sunderer, Georg; Zundel, Stefan

***Structuring the phenomena of consumer behaviour - results of an interdisciplinary endeavour***

Kaufmann-Hayoz, Ruth; Brohmann, Bettina; Defila, Rico; Di Giulio, Antonietta; Dunkelberg, Elisa; Erdmann, Lorenz; Fuchs, Doris; Götz, Sebastian; Homburg, Andreas; Matthies, Ellen; Nachreiner, Malte; Tews, Kerstin; Weiss, Julika

***Steering consumer behaviour – perspectives and challenges***

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# keynotes

## **Applying the lessons learned here toward transforming cultures**

**Assadourian, Erik** (Worldwatch Institute, US)

Several of the interesting studies presented at the conference are reflected, extracting important findings, observations, and conclusions and applying them to the essential broader mission of transforming cultures around the world to make it feel as natural to live sustainably as living as a consumer feels today.

## **Waltzing with a monster: The challenge of knowledge brokerage between research and policy in the field of sustainable consumption**

**Reisch, Lucia** (Copenhagen Business School (CBS), DK)

While the research field of sustainable consumption is slowly but surely consolidating, it is still an unsolved – and rather untapped – question how this scientific evidence can inform and influence real world policy-making. This holds true for all levels of policy making – from local to national, from European to global conventions – in most parts of the world. Knowledge brokerage (KB) aims at making policy more evidence based, more realistic and hence more effective. Against the backdrop of current and future policy challenges, the paper looks into potential pathways of knowledge brokerage in the field of sustainable consumption, shares recent networking and KB initiatives, and sketches basic strategies of successful policy consulting in the field of SCP.

## **Ecological macroeconomics: Challenges for consumer studies**

**Røpke, Inge** (DTU Management, DK)

Against the background of the research till now within the field of consumption and environment, the presentation considers the challenges for the field that follows from the present economic crisis. Ecological macroeconomics highlights the dilemma where, on the one hand, growing consumption leads to insurmountable environmental problems and, on the other hand, consumption growth seems to be needed for economic and social stability. One response is a Green New Deal implying a shift from consumption to green investment as a driver of growth, which calls for studies of investor-consumers. While it may be difficult in itself to encourage this role for consumers, the Green New Deal perspective is insufficient to meet the present environmental and ethical challenges. More radical changes of socio-technical systems and societal institutions are needed, and the presentation suggests that future research should deal with the potential roles of consumers in these changes.

## **Sustainable practices: Beyond the ABC**

**Shove, Elizabeth** (Lancaster University, Department of Sociology, GB)

Most discussions of sustainable consumption focus on the determinants of consumer behaviour, on consumers' attitudes and choices, and on the potential to steer behaviour such that the consequences are less resource intensive. The programme for this conference is no exception. In this talk I argue that such approaches depend on a restricted range of social theory, and that the social sciences have very much more to offer. I explore methods of turning dominant ways of conceptualising consumption around, and go on to consider the practical implications of reframing the agenda for academic research and policy.

## **Towards a sustainable flourishing: Democracy, hedonism and the politics of prosperity**

**Soper, Kate** (London Metropolitan University, GB)

My paper is intended as a contribution to conceptualising what we might mean by an indefinitely 'sustainable consumption' and how we might progress towards it. It will argue that no programme towards that end can be advanced without a more equitable distribution of global resources, and that this in turn will depend on a break with currently dominant conceptions of prosperity, development and human well-being. Drawing on my argument on 'alternative hedonism', I shall present this as opening up a post-consumerist approach to human flourishing that avoids both the simplistic assessments of need and the authoritarian tendencies of earlier critiques of commodification. It will also be defended as a way of thinking about pleasure and human well-being that offers a way through, even if it cannot finally resolve, the tensions between the more subjective (Utilitarian) and the more objective (Aristotelian) philosophies of happiness and the »politics of prosperity«.

## **The impacts of household consumption and options for change**

**Tukker, Arnold** (NTNTU, Industrial Ecology Program/Department of Product Design, NO)

This keynote talk will first review the priority impacts of household consumption and the main driving forces behind this. Science has provided a fairly robust picture on this, e.g. that food and beverages, mobility, housing, and energy-using products are the most critical consumption domains from the standpoint of environmental sustainability and that higher household income leads to greater (but less than proportional) impacts. Another main issue related to consumption choices are social impacts. Value chain analyses come to the quite robust conclusion that in a globalised world, added value created in the production of goods, particularly in developing countries, is a trickle compared to value added in trade, branding and retail, reflecting the relative power of players in the value chain. This leads to the apparent contradiction that where consumers in the West would hardly notice it if fair prices and wages would be paid at the beginning of the value chain, specific measures are needed to make this happen. The talk will then discuss the potential for mitigating these impacts through behavioural change, organisational change and innovation. Research suggests that areas like mobility, housing and food consumption need quite different approaches, but conclusions on how to realize this are much more inchoate as the rather robust problem analysis discussed before. Some case by case evidence of successes can be given though, such as the rather quick diffusion of certified coffee and cacao in the Netherlands. A result is that the international SCP policy agenda still is weak, despite being launched as early as the first Rio conference, as reflected by the inconclusive meeting of the Commission for Sustainable Development in May 2011 in New York.

## **Climate change, behaviour change and sustainable consumption**

**Warde, Alan** (School of Sciences & Sociology, University of Manchester, GB)

The context of this talk is the challenge that contemporary patterns of personal and household consumption pose for mitigation of the effects of climate change, since a substantial proportion of CO<sub>2</sub> emissions emanate from travel, heating and cooling, and eating. I review some recent relevant research and theoretical analysis in the social science of consumption. I seek to explain why it is difficult to change consumption patterns, and suggest that the normal ways of framing behaviour change are ineffective responses. Individualistic models, the sovereign consumer of economics and the expressive individual of cultural analysis, provide a limited and skewed understanding of the processes of change. I consider other approaches, from various disciplines, which put more emphasis on the repetitive and automatic aspects of consumption characteristic of everyday life situations. If consumption is deeply embedded, often invisibly, in habitual and routinised daily practice then changing individual attitudes and incentives is likely to be insufficient. I conclude by identifying some alternative strategies for changing behaviour and assess their feasibility. The talk is illustrated with examples from the field of food and eating.

# determinants of consumer behaviour

## **Implementation of sustainable lifestyles – barriers and potentials from a psychological perspective - part I** (description of the session)

**Matthies, Ellen** (Otto von Guericke University of Magdeburg, Environmental Psychology, DE); **Bamberg, Sebastian** (University of Applied Science, Bielefeld Department of Social Work, DE); **Rennings, Klaus** (Zentrum für Europäische Wirtschaftsforschung GmbH, ZEW, DE)

To achieve the changes in lifestyles that are necessary to fulfill the ambitious CO<sub>2</sub>-reduction goals of most of the European countries (e.g. switch to new forms of transport and energy use) new technological solutions are not sufficient. Citizens also have to change their behavior: They have to accept, buy and use new technological solutions and have to make changes in several everyday routines. Therefore it is crucial to learn more about the processes / factors underlying individual behavioural change. Psychology has a long tradition of research on change processes in everyday life, and has come up with models and concepts that focus on possible barriers but also on potentials for change. However, there is still a gap in using this knowledge in the context of developing new consumption options. Contributions in this thematic session focus on empirical research which takes into account key concepts (e.g. self efficacy, habit) and psychological models of change (e.g. model of self regulated change). In each contribution of the double session potential implications for the development and marketing of new products/services are reflected.

Keywords: behavioural change; habits, self regulation, psychology

## **Co-evolution: An interdisciplinary economic approach for the analysis of sustainable energy consumption**

**Rennings, Klaus** (Zentrum für Europäische Wirtschaftsforschung GmbH, ZEW, DE)

Inter- and transdisciplinary approaches need a theoretical framework where the different disciplines can be integrated. Sustainability transitions include both a long-term change to various environmentally innovative technologies and also towards sustainable consumption. For a transition to sustainable consumption patterns an interdisciplinary co-evolutionary framework is relevant. There are ongoing discussions on such a framework. Such a transition to a sustainable economy can be analyzed within a framework of evolutionary economics as developed by Foxon (2010). He proposes a framework based on the co-evolution of technologies, institutions, business strategies and user practices, within a multi-level micro-meso-macro framework. Foxon argues that user practices are often still missing in the co-evolutionary debate. Co-evolutionary approaches are a good way for understanding the problem. The problem e.g. of unsustainable energy consumption can only be analysed when we consider routine behaviour, which is ignored in mainstream economics. However, the development of quantitative tools is a weakness of these approaches. Improvement can be made when partial observations identified by evolutionary studies are integrated into mainstream economic approaches. Examples are the concept of lifestyles, the concept of life events or the phase model of interventions. The academic discussion on evolutionary approaches has not yet been linked to the community of inter- and transdisciplinary research. Further steps into this direction may be promising. Evolutionary approaches have the advantage that they are able to integrate other disciplines such as psychology and engineering. They can be developed incrementally, e.g. by taking life events, life styles or the stage model of interventions into account. Or they can be developed radically e.g. within a system dynamics models.

References: Foxon, T. (2010): A coevolutionary framework for analysing a transition to a sustainable low carbon economy, Sustainability Research Institute (SRI), Discussion paper 22.



## **Applying the stage model of self-regulated behavioural change**

**Bamberg, Sebastian** (University of Applied Science, Bielefeld Department of Social Work, DE)

Ultimately a society's degree of sustainable consumption reflects individual decision making: Citizens have to buy available energy efficient household applicant, have to change their nutrition style, or reduce their car use. Thus empirically supported insights on when and how individual change of consumption behaviours starts, how it proceeds, and when it is successful, are necessary for systematically developing interventions aiming to promote sustainable consumption behaviours. The stage model of behavioral change assumes that behavioral change is best described as transition through a sequence of four qualitatively different stages. Each stage is characterised by a specific task representing the motivational/ volitional problems a person is confronted with when trying to change her/his current behavior. The transition through stages is marked by three intention types. It is further assumed that the formation of each intention type is influence by a stage-specific set of socio-cognitive variable. The presentation show how this model can be used as theoretical basis for the development of social marketing campaigns triggering and supporting sustainable consumption behaviours. Respective campaigns in the domains of home energy saving, sustainable food consumption, and car use reduction were implemented in Berlin. Results of randomised control trials evaluating the effects of these campaigns are reported.

References: Bamberg, S. (2011) Processes of change. In: L. Steg, A. E. van den Berg & J. I. M. de Groot (eds.), *Environmental psychology: An introduction*. New York: Wiley (in press). | Bamberg, S., Fujii, S., Friman, M. & Gärling, T. (2010). Behaviour theory and soft transport policy measures. *Transport Policy*, 18, 228-235.

## **Overcoming habitualization with an action oriented intervention approach – a survey on energy efficiency in organizations**

**Matthies, Ellen** (Otto von Guericke University of Magdeburg, Environmental Psychology, DE); **Kastner, Ingo** (Ruhr-Universität Bochum Workgroup for Environmental Psychology and Cognition, DE)

In Germany approximately 12% of the total CO<sub>2</sub>-emissions originate from the tertiary sector including public services (Statistisches Bundesamt 2009). There is now increasing recognition of a possible reduction potential in user behavior that has so far not been tapped thoroughly. Psychology with its long tradition of research on change processes in everyday behaviours can contribute to a better understanding of these behaviours and inform the development of effective intervention tools. A concept focusing on possible barriers to change is habit. According to Ouellette and Wood (1998) behaviour becomes habitual (i.e. carried out automatically) if it is repeated regularly under identical circumstances. This is true for most of the energy relevant behaviours at the work place (e.g. manual ventilation, use of computer). Against this background it can be assumed that action oriented intervention techniques which enhance attention and salience of motives are more effective to change these behaviours than traditional motivation focused information techniques. A field experiment was carried out to investigate this assumption. Data from staff members at four German universities were collected in winter 2008/2009 (N = 913) using a quasi-experimental pre-post design with control group. Two types of intervention packages were applied to selected groups: A standard package including informational strategies, and an action oriented intervention package including prompts, commitment, a feedback tool, and change of situation. Results indicated that only the action oriented package effected changes in habitualization (measured by an adjusted version of SRHI). Results are contrasted with findings on the organizational level (n = 12 organizations) indicating that the relevant actors in the public sector do not perceive these techniques as appropriate and in particular do not approve of the use of prompts and commitment techniques.

References: Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, 124, 54-74. | Statistisches Bundesamt (2009). *Umweltnutzung und Wirtschaft: Bericht zu den Umweltökonomischen Gesamtrechnungen* [Environmental use and economy: Report regarding environmental accounting]. Wiesbaden: Statistisches Bundesamt.

## **Implementation of sustainable lifestyles – barriers and potentials from a psychological perspective - part II** (description of the session)

**Matthies, Ellen** (Otto von Guericke University of Magdeburg, Environmental Psychology, DE); **Bamberg, Sebastian** (University of Applied Science, Bielefeld Department of Social Work, DE); **Rennings, Klaus** (Zentrum für Europäische Wirtschaftsforschung GmbH, ZEW, DE)

Abstract see above (part I).

## **Consumer acceptance of playing an active role in the smart grid: A three countries study**

**Thøgersen, John** (Aarhus University Business and Social Sciences Department of Business Administration, DK); **Schuitema, Geertje** (Aarhus University Business and Social Sciences Department of Business Administration, DK); **Broman Toft, Madeleine** (Aarhus University Business and Social Sciences Department of Business Administration, DK)

The creation of an effective supply and demand matching (SDM) system for electricity requires that consumers act as supplier of balancing capacity (i.e., postponing consumption in times of peak demand). In order to do so, they will have to delegate control of their electricity consuming equipment to an external agent. Most electricity consumers have reservations about that (Accenture, 2010). Hence, the future development of the “Smart Grid” is contingent on the development of strategies for securing consumer acceptance and active participation, based on solid knowledge of which factors determine their reservations. In this paper, we report results of an on-line survey in Denmark, Norway and Switzerland on consumers’ acceptance of playing a more active balancing role in the electricity system. We expect that the acceptance of the new consumer role in the Smart Grid will depend on the recruitment model. There are in principle three different models for getting electricity consumers involved in a SDM system: (1) making it mandatory, (2) making it the default, but with an opt-out possibility, and (3) making it voluntary, implying an opt-in possibility. A mandatory model can secure a quick diffusion of the system, but is likely to provoke substantial public and political resistance. In this study, we test the expectation that a default (opt-out) model can produce nearly as high adoption rates as a mandatory model and substantially higher than the voluntary (opt-in) model (Thaler & Sunstein, 2008). Moreover, we examine possible interactions between recruitment models on the one hand and consumer’s motives and reservations on the other hand.

References: Accenture. (2010). Understanding Consumer Preferences in Energy Efficiency: Accenture. | Thaler, R. H., & Sunstein, C. R. (2008). Nudge. Improving decisions about health, wealth and happiness. London: Penguin Books.

## How should smart meters be designed so that they optimally overcome obstacles and exploit potentials concerning electricity saving?

**Mack, Birgit** (ZIRN - Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development, University of Stuttgart, DE); **Renn, Ortwin** (ZIRN - Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development, University of Stuttgart, DE); **Tampe-Mai, Karolin** (ZIRN - Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development, University of Stuttgart, DE); **Sippel, Tim** (ZIRN - Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development, University of Stuttgart, DE); **Heins, Bernd** (INEP Institut Oldenburg gGmbH, DE); **Klöpffer, Carsten** (INEP Institut Oldenburg gGmbH, DE)

This study on smart meters is part of a project funded by the German Federal Ministry for the Environment. Smart meters give feedback about the electricity consumption of households on home displays and internet platforms. These interfaces may also provide other types of information supportive of saving behavior. Intervention studies have shown that feedback is a powerful measure leading to a reduction of energy consumption, especially if combined with goal setting, action-relevant information, and social comparison, and if it is behaviorally relevant. Our research questions are: -What kind of smart meter information is useful and motivating from a consumer perspective and leads to the exploitation of saving potentials and the overcoming of obstacles? -How do consumers think they would use this information in decisions concerning energy saving? -Do current smart meter offers correspond to the interests and motivations of consumers? We ran 12 focus groups with consumers differing in age and family status. Group discussions were transcribed and analysed according to the principles of qualitative content analysis. A questionnaire supplemented the qualitative data. Results show that consumers consider it important to receive behaviorally relevant device-specific feedback on top of the global feedback on total consumption. Many prefer device-specific feedback centralized on the smart meter in comparison to feedback on individual device displays, because this facilitates comparison and the identification of energy consumption hogs. In addition, consumers ask for tailored information and recommendations on how to act in the future. In the session we will compare the design recommendations given by the focus group participants with those which may be deduced from intervention studies, Ajzen's theory of planned behavior, and Bargh's habit theory.

## **Subjective barriers against more energy efficiency in the residential sector – results from focus group discussions in Norway**

**Klöckner, Christian A.** (Norwegian University of Science and Technology, NTNU - Department of Psychology, NO); **Matthies, Ellen** (Otto von Guericke University of Magdeburg, Environmental Psychology, DE); **Sopha, Bertha M.** (Norwegian University of Science and Technology, NTNU - Industrial Ecology, NO); **Bjørnstad, Even** (Enova SF, NO)

The presented research project analyses the consumer's subjective representations of barriers against energy efficiency with respect to direct energy use at the household level. The project uses the theory of planned behavior (Ajzen, 1991) extended by external barriers and facilitators as well as the processes of habitualization as theoretical framework. The model assumes that energy relevant intentions are translated into behavior in interaction with facilitating factors and barriers. If repeated consistently, behaviour is transformed into a habit, which both feeds back on behavior (change) and attitudes. For this presentation the focus of analysis will be identifying (anticipated) barriers that hinder energy efficiency and identifying energy relevant societal norms that negatively impact energy use. Both aspects will be analyzed by means of focus group discussions. Eight focus groups with eight participants each will be conducted in June 2011 in four regions (Oslo, Bergen, Trondheim and Tromsø), one in each city and one in the respective rural surroundings to cover the large geographical, climatic and structural differences in Norway. The participants of the focus groups will represent different residential types (house owners, tenants, parents, singles, couples, young families, pensioners, etc.). The focus groups will be analyzed with a content analysis. The question if the results can be generalized to other countries will be addressed.

References: Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50 (2), 179-211.

## oral presentations in open sessions

### **Flexibility of private households in consuming energy**

**Brening, Jessica** (University of Luxembourg, LU); **Schulte, Eva-Maria** (Technische Universität Braunschweig, DE); **Schweizer-Ries, Petra** (Saarland University, DE)

The consumption of energy services is an important part of daily life. Due to its three times higher primary energy consumption, electricity is of special interest in saving energy. There are various ways of achieving a sustainable energy consumption. One way is to produce electrical power through the use of renewable sources. This non-continuous and decentralized way of production contains some challenges which can be met by load shifting. This means shifting the electrical consumption from peak times (e.g. in the evening) to times of lower load (e.g. in the night). This flexible load shifting allows an optimized way of using renewable energy. This raises the question of how flexible the inhabitants of private households are in shifting their consumption of electrical power. In this context, routines in our everyday behaviour are important. They are performed without a high level of awareness and aren't easy to change. Routines are the strongest predictors of future behaviour (Verplanken et al., 1998). Therefore, we asked, in a semi-standardised questionnaire, about typical routines concerning energy consumption behaviour such as using a washing machine, dryer and dishwasher and the willingness to change the starting time of their use. The aim of this study is to examine psychological conditions which facilitate or inhibit the flexibility of consumer behaviour which is necessary to use the renewable energy more efficiently. Thus, we analyse the role of acceptance for renewable energies, as well as the affective component of energy consciousness. Furthermore, the possibility to save money (for example by offering a flexible electricity rate) as a motivation for shifting the times of using energy services is examined. The data collection was integrated in an interdisciplinary project, which aims to establish a virtual net to combine decentralized renewable energy generating plants in a German district. 424 of 2500 randomly selected inhabitants answered the questionnaire concerning the mentioned aspects (17%). The results indicate a willingness to shift their energy service demands to other times of the day, under certain conditions. The acceptance of renewable energy, as well as the affective component of energy consciousness and the possibility of saving money function as carriers. The fear of disturbing neighbours and the concern about a high effort resulting from change inhibit the willingness to shift their energy service demand. Furthermore, the residents aren't well informed about load shifting. Practical implications for the implementation of renewable energies are discussed.

Keywords: ecological attitude; energy sustainability; behaviour changes; conservation ecological behaviour

References: Verplanken, B., Aarts, H., van Knippenberg, A. & Moonen, A. (1998). Habit versus planned behaviour: A field experiment. *British Journal of Social Psychology*, 37, 111 – 128.

## **Sustainable energy consumption: The problem of fuel poverty**

**Brunner, Karl-Michael** (Institute for Sociology and Social research, Vienna University of Economics and Business, AT); **Spitzer, Markus** (Austrian Institute for Sustainable Development, AT); **Christanell, Anja** (Austrian Institute for Sustainable Development, AT)

People living at risk of poverty or in conditions of manifest poverty very often cannot satisfy basic needs such as being able to heat their homes adequately. These groups of energy consumers are vulnerable to the consequences of insufficient or insecure access to energy. Reports by social welfare organisations state that a large part of low-income households has problems in paying their energy bills, at least for some time, and that disconnections are more widespread than expected. Rising fuel costs, bad housing conditions, the use of energy-inefficient appliances etc. belong to the list of problems these vulnerable consumers face and which call for socio-ecological solutions that contribute to energy efficiency as well as to social empowerment. The proposed presentation presents results and policy recommendations from the project "Sustainable energy consumption and lifestyles in poor households" (German acronym: NELA) which investigates energy consumption in low-income households in the Austrian capital Vienna. The study is based on a broad, multidisciplinary approach regarding underlying social theories and guided by questions about the type of socio-cultural and everyday life images that shape energy consumption in low-income households and the target-group-specific strategies and measures that can be developed in order to combine energy efficiency and energy savings with an improvement of living standards. The methodological approach of the project is premised on the qualitative paradigm, and data was collected in qualitative interviews. In summary 50 interviews were conducted in low income households in Vienna, 10 interviews in more affluent households and subsequently analysed. The main aim of the project is to identify potentials for energy efficiency and energy savings (and thus also of costs) and to develop and implement policy measures that help combat fuel poverty and social exclusion in close cooperation with key actors within the energy system (e.g. energy companies, policy makers, NGOs, social workers).

Keywords: fuel poverty; sustainable energy consumption; environmental justice; poverty

## Electricity consumption in German households: Determinants of investment and curtailment behaviours

**Dehmel, Christian** (University of Münster, Chair of International Relations and Development Policy, DE); **Krömker, Dörthe** (University of Kassel, Institute of Psychology, DE)

This study comprehensively analyzes psycho-social as well as socio-demographic factors influencing selected target behaviors of electricity consumption. By means of a nationwide telephone survey (N=1000) the reasons behind investment behaviors, such as buying energy efficient cold appliances and TVs, as well as daily curtailment behaviors, such as regularly switching off power strips as well other stand-by appliances, were disclosed. Thereby past, actual and future behaviors (intentions) were considered. Also, consumers using electric heaters were questioned on their willingness to exchange their electric appliance with a heating alternate (N=126). The respective investment and curtailment behaviors were chosen on the basis of an ecological potential analysis, which identified those areas with the highest potential to reduce electricity consumption in private households. The influencing factors were operationalized on the basis of an integrated behavioral model, which considers object-, subject and action related components (OSA-heuristic). The heuristic has been developed by integrating relevant theories of environmental behavior, such as the Norm-Activation Model (Schwartz & Howard, 1981) or Theory of Planned Behavior (Ajzen, 1991) and further, approaches of personal identity were used. The purpose for this study was not to test the complex model but rather to use it as a heuristic to allow a broad empirical test of potentially relevant factors of influence for this field of environmental action. The results show that every target behavior is influenced, in detail, by different factors, which must be accordingly considered when drawing up interventions for reducing consumption. However, principal differences become evident between investment and curtailment behaviors: While the past purchase of appliances is rather influenced by practical conditions and socio-demographic factors, thus, not by ecological considerations, the curtailment behaviors are influenced by those components that had been specified in the OSA model. For instance, the electricity consumption due to cooling appliances is influenced by the lack of space in the existing appliances and by socio-demographic factors: Tenants use less electricity for cooling appliances in comparison to house owners. Daily curtailment behaviors to the contrary, are among others influenced by personal ecological norms and a "green" self concept. Intentions for future ecological investment behaviors however, are influenced by both, OSA variables and socio-demographic factors. For instance, the intention to buy an energy-efficient TV is influenced by a "green" self-concept, personal norm and several behavioral beliefs as well as income and apartment size. Regressions on intentions for future curtailment behaviors however, did not show any satisfying results. This eventually points to limits of models that assume reasoned or planned behavior for this type of electricity consumption.

Keywords: electricity saving; investment behavior; curtailment behavior

References: Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. | Schwartz, S. H., & Howard, J. A. (1981). A normative Decision-Making Model of Altruism. In J. P. Rushton & R. M. Sorentino (Eds.), *Altruism & helping behavior*. (pp. 189-211): University of Wisconsin-Madison Hillsdale, Erlbaum.



## **Consumer's adoption of eco-friendly products: The effect of message framing and consideration for future consequences**

**Han, Sidney Su** (Department of Marketing and Consumer Studies, University of Guelph, CA); **Xu, Jian** (Dongbei University of Finance and Economics, CN)

*Introduction* The current study examines the effect of message framing strategies used in marketing communication on consumer's adoption of eco-friendly products. A factorial experimental design is used to explore the main effect of message framing on consumer's attitude towards and purchase intention of eco-friendly products as well as to investigate the moderating role of consumer's consideration of future consequence (CFC) on the message framing effect. *Theoretical Foundation* According to the message framing theory, one message can be phrased in a frame of a positive or negative approach (Yi & Baumgartner 2008). Eco-friendly products can be emphasized in either a positive or negative framing in marketing communication. Using different message framings could influence consumer's cognitive processing, attitudinal formation and behavioral change. Consumer's consideration for future consequences (CFC) refers to a stable individual difference to the extent which consumers consider distant or immediate consequence of potential purchase behaviors (Strathman, Gleicher, Boninger and Edwards 1994). Literature demonstrates that CFC affects the extent to which individuals are influenced by a persuasive communication. Based on the above theories, we hypothesize that a negatively framed message is more persuasive than a positively framed message, but this effect only exists for individuals with considerations for distant consequences, in contrast, for individuals with consideration for immediate consequence, the effect will be reversed. *Methodology* This experimentation employs a 2 (message framing: positive/negative) x 2 (CFC: distant/immediate) between-subject full-factorial design. 120 undergraduate students are selected to participate in this study. Message framing is manipulated in a small advertisement by framing the benefit of buying eco-friendly textbooks (made in 100% recycled paper) in a negative or positive approach (both scenarios have been pretested by student samples). Consideration for future consequences is directly measured by a 12 items scale adopted from Strathman, et al. (1994). Participants are assigned to view either of advertising messages, and then they are asked to answer a questionnaire to do manipulation check, dependent variables measurement (attitude and purchase intention) as well as to collect demographic information. Two-way analysis of variance is conducted for a pilot study and the results show that the hypotheses are supported. *Contributions* The current study contributes to sustainable consumption research by identifying two influential factors of consumer's purchase of eco-friendly products: message framing and consideration for future consequences. Managerially, message framing has been identified as an effective marketing communication strategy to promote eco-friendly products to the public.

**Keywords:** message framing; consideration for future consequences (CFC); eco-friendly purchase behavior; experimentation and marketing communication

**References:** Strathman, A., Gleicher F., Boninger D.S., & Edwards C.S. (1994). The consideration for future consequences: weighing immediate and distant outcome of behavior. *Journal of Personality and Social Psychology*, 66 (4), 742-752. | Yi, S., & Baumgartner, H. (2008). Motivational compatibility and the role of anticipated feelings in positively valenced persuasive message framing. *Psychology & Marketing*, 25(11), 1007.

## **“My home is my castle - and it better be warm” – difficulties in reducing energy consumption in the household**

**Huebner, Gesche** (University of Greenwich, GB); **Cooper, Justine** (University of Greenwich, GB); **Jones, Keith** (University of Greenwich, GB)

One of the biggest challenges of today is to achieve environmental sustainability. Reducing energy consumption in the private realm is of prime importance, considering that 27% of all carbon emission stem from domestic households (HM Government, 2006). Space heating reflects the largest share of private energy use with 53%, followed by appliances and lighting (22%) and water heating (20%), making these the most relevant areas to address (HM Government, 2006). In fact, in recent years, most energy suppliers have started to provide their customers with information on how to reduce energy consumption, and gadgets such as energy monitors are easily available. Yet, consumption needs to decrease further to meet the ambitious targets defined by the Climate Change Act 2008 (<http://www.theccc.org.uk/about-the-ccc/climate-change-act>). One question that arises is how much energy consumption can be reduced without impacting negatively on personal comfort. We addressed the question what comfort means and how people feel about their level of comfort in a study among social housing tenants in England. Participants were asked to define what comfort in the home means to them and how satisfied they were with the comfort their home provided. In a survey, their current behavioural practises with regard to energy consumption were assessed, together with a variety of related variables, such as perceived knowledge on energy saving and environmental awareness. Participants also gave information on how they operated their heating system. The data was completed by assessing the stock condition and average energy consumption. Preliminary data show that “warmth” was the most important aspect of comfort, followed by security, space and privacy, and cleanliness. Likewise, discomfort was most often ascribed to coldness and drafts. The questions on current practices revealed that most participants took positive actions to reduce their energy consumption, such as turning off appliances completely. The study also revealed that many participants were unsure on how to most efficiently operate the heating system. Taken together, three important factors emerged that make energy reduction in the household difficult: Firstly, personal comfort is mainly determined by warmth. Secondly, behaviours other than cutting back on heat are already performed to a large extent. Thirdly, information on how to best operate the heating system are missing. The implications of these results for landlords and energy suppliers are discussed, with emphasis on how to use this information to reduce energy consumption in social housing.

Keywords: comfort; energy consumption; heating; social housing

References: HM Government, UK Climate Change Programme 2006, The Stationery Office, London, UK (2006).

## **The impact of corporate social responsibility initiatives on consumers' behavioral intentions in the Egyptian market**

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The scarcity of research on public response towards corporate social responsibility in developing countries has inspired this research. The research is aimed at studying the consumers' awareness of, and their attitude and behavioral intentions towards, socially responsible companies in the Egyptian market. The relevant CSR literature was recapitulated into a conceptual framework. An empirical study was then conducted through a mixed research design, in order to utilize the strengths of qualitative and quantitative research paradigms. The empirical investigation was divided into two phases. In Phase I, exploratory qualitative interviews were conducted with corporate managers of five companies in the Egyptian market in order to gain insights about the CSR status in the country and develop a preliminary idea of how consumers' responses are. In Phase II, descriptive quantitative research was conducted through a survey on a non-probability sample of consumers, in order to answer the major research questions of the research; "To what extent are consumers in the Egyptian market aware of CSR?" and "What are the consumers' attitude and behavioral intentions towards socially responsible companies in the Egyptian market?" The results of Phase I indicated that consumers in Egypt - from the companies' perspectives - are actually aware of CSR and even have better attitudes towards socially responsible companies. However, the companies under study believe that consumers in the Egyptian market still do not consider CSR in their purchase decisions. These results were confirmed in Phase II, where almost 75 percent of the respondents were familiar with the CSR concept. Around 63 percent of respondents tend to have positive overall impression of socially responsible companies, which was relatively reflected in their behavioral intentions. The greatest bulk of respondents (around 46 percent) do consider CSR in their purchasing decisions. Yet, when it comes to the evaluative purchasing criteria which consumers consider the most; the economic criteria are still given a priority over the social ones. These findings have a lot of managerial and theoretical implications for societal development and for future research.

Keywords: corporate social responsibility; consumer awareness; consumer attitude; consumer behavioral intentions

## **Precarious wealth and sustainable consumption**

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Precarious wealth and sustainable consumption The term “precarization” has been introduced into the social scientific debate about changes in the working society in order to analyze new forms of unequal employment opportunities. The debate revolves around claims that precarious employment is no longer restricted to the margins of society only, but now extends far into the middle classes. According to this thesis, job-related social insecurity and fears of precarization are spreading particularly among those segments of society that increasingly perceive their own, hitherto stable social status as insecure or even threatened. Sustainable consumption patterns can be observed especially among segments of society whose social status is secure or at least not vulnerable. Given the increase in living conditions characterized by insecurity and precarious wealth, we are faced with the question as to how this will affect the households’ willingness and capability to engage in sustainable consumption practices. Precarious social conditions hardly allow for a longer-term perspective in planning for everyday issues and life in general. Therefore, we can expect precarious living conditions to take their toll on the sustainability of private consumption. Bearing this in mind, the presentation pursues two objectives: First, I want to show how experienced (“objective”) and perceived (“subjective”) precarization affects the conduct of everyday life in private households, and how these effects then influence the social opportunity structures for sustainable patterns of consumption as well as the chances for their diffusion. Second, I will show the opportunities and limitations of sustainable consumption patterns under changing socio-economic conditions for prosperity. The approach is based on the working hypothesis that people by no means merely passively adapt to restrictive socio-economic conditions, especially in situations of uncertainty and insecurity, but that – with some gender-specific differences – they will proactively readjust the conduct of life, develop new patterns of time use, and change their ways of appropriating the material infrastructure of everyday life (products and services) in order to maintain or restore the quality of life.

Keywords: social inequality; research on precarization; private households; sustainable consumption

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## **Stated versus revealed preferences for ethical consumption – insights from organic yoghurt shoppers**

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Today consumers state they like to engage in ‘politics with the supermarket trolley’. In supermarkets consumers can choose between several labels indicating that a product is traded in a fair manner (Fair Trade certified products), produced in an organic way (organic certified) or that its purchase is linked to a donation. The last type of product is in the following called Cause-related Marketing (CrM) products. Nevertheless, despite its growing importance, the market share for organic products is still small and for Fair Trade and CrM products negligible (e.g. BLE, 2008; Oloko, 2008; Transfair, 2010). This contradicts the results of many studies that indicate that ‘ethical’ and ‘sustainable’ attributes play an important role in consumers’ purchase decision (e.g. Becchetti and Rosati, 2007; Langen 2011; Loureiro and Lotade, 2005). This inconsistency might be due to socially desirability effects. If consumers are directly asked about the relevance of ethical labels in their purchase decision social desirable answers likely play a role (Fisher and Katz, 2000; GfK et al. 2009). To elicit consumers’ cognitive structures in consumer decision making processes while minimising socially desirable behaviour the information display matrix (IDM) can be used (Ott and Roidl, 2008). The IDM is a computer based information acquisition procedure mapping the information search of individuals. Results provide insights into e.g. the type of information considered and the order in which it is taken into account (Payne et al. 1993). To assess the true importance of ethical labels for the decision making process and the choice of a product without gaining social desirable answers consumers preferences are analysed in the context of eight different product attributes such as price, brand and flavour using the IDM. In this study yoghurt is used as research object. At the time of the survey with n=300 shoppers in organic grocery stores in summer 2010 Cologne/Bonn, the organic dairy company Söbbeke promoted a CrM yoghurt. This was developed with flavour, design and name adapted to the soccer world cup in summer 2010. This work presents the results of a comparison of stated and revealed preferences for ethical products at the example of yoghurt. It reveals to which extent stated preferences are reflected in revealed preferences and enables researchers to assess to which extent stated preferences deviate from revealed ones. It furthermore indicates to which extent a combination of methods originated in different disciplines is appropriate to study preferences for ethical food.

Keywords: stated preferences; revealed preferences; information display matrix; yoghurt; organic shoppers

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## Behavior change in individual road traffic behavior

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*Introduction* Mobility behavior is one of the most environmentally relevant human behaviors. Beyond its well-known negative effects, such as greenhouse gas emissions, air pollution, and need for roads and cars, the noise emission by road traffic is a serious problem. More than 15% of the Swiss population suffer from road traffic noise exceeding the threshold limits (BAFU, 2009). Exposure to traffic noise may cause serious health problems, such as sleep disturbance or high blood pressure. In addition to technical improvements and government policies, motivating individuals to change their road traffic behavior (e.g., eco-driving and using low-noise tires) may help reducing noise emission. Therefore, the aim of this study was to investigate the process of behavior change regarding road traffic behavior with special focus on motivating and inhibiting individual factors. *Method* First, we conducted a literature research on psychological continuum and stage models in the fields of environmental psychology, health psychology, and applied social psychology. Based on this literature we developed a comprehensive theoretical process model of changing environmentally relevant behavior. Second, we conducted 16 individual interviews with experts in noise prevention and road traffic and other important informants (such as, e.g., motorbike drivers, traffic planners). The variables of the theoretical model provided the codes for the content analysis of the interview data. *Results* The findings of the interview analyses were used to refine our theoretical model. We identified general values, norms, and personal needs that increase vs. decrease the motivation for preventing noise. Furthermore, we explored aspects of perceived behavioral control, attitudes, and social norms towards specific individual traffic behaviors and the importance of knowledge about these behaviors. Finally, influences of the structural context were examined. The analysis showed that there are diverse motivating and inhibiting factors in every stage of the change from noise-producing to noise-reducing behavior. Whereas the psychological factors are more influential in the first three stages, the contextual factors are more influential in the last two stages. *Outlook* In the next step of this project, we will conduct a quantitative survey for testing whether the conclusions of the qualitative interviews hold in a larger sample and for providing further empirical data on which the change model of individual traffic behavior can be based. The resulting insights will be used for the development of noise-reducing interventions. *Acknowledgements* This study is funded by the Federal Office for the Environment.

Keywords: individual road traffic behavior; eco-driving; low-noise tires; behavior change

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## **Exploring the existing and emerging trends in domestic consumption behaviour; a case study from Ireland**

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Sustainable consumption has emerged as a key area within the sub-discipline of Environmental Geography. For the purposes of this paper, sustainable consumption is understood to be 'the use of goods and services that meet basic human needs and bring a better quality of life, whilst minimizing the impact on the environment so as not to jeopardize the needs of future generations' (Jackson, 2006). In Ireland, domestic consumption levels have increased dramatically in the past decade making sustainable consumption a key challenge for policy makers (EEA, 2005). To date, policy interventions have focused predominantly on information provision with regard to environmental problems, assuming that individuals will then utilise this knowledge base to make more sustainable decisions regarding their consumption choices (Ehrlich et al., 1999). However, research has found that personal values, situational contexts, infrastructural deficits and financial incentives play a more important role than knowledge in changing environmental behaviour. There has been a dearth of comprehensive analysis into these underlying motivating factors that influence consumption behaviour in an Irish context. This paper aims to shift the current focus of analysis and explore the psychological, social and economic drivers behind current consumption patterns. In other words, individual's attitudes and behaviours will be examined through the lens of sustainable consumption and sustainable lifestyles, providing a more socially and culturally nuanced understanding of consumer behaviour. In addition, this paper will critically explore the crucial relationship between quality-of-life issues and sustainable household consumption patterns. This paper aims to disseminate the results of an extensive all-island household survey that was undertaken between June 2010 and April 2011 across Ireland. A total of 1,500 questionnaires were completed across 30 electoral districts both north and south of the border. Prior to this study, no consolidated data existed at national level in Ireland with regard to sustainable consumption patterns. This research is the first of its kind to explore the four key areas of household consumption that currently impact negatively on the environment of Ireland – transport, energy, water and food. This paper aims to highlight the existing and emerging trends in domestic consumption behaviour. The results presented are derived from data analysis using SPSS and highlight variations in consumption patterns between different geographical areas, as well as different socio-economic groupings.

Keywords: sustainable consumption; sustainable lifestyles; consumption trends

## **Energy cultures: An empirical examination of New Zealand households**

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This presentation details empirical work building upon the Energy Cultures framework published by Stephenson et al in 2010. The 'Energy Cultures' conceptual framework aims to assist in understanding the factors that influence energy consumption, and to help identify opportunities for behaviour change. It takes a culture-based approach to behaviour, while drawing also from lifestyles and systems thinking. The framework suggests that behaviour is influenced by the interactions between cognitive norms, energy practices and material culture. Focusing on household electricity usage, data has been gathered from a sample of 3357 New Zealand households on over 300 variables that describe the physical aspects of the accommodation, the energy behaviours practiced and the beliefs held in relation to energy and related sustainable consumption. Using two-step cluster procedures, which allow for groupings to be made on variables at different levels of measurement, we have defined three main clusters, or energy cultures that describe 92.4% of our sample of New Zealand households. The remaining 7.6% are classified as outliers, too different to be assimilated into any main grouping. The three clusters exhibit very different predispositions towards patterns of sustainable consumption and from a policy perspective we believe they would require quite different interventions in order to move them towards more efficient and sustainable use of energy in the home.

Keywords: household energy use; energy efficiency

References: Stephenson, Barton, Carrington, Gnoth, Lawson, Thorsnes (2010) 'Energy Cultures: A framework for understanding energy behaviours'. Energy Policy.



## Profiling the green consumer: The role of personal values

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Switching to green electricity (GE) is a behavior related to sustainable energy consumption that typically recurs infrequently in an individual's life. The same is true for purchasing renewable energy technologies (RETs) e.g., solar photovoltaics or wood pellet stoves, which might recur even less frequently. Consequently, the need to win new customers in these markets is high. Being able to pinpoint groups with a high potential to become new customers is therefore extremely valuable. Knowing the potential customer is more difficult if there is constant flux. Therefore, we focused on development over time to discover trends that enable predictions of the future. We focus on personal values to characterize consumers because it has been shown that they impact purchase decisions (Doran, 2009). The data was collected via a web-based questionnaire. Members of home-owning households participated (N=788). Personal values were assessed and value groups defined by running cluster analyses. Three stable groups were found: 1. LOHAS (those pursuing a Lifestyle of Health and Sustainability), 2. Traditionalists and 3. Career-oriented. In line with Rogers (2003), who outlined the diffusion of innovations, the respondents who were using RET or GE were grouped according to the point in time at which they had purchased/ switched (based on retrospective data). For each time period the percentage of LOHAS, Traditionalists and Career-oriented among those who switched/ purchased during that period was examined. While in the period from '99 to '01 only 5% of those who had switched to GE were Career-oriented, the proportion amounted to 21% in the period from '08 to '10. A similar pattern was observed for RET purchase. Neither belonging to a certain value group nor the point in time of RET purchase were independent of age. Regression analyses confirmed that both values and age are relevant in predicting the point in time of RET purchase whereas only values and not age were significant predictors for the point in time when the switch to GE had occurred. Our results show, that in the recent past the share of Career-oriented among users of sustainable energy solutions has continuously grown. This indicates that consumers beyond the eco-niche become increasingly interested in such solutions (Wüstenhagen et al., 2003). Additionally, the RET users' age at the point of time of purchase ranged between 40 and 45. Thus, a crucial phase in a consumer's life can be defined during which readiness to purchase RET is especially high.

Keywords: consumer behaviour; personal values; green electricity; renewable energy technologies

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## **Determinants of greenhouse gas emissions from household consumption in Sweden: Time-series and cross-sectional analyses**

**Nässén, Jonas** (Chalmers University of Technology, SE)

This presentation provides findings from two separate empirical analyses of energy use and greenhouse gas (GHG) emissions from Swedish households. The first analysis uses expenditure data from 2000 households with 100 expenditure categories and coupled energy and emissions intensities. The second analysis follows the development of aggregated consumption patterns and GHG emissions in Sweden over time from 1993 to 2006. Emphasis is put on the total GHG emissions of the households (transport, heating, food, entertainment etc), recognizing that reduced spending in one category may cause rebound effects through increasing spending in other categories (Nässén & Holmberg, 2009). The author belongs to a research group which consists of energy system modellers, economists and sociologist. Structural determinants of consumption are emphasized (e.g. income, urban form) while psychological determinants are not included. This research primarily builds on an empirical tradition rather than a theoretical, but an overarching aim is to add to the understanding of how society can be transformed towards long-term climate targets, for example if eco-efficiency will be enough (ecological modernization theory) or if more radical changes will be required (e.g. to the work-life balance; Nässén et al, 2009). The cross-sectional analysis confirms results from other countries showing that income (or total expenditures) is the most important determinant of energy use and GHG emissions. A 1% increase in total expenditures corresponds to increases of 0.78% in energy use and 0.83% in GHG emissions. Spatial determinants also proved to be important. For example, given the same household size and income, an average household living in a detached house in a non-urban area caused 28% more GHG emissions than an average household living in an apartment in a large city. Contrary, the level of education did not show any statistical significance. In the time-series analysis, a decomposition method is used to describe the change in GHG emissions as a series of factors (GHG/energy, energy/energy service, energy service/consumption, consumption/cap, cap). The development of energy service demand is here calculated as energy use under constant technical energy efficiency. This is done in order to separate the technical progress from the structural change of consumption patterns. A 1% increase in consumption corresponds to an increase in energy service demand by 0.80% which is very close to the result from the cross-sectional analysis. This finding gives some support for the use of results from cross-sectional analyses in scenarios of energy use if these are complemented by scenarios of technological change. The aggregated effect of structural changes of consumption, energy efficiency and fuel substitutions was a decrease in GHG emissions by 5% while consumption increased by 39%. While this can be seen as a substantial decoupling, this rate will not be enough to reach long-term climate targets.

Keywords: greenhouse gas emissions; energy use; consumption patterns; households; decomposition analysis

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## Psychological determinants of rebound effects

**Peters, Anja** (Fraunhofer ISI, DE); **Dütschke, Elisabeth** (Fraunhofer ISI, DE)

Improving energy efficiency of products or services is generally regarded as an effective strategy to reduce energy demand and, thus, to contribute to a more sustainable consumption. However, the potentials realized by this strategy can be lower than those theoretically expected or calculated from a technological point of view due to parallel changes of behaviour following the improvement. This effect is known as the rebound effect. From an economical point of view, if a product or service becomes more efficient, lower operation costs result and may in turn elicit increased use. However, individuals do not only react to changes of energy price and costs, psychological factors may also induce rebound effects. Up to now, hardly any empirical study analyses psychological factors in relation to the rebound effect. Starting from a psychological framework integrating psychological action theories such as the theory of planned behaviour (Ajzen, 1991) and the norm-activation model (Schwartz, 1977), we assume that energy efficiency improvements of products or services might induce changes of variables which influence the usage patterns of the respective product or service. In particular, the following variables might be relevant to explain rebound effects following improvements of energy efficiency: The attitude towards the respective behaviour, i.e. the expectation and evaluation of consequences, might change: e.g., more intensive usage might be perceived as less harmful to the environment due to the higher efficiency of the product. Additionally, personal and social norms, i.e. the intrinsic and the perceived social obligation to engage in certain kinds of behaviours may be weakened after an investment in energy efficiency. In order to explore the role of such psychological variables, focus groups have been conducted with individuals who have invested in energy efficiency improvements of their homes (heating, appliances, and lighting) or their mobility. In our presentation we will present results from the focus groups and discuss them in relation to the psychological framework outlined above. Conclusions will be drawn for the psychological explanation of rebound effects as well as for the design of a quantitative questionnaire study which will be conducted in a next step. *Acknowledgements:* This research is funded by the German Federal Ministry of Education and Research (BMBF) as part of the project REBOUND under project number 01UV1002C.

Keywords: energy efficiency, mobility, appliances, heating, psychological action theories

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## **The CO<sub>2</sub> footprint in international comparison – energy consumption patterns of residence, mobility and nutrition and their determinants**

**Peters, Vera** (Potsdam Institute for Climate Impact Research, DE); **Reusswig, Fritz** (Potsdam Institute for Climate Impact Research, DE)

Climate change is on its way, and individual consumption decisions contribute substantially to it. About 40% of all GHG emissions come directly from private household energy consumption, and the figure is even larger if indirect effects of private consumption are included. In order to further explore the conditions and motives that lead individuals to sustainable consumption and thereby to decrease their GHG emissions, we present results from a quantitative household survey (n=2.354) in five European countries (Hungary, Germany, Scotland, Czech Republic, and the Netherlands), which was conducted within the framework of a EU FP 7 project (GILDED) in 2010. A CO<sub>2</sub>-calculator and its items on self reported behavior were used to identify country-specific energy saving patterns in the fields of residence, mobility and nutrition. For this analysis we define sustainable consumption in line with Belz and Bilharz in a broad sense as “consumption options, which in comparison to conventional options have less effect on the ecological and by that social sphere without unduly decreasing the individual good.” (Belz & Bilharz, 2005) The results show highly significant national differences regarding sustainable consumption: in the Netherlands engagement in energy saving behaviors is overall the highest, while engagement is the lowest in the Czech Republic. But in different fields of consumption the results vary; e.g. when it comes to mobility Hungary’s consumption can be considered the most sustainable, since a high percentage of people never or comparably seldom use the car or airplane. Beside site specific conditions such as infrastructure and sociodemographic factors, major individual and social motives for sustainable behavior are explored by applying psychological and sociological concepts such as the “Schwartz value inventory”, a lifestyle segmentation (Otte & Baur, 2008) and people’s perception of climate change (Heath & Gifford, 2006). We try to transcend individualistic approaches by linking effects of individual strategies to more structural themes connected to the national context. Opportunity structures, individual values and social norms influence each other and contribute to distinct consumption patterns and chances for sustainable consumption. The analysis of car mobility for instance indicates that national differences in car mobility are not significantly determined by different lifestyles and values, but by the country specific conditions (e.g. average income, population density and infrastructure). Whereas domestic energy saving measures like decreasing the room’s temperature, turning off unnecessary lights and buying energy saving light bulbs are to a much higher degree affected by values and lifestyles. By comparing national discrepancies and consistencies in energy saving behavior we are able to identify patterns of sustainable behavior and their determinants.

Keywords: CO<sub>2</sub> footprint; lifestyles; domestic energy use; mobility; nutrition

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## Sustainable consumption and economic crisis in Spain

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The economic crisis that Spain has been facing since 2 years ago is showing significant effects in the way citizens are dealing with consumption. Beyond decreases in the sales, there is a rising anxiety about the sustainability of the current consumption patterns as well as a concern related to new tendencies towards sustainable consumption which face new challenges and opportunities. We understand sustainable consumption as the Oslo Declaration on Sustainable Consumption defines:

‘Sustainable consumption focuses on formulating equitable strategies that foster the highest quality of life, the efficient use of natural resources, and the effective satisfaction of human needs while simultaneously promoting equitable social development, economic competitiveness, and technological innovation’. This paper is based on an empirical research project whose main goal has been to map necessities and consumption practices in Spain, trying to assess the impact of the crisis, specially in the sustainable consumption practices. To do so, our perspective has been to deepen into these complexities from the discursive side, in a qualitative sociological research whose methodology has been based on 9 focus groups, that represented different socio-economic profiles and regions. In this work, we discuss the analysis of the results focusing on the different discourses on consumption whose main axis are the separated perception of ecological and economic crisis and the role of guilt as well as commercial and institutional labels attributed to public discourses on sustainability. Guilt is also linked with the eco-fatigue phenomenon that Uzzell (2000) has pointed out before as a risk of over-individualization of responsibility and moral pressure. Therefore, we have explored which conditions facilitate or inhibit sustainable consumer behaviour in these groups. Our main results indicate which are the commodities whose users are more reluctant to quit. In this sense, which is role of technology in the self-sacrifice process of consumer behaviour. The most common practices linked to sustainable consumption in the analysed discourse are turning off the lights and recycling at home. These habits are also mentioned by other authors in quantitative studies of our context such as Meira et al. (2009). Other recurrent options are low consumption light bulbs, argued by the economic saving that implies. Public transport is another common place in several groups and bicycle presence is remarkable, despite the perceived limitations such as infrastructures absence (cycleways or bicycle tracks), risks in cities, as well as the lack of culture and respect for this vehicle. Discourses on sustainable consumption alternatives are mainly unstable, based on mass media and referred to other people’s options. They are not articulated from a personal experience or knowledge. Only some sustainable practices are shared by different socioeconomic groups. These are what we called windows for change.

Keywords: necessities; sustainable consumption; economic crisis; ecological crisis; discourse analysis

References: Oslo Declaration on Sustainable Consumption <http://www.score-network.org/files/OsloDeclaration.pdf> (Data obtained: May 3rd 2011) | Meira, P.A.; Arto, M.; y Montero, P. (2009) La sociedad ante el cambio climático. Conocimientos, valoraciones y comportamientos en la sociedad española, Fundación MAPFRE / Universidad de Santiago de Compostela. | Uzzell, D. L. (2000), “The Psycho-Spatial Dimension to Global Environmental Problems”, *Journal of Environmental Psychology* 20: 307-318.

## **Green product in Malaysia: Still a long way to go**

**Rajiani, Ismi** (Technical University of Malaysia Malacca, MY)

In the early 2000's green technology is a buzz word. However in a developing country like Malaysia, customers' acceptance of green products is still low due to the low number of environmentally friendly products acceptance compared to their non-green counterparts. On the basis of benefit and cost analysis, the purpose of this study is to identify the factors influencing customers' decision in buying green product. This study argues that customers' intention to buy green products are determined by benefit-to-self, benefit to environment, comparative cost and attainable cost. A survey is based on sample of 360 customers and potential customers of green products in Melaka, Malaysia and Structural Equation Model is used. The research revealed that the benefit-to-self factor is not a significant factor which influences customers' intention to buy green products. The implication of this research to the design of green products is then discussed.

Keywords: green product design; intention to buy; benefit; cost

## **Sustainability, food and consumption behaviors. Exploratory research focused on a group of young Italians using projective interview techniques**

**Russo, Vincenzo** (IULM University, IT); **Castelli, Luciana** (IULM University, IT); **Re, Anna** (IULM University, IT); **Sciangula, Cinzia** (IULM University, IT)

Introduction Sustainability is a broad subject which concerns not only institutional policies and corporate choices, but also ordinary people purchase and consumption behaviors. For instance, food is an issue strongly connected to sustainability. Concerning health and environmental sensitivity, sustainability often influences diet choices, although it is still not clear how much people are actually conditioned by this issue, and whether such conditioning comes from direct and conscious processes or from profitable or unconscious choices. At the same time, what emerges is a general contradiction between knowledge, beliefs, opinions, professed values and actual behaviors; consumers act differently and inconsistently with respect to their intentions and declarations. Their opinions and attitudes are often contradictory, and the professed sustainability consciousness (in surveys too) doesn't match with their habits and behaviors as consumers (Biel and Dahlstrand, 2005). Objective, Methodology and Tools The research, in the field of Consumer Behavior Psychology, has an exploratory purpose, and is aimed at investigating the connection between sustainability and young Italians' consumption choices. A convenient sample, constituted by 18 individuals from 18 to 30, living in three Italian cities, one in the North (Milan), one in the Centre (Rome) and one in the South (Palermo) of the country, has been isolated. 18 depth interviews have been carried out for about an hour and half, using projective techniques in order to stimulate respondents and gather sustainability concept representations (Vacheret, 2001), and to illuminate connections between representations and purchase and consumption choices. Main Results Analyzing the corpus of interviews through the Content Analysis codification techniques (Silvermann, 2009), some aspects of the sustainability concept representation prevailing among young people could be highlighted. What emerged at first is a partial knowledge of the historical origins of the sustainability idea, and of the reasons of its circulation. Sustainability, in the majority of cases, is related to a concern for the environment and the future of our planet; as far as consumption choices, sustainability is not the main driver and it is influenced by other variables, such as price and the perceived quality of products. When dealing with food and sustainability, the focus and main concern of the sample is health, that is safety of food.

Keywords: sustainability; consumer behaviour; projective interview; sustainable consumption; sustainable native

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## **The effect of acculturation on immigrant consumers' green behavior: Antecedents and consequences**

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International migration is one of the main factors in social transformation and development throughout the world. Worldwide, there is an estimated 191 million immigrants with 33% living in Europe and 20% living in the U.S. (Shah 2008). In the U.S., debate swirled around the degree to which immigrants' environmentalism differs from those born and raised in the country, ranging from perspectives stereotyping immigrants as lacking environmental concern to highlighting their higher concern compared to the naturalized population (e.g., Whittaker et al., 2005; Inglehart, 1995). However, less is known about the effects of socio-cultural change that occurs when immigrants encounter the host country in terms of their environmental attitudes and behaviors. Acculturation occurs when elements of the host culture are added into the original culture, while maintaining the original culture (Berry 1980). Acculturation became a viable conceptual framework for intra-cultural consumer behavior (Ogden, Ogden and Schau 2004) and can shed light on how environmental attitudes and behaviors shift as a result of contact with the host culture. While previous studies suggest that acculturation determines environmentalism among immigrants (e.g., Schultz et al., 2000), they are mostly focused on measuring environmental attitudes and concerns which are limited in their ability to predict behaviors (Lee, 2009). Our paper presents the results of an empirical research that investigates how acculturation affects the environmental behavior of Hispanic consumers, the largest and fastest growing ethnic group in the U.S. We identify three acculturation modes and show that these affect a set of antecedents to green behavior including environmental awareness, perceived effectiveness and perceived influence of green advertising. These, in turn, predict a number of green behaviors: Conservation, environmental activism, green buying, green purchase intent and information search. We conclude that differences exist among acculturation segments across antecedents and consequences. The importance of this paper is tri-fold. First, it integrates the literature from multiple disciplines (consumer psychology, socio-cultural psychology and marketing) to explore two global phenomena, green consumerism and immigration attitudinally, cognitively and behaviorally. Second, from a theoretical perspective, it adds to the consumer behavior literature that views acculturation as a key in moderating immigrants' behavior in the new marketplace. Third, by identifying the drivers for and predicting the nature of green behaviors, marketers are given insights for reaching immigrant consumers effectively. Managerial implications include developing segmentation strategies that combine consumer characteristics (i.e., green behavior and level of acculturation) and designing effective communication programs to promote green behavior.

Keywords: acculturation; green behavior; green marketing; consumer behavior; psychographics

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## **Sustainable living: The role of values and beliefs in citizen decision-making**

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Sustainable consumption is part of a comprehensive, thoughtful approach to living an appealing, fulfilling, productive, and environmentally-responsible life. In 1998, a new project in environmentally-responsible consumerism quietly began at Oregon State University. Its goal was (and continues to be) to "Improve the quality of life and reduce environmental degradation in the United States by fostering new consumption patterns and sustainable lifestyles." To date, over 7500 citizens have participated in the OSU workshops. The website attracts over 1 million browsers per year. Longitudinal evaluations indicate that 85% of workshop participants continue to use workshop materials 18 months after completing the training; 87% use their personal sustainability triangle for making major household decisions; 83% report an average of \$250 in energy savings; and 50% report a reduction in family conflict when using the sustainability triangle. In 2004, the OSU program expanded into a national effort involving 90 Extension faculty at 36 land-grant universities. The sustainable living curriculum is ethics-based education, meaning that, in a safe intellectual environment, participants explore their personal and professional value systems, examine national and international trends, consider barriers to living sustainably, and ultimately, identify personal priorities and life choices. Dr Courtland Smith's pivotal work on the role of values, ethics and beliefs in the salmon restoration controversy on the Columbia River is at the core of the curriculum. Defining values, ethics, and beliefs is the first program element. Exploration of personal and professional ethics is the second. Identifying societal barriers -- time, spiritual and natural disconnect, and materialism -- is third. By the end of a multi-week workshop, participants have identified their most important social, economic, and environmental values; and learned techniques for using them in decision-making. We have found that the juxtaposition of rapid climate change with sustainable living is a powerful catalyst for citizens to take action. Providing an ethics-based foundation along with climate mitigation and adaptation strategies ensures a higher rate of follow-through.

Keywords: intelligent consumption; sustainable living; ethics-based decisions

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## How to know what to do - communicating low carbon housing to private homeowners

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Private homeowners can reduce their energy use significantly and move towards a low carbon lifestyle by retrofitting their homes in an energy efficient standard. The adoption of low and zero carbon (LZC)-technologies can play a pivotal role to reach significant reductions of CO<sub>2</sub> emissions. However, energy efficient refurbishment is a complex activity, requiring specialized information and skills. Homeowners usually are not trained in construction and technology and do not have the required expert knowledge. Therefore, they have to find ways to cope with expert knowledge and have to gather, select and evaluate the necessary information. While this is true for refurbishment in general, one could argue that an appropriation of expert knowledge is still more important when the adoption of innovative technologies is at stake.

Homeowners who want to insulate their home, set up a thermal collector or install a wood pellet heating system face a complex set of questions concerning technology as well as the thermal properties of their house. They have to assess the performance of different technical options, estimate their reliability, benefits and risks and pay attention to their compatibility with the electrical or plumbing systems of the home. Communication and transfer of knowledge, therefore, is a crucial prerequisite for the adoption of LZC-technologies. But in this process, information is not simply passed from an expert to a layperson. Expert knowledge has to be actively translated, assessed against the views and opinions of laypersons and other experts and adapted to the context of everyday life. Moreover, expert knowledge has to be consistent with the view of other persons in the homeowner's social network. Drawing on an empirical survey among 1,008 homeowners who retrofitted their homes, the contribution examines how expectations and attitudes towards refurbishment and technology can promote or hamper energy efficient refurbishment, giving particular emphasis to how homeowners deal with the demand for expert knowledge to overcome uncertainties and ignorance related to energy efficient refurbishment. Comparing homeowners who applied LZC-technologies and those who carried out refurbishment in standard quality, the critical role of information and knowledge transfer for energy-efficient refurbishment is highlighted. Against this background, the potential of energy advice for enhancing the agency of private homeowners to adopt LZC-technologies is discussed and conclusions for communications strategies are drawn.

Keywords: energy-efficient refurbishment; low and zero carbon technologies; private homeowner; energy advice

## **Extending the framework of the theory of planned behavior: Effect of personal norms on organic food consumption**

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The main objective of this study is to analyze the role of personal norms in motivating organic food consumption. This study is based on data from a survey of general population (N=600) and of the subpopulation of organic food consumers (N=600) conducted in the Czech Republic in 2010. We use theory of planned behavior that has been successfully applied to explanation of organic food consumption in several empirical studies and extend it by including personal norms related to organic food consumption. Personal norms have been found in previous meta-analytical studies to be an important predictor of proenvironmental behavior, explaining as much as 52% of variation in proenvironmental behavior (Bamberg and Möser 2007), with several empirical studies attempting to include personal norms in TPB framework (see e.g. Bamberg and Schmidt 2003, Wall, Devine-Wright and Mill 2007). Based on the literature review, we propose and sequentially test a conceptual model using latent variable structural equation modeling with categorical outcome variables. We have found that standard TPB fits the data well. However, including personal norms in the TPB framework increases explanatory power of the model. Our result also suggest that the causal model proposed by Bamberg and Möser (2007) that assumes the effect of social norms to be mediated by personal norms fits the data very well. In addition, we have also found that personal norms are highly correlated with attitudes even when we control for known effect of social norms on attitudes. Unfortunately, there is no clear theoretical interpretation for this pattern that has been also found in other empirical studies. In the concluding section we discuss implications of our results for attempts to relate Value-Belief-Norm theory to the theory of planned behavior.

Keywords: personal norms; organic food consumption; theory of planned behavior; structural equation modeling

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## **Consumption patterns of the 'new consumers' in Vietnam: How to reduce their sharply risen ecological footprint?**

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This paper is analyzing consumption patterns of the rapidly emerging urban middle class population of the biggest metropolis in Vietnam, Ho Chi Minh City. This new social strata is adding to the global phenomenon of the so-called "new consumers" (Myers, Kent 2003) with sharply increasing ecological footprints and resource-intensive lifestyles all over the world in countries such as China, Russia, Brazil or India. Some scientists consider the new urban middle classes in Asia simply as post-modern consumers, others regards them as important drivers of democratization of civil society. The argumentation line of this paper is that the urban middle-class can indeed be an essential target group for more sustainability. In the case of Ho Chi Minh City this is particularly needed because the metropolis is very much vulnerable to the effects of climate change at the one hand and has become the single-most important emitter of green house gases in Vietnam, at the other hand. By means of an investigation in the context of a five-year-research project funded by the German Ministry of Education and Research (BMBF; Research Programme: "Research for Sustainable Development of the Megacities of Tomorrow: Energy- and Climate-Efficient Structures in Urban Growth Centres"), this paper presents recent results from a representative survey among more than 400 new urban middle class households in Ho Chi Minh City (Waibel 2009). For example, the latter are important drivers of socially selective suburbanization processes thus contributing to urban sprawl. A special focus is laid upon on aspects of energy-consumption related to housing. Thereby, energy needing for cooling and energy needing for heating up water have been identified as the two single most important sources of energy consumption (Waibel/Schwede 2009). The paper continues with a discussion how to promote behavioural change particularly related to energy-efficient and climate-adapted housing given administrative constraints in Vietnam such as institutional fragmentation and low capacity of public authorities. As a consequence, the implementation-orientated multi-faceted approach chosen by the research consortium and developed together with policy makers and national and local level in Vietnam will be introduced. It will be finally concluded that only comprehensive approaches with a combination of top-down and bottom-up measures have a chance to increase the ecological footprint of the new consumers in Vietnam.

Keywords: new consumers; sustainable consumption; energy-efficient housing; Vietnam; mitigation

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## **Green consumer profile and purchase behaviour: An application to the Portuguese market**

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As a result of the growing environmental conscienceness, consumers began to seek more environmentally friendly alternatives instead of their traditional purchasing. The main objective of this paper is to explore the determinants of green consumer behaviour by analyzing in to what an extent socio-demographic variables (sex, age, income, literacy level) and psychographic variables (environmental consciousness, perceived effectiveness, altruism and liberalism) explain the ecologically conscious consumer behavior. This investigation also evaluates the green consumer purchase behavior by studying the relation between green purchase intention and green effective purchase. This paper fills this research need by presenting a research model that defines relevant constructs and their inter-relationships. The empirical research is a replication and adaptation of the ECCB scale (Ecological Conscious Consumer Behaviour), developed by Straughan and Roberts (1999) and GPI (Green Purchasing Intention) and GPB (Green Purchase Behaviour) scales developed by Chan (2001), empirically validating the hypotheses that describe the complex relationships and discussing its theoretical and managerial implications. This investigation is based on a quantitative study and it is a research paper. In order to test our hypothesis, the questionnaire was administered to a convenience sample of 186 students at a major university. The data was collected through an online survey in two phases. On the first phase the aim was to evaluate the ECCB, to identify the green consumer behaviour profile and to measure to what an extent the existence of an ecological behaviour is related to the green purchase intention. On a second stage, one month after, respondents were contacted again in order to understand their green buying behaviour during this period. The results reveal that the psychographic variables proved to be more effective to characterize the ecologically conscious consumer behaviour than the social-demographic ones. This finding is in alligned with what would be expected, such as Robert's (1996) and Straughan and Roberts' (1999) previous studies have shown this evidence. Among the psychographic variables analysed, the perceived consumer effectiveness assumed to be the most significant variable and the driving force for environmentally conscious behaviour. Altruism, in spite of being secondary, has also an important role to explain this behaviour. The present study has also shown that the gap between green purchase intention and actual purchase of green products is becoming less evident. Previous studies, specially Chan's (2001), argued that despite of the consumer expresses a high level of green purchase intention it didn't affect their buying behaviour. This finding might reveal that the green consumer behaviour has entered into a "new era", where exists a greater conformity between their thoughts and their actions.

Keywords: green marketing; green consumer; ecological consciousness; green purchase intention; green purchase behaviour

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## **Barriers and opportunities for sustainable consumption – a study of eight citizen types**

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Support for sustainable consumption has since the Rio Declaration on Environment and Development in 1992 grown steadily among politicians, businesses, and not at least, consumers. But while sales of “ethical” and ecological labeled products in some areas of consumption also have increased, many un-sustainable consumption patterns still persist. One reason for this inertia could be that many citizens lack the necessary prerequisites to make sustainable choices. This poster will present eight types of citizens who are equipped with different level of motivation and capacity to be sustainable consumers, derived from a quantitative cluster analysis of data from a representative Swedish survey. The analysis will show how some consumers fail to choose sustainable products, even though they have supposedly good prerequisites to do so. Others, who we could expect to not be sustainable consumers, are actually frequently buying Fairtrade and organic labeled products. The study outlines some barriers to action that hinders sustainable consumption as well as strong mobilizing factors (“opportunities”) that enable consumers with low capacity and motivation to make sustainable choices. Sustainable consumption has both in the public debate as well as in previous research been framed in a number of ways and is a highly contested term with no consensus on its definition. This political science study employs a citizenship perspective, deriving its theoretical foundation from newly developed sustainable citizenship-theory as well as more traditional civic engagement theory. Sustainable consumption is thus seen as a matter of citizenship and lifestyle rather than focusing on for example governmental policy, financial incitements or technological advancements.

Keywords: sustainable consumption; sustainable citizenship; consumer behavior

## **Towards a sustainable building sector - path dependent developments in the heating market**

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In Germany and other north-European countries, energy demand for space heating and domestic hot water dominates the households' energy consumption. Hence it has to be analysed how the energy consumption of those applications can be reduced [Amstalden, R., Kost, M. 2007] and whether measures and regulations suffice to achieve political goals [Loga, T. et al. 2007] and turn households into sustainable energy consumers. Methods This (socio-)economic contribution follows two lines of investigation. In a first step different scenarios are explored to find out how the building stock and its related emissions will evolve during the next decades, following different political requirements. The calculation includes several structural factors as well as the CO<sub>2</sub>-intensity of the energy used for heating, to assess possible shifts away from fossil fuels to renewable and sustainable energy. These factors are combined and calculated in a three component model. As a second step a discrete choice model, formulated as logit model, is used to reproduce the heating system decision of house owners, major actors in this case. Differences concerning the existing heating infrastructure are taken into account. It is examined whether price signals do exclusively affect the house owners decision or if other determinants bias the consumer behavior in the case of a heating system purchase. The tendency to stuck to one, well known system is also part of the calculation. Results The results show that current policy developments will not be sufficient to achieve an 80% emission reduction until 2050 [Federal Government 2008] . A paradigm shift, meaning a more intensive concentration on the building stock and a faster and more consequent replacement of old, inefficient fossil heating can lead the way to the 80% reduction. For the case of Germany, the inertia of building owners and similar phenomena are likely to be underestimated . Official scenarios foresee a strong decline of gas-supplied homes to a level near zero in 2050 while an expansion is predicted for district heating. Both developments seem to be unrealistic, considering the strong and persistent role of gas heating. Assumptions made seem to undervalue the consumers and their process of decision making. It is shown that price signals are crucial determinants of consumer behaviour, but also continuity in price differences and subsidies is needed to convince consumers to move away from old, well known systems. Conclusions Ameliorations of the energy efficiency of buildings when renovated anyway is crucial to keep the costs low and benefit from synergy effects. Another decisive driver of CO<sub>2</sub>-emissions in residential buildings is the chosen heating energy. A direct and cost-efficient way to lower emissions and turn towards sustainability is the renewal of heating systems. Policies will have to incorporate heating systems and the determinants of consumer decisions far more to reach the ambitious climate goals in the building sector.

Keywords: heating market; building sector; renewable energy; discrete choice model; sustainability

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## **Demand for voluntary carbon offsetting – a discrete choice experiment among individual consumers**

**Blasch, Julia** (ETH Zurich, Institute for Environmental Decisions, IED, CH)

Voluntary carbon offsetting was introduced as a concept to reduce individual CO<sub>2</sub> emissions and to enable climate friendly consumption. We draw on the economics literature on altruism, donations, philanthropy and the private provision of public goods and refer to contributions from behavioral economics, sociology and social psychology in order to derive explanations for individual carbon offset demand. Our aim is to give answers to the questions why and under which conditions individuals are willing to compensate their CO<sub>2</sub> emissions and to what extent voluntary carbon offsetting can be an effective means for mitigating climate change. In a discrete choice experiment among consumers from the German-speaking part of Switzerland we explore the motives of consumer demand for voluntary carbon offsetting for different consumption activities with varying mitigation project characteristics. Furthermore, we inquire possible implications of governmental regulation on carbon offset demand. The poster will present a summary of preliminary results from the currently ongoing discrete choice experiment. It will be shown whether framing a payment for climate change mitigation either as a voluntary carbon offset or as a donation will influence WTP differently for different types of consumers. We hypothesize that framing the payment as a voluntary carbon offset increases WTP of pro-social individuals when they value the social outcome of their consumption according to Prospect Theory's value function. Results will allow drawing conclusions on how different types of consumers can be motivated to contribute to climate change mitigation. We will share our findings on how WTP for carbon offsetting is related to the attributes of the underlying consumption activity, such as its price and environmental impact in terms of CO<sub>2</sub> emissions. On the one hand, we hypothesize that the price of the consumption activity is taken as a reference for WTP. On the other hand, we assume to find a non-linear relationship between WTP for offsetting and the environmental impact of the underlying consumption activity which may either support the Low-Cost Hypothesis or the hypothesis that WTP is limited to high-impact consumption activities. We will inquire whether consumers recognize and value the signals for high quality projects. This is essential in order for emission reductions to be "real" and effective in terms of climate change mitigation. Finally, we will show our observations on the influence of governmental climate regulation, such as a carbon tax, on carbon offset demand. Our results will allow drawing conclusions about consumers' willingness to contribute voluntarily to climate change mitigation, taking into account different frames and conditions.

Keywords: carbon offsetting; willingness to pay; discrete choice; climate change mitigation; environmental behavior



## **Caring about sustainability? Farmers' markets in post-socialist Prague**

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After almost two decades of supermarkets' hegemony in the food retail sector, Prague and other Czech cities have in the last two years seen a surge of interest in alternative food provision with farmers' markets representing the major trend. While open-air markets with fresh produce used to be an integral part of Czech cities in the more distant past, this tradition was often disrupted during both the socialist and post-socialist period. The western inspiration for the new farmers' markets is reflected in their name. In western Europe or North America, farmers' markets are associated with ideas of sustainability, although often tentatively. Yet we don't know much about the ideas and motivations associated with farmers' markets in post-socialist context. This is why this paper has two goals. First, to trace the origins (domestic and foreign) of the contemporary boom in farmers' markets in the Czech capital. Second, to analyze the extent to which, in the Czech post-socialist context, farmers' markets represent a shift towards sustainability. The role of sustainability topics in the motivation of different types of actors involved in farmers' markets was researched using qualitative and quantitative methods. The findings were compared with a similar research aimed at actors involved in traditional open-air markets to establish whether we are witnessing a paradigm change in food consumption or just a marketing ploy.

Keywords: sustainability; farmers' markets; post-socialism; Czech Republic

## The role of sustainable development related self-efficacy beliefs in sustainable consumption

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Research on the importance of psychological variables in sustainable consumption decisions suggests that self-efficacy beliefs (i.e., the perceived ability to successfully bring about desired outcomes) play a role in purchases of sustainable products. Most studies in this line of research measured self-efficacy with regard to environmental preservation and focused on pro-environmental consumer behavior as the outcome variable (e.g., Berger & Corbin, 1992; Straughan & Roberts 1999). In the present study, we took a broader perspective: We addressed consumer behavior that contributes to a sustainable development (more specifically, intentions to purchase “sustainable” groceries, i.e., groceries that help to promote environmental preservation, a socially fair distribution of resources, and economic welfare) and measured self-efficacy with regard to sustainable development (SDSE, i.e., beliefs in one’s ability to contribute to a sustainable development). In an online survey among students (N = 194) of different majors we explored the dimensionality of SDSE and investigated if SDSE predict intentions to purchase sustainable groceries (PI). SDSE was measured by means of 28 questionnaire items and PI was measured by means of 31 questionnaire items. A factor analysis indicated that six facets of SDSE can be distinguished (67 % explained variance, cumulated): Four facets represent self-efficacy beliefs regarding one’s ability to directly contribute to different aspects of sustainable development (i.e., the perceived ability 1. to contribute to social fairness and economic welfare, 2. to contribute to environmental preservation and securing the needs of future generations, 3. to help improving social services and securing the basic needs of people in developing countries, 4. to reduce the ecological stress from agriculture); Two facets represent self-efficacy beliefs regarding one’s ability to indirectly contribute to sustainable development through motivating other consumers to promote sustainable development (i.e., the perceived ability 1. to encourage other consumers to purchase sustainable groceries and to think about environmental preservation, 2. to draw other consumers’ attention to a socially fair distribution of resources and economic welfare). Multiple regression analyses revealed that the six SDSE facets differed with regard to their role in predicting PI. Two SDSE facets were particularly important in predicting PI: Consumers’ perceived ability to reduce the ecological stress from agriculture and consumers’ perceived ability to draw other consumers’ attention to a socially fair distribution of resources and economic welfare. Our findings suggest that self-efficacy beliefs regarding one’s direct and indirect contribution to sustainable development play a role in decisions to purchase sustainable groceries. An interesting question for future research is if interventions to strengthen SDSE allow for promoting sustainable consumption.

**Keywords:** self-efficacy; sustainable development; fair trade; ecological products; developing countries

**References:** Berger, I. E. & Corbin, R. M. (1992). Perceived consumer effectiveness and faith in others as moderators of environmentally responsible behaviors. *Journal of Public Policy and Marketing*, 11, 79-89. | Straughan, R. D. & Roberts, J. A. (1999). Environmental segmentation alternatives: A look at green consumer behavior in the new millennium. *Journal of Consumer Marketing*, 16, 558-575.

## **European meat consumption - From past trends to a more sustainable future?**

**Kanerva, Minna** (Universität Bremen, DE)

This paper will investigate the trends of meat production and consumption in a number of European countries for the past half a century, as well as the influences on these trends. Overall, Europe follow the global trend of increasing meat consumption, even if per capita meat consumption has somewhat stabilized in the recent past (see e.g. FAO, 2009). But what are the differences between EU countries? Have there been periods of decreasing consumption in the past 50 years in Europe? What are the differences between different types of meats, namely beef, poultry, pork and lamb? Apart from assessing past trends, an important point is to try to also identify what has potentially influenced our meat production and consumption in the past and whether such influences could affect the future, when increasing attention needs to be given to the impact of meat - in particular, beef - production and consumption on climate and environmental change and the relationship between consumption and resource constraints. Does there always seem to be a clear correlation between rising affluence, or increased industrialisation of meat production and the associated decrease in prices, and increasing per capita meat consumption? If not, are there any obvious pointers in the data for why not? This paper explore these and other questions for a group of eight EU countries – France, Italy, Spain, the UK, Germany, the Netherlands, Finland and Hungary - drawing on data from the past half a century. For the analysis, secondary data has been collected from public sources (Eurostat, FAO, ILO, OECD), and quantitative analysis is performed. The availability and nature of the related data is also discussed, in particular, the relationship between data on production, supply and consumption. The paper is intended to be a scoping paper for the second part of the project, which is planned to mainly consist of primary qualitative data collection from a number of European countries, analysis of media discourse around meat production and consumption, and possibly interviews. Questions to investigate in the second phase include: What do various publics see as important issues related to meat production and consumption? Why is the issue of reducing meat consumption such a difficult one? Are there cultural differences between European countries? Can any gender differences be found? What impact do different economic situations have on discourses? The aim would be to learn about the difficulties around the issue of reduction of consumption, and about possibilities for chance towards reaching levels of meat production and consumption with fewer negative impacts.

Keywords: meat consumption; meat production; Europe; culture; affluence

## **Consumption behaviors concerning regional renewable energies – financial participation, demand and attitudes of citizens within communities pursuing the goal of renewable energy self-sufficiency**

**Kress, Michael** (Institute for Ecological Economy Research, IÖW, DE)

Introduction and Aim Climate change, scarcity of resources, political dependencies – there are many reasons why it is time to advance the expansion of renewable energy (RE). This expansion needs both a top-down and a bottom-up approach. The latter of a bottom-up approach is pursued by the ambitions of some local municipalities in Germany which announced the political goal to reach 100% RE self-sufficiency. To avoid conflicts and to generate an 'active' acceptance – which includes a growing demand and financial participation for RE - the attitudes and needs of the inhabitants both as consumers as well as political actors should be considered. This paper will focus on the role of consumption in the promotion of regional expansion of RE by answering the following questions: - What internal (e.g. psychological or solvency) or external (e.g. physical or institutional) factors influence citizens consumer behavior concerning regional RE (demand for green energy, installation of solar panels, financial participation in plants)? - Which differences in this consumer behaviors exist in different regional contexts and between different social groups? - Which conditions and instruments (shapeable by regional actors) facilitate or inhibit the demand for regional produced green energy or the financial involvement in RE plants? Theoretical Concepts and Methods Based on (sociological and psychological) theoretical literature, empirical studies and own explorative researches, a draw of an explanatory model concerning acceptance of regional RE (including 'active' acceptance like mentioned behavior patterns as well as attitudes) was designed. In this model assumptions about influences of and coherences between potential causal variables (e.g. perceptions of political process and specific RE-technologies, economic valuations, ecological awareness) were made. To 'measure' the attitudes and behavior pattern and to analyze the coherence between them, a representative telephone survey was conducted among citizens of four German communities. Additionally, in order to achieve a greater depth of understanding of financial participation in regional RE plants, qualitative interviews with financially involved citizens will be conducted in summer 2011. Presented Findings In this paper, the findings of the telephone survey (complemented by first findings of the qualitative interviews) concerning the above mentioned research questions will be presented - for example: generally high 'passive' acceptance of RE in contrast to low 'active' acceptance in terms of demand and financial engagement for RE or differences in attitudes and behaviors within different social groups (e.g. regarding age, gender and education). Beside analytical and theoretical insights, the paper will also include practical suggestions to local authorities for the promotion of 'active' acceptance of regional RE.

Keywords: renewable energy; green electricity; demand; financial investment; empirical social research

## **Realities of sustainable consumption in Poland**

**Neale, Agata Kinga** (Jagiellonian University, PL)

In my presentation I would like to show the issues in maintaining sustainable consumption in Poland. This country being a fairly new European Union member does not implement sustainability policies as fast and as comprehensive as the old EU member states. Since the transformation in 1989, Polish governments did not consider these ideas as fundamental concepts to economical development in Poland. In addition no political party has made these concepts an important focus for their political platform since accession to the EU. The ideas of sustainability are not expressed in school curriculum, local politics, nor the majority of business ventures in Poland. When it is being implemented it is minimized to token environmental changes, while ignoring changes to educational and social attitudes. This responsibility has been left in the hands of non-profit organizations to fill the large void left by government inaction. Despite these problems there are sections of the Polish population who still purchase sustainably. The purpose of my presentation is to explore the reasons why some consumers in Poland buy goods while adhering to sustainable methods despite low purchasing power, lack of political guidance and choosing cheaper cost over value. In addition I will expand on the Polish sustainable consumer's motivation, daily practices, dilemmas, restraints and what changes can be made to improve the position of sustainable consumption in Poland.

Keywords: sustainable consumption; attitudes

## Future scenarios for sustainable lifestyles and consumption in Spain

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Our aim is to contribute to go further in knowledge and practice about sustainable lifestyles in Spain, defining key strategies in our transition to more sustainable lifestyles through these objectives: 1) To identify and map stakeholders in sustainable consumption (SC) and lifestyles topics (public institutions, academia, social movements, private sector, social enterprises, etc.). To explore the diversity of discourses about these topics and create a common understanding/working framework. 2) To describe present and plausible futures of SC, as well as their eco-social impacts. To explore the conditions and the uncertainty for lifestyles and consumption changes in Spain. 3) To produce an outcome suitable for decision-making, resilient to the socio-ecological uncertainty and adapted to different stakeholders. To obtain a battery of policy and action proposals related to sustainable lifestyle changes. The future scenario workshop is a key element of the project "Consumption and Lifestyles: Perceptions, scenarios and policy to Global Change". This workshop is a pioneer experience in Spain and took place in April 2011. We have opted to gather a diverse group of relevant stakeholders at national scale with a clear objective: develop a creative, realistic and fruitful dialogue about lifestyles changes and concrete actions to achieve them. This debate was organized through the participatory construction of future scenarios that can provide a framework for reflection and decision making. The selection of the participants at the workshop responded to a previous phase of research, aimed at ensuring the relevance, consistency, and interest of the results obtained from the process. Socio- Psychological, Technological, Environmental, Political and Economical Drivers and key elements such as consumption areas (energy, food, housing, etcetera) for the building of the different future scenarios had been defined before as part of the previous survey process (4 semi-structured interviews and 70 questionnaires). The results of these workshops are plausible descriptions of how the future might unfold based on a coherent set of assumptions about key elements and drivers of change (Carpenter et al. 2005 quoted by Palomo et al. 2010). We have 4 scenarios with their own storylines that open our minds into different possibilities for sustainable lifestyles in Spain from inspiring stories of social transformation to survival options in a deep ecological crisis. Other results are a battery of proactive policy proposals and initiatives for action and a map of relevant actors for the transformation toward more sustainable lifestyles. As part of the feedback for participants, in further steps of this research, we will also explore policy acceptability amongst the stakeholders involved in the workshop. It is important to move from scenario development to strategic planning and decision-making (Volkery and Ribeiro 2007).

Keywords: future scenarios; participative workshop; sustainable consumption

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## **Who owns personnel car, who cannot afford it but likes to have it and who buys a second-hand car? An examination of determinants of car ownership in the Czech Republic**

**Scasny, Milan** (Charles University in Prague, CUNI, CZ); **Urban, Jan** (Charles University Environment Center, CZ)

Transition of former centrally-planned societies towards market economies brought about many changes in consumption patterns of households, including shifts in individual transportation patterns. This has been also the case of the Czech Republic, where environmental burden from individual transportation has been continuously growing since 1993 when in the same, and on average, fuel consumption of a car-owning household and age structure of the fleet have both remained almost constant over last 17 years. This interesting outcome was a result of increasing car ownership, large share of second-hand purchased cars and increasing engine size of newly purchased cars. In our paper we target some of these drivers of environmental burden. Specifically, we examine which household segments are more likely to own a car and which segments cannot afford a car although they would like to have one. Finally, we try to identify which household segments buy second-hand cars. To answer these research questions, we analyze two datasets comprising household-level data from the Czech EU-SILC from the last 5 years and a micro-level data from the Czech Household Budget Surveys (HBS) covering years 2001-2009. In general, our models based on HBS data show that household structure matters when a decision about car purchase is made. In addition, direction of the effects found in our study are very similar to those reported in the literature (e.g. Clark 2009; Dargay 2002, Johnstone et al. 2009; Š asný 2011; Whelan 2007). For instance, we have found that number of household members is positively associated with car ownership. Further, we see that households with retired household members are less likely to own a car. Presence of children in the household increases probability of car ownership, particularly when children are below 5 years of age. On the other hand, presence of older children above 10 years of age does not seem to have any significant effect on car ownership. These results can be related to changing consumption pattern due to family life-cycle. In addition, probability of car ownership decreases monotonically with residence size and increases with income for those households that cannot afford to own a car. Price of fuel has small and negative effect as one would intuitively expect. The results from multinomial logit regression model using Czech EU-SILC data supports these findings: probability of car ownership is larger for families with children younger than 5, household with male head, more educated households and households living in family house and in villages. Households that cannot afford a car differ from those that do not wish to have a car in that the former are smaller, somewhat poorer, childless, living in cities, and composed of retired people. Interestingly, people living in the capital of Prague are more likely not to own a car because they do not like to have one rather than because of economic constraints.

Keywords: car ownership; the second-hand car; personnel car purchase; determinants of consumer behaviour; consumption patterns

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## Buying behaviour for organic products in grocery discounters

**Wiese, Anne** (Georg-August-Universität Göttingen, DE); **Toporowski, Waldemar** (Georg-August-Universität Göttingen, DE)

Consuming organic products can be seen as part of sustainable behaviour since these products are produced more environment-friendly than conventional products. Due to an increased demand, even discounters have an organic assortment nowadays which appeals a broad target group, i. e. discount buyers. As higher prices and lack of availability are the main barriers for purchasing organic products (Aertsens et al., 2009), sustainable consumption is supported by discounters offering an organic assortment. However, at the first glance, organic products do not fit well with the discount format. Buyers of organic products are quality conscious and have a high willingness to pay (Aertsens et al., 2009; Hughner et al., 2007), whilst customers of discounters are price conscious and convenience-oriented (Schmitz, 2009). In order to gain a further understanding of consumer behaviour in this situation, it is investigated who are buyers and non-buyers of organic products at discounters (based on sociodemographic and psychographic characteristics) and how these products are perceived. From an economic perspective, the results yield implications which retail formats should offer organic products and which success can be expected from this assortment. The analysis is based on a survey of 202 customers of a German discounter regarding their buying behaviour for organic products in this discounter and their perception of the discounter's organic assortment. The findings clarify that buyers are older, better educated and have higher incomes than non-buyers. Buyers have almost always significantly higher values for sense of responsibility and health awareness. Interestingly, no significant differences show for quality or price consciousness as both groups apply very high values for these categories. This indicates that, despite of higher incomes and the willingness to pay more for organic products, buyers are still price conscious. Buyers as well as non-buyers judge the fit between the discounter and organic products quite good. The buyers even stated that the discounter is their favourite format for organic purchases. This study reveals that both customer groups do not perceive a discrepancy in discounters offering organic products. The characteristics of organic buyers in discounters are quite similar to the characteristics of organic buyers in general. A distinction is the price consciousness as the discounter customers are price as well as quality conscious. Therefore, discounters offering organic products can help widening the organic market to customers who might not have bought organic products in other retail formats with higher price levels.

Keywords: retailing; consumer behaviour; organic products; grocery discounters; store format choice

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## **What does “pro-environmental behaviour change” actually mean? An approach to mapping consumer behaviour along meaningful dimensions.**

**Wilson, Charlie** (Tyndall Centre, University of East Anglia, GB)

Behaviour change is an important part of sustainable consumption research. Behaviour change strategies tend to comprise interventions and communications which target groups of behaviours linked by a common, indirect outcome such as reduced energy use. Energy-consuming behaviours are grouped in descriptive or place-based sectors: household, commercial, transportation, etc. Within each, behaviour change strategies emphasize ‘menus’ of relevant behaviours (e.g., Barr & Gilg 2006). For example, sustainable energy-related consumption ‘at home’ encompasses energy efficient renovations, changing a light bulb, and turning the thermostat down (e.g., Dietz et al. 2009). These sectoral groups of behaviours - linked by a common environmental outcome - fail to capture basic similarities and differences between the behaviours themselves. As a result, they may be neither socially, psychologically, nor behaviourally meaningful to the individuals or groups targeted. This risks limiting the appeal or resonance of the strategies, and undermining their intended goals. In response, we propose a ‘behavioural proximity’ measure to describe the extent of similarity between different pro-environmental behaviours. ‘Behavioural proximity’ has two important characteristics. Firstly, it is assessed from the perspective of individuals or groups targeted by behaviour change strategies. Secondly, it is multi-dimensional. Each dimension describes the similarity between two behaviours according to a particular model or insight from behavioural and social research. Mapping pro-environmental behaviours using these proposed proximity measures should help ensure behaviour change strategies match the particular characteristics of targeted behaviours in a way which is meaningful to those targeted. This mapping approach also recognises heterogeneity among targeted individuals or groups (e.g., Sakhian & Steinberger 2011).

Keywords: behaviour change; interventions; folk psychology

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# steering consumer behaviour

## **Promoting sustainable consumption in educational organizations** (description of the session)

**Michelsen, Gerd** (Institute for Environmental & Sustainability Communication, INFU, Leuphana University Lüneburg, DE); **Fischer, Daniel** (Institute for Environmental & Sustainability Communication, INFU, Leuphana University Lüneburg, DE)

Educational organizations and education feature prominently in the discourse on approaches to bring about changes towards more sustainable patterns of consumption among the younger generation. However, it remains unclear, what the contribution of education(al organizations) in promoting sustainable consumption can be. The transdisciplinary project BINK (German acronym for “educational organizations and sustainable consumption”) set out to implement, evaluate and accordingly improve a new strategy to change educational organizations into places that promote a more sustainable lifestyle among young people. The strategy focuses on participation and thus aims to involve both internal and external stakeholders of educational organizations. As a first step, the formation of change management teams taking charge of the change process in the six affiliated organizations was initiated. With the support of a multidisciplinary team of researchers, each of these change management teams collaboratively analyzed their organization’s culture of consumption in a second step. Based on this analysis, goals for a culture of sustainable consumption and for the promotion of more sustainable lifestyles especially among adolescents and young adults were strategically derived and formulated in step three. In step four, the change management teams were then also supported in the development of various interventions addressing both formal and informal learning settings in order to reach the previously defined goals. Final steps in the project involved implementation (step five) and evaluative (step six) of the interventions developed. The results presented in this session represent different disciplinary approaches to and perspectives on different steps of the project’s strategy to promote sustainable consumption in educational organizations. First, findings of a joint study by educational researchers and sociologists are presented that report on the project strategy’s effects on students’ consumer behaviours and the changes achieved in the organizations’ cultures of consumption. This study is next complemented by an implementation perspective informed by organizational development which focuses on the role and the functioning of the change management teams. The session is concluded by a third contribution, concerning the illustrative change measure of the media intervention in which film clips were produced to change the participants’ behaviour. Compared to individual presentations, the session design allows for a more comprehensive and contextualized presentation and discussion of the different phases of the BINK strategy and the different disciplinary perspectives on educational organizations’ contribution to promoting sustainable consumer behaviour among youths and young adults employed in the project.

Keywords: education for sustainable consumption; whole-school-approach; participation; organizational culture; organizational change; evaluation

## **Educational organizational »culture of consumption« as a context of student consumer learning**

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A common approach to assess the sustainability of consumer behaviours is to evaluate them according to their effects on specific indicators representing desired states of sustainability. Conveying knowledge about the impacts of specific consumer behaviours is an indispensable element of consumer education. Apart from knowledge about causal effects, students need competencies that enable them to orient their consumer behaviours towards the normative idea of sustainability in light of uncertainty and lack of information on causal effects. The participatory BINK-strategy sought to develop, implement and evaluate interventions targeted to change the organizational "culture of consumption" in schools and universities and build the respective capacity among youths and young adults to consume sustainably. In this presentation, findings from an empirical study are reported that help to elucidate the interrelations between features of the organizational culture and individual dispositions for consumption choices. The study presented draws on and operationalizes different consumption-related realms of organisational culture. A questionnaire was compiled and administered to students (N > 1.000) and their teachers and lecturers (N > 100) in secondary and vocational schools as well as institutions of higher education. The questionnaire consisted of two parts: the first on the perception of the organisational culture of consumption, the second on individual consumption dispositions and orientations. The study's findings point to interrelations and patterns of interaction between student and teachers and lecturers perceptions of formal and informal organisational learning environments and individual and collective dispositions and orientations towards sustainable consumption. Implications for the design, implementation and management of whole-of-organization-approaches to the promotion of sustainable consumption are discussed.

## **The role of change management teams in implementing a culture of sustainable consumption in educational organizations**

**Homburg, Andreas** (Faculty of Economics & Media, Hochschule Fresenius - University of applied sciences, DE); **Nachreiner, Malte** (Faculty of Economics & Media, Hochschule Fresenius - University of applied sciences, DE)

One of the most crucial steps of the BINK-strategy consists of the formation of a change management team, consisting of members from all the educational organization's consumption related stakeholder groups, as this team is responsible for the planning and implementation of the process of changing the educational organization's culture of consumption towards a more sustainable one. Thus the assessment of the functioning of this group as well as the knowledge of factors that enhance or inhibit its performance is essential for improving the overall BINK-strategy. In order to identify such factors and to be able to promptly react to the groups' needs concerning scientific support, a formative evaluation particularly based on multiple short surveys ( $t = 6$ ) of the six change management teams' perceptions of the process of change as well as the teams' understanding of concepts central to this process were conducted. In addition, to be able to link the performance of the teams to the success of the interventions for achieving the goals connected to a culture of sustainable consumption, a series of computer assisted telephone interviews ( $N > 40$ ) was carried out with all the change management teams' members that were also responsible for the organization of the planning, implementation and evaluation of these interventions. The results indicate that in addition to established factors influencing organizational change such as the support by the organizational management, certain factors that seem to be more specific for transdisciplinary endeavours like a participatory and deliberative design of the organizational development process should be taken into account when planning such processes of change.

## **Promoting sustainable consumption through a media intervention**

**Mieg, Harald A.** (Institute of Geography, Humboldt University Berlin, DE); **Bauer, Judith** (Institute of Geography, Humboldt University Berlin, DE)

One special intervention offered to the educational institutions in the project BINK was the media intervention: groups of youths and young adults were involved in the production of short films on “sustainable consumption” in the fields of energy, mobility or nutrition. The film production was coached by professional filmmakers. From the scientific perspective, the question explored was how and why the participation in the production affects one’s own behaviour. In particular the effects of voluntary agreements (commitment), the acquirement of consumption-related knowledge and the significance of identity were investigated. In the study presented, three film groups (knowledge, behaviour, commitment) were compared with each other and a control group. A questionnaire was compiled and administered to the pupils and students before and after the intervention (N= 120). The respondents were then also interviewed in focus groups. Results indicate that all groups showed a significant increase in knowledge, favourable opinions and behavioural intentions concerning sustainable consumption compared to the control groups. The comparison of the different groups showed that the behaviour groups learned more about behavioural options and indicated a stronger change in behaviour than the other groups. In summary, producing films on the topic of sustainable consumption bears the potential to increase knowledge and sustainable behavioural intentions. To change behavioural intentions, it seems to be favourable to focus the films on behavioural options than on knowledge or commitment.

## **Fostering sustainable behaviour through local climate protection initiatives: What makes citizens participate and choose specific media?**

**Aichholzer, Georg** (Austrian Academy of Sciences, ITA, AT)

This contribution will present and put up for discussion intermediate results from the European collaborative research project “e2democracy” (environmental electronic democracy) which investigates a specific approach taken by local governments in Austria, Germany and Spain to encourage a sustainable transformation towards climate-friendly behaviour among their citizens. Climate targets set by governments are decisions of the political system which citizens may support, ignore or obstruct with their consumption behaviour. The subject under investigation is citizen participation (“citizen panels”) as a form of cooperation with municipal governments on agreed local climate targets. A core element of these similarly structured “climate dialogues” in the three countries is the fostering of sustainable consumption through a combination of collective engagement and measurement of individual carbon footprints with feedback over a longer time-span, allowing for free choice of online or traditional media for interactions. The underlying research is funded by the European Science Foundation (ESF), the Austrian Science Fund (FWF), the German Research Foundation (DFG), and the Spanish Ministry of Science and Innovation. In contrast to another contribution to this conference based on the same collaborative research project, the focus here is on the characteristics of the participants engaged in these climate initiatives. Related research questions which will be explored on the basis of surveys carried out at municipal and regional levels, respectively, are: - What distinguishes the social profiles, motivations, attitudes and expectations – especially those towards sustainable development and climate protection – of participants and general local population? - Which role do social, cultural, economic and political factors play for fostering and sustaining engagement? - How useful and supportive are online carbon calculators as compared to tools based on traditional media according to assessments by participants? The results of a first panel survey among nearly 400 participants in these local climate dialogues in Austria, Germany and Spain, including both urban and rural regions, together with survey data from the local population at large allow us to explore these issues against some hypotheses derived from the literature, e.g. on sustainable citizenship, and on the role of gentle “nudges”. Implications and challenges for assessing more long-term participation effects will be pointed out and put up for discussion.

Keywords: citizen participation; carbon footprint; climate protection; local governance; Europe

## **Combining information, goal setting with an implementation intention to reduce household energy consumption**

**Altenburg, Corinna** (Potsdam Institute for Climate Impact Research, DE); **Reusswig, Fritz** (Potsdam Institute for Climate Impact Research, DE)

A combination of three intervention elements to change energy-relevant behaviour of households, namely energy saving information, goal setting and an implementation intention, was tested within the framework of an EU FP 7 project (GILDED) in 5 European countries (UK, the Netherlands, Germany, Czech Republic and Hungary). The core part of the project was the quantitative household survey conducted once in 2010 and 2011 (Ntotal= 2354). The questionnaire comprised a number of topics such as values, perception of climate change, lifestyles and energy-related questions resulting in a personal CO<sub>2</sub> footprint. The experimental group (EG, Nexp=1195) received an extra treatment in the form of the combined above-mentioned intervention elements. Of these, the application of implementation intentions has been least studied in the domain of energy conservation so far (Abrahamse 2005). To the knowledge of the authors, this is the first large-scale test of the impact of adding implementation intentions to other intervention elements. Generally, psychological studies have shown that implementation intentions are potentially very effective in changing behaviour in a number of domains, such as controlling emotional behaviour, spurring sport and exercise motivation or changing dietary habits (Faude-Koivisto 2009). The concept was shaped by Gollwitzer based on Ajzenz's theory of planned behaviour. According to the theory and studies, the likelihood of achieving an intended behavioural change rises if the subject has invested time and thought on the potential barriers and how to overcome these. A smaller previous study by Bamberg (2002) in the context of two environmentally related behaviours suggests that the supplement of implementation intentions increases the likelihood of actually performing a new behaviour. Previous studies and expert knowledge aided in designing the intervention design for the GILDED project which is the first of it's kind in this setting. The effect of the combined intervention within the GILDED project is measured by comparing single behaviours (both routine and investment behaviours) and the overall CO<sub>2</sub> footprint over time among the control and experimental group. Due to the combination of different interventions and in spite of the long interval period of 12 months we expect an overall CO<sub>2</sub> reduction of 5-10%. Currently, the questionnaires are being analyzed in all five case sites and we expect detailed results and cross-country comparisons in the late summer of 2011. The results will help to inform a number of stakeholders involved in household energy saving, such as energy advisors, communities and energy saving centres, in designing future intervention programmes.

Keywords: household energy consumption; implementation intention; planned behaviour; CO<sub>2</sub> footprint

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## Tackling the puzzle of product variety

**Dobernig, Karin** (Vienna University of Economics and Business, Institute for the Environment and Regional Development, AT); **Stagl, Sigrid** (Vienna University of Economics and Business, AT)

The phenomenon of high product variety present in today's markets seemingly creates a dilemma for sustainable consumption. On the one hand, the variety-seeking consumer are said to expect to be able to choose from a great number of options when making choices and firms seek to create product variety to succeed in competition. On the other hand, more choice options lead to search and information costs for consumers in terms of time, cognitive and possibly financial resources. Moreover, "paradox of choice" signifies the counter-intuitive observation that more choice often creates psychological stress, causes feelings of regret and decreases well-being (Schwartz, 2003; Loewenstein, 1999). From an environmental perspective, a wide range of products in supply is problematic because early replacement of products and expansion of purchases leads to higher resource use and waste. Choice-editing on the basis of environmental criteria has been suggested as a policy option to tackle the challenge (Stevenson & Keehn, 2006). However, key questions have not been answered, notably who would be legitimized to decide on choice-editing, along which criteria the pre-selection of the particular range of products available to the consumer should take place (Witt, 2011) and how to do it so that consumer wellbeing is least affected. After all, interfering into consumers' choice is unpopular in the policy arena and at odds with mainstream economic thinking. We argue that this dilemma can be addressed by taking a more differentiated view on the diversity of products. Building on the framework of Andy Stirling (2007) for analyzing diversity, we propose to distinguish between product variety and product disparity when discussing choice-editing as a policy-option for sustainable consumption. While variety refers to the numerical quantity of products available on the market, disparity is understood as "the manner and degree in which the elements may be distinguished" (Stirling, 2007) and consequently addresses the question how different the presented options are from each other. In this study we conduct focus group research to study consumers' perceptions of product variety and disparity in three food product groups and explore the respective values consumers' put on these two dimensions and link them to choice editing measures. Early findings of the study indicate that for the product lines studied: (1) choice editing that takes out the most environmentally harmful options of a product range, increases consumer wellbeing; (2) initiating participatory processes about desired pro-environmental product disparity can help ignite innovative processes in firms and increase consumer wellbeing. Hence, distinguishing the preference for product disparity from the preference for product variety has the potential to open-up novel and less controversial options for sustainable consumption policies.

Keywords: product variety; product disparity; choice editing

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## **Sustainable neighborhoods between standardised planning and contextual processes**

**Heyder, Monika** (European Institute for Energy Research, EIFER, DE); **Huber, Andreas** (European Institute for Energy Research, EIFER, DE); **Koch, Andreas** (European Institute for Energy Research, EIFER, DE)

In the discussion on sustainable neighborhoods different processes can be identified. On one hand, international sustainability certification labels for urban neighborhoods or communities have been developed in North America, Great Britain and, more recently, also in Germany. These systems aim to standardize the planning and implementation of sustainable neighborhoods. On the other hand, a large variety of context-specific, experimental "grass root initiatives" have been emerging during the last years, especially in the Netherlands and Great Britain. In our paper we will first describe existing international sustainability labels for the particular scale of neighborhoods. Subsequently, we will discuss the promises and challenges of local neighborhood initiatives that aim to jointly reduce their environmental footprints. This paper discusses these two opposed developments of sustainable neighborhoods and argues that even though these are driven by different actors they are not necessarily incompatible. Hence we present suggestions on how the two approaches might mutually stimulate each other by bringing together local communities, planners and developers.

Keywords: sustainable neighborhood; grass-root initiatives; sustainable neighborhood labels

## **Nobody was dirty: Reimagining cleanliness to reduce consumption of water, energy and chemicals**

**Jack, Tullia** (University of Melbourne, AU)

Modern standards of cleanliness consumes water, energy and chemicals. While social norms of cleanliness are constructed in our imagination, personal grooming bears very real social outcomes, such as career progression and relationship development. Beyond basic sanitation, complicated cleaning rituals do not have any health benefits, and some argue that health is negatively affected (Ashenburg, K. (2007): Ger, G., & Yenicioglu, B. (2004): Yazdanbakhsh, M., Kremsner, P. G., & van Ree, R. (2002)). There are environmental gains to be obtained from washing less, but cultural expectations and behaviour must shift in order to facilitate those sustainable initiatives(Shove, E. (2003); Fletcher, K. (2007)). To investigate what happens when people consume less laundry resources, 30 participants in Melbourne, Australia wore the same pair of jeans 5 days a week for three months, foregoing traditional washing practices. Based in the field of fashion and textiles, this presentation explores their lived experience through a social lens. As an added layer, the researcher also participated in the study and kept a diary of observations which have been triangulated against the participants' experiences, giving a unique insiders view of pushing personal comfort levels and breaking social boundaries in order to live more sustainably. The low wash experiment was embraced by participants who enthusiastically took up the challenge to consume less water, energy and chemicals, indicating that with the right information, behaviour can be changed and even disseminated through wider social groups. Evaluation was based on self observation and reporting via in-depth interviews after the three month wearing period. There were no negative social implications reported, indicating that consuming less washing resources can save time, water, energy and chemicals with minimal interference with social well-being. While measuring long term behaviour change is fraught, this study is useful in the initial intervention in shifting everyday practice. In the coming years as finite resources and burgeoning population intersect, everyday norms and practices must change. By considering the experience of these 30 everyday people in Melbourne we can gain insight into shifting the intertwined patterns of aspirations, expectations and behaviour, leading to an understanding of positive change towards sustainability.

Keywords: fashion; textiles; sustainable; behaviour change; intervention

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## Sustainable marketing via social value segmentation

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One marketing and psychology theory of how to communicate with consumers places social values at the center of consumer decision-making. In means-end chain theory, consumers want products that have certain attributes. When you ask a consumer why he or she bought a certain product, the answer usually involves a product attribute. If you follow-up with a question about why that attribute is important, the consumer will usually respond by citing a consequence of that attribute. If you continue to ask the consumer questions about why the consequence was important, the response usually links to some core value the consumer holds. If communication can link a product to a core value that a particular consumer holds, that product will be more attractive than one that merely has a right attribute. Consumers respond more favorably if they see the core values of their lifestyle involved with a product (Kahle & Valette-Florence, 2011). Consider the case of marketing solar energy. Some of the reasons that someone might want to install a residential solar energy system include less carbon emissions, greater safety, less dependence on energy foreign sources, wide availability, individual control, participation in a movement, and incentives. Some of the core values to which these attributes might link include self-respect, sense of accomplishment, security, being well respected, and warm relationships with others. One problem with making linkages in any given instance is that not all people have the same core values, according to a national survey of 1000 US consumers (Gurel-Atay et al., 2010). Thus, one may need to use market segmentation to communicate to different target markets. For example, the person who values self-respect or sense of accomplishment, the critical solar attributes might be less carbon emissions, making a difference in the world, or even conspicuous consumption. For people who value security, the key attributes may be getting off the grid where you depend on others to supply your energy or greater national independence because of not having to rely on foreign sources. We discuss communication implications of these ideas.

Keywords: social values; segmentation; solar

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## **Sustainable consumption through tenant's empowerment? Evidence from German case studies**

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The paper discusses the results of an explorative empirical work on tenant information, as well as questions regarding tenant participation in energy-saving renovations. They are part of the project "consuming energy sustainably – consuming sustainable energy: Heat energy in the field of tensions between social predictors, economic conditions and ecological consciousness". The paper takes its analytical starting point focusing on various concepts of consumer empowerment and their link to sustainable consumption. Those concepts differ strongly in terms of their theoretical understanding of consumers, ranging from rational market actors to a strong normative, ethics-based vision of responsible citizens or to structural limited actors. Therefore all concepts have developed different theses on how sustainable consumption and consumer empowerment can be achieved. Starting from this broad perspective, the paper first analyzes the understanding of consumer empowerment found in existing instruments developed in order to support sustainable consumption. Examples for such instruments are information brochures, on-site information and tenant's participation during renovation processes. In a second step, the potential contributions of these instruments to support sustainable heat energy consumption patterns are discussed. The analysis is based on a quantitative content analysis, focus group discussions with tenants, qualitative interviews with representatives of housing associations, as well as on a group Delphi which has been conducted with experts on energy consumption. The discussion of pros and cons of existing instruments for stirring sustainable consumption and strengthening tenant's market positions will show that mere information brochures are not sufficient instruments, especially regarding the change of daily heating and ventilation routines. Instead, interactive and practical forms of information on-site are more likely to initiate learning processes and to influence behaviour. With regard to the special situation of tenants in energy-saving renovations, a broader understanding of consumer empowerment additionally requires different methods of participation. In this respect, consultative methods prove to be adequate and effective forms of consumer involvement. The paper concludes with recommendations to advance instruments for supporting sustainable heat energy consumption which simultaneously may enhance tenant's empowerment.

Keywords: tenants; empowerment; sustainable heat energy consumption; information participation

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## Are public perceptions and values of importance for sustainable consumption policy?

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Amidst increasingly worrying environmental and climate trends there is growing recognition that the shift required to achieve sustainable consumption and production is a momentous paradigm shift in Western culture (Speth 2008; Beddington 2009; Sachs 2010; Stiglitz 2010). While supporting cultural change may appear an overwhelming task, leaders need not be daunted. Western society has made momentous shifts in the past. The current consumer culture is less than 75 years old – post-War America and Europe was a thrifty, community-focused culture (Sachs and Finkelpearl 2010). This paper argues that cultural values are an important driver of both consumption behaviour and attitudes towards sustainability policies, and therefore it is essential that the role of values is considered in policy-making processes. We demonstrate that since policy makers are already influencing the values and perceptions that affect consumption behaviour, they have the opportunity to take a pro-active stance and develop a cohesive strategy to enable and re-enforce sustainable consumer behaviour through an increased awareness and active use of the evidence and understanding of human culture, especially values and behavioural change. We demonstrate that a great deal of positive change is possible when people's existing we-centred, pro-sustainability values are activated and well-balanced with the I-centred, consumerist values that are currently very dominant in society. Some conclusions that aim to assist the work on values in policy making are: - Policy making has significant influence on cultural values, and has the potential either to further strengthen the dominant consumerist, I-centred values, or to activate we-centred values that are associated with pro-environmental and pro-social behaviour. Aware and transparent policy making could significantly enhance the potential for positive systemic change towards sustainability. - Awareness of how policies and communications are 'framed' can be helpful in ensuring that they contribute to promoting only those values that help to create a more sustainable society. Therefore, greater attention needs to be given to how policies and messages to the public are framed. - Achieving sustainable consumption requires bold, positive and visionary leadership from policy makers in supporting citizens in achieving sustainable consumption practices. A vision of a sustainable society could help unite the diverse goals, expectations and activities of not only different stakeholders, but also policy makers and politicians working with different issues. - Due to the holistic nature of shifting cultural values, policy makers need to take a systemic and comprehensive approach to working with cultural dynamics. This should entail a variety of strategies and approaches to engage with citizen's consumptive behaviours that fit together in a comprehensive way.

Keywords: cultural values; public perception; framing

## **Employees at work and in private life – a new concept for promoting sustainable consumption**

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Work-life-research has shown that multiple interactions between working life and private life occur (for an overview see e.g. Edwards/Rothbard 2000). Companies already consider these possible interactions by setting up work-life balance policies. These interventions aim to reconcile both life spheres for instance by decreasing time- and strain-related conflicts. Since (sustainable) consumption is a significant part of private life, interactions between working life and (sustainable) consumption are likely to occur. Regarding this, some studies have already illustrated positive effects from working life to sustainable consumption (e.g. Berger/Kanetkar 1995). However, positive effects arising from (sustainable) consumption in private life towards working life can be assumed as well as negative effects in both directions (Muster/Schrader 2011). Up to now, companies mainly disregard these possible interactions. In order to push forward sustainable behaviour at work and in private life we propose a rather holistic perspective on employees that learn and practice (un)sustainable behaviour not only at work but also in private life. In order to promote positive interactions and to prevent negative interactions, systematic interventions that also focus on employees' private life are suggested: On the one hand we suggest that companies can actively support employees' sustainable consumption in private life by setting up so called "work-to-life interventions", for instance by organizing centralized orders of organic products or by giving discounts for public transport (Muster/Schrader 2011). On the other hand we propose that companies can set up "life-to-work interventions" that help employees to better integrate their sustainable ideas and consumption experiences in the working process (Muster/Schrader 2011). We assume that these interventions can bring benefits for companies and employees. In our presentation, we will briefly illustrate insights from work-life-research in order to understand possible interactions between working life and (sustainable) consumption. Second, we will illustrate our new concept of promoting both sustainable behaviour at work and sustainable consumption in private life. Third, we will challenge this theoretical approach by looking at its practicability and perception in practice. We will present results from expert interviews with professionals involved in Human Resource Management and Corporate Social Responsibility concerning the relevance, practicability and perceived chances and risks of this approach.

Keywords: employees; private life; work-life-research; sustainable consumption

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## Locating the environmentally friendly consumer

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Sustainable consumption, intended as a pattern of consumption that allows a sustainable use of resources, and generates low levels of environmental pollution, is becoming increasingly important in the policy agenda. Insight into the overall environmental impact of consumption is developing with three areas found to be most significant: food and drink, private transport and housing (EU-funded EIPRO study). While it is extremely important to identify these “hotspots” using macro data, additional knowledge is now required to inform chain management, retailing activities and policies to nudge consumers towards friendlier consumption patterns. The main problem is the unavailability of a baseline for the sustainability level of consumption as this prevents an ex-post intervention appraisal. In addition information is lacking on how products are combined in consumption activities and how this changes when consumers become more sustainable. For this situation to improve, required are consumer-level sustainability indicators that enable the comparative analysis of instruments aimed at improvements in consumer behaviour. Against this background the purpose of the paper is twofold: first to propose the construction of an indicator of environmental friendliness in food consumption based on an economic perspective; and second to demonstrate its application for revealed food preferences of a sample of UK consumers. Starting from six food categories with large sustainability implications, we develop two versions of a sustainable consumption indicator: one based on a factor analysis, and one based on category-count data. The use of the single sustainability indicator enables every consumer to be located on a sustainability spectrum and this in turn allows a better understanding of how food consumption develops when consumers move away from the leftmost side of the scale and progressively move to the right-hand side of the same spectrum. The empirical application shows the characteristics and the practical application of these indices based on scanner data for a 2-year period provided by the largest UK supermarket chain.

Keywords: sustainable consumption; sustainability index; revealed preferences; food purchases



## **Sustainable consumption initiatives in a communal context: The responsible consumption cooperatives**

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A growing interest on the environmental and social implications of consumption has been observed over the last two decades. Academics and the society in general place more attention on how individuals can lead sustainable lifestyles as consumers and new consumer movements with such concerns, like the ethical simplifiers (Shaw & Newholm, 2002), appear with more intensity. Nevertheless, less attention has been placed on collective expressions of ethical consumer behaviour and how the participation in ethical collective spaces can guide the consumer towards more sustainable lifestyles. The present paper describes the phenomenon of Responsible Consumption Cooperatives that has been gaining increasing popularity in Spain during the last ten years according to the findings of the empirical study. The research objectives of this study are to: 1) To present these sustainable collective initiatives and the type of projects carried out within these collectives. 2) To examine how individuals can lead sustainable lifestyles at a 3) To check whether the members of these communities feel more empowered by participating in such communities than trying to lead individually sustainable lifestyles. This study has taken a qualitative approach aiming at more richness and depth of data. To ensure the validity of qualitative research, methodological triangulation was required. Using the 'qualitative tool kit' as suggested by Hall and Rist (1999, 295), three data-collection techniques are combined in this study; observation, interviews (including focus groups) and document analysis.

Keywords: collective ethical spaces; sustainable consumption; consumer empowerment; cooperatives

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## **The communication strategy entertainment-education to promote sustainable consumption – celebrities do it fair**

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The major task of sustainability communication is to communicate and shape the concept of sustainable development with and for consumers. Topics like climate change, limited natural resources, extinction of species, unhealthy diet, and weak social standards find their way into western media formats more and more. But those formats usually address the "educated elite" and the LOHAS (Schwender/Schulz/Kreeb 2008). This is a consumer type, who is into ethical and sustainable consumption (Lubjuhn/Pratt 2009). What still missing are long-term solutions and strategies to integrate sustainability topics in popular media formats which are adopted by the mainstream consumers and inspire to live more environmentally friendly and socially responsible (Reinermann/Lubjuhn 2011). Entertainment media formats can play a decisive role here (Reinermann 2010). Especially for consumers with lower socio-economic and/or migrational background the potentials have not been extensively used to create needs for sustainability action and to reach them through sustainability communication measures. As recent literature shows particularly in the field of mass media entertainment formats are potentials to reach these consumer groups in their every day life with an affective communication approach e.g. through the depictions of sustainability topics in soap-operas, reality shows or serious-games. However, these potential have only insufficiently been explored and utilized for sustainability communication research so far and several gaps are existent. The affective communication strategy named Entertainment-Education (E-E) can be considered as one out of several theoretical concepts with potential to close parts of these gaps. In order to promote prosocial change towards sustainable lifestyles, the E-E strategy has a key role (Papa/Singhal 2008). „Entertainment-Education is a theorybased communication strategy for purposefully embedding educational and social issues in the creation, production, processing, and dissemination process of an entertainment program, in order to achieve desired individual, community, institutional, and societal changes among the intended media user populations.“ (Wang/Singhal 2009: 272-273). E-E uses affective messages to show consumers how they can live more sustainable life and to show them how they can address such issues in their communities (family, circle of friends, youth clubs etc.). The strategy had been successful in promoting changes in knowledge, attitude, behavior and social change processes. Best practice examples from the USA, the Netherlands and first steps in Germany illuminate how E-E works through TV formats and indicate useful options for guided research activities in this field (Lubjuhn/Bouman 2009). Furthermore, recommendations are outlined, which may help to mainstream E-E projects in practice.

Keywords: entertainment-education; unmanageable consumers; social change; media-saturated countries; sustainability communication

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## **Options for system design and market implementation of a sustainability label for consumer information**

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Product labels provide information to consumers on different product characteristics. Nowadays, a variety of labels inform on ecological and/or social aspects of products; only some aspects of the product's sustainability are represented by those labels. Most of them are mere "eco-labels", discounting social aspects, aspects of quality or of life cycle costing. A "sustainability-label", addressing all aspects of sustainability, still does not exist. Hence the labelling environment is changing in several ways. Examples are the recent efforts of Wal-Mart to elaborate a sustainable product index conveying information on environmental and social sustainability features of their products, the labelling initiative in France requesting to inform on the social conditions of production or the starting efforts of some labelling schemes to test social requirements for new product groups. In addition, consumers become increasingly aware of the ethical dimension of production and consumption and have slowly started to integrate not only the environmental, but also social characteristics of consumer goods into their purchasing decisions. One can conclude from these observations that a comprehensive sustainability labelling is gradually climbing the corporate and political agenda. We postulated some general basic conditions for the development of a potential system design of a sustainability label: the consideration of the whole value chain, the voluntariness of labelling and the request that the label is open for different kinds of product groups. Based on analyses of literature, case-studies and expert interviews, several potential theoretical concepts of a sustainability label, addressing ecological, social and economic aspects as well, were worked out and strengths and weaknesses of each concept were rated. At present, a concept of "informal quality criteria" seems to be most successful and feasible. One major goal is that no independent sustainability label will be elaborated: Existing (or future) labels should be given guidelines how they can develop in the direction of a sustainability-label. These guidelines should offer labels a frame of reference for their further development which could contribute to the further development of sustainable consumption. In the process of elaborating and establishing the "informal quality criteria concept", all relevant stakeholders as well as important existing label institutions should be integrated by establishing a networking platform to exchange and to bundle different experiences and competences.

Keywords: sustainability labelling; eco-label; consumer information

## Greening household behaviour: Lessons learned

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The proposed OECD contribution improves the understanding consumer behaviour and provides new insights on what works to promote “greener” lifestyles in five key areas: water use, energy use, personal transport choices, organic food consumption, and waste generation and recycling. It draws on the results of an OECD survey on environmental behaviour implemented in 10 countries with a total sample of 10 000 respondents. Environmental pressure from households is expected to significantly increase in the future. As governments promote strategies to encourage more environmentally sustainable consumption patterns, this international OECD survey examines what really works and what factors affect people’s behaviour. The findings confirm the importance of providing the right price incentives to spur behavioural change. For instance, households charged for their consumption on a volumetric basis consume approximately 20% less water than those who are not charged. In addition, they are more likely to install water-efficient equipment at home. Similarly, charging households for the mixed waste that they generate increases recycling volumes. In addition to the significant role played by price-based measures, the survey findings indicate that “softer” instruments, based on the provision of information to consumers and on public education, can have a substantial complementary role to induce changes on the demand side. The results obtained indicate that the role of soft policy measures is more significant than many earlier assessments of policy instruments have found. The study also pays particular attention to the role of environmental awareness and households’ concern for the environment, and the impacts these have on decision making. Respondents who expressed a particular concern for the environment relative to other issues, are more likely to adopt practices and make investments which reduce environmental impacts. For example, environmental awareness is a main driver for water-saving behaviour. Concern for the environment also influences demand for energy-efficient appliances and renewable energy, as well as the intensity of waste recycling and decisions to consume organic food. This contribution provides useful insight on conditions under which it may be necessary to combine market-based instruments, information-based policies, and supply-side measures in order to increase the efficiency and effectiveness of policies. It is a valuable resource for all those interested by the challenging questions of ways to encourage the transformation of consumption patterns towards sustainability, from academics to policy makers.

Keywords: environmental behaviour; policy; household survey; water; energy; transport; waste

References: (OECD, 2011), Greening Household Behaviour: The Role of Public Policy.

## **The governance of consumption transitions: Analysing the institutional factors influencing local food systems**

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System innovations and transitions in the realm of sustainable consumption policies will seldom emerge automatically from the present socio-political context. This paper explores issues related to the governance of transitions and elaborates on their application to the relatively unexplored governance of sustainable consumption transitions, with a case study on food consumption niches (i.e. collectively organized Local Food Systems- LFS). LFS are “systems which allow a direct contact between consumers and producers, and/or in which consumers and producers enter into a long-term contractual relation with one another. The distance between the different actors should remain limited (geographically as well as for the number of links in the chain)” (Mathijs et al, 2006, p.7). In the context of recent episodic food scares generating consumers’ anxieties and questioning regarding the safety and nutritional value of standardized industrial food, LFS are perceived as more ‘natural’ and healthy by the consumers who call for a ‘quality turn’ (Goodman, 2007). We are focusing on the relation between LFS and the current institutionalized food provision system. Indeed, LFS as social innovations, appear to slowly formalize and crystallize their practices, rules and organizational structure in order to diffuse continuously. However, to do so - while at the same time keeping their alternative specificity - requires innovative policies in order to support such initiatives without fostering a process of ‘banalization’. This will imply new types of policy interventions and a possible redefinition of the roles of social actors and policy practitioners. Indeed, such social innovations usually do not fit with existing legislation and tend to be marginalized by those: for example, sanitarian rules designed for agro-industrial groups constitute structural barriers to the development of small sized initiatives. Subsidies to support associative types of projects seems to be strongly questioned by participants of LFS. Similar debates were held with regard to organic or fair trade labels. As a matter of fact, the traditional tools of government might not be accepted by such ‘alternative’ initiative and could even be counter-productive when they lead to the ‘banalization’ of the practices, e.g. from local food as a closer link between producer and consumer and a new form of trust for quality through proximity, to localness or ‘regionalness’ as selling argument and brands on the shelves of hypermarkets. This paper elaborates both from a theoretical and conceptual point of view, and on the basis of the results of an extensive Belgian case study. More specifically, we analyse and discuss the specific institutional contexts and socio-political configurations within which these system innovation cases are embedded. The results will thus feed the exploration of the role of governmental actors in fostering innovative practices for a transition towards a more sustainable food system.

Keywords: local food systems; governance; transition; consumption niche

## Steering consumer behavior by successful labelling

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Labelling is increasingly used as a political instrument to promote sustainable food products (Eberle 2000), since the use of labels enables the consumer to make an informed and conscious buying decision (Harper & Henson 2001; Caswell 2009). Hence the agro-food market has experienced a proliferation of standards addressing ecologic and social aspects of the food production with the intention to enforce a sustainable development in the past decade. However, there is still limited evidence about the actual success and impact of these initiatives. A comparative case study analysis on eleven common agro-food labels in Germany has been conducted based on literature research and in depth face-to-face expert-interviews. With the help of these the characteristics and status-quo of the labels market relevance are analyzed. Moreover, criteria for the success of sustainable labeling are identified. The labels have been analyzed concerning their governance structure as well as their strategic and ideological positioning. This resulted in the plotting of three different kinds of labels (Goldstandard, Massmarked, Goldstandardpositioner). Goldstandard-labels represent small niche markets with exceptional demanding standards, guaranteeing high credibility. Massmarket-labels reach higher markets shares, at less demanding standards, making them less credible. Both types of labels are gradually moving towards a position of high market share and demanding standards. Nevertheless, there exists a third group of labels that does not intend to follow this development. These labels are not trying to reach the above described ideal position from their Goldstandard position, because it would imply to gradually shift from their high standard to a lower level of requirements in order to increase their market share. The analysis identified the following success criteria for labels promoting sustainable produced agro-food products: voluntary, independent third-party certification; economic sustainability; scientific foundation; Goldstandard-strategy. In conclusion, the case study analysis illustrated several necessary criteria which need to be met by product label initiatives in order to achieve the promotion of a sustainable development. Moreover, challenges have been recognized that will need to be mastered by product label initiatives wanting to meet future challenges, such as regular monitoring and evaluation of the labels impacts.

Keywords: labelling; buying decision; standards; sustainability; success criteria

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## **How to design the right mix: An analysis of policy instruments addressing energy-efficient retrofitting of residential dwellings with a view to potential savings and barriers**

**Weiss, Julika** (Institute for Ecological Economy Research, IÖW, DE); **Vogelpohl, Thomas** (Institute for Ecological Economy Research, IÖW, DE)

Energy consumption of private households in Germany – as well as in the European Union – is currently not sustainable as it is responsible for a main part of the country's greenhouse gas emissions. Energy consumption in the residential building sector will only be sustainable if the energy demand of buildings can be reduced significantly – while taking homeowners' needs and capabilities into account. Especially, single-family and semi-detached houses offer high potentials for energy conservation. Along with various communicative instruments, it is primarily regulatory instruments and various subsidy programs that attempt to persuade homeowners to pursue refurbishment measures intended to improve energy efficiency – to date, however, with little success. Current rates of energy-efficient refurbishment of single-family and semi-detached houses in Germany are not only significantly lower than theoretically assumed, but also insufficient to achieve reduction aims stipulated by the federal government. Thus, increasing energy efficiency in those dwellings remains one of the top priorities with respect to climate protection. The main focus of this presentation is the question of how the present policy instruments can be improved or complemented in order to increase refurbishment rates. Therefore, informed by theories of policy implementation and effectiveness, an analysis of existing policy instruments in Germany has been conducted (Weiß/Vogelpohl 2010). The analysis builds on an investigation of the barriers being responsible for the discrepancy between potential and actual refurbishment rates, e.g. building-related barriers, the cost effectiveness of refurbishment measures, or specific homeowner-related barriers, such as lack of interest and various tangible fears and concerns (Weiß/Dunkelberg 2010). Furthermore, the potential savings identified for existing single-family and semi-detached houses have been taken into account (Stieß et al. 2010). Thus, the analysis was based on an interdisciplinary approach that draws on insights from political science and economics and connects them with empirical findings from social and engineering science research. Results of this analysis show that the policy instruments currently in force do not adequately address the measures promising the highest energy savings as well as the specific barriers of homeowners towards an energy efficient refurbishment. Drawing on these findings, recommendations for improving current policy instruments and implementing new instruments are given, focussing on the most promising types of buildings and refurbishment measures. Altogether, this broader approach provides us with hints on how knowledge of real-life barriers as well as of tangible potentials for energy conservation can be used as starting points to systematically improve policy instruments. Thereby, it could help to design a mix of policy instruments that is more effective in enhancing sustainable energy consumption in the residential building sector than the current one.

Keywords: energy efficiency; policy instruments; residential buildings; homeowners; barriers to sustainable consumption

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## **Effects of sustainable consumption policy instruments: A comparative assessment across Europe**

**Wolff, Franziska** (Oeko-Institut e.V., DE); **Brohmann, Bettina** (Oeko-Institut e.V., DE)

The presentation summarises and synthesises the results of ten case studies on the effects and effectiveness of sustainable consumption (SC) instruments implemented within the EU. The case studies were carried out in 2010 within an EU research project ([www.eupopp.net](http://www.eupopp.net)). They cover policy instruments that seek to promote sustainable consumption in the realms of 'housing' and 'food', put into practice in Finland, Germany, Latvia, Spain, and the UK. By sustainable consumption we mean a more ecologically but also socially premised way of buying, using, and disposing of goods and services. We regard SC to be tightly interlinked with production patterns and technological evolutions. We will first introduce ten policy instruments implemented in EU Member States as well as their effects (including side effects) on consumption patterns (instrument 'outcomes') and on selected sustainability indicators (instrument 'impacts'). In order to causally link the policy instruments to changes in consumption patterns and sustainability impacts, the case studies employed a combination of qualitative and quantitative methods. These include narrative analysis based on process tracing and causal reconstruction, expert interviews, focus groups, statistical analysis, and in some cases (where data was conclusive) indicative screenings using material flow analysis data. We will then elaborate on the factors that have fostered the generation of the described instrument effects or have hampered the creation of greater effects, respectively. We will analyse these success and failure factors by discussing the case study findings against a set of deductively developed propositions (Wolff and Schönherr 2011). The hypotheses are rooted mainly in the policy evaluation literature and the sociology of consumption. They address the role of various factors for fostering or hampering instrument effects, among others instrument design and implementation, stakeholder involvement, consumer needs and practices, policy interaction and framework conditions of consumption including the market context. We will show how the design and "intervention logic" of SC instruments, the political process of their development, their implementation (including within policy mixes) and various socioeconomic and institutional context factors affect consumption patterns. Hence, our findings contribute to better understanding the conditions under which public policy instruments can steer consumer behaviour towards sustainability. Ultimately, our results can inform policy-making in the area of sustainable consumption. The disciplines from which the findings arise are: political science, sociology, economics as well as environmental and natural sciences. Relevant professional fields are policy evaluation and policy advice.

Keywords: sustainable consumption policy instruments; policy evaluation; sustainable food; sustainable housing; sustainability impact

References: Wolff, F. and N. Schönherr (2011): The Impact Evaluation of Sustainable Consumption Policy Instruments. In: *Journal of Consumer Policy*, Vol. 34, Issue 1: 43-66.



## **Using goal-setting theory to tackle energy consumption in the retail environment**

**Christina, Sian** (Loughborough University, GB)

Following the introduction of the Climate Change Act, 2008, and subsequent policies aimed at reducing UK carbon emissions to 80% below 1990 levels by 2050, an increasing number of UK organisations are setting energy efficiency and carbon reduction goals. As heavy energy consumers, large organisations have the potential to make a significant in the energy consumption levels of the country as a whole. This study is set within a leading UK retail chain, which has published long and short-term targets around the responsible use of Energy across the UK estate. While many energy targets can be achieved through the use of technology, other energy targets are likely to require the participation of workers to change everyday habits and behaviours. In this UK retail chain, goal-setting theory (Locke and Latham, 2002) is being used as a framework to tackle motivation around energy efficiency behaviours; building on the perception of successful use of goal-setting and feedback in the domestic energy field (Abrahamse, Steg, Vlek and Rothengatter, 2005). In a retail organisation, energy efficiency represents a collective goal, but one that is unlikely to be a primary one for many workers individually. This consideration builds concern that its effectiveness in a business environment could potentially be compromised by goal conflict, managerial priorities and discretionary behaviours (Cheng, Lockett and Mahama, 2007). A series of experiments are planned to take place over the next few months within this retail organisation, as part of a relaunch of a Energy Champion scheme. These organisational interventions are designed both to incorporate goal-setting theory into improving goal performance; and help support focus on the Energy Agenda amongst a range of organisational challenges. The poster will show this application of theory to a big UK energy consumer. Data collection may be partly still in progress, but would hope to feature some results.

Keywords: retail; energy efficiency; goal setting; multiple goals; conflict.

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## **Comparative assessment of e-participation in the context of sustainable development and climate change**

**Cimander, Ralf** (Institut für Informationsmanagement Bremen, DE); **Rust, Ina** (Leibniz Universität Hannover, Institut für Soziologie, DE)

The European research project e2democracy (environmental electronic democracy) explores participation projects for their effects on energy saving, CO<sub>2</sub>-reduction and participants' behaviour. In three cities each in Austria, Germany and Spain a field experiment has been started, employing the same kind of e-participation processes on the same subject. In so called citizen panels the monitoring of consumption behavior by use of CO<sub>2</sub>-calculators is central. Important research questions are: - Will participants of participation procedures on climate saving change their behaviour in this respect? - Will the participation leave to energy savings and reduction of CO<sub>2</sub>? - Would the results have been the same without citizen participation? - Do quality and effects of a participation procedure depend on the mode of participation, either via Internet or by traditional means? In this project, which is funded by the European Science Foundation (ESF), the Austrian Science Fund (FWF), the German Research Foundation (DFG), and the Spanish Ministry of Science and Innovation, we will investigate the impact of electronic compared to traditional "offline" citizen participation exemplified by the participation of citizens in the field of climate protection. The field experiment takes place in the cities of Bremen, Bremerhaven, and Wennigsen in Germany, Bregenz and Mariazeller Land in Austria, and Pamplona and Saragossa in Spain. The aim is to find out what the added value of electronic participation is compared to traditional participation and to show how sustainable participation as such is by regularly measuring the improvement achieved by participation by means of so-called CO<sub>2</sub>-calculators during a period of two years. This verification will be carried out online and offline by regularly entering consumption data in a CO<sub>2</sub> calculator. Participants receive individual feedback by detailed analyses of their consumption (CO<sub>2</sub>-balances) and can compare their results with the results of the other panelists and the average in their country. As one measure of success, the effect of the participation processes will be measured by comparison with the general consumption data of local suppliers for electricity, gas and water (control group). Besides the transparent monitoring, the panels are accompanied by information on saving possibilities, online forums as well as public meetings for the exchange of experiences. The presentation gives an overview of the project and presents first results – based on figures of energy saving and CO<sub>2</sub>-emissions caused by panelists, surveys among the panelists and experts in the public authorities / climate saving agencies organizing the panel, representative surveys carried out in the participating cities and regions, and additional interviews with panelists in Wennigsen.

Keywords: e2democracy; e-participation; co<sub>2</sub>-reduction; european project; climate change

## **Developing a concept for an interdisciplinary competence based module to empower students for sustainable consumption behaviour**

**Freytag-Leyer, Barbara** (University of Applied Sciences Fulda, DE); **Metz, Martina** (University of Applied Sciences Fulda, DE); **Klotter, Christoph** (University of Applied Sciences Fulda, DE); **Milde, Jan-Torsten** (University of Applied Sciences Fulda, DE)

Today's modern society supports non-sustainable consumption patterns, e.g. by offering low-price meat products at a high amount. Dealing with these circumstances and proceeding to more sustainable lifestyles does not only require adequate knowledge but rather basic competencies which enable the individual to reflect and self-organise its consumption patterns. The aim of the project is to develop a competence based module for new students from different faculties at the University of Applied Sciences in Fulda that enables them to observe, reflect and evaluate their lifestyle in the fields of mobility, nutrition, living and technology usage. These basic skills should support the students' skills to apply sustainable consumption patterns to a self-determined extent. The interdisciplinarity of the module through the participation of students and teachers from different disciplines is supposed to strengthen the sensitivity for such processes and therefore to prepare for later professional life. The innovative concept will be presented. In autumn 2011, the module will start. The preliminary results can refer on the one hand to the applicability of a newly designed module including knowledge-integrating and activating teaching methods, and on the other hand to its acceptance by the students. The particularity of this approach is that it focuses on students which appear to be a critical population group because they are enrolled in a change of living that opens the opportunity for lifestyle changes. Even more, studying constitutes a transformation process directed to becoming a productive and responsible actor of society. Starting at this point, universities can play a responsible role in influencing societal life by supporting their students in developing self-organisation skills. The module will be accompanied by an evaluation concept to determine its effectiveness over a two-year period.

Keywords: competence module; sustainable consumption; empowerment

## **Playing RED – Acting GREEN. Developing an online game to strengthen energy saving behaviour in private households**

**Hoppe, Imke** (Fraunhofer Institut für Digitale Medientechnologie, DE); **Gaudi, Swen** (Fraunhofer IDMT, DE); **Jantke, Klaus Peter** (Fraunhofer IDMT, DE)

Because their participatory character and their wide reach, digital media are regarded as promising tools to support communication about sustainable consumption. (Siekierski & Wohlers, 2007; Barth, 2005) However, current studies show that digital media in general do not have an awareness-enhancing effect concerning sustainable consumption styles per se (Hansen, 1991; Holbert, Kwak & Shah, 2003; O'Neill & Nicholson-Cole, 2009; Arlt, Hoppe & Wolling, 2011). Within the project "RESIDENS" an interdisciplinary research team (computer science & communication studies) took a closer look at the potential of a particular digital medium, namely online games. The starting point was to analyse which potentials online games might have to engage people in energy saving behaviour in their private households. Those potentials range from a general popularity (accompanied by the expectation of entertainment) to interactivity (e.g. enabling feedback loops). Moreover, games can stage a scenario close enough to the daily life of people. Hence, online games can provide a learning environment that is far away from merely 'transporting' cognitive information, but addressing users emotionally and taking their every day life experiences into account. As main theoretical framework for the conceptualisation we chose an action oriented learning approach (Schack, 2004; Meyer, 1987), being complemented by a dramaturgical model to develop a story line (Lessing, 1776; Fick, 2009; Meisiek, 2009) and an explicit definition and understanding of interactivity ('direct manipulation paradigm'; Shneiderman, 1983). On that basis we developed a theory driven storyboard (Jantke & Knauff, 2005) and realised a respective online game: RED (Renewable Energy Drama). The game was developed using a broadly accepted development environment (Unity3D), which allows an easy combination and modification of digital assets, e.g. 3D models, 2D artwork, and videos. Using this environment rapid prototyping and continuous presentation of the development state of 3D worlds is possible. A mixed-method research design (Creswell, 2008) accompanied the development process and strongly affected the game design (focus groups, usability test). To be able to evaluate and analyse the behaviour of players a data mining module is integrated inside the game itself. This allows the tracking of all relevant player interactions with the game environment. In July the game will be launched online, and on the basis of the mentioned data mining, online questionnaires and qualitative interviews we will be able to present further results on the actual patterns (Jantke, 2009) of the game playing experiences.

Keywords: digital games; action oriented learning; interactive dramaturgy; feedback processes

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## **Energy consultants as change agents and multipliers for more sustainable heat energy consumption**

**Jahnke, Katy** (co2online gGmbH, DE)

The key importance of sustainability and the role of consumer behavior to reach climate protection goals are widely acknowledged regarding the political and scientific discussion during the last decades. One of the most interesting fields of research is the housing sector especially considering household's energy consumption. Looking at Germany's whole energy consumption we can deduce that about 30% is demanded by households. At least 78% of the whole household energy consumption is used for space heating and warm water use. Recent data show a slow development of energy savings in the building sector. Considering the economic efficient energy saving potential it is obvious that with actual rate of modernization there is a large potential unexploited. In the economic literature this phenomena is called Energy Efficiency gap, which from standard economic perspective is related to market failures and barriers to energy efficiency such as financial or informational constraints. But a pure economic point of view is narrow-minded to fully explain the Energy Efficiency gap and its causes. Behavioral aspects especially the psychological influences on behavior are not taken into consideration. The focus of this contribution will be on energy consultancy as an instrument of environmental policy and its influences on consumer behavior. Based on Rogers diffusion of innovation model (DoI) we will closely look at the role of energy consultants in the decision processes of consumers. Energy consultants play an important role as a mediator of information and multipliers of persuasion in the adoption process of innovations. Furthermore the trustfulness of the energy consultant is very important for the persuasiveness of the consultancy and therefore for consumers decision for sustainable heat energy consumption patterns. Consumers can be reached by energy consultancy through different communication channels. Results from guided interviews with market actors and different evaluations of German energy consultancy programs show the empirical relevance of such communication instruments.

Keywords: sustainable consumption; energy efficiency gap; energy consultancy; diffusion of innovation

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## **Do standards and certification in the agricultural sector matter for sustainability? A review of the state of research**

**Jawtusich, Julia** (Research Institute of Organic Agriculture, FiBL, CH)

The paper reviews the state of knowledge on voluntary sustainability standards in the agro-food sector with regard to their real-life environmental, social and economic impacts related to the global problems in agriculture. Six voluntary sustainability standards were selected to represent the wealth of standards (>400) in the agro-food sector. They include the four most widely known standards - Organic, fairtrade, Sustainable Agriculture Network Standard (by Rainforest Alliance) and Utz Certified - plus two young standards – the Roundtable on Sustainable Palm Oil (RSPO) and the Roundtable on Responsible Soy (RTRS) standards. The paper draws on scientific peer-reviewed and non-peer reviewed literature as well as grey literature (where scientific literature is unavailable). To give justice to the high number of studies without neglecting study quality, the material was analyzed quantitatively as well as qualitatively. Results show that a disproportionate share of the literature deals with impacts of organic, followed by fairtrade. There are very few studies on SAN/ Rainforest Alliance and Utz. No scientific impact studies have been conducted yet on the Roundtables. The differing amounts of scientific literature pose a challenge to the comparison of the standards. All reviewed studies differ in approach, methodology, data grounding and geographical focus. In addition, also the quality of papers differs considerably. Conclusions take into consideration knowledge that is well secured versus aspects that are debated between researchers, remaining knowledge gaps, and how these could be addressed. Though amount, strength and completeness of evidence differ between standards and impact areas, evidence is sufficient to conclude that agricultural production certified according to one of the sustainability standards usually contributes more to sustainability than non-certified, conventional agricultural production. (Whether this statement includes RTRS and RSPO is yet unclear.) Apart from sometimes mentioned negative impacts on yields, no negative impacts have been reported, except for RTRS and RSPO. For these two standards, grey literature (published by NGOs such as Friends of the Earth or Greenpeace) claims that impacts are likely to be negative. Organic and fairtrade have been researched with regard to their stated aims (welfare of producers for fairtrade and environmentally friendly, holistic agricultural production systems for organic) for a considerable long time. Evidence is sufficient to support the conclusion that they work successfully towards their stated aims. However, there are individual cases where they are not that successful, as local conditions always play a strong role. Concerning the other standards, there is insufficient evidence to draw general conclusions. For SAN/RA, there are some first indications that they do well with regard to their stated aims.

Keywords: sustainability assessment; voluntary standards; certification

## **Sustainable food consumption in Ireland: Challenges and opportunities**

**Pape, Jessica** (Trinity College Dublin, IE)

Promoting more sustainable consumption patterns globally and locally is one of the major challenges the world is facing today. The impact of food consumption has been recognised as one major factor impacting on environmental, economic and social aspects of sustainability. Which policy designs can be effective in a given national and cultural context is an important question in this regard. The use of innovative methodologies including various stakeholders is important to come up with policy recommendations which 'work' in a given national context towards more sustainable food consumption in the future. The aim of this paper is to identify the specific challenges and opportunities facing a transition to more sustainable food consumption behaviour in Ireland. First, drawing from social practice theory, the interplay of individual behaviour (motives and barriers) and contextual factors is explored. The often observed 'value-action-gap' between people's values and attitudes and their observed behaviour regarding sustainable consumption makes it necessary to explore the national context in more detail, i.e. the policy context, the institutional system, as well as social values and norms. Second, an examination of the international literature, policy context and governing conditions for these practices will be described. Third, a range of examples considered to be good practice within the European context in the arena of sustainable food consumption will be delineated and critically examined from the perspective of potential application to the Irish context. Ultimately a multifaceted methodological approach including creative visioning and assessment of, and reflection on, alternative consumption practices within the food consumption arena will be outlined. First results will be presented from visioning workshops resulting key stakeholders in food consumption and production conducted in the ConsEnSus project ([www.consensus.ie](http://www.consensus.ie)) which have resulted in the development of three scenarios indicating how food consumption could become more sustainable in the year 2050. The aim of these visioning methodologies and the scenario development is to ultimately arrive at policy recommendations which are tailored to the Irish context.

Keywords: sustainable food consumption; social practice theory; Irish governance; best practice examples; visioning methodology

## **Energy consumption - how can sustainability science help to increase energy sustainability! The case of universities**

**Schweizer-Ries, Petra** (Saarland University, DE); **Brensing, Jessica** (University of Luxembourg, LU); **Rögele, Stefan** (Saarland University, DE); **Reuss, Maximilian** (Saarland University, DE)

Energy Sustainability can be reached by three strategies (see also Schweizer-Ries, 2008): consistency (producing energy in a CO<sub>2</sub>-neutral way), efficiency (providing energy services with less energy demand) and sufficiency (thinking about how much and when energy service demands really exist and changing the use and production). Sustainable consumption would involve all three aspects: using energy from “clean” production, using energy efficient devices and reducing the demands where not needed (e.g. switch off stand-by functions) or bringing the demand to the times, when energy is produced sufficiently (e.g. data saving at night). Our Universities (like our societies) are not yet prepared to become completely energy sustainable, but some are beginning to strive for a more efficient use of energy, bringing money-saving effects at the same time. This can be seen as the foot in the door technique for energy sustainability. In our presentation, we will give examples from three to four Universities on the way to reach the energy sustainability target from an environmental psychological perspective, working in interdisciplinary teams with engineers, architects and economists. We build upon the model of Kaufmann-Hayos & Gutscher (2001), modified and adapted to energy systems by Schweizer-Ries (2008), integrating psychological intervention methods and supported by data from case studies, where energy behaviour changes at Universities are described and realised through different measures, world-wide. In our scientific work, we realise a systemic research and intervention approach (Willke, 1996), doing participative work with Universities as organisations on different social levels. We work with energy facilitators, end users in staff and student groups as well as the leading units, involving the whole organisation or subsystems toward the improvement of sustainable energy consumption, facilitating and motivating these individuals to start to think about, wish, plan and realise the vision of becoming an energy sustainable community. Our diagnostic approach of how to create system knowledge in describing the Universities will be demonstrated and how the transformation knowledge is designed to change the organisation from within by creating knowledge through action and vice versa. The evaluations aim at showing a significant decrease of energy consumption (our target goes up to 20% without even basic technical changes, “only” the change toward energy sustainable consumptions), however, it is still a work in progress and will be developed. As findings, the outcomes of a psychologically standardised online-questionnaire will be analysed at one University, the analysis of “sensitising Interviews” will be demonstrated about another University and a quasi-experimental design to change energy behaviour via feed-back systems will be described within a third University. The Universities will be qualitatively and quantitatively compared in their approaches as well.

Keywords: sustainability science; energy sustainability; conservation ecological behaviour

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**3****effects and evaluation of  
consumption patterns**

## **Culture of online trading of used goods: Prospects for a sustainable consumption** (description of the session)

**Blättel-Mink, Birgit** (Goethe-University Frankfurt / Main, DE); **Behrendt, Siegfried** (IZT Berlin, DE)

Looking at the prospects of sustainable consumption, electronic auction and trading markets open up new options, especially trading of used goods by increasing the live span and utilisation phase and by avoiding buying of new goods. The papers of the session focus on the results of the project: "From consumer to prosumer. Development of new types of trading and cultures of auction that support sustainable consumption." With a multi method and multi disciplinary approach the project tried to answer the following scientific question: "What kind of sustainable potentials can be identified as well as developed concerning the electronic trading of used goods and the change of the consumer towards a 'prosumer'?" One crucial facet of the knowledge society is the involvement of the consumer in the process of production - if not innovation - of goods and services. Alvin W. Toffler in 1980 created the "prosumer"-concept to describe the merger between the notions of producer and consumer. Recently this concept or the content it entails is being revitalised mainly in the context of knowledge based service economy. In the project referred to in this session the example of eBay is taken in order to explore the relationship between prosuming and sustainability in the field of online based trading of used goods. On one hand the user of eBay is seen as buyer and seller in one person and by that as a co-creator of products of trading. On the other hand it is assumed that online based second hand trading entails potentials of sustainability. The project hypothesises that the product life span of a resold product might be longer than that of a product only used by the first buyer. The environmental impact of private online trading of used goods is quantified by a social-ecological approach with three core elements: 1. analysis of primary, secondary and tertiary environmental impacts on the layer of single products and society, 2. interviews with eBay users to broach the issue of trading of used goods, and 3. undertaking an environmental life cycle assessment (LCA). During the session three papers will be presented. The first one ("Culture of online Trading of Used Goods") will give an overview of the research project, with main research question, theoretical frame and methodical design. The second paper ("Social Impact of Private Online Trading") will present results of the surveys undertaken with users of the online platform eBay. The third one ("Environmental Impact of Private Online Trading") will discuss the results of assessing the ecological impact of online trading.

Keywords: online trading; used goods; social and ecological impact

## **Culture of online trading of used goods: Prospects for a sustainable consumption**

**Blättel-Mink, Birgit** (Goethe-University Frankfurt / Main, DE); **Behrendt, Siegfried** (IZT Berlin, DE); **Scheumann, René** (Institut für Zukunftsstudien und Technologiebewertung, DE)

Looking at the prospects of sustainable consumption, electronic auction and trading markets open up new options, especially trading of used goods by increasing the live span and utilisation phase and by avoiding buying of new goods. The papers of the session focus on the results of the project: "From consumer to prosumer. Development of new types of trading and cultures of auction that support sustainable consumption." With a multi method and multi disciplinary approach the project tried to answer the following scientific question: "What kind of sustainable potentials can be identified as well as developed concerning the electronic trading of used goods and the change of the consumer towards a 'prosumer'?" One crucial facet of the knowledge society is the involvement of the consumer in the process of production - if not innovation - of goods and services. Alvin W. Toffler in 1980 created the "prosumer"-concept to describe the merger between the notions of producer and consumer. Recently this concept or the content it entails is being revitalised mainly in the context of knowledge based service economy. In the project referred to in this session the example of eBay is taken in order to explore the relationship between prosuming and sustainability in the field of online based trading of used goods. On one hand the user of eBay is seen as buyer and seller in one person and by that as a co-creator of products of trading. On the other hand it is assumed that online based second hand trading entails potentials of sustainability. The project hypothesises that the product life span of a resold product might be longer than that of a product only used by the first buyer. The paper presents the theoretical frame, the hypothesis and the methodical design of the research project.

## **Social impact of private online trading**

**Blättel-Mink, Birgit** (Goethe-University Frankfurt / Main, DE); **Dalichau, Dirk** (Goethe-University Frankfurt / Main, DE); **Bender, Saskia-Fee** (Goethe-University Frankfurt / Main, DE); **Hattenhauer, Merle** (Goethe University Frankfurt / Main, DE)

Following the question which chances of increasing sustainable consumption are related with the online based trading of used goods, more than 2.500 users of the platform eBay have been surveyed. Results show that all kind of goods are traded via eBay and that e.g. men trade different things as women do. Among the motifs of trading used goods on eBay the environmental motivation is not the prior motivation. Nevertheless is there a willingness to act sustainable, but it differs widely between groups of consumers. The results show that five different consumption patterns of eBay users can be identified, among them the 'prosumer' and the 'environmentally friendly buyer of used goods'. Sociodemographic characteristics show only small relevance in terms of mapping consumer patterns. Guided in-depth interviews with eBay users revealed the influence of the consumer's life course in their acting on eBay. In different phases of life (parenthood, unemployment, retirement) specific characteristics of acting on eBay as well as different motifs, barriers and kinds of using (used) goods have been carried out.

References: Toffler, Alvin (1980): The Third Wave. New York

## Environmental impact of private online trading

**Behrendt, Siegfried** (IZT Berlin, DE); **Erdmann, Lorenz** (IZT Berlin, DE); **Henseling, Christine** (IZT - Institut für Zukunftsstudien, DE); **Scheumann, René** (Institut für Zukunftsstudien und Technologiebewertung, DE)

The user interviews showed that it depends on the product, if someone purchases a used good on eBay instead of a new product. 40.4% of the respondent would have bought new clothing for children instead of used compared to only 25.5% for the product notebook. But there is also a group of 20% of eBay users who are used good sceptic. All those not existing new product purchases because of buying used goods do not necessarily reduce the environmental impact. Those effects are not presuppositionless and appear only if consumption is not enhanced. A positive environmental impact was observed by long-lasting and high value products with increasing utilisation time through second hand trading. Generally, trading used goods minimises ecological stress if products are used for a relevant time span and do not use energy or water during their usage. 80% of the products traded on eBay are of this nature. For products consuming water and energy the age, efficiency, and hours of operation are very important to judge on the ecological impact. The benefit of increased efficiency of new equipment may overcome the environmental savings through a longer utilisation phase of the old devices. It exist a break even point. On the macro scale, the environmental impact depends strongly on the definition of the system boundary as well as of the efficiency improvement. The undertaken LCA showed that emission of carbon dioxide (CO<sub>2</sub>) resulting from online transactions were compensated by enhancing the utilisation phase of the used goods. The total savings were in the range of 0.3 to 1.5 million t CO<sub>2</sub>, eq.. The high variation resulted from insecure extent of the different products and their market share. The savings are reduced by rebound effects. Their were estimated to range from 0.5 to 2.5 million t CO<sub>2</sub>, eq.. This means that it is indispensable to gain more knowledge on price rebound effects on the macro scale to judge on ecological impacts while expanding used good trading markets and platforms. The results will depend on how the saved money from used good merchandising is used for other purposes.

## **Effects of lower animal product consumption in OECD countries on the global food balance: A partial equilibrium analysis**

**Duman, Nuray** (Universität Hohenheim, DE); **Grethe, Harald** (University of Hohenheim, DE)

Due to the relatively high resource intensity and negative environmental effects in animal production, lower consumption of animal products can significantly decrease the environmental footprint of human diets in industrialized countries (ICs). Additionally, animal production increasingly stresses the world food balance, which contributes to food insecurity in developing countries. While traditionally animals have been raised primarily as efficient users of land not suitable for food crop production and converters of non-human consumable feed, animal farming is increasingly based on feed being cultivated on cropland. Consequently, animal production increasingly competes with production of food crops. Thus, prices for food staples are driven up, affecting primarily the poor. Finally, high levels of animal product consumption in ICs cause diet related diseases and health costs. Many researchers stress the benefits a decrease in animal consumption in ICs may have on health, the environment and the global food balance. Most research, however, is based on spreadsheet calculations or non-economic simulation models that do not consider global market effects being caused by lower animal product demand in ICs. Since effects of lower animal product demand in ICs depend on global supply and demand responses, global market simulation models rooted in microeconomic theory can contribute to understanding these effects which have so far rarely been researched. We therefore employ a partial equilibrium model to simulate effects of a tax-induced decrease in demand for animal products in ICs on the global food balance. The model covers 5 animal products (beef, pork, poultry, eggs, milk) and 5 plant products (cereals, pulses, roots, oilmeals, grass). The world is modelled in the form of two country aggregates: the OECD and the rest of the world (ROW). The model consists of human food and animal feed demand functions and supply functions, based on microeconomic theory. Taxes are implemented on consumption with differentiated tax levels for different animal products, reducing aggregated animal consumption by 12%. Results show an increase in OECD food crop demand, substantially lower world market prices for animal and plant products, higher animal and food crop consumption in the ROW and lower global production of animal and plant products. In conclusion, such a consumption shift in OECD countries would positively affect consumer health in the OECD, decrease pressure on global resources and the environment and improve food equity between OECD countries and the ROW. Results show, however, that due to inelastic consumer demand in ICs, high consumption taxes would be needed to have significant effects on demand. Therefore, a mix of political instruments (e.g. including taxes, consumer information campaigns and health labelling) is more likely to successfully reduce animal product demand.

Keywords: animal consumption; dietary change; health; environment; food security

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## **Beyond John Doe: Assessing the diverse carbon footprints of social milieus to conceive tailored intervention strategies**

**Girard, Sebastien** (European Institute for Energy Research, EIFER, DE); **Huber, Andreas** (European Institute for Energy Research, EIFER, DE); **Thomas, Yoann** (European Institute for Energy Research, EIFER, DE)

Achieving a massive reduction of greenhouse gas emissions is not only a question of energy efficiency; it also strongly depends on changing patterns of consumption. The great variety of individuals in modern societies is often neglected; instead, people are referred to as some kind of standard and uniform being called “the consumer”. In this paper we take the segmentation of the French society into account, applying the SinusMilieus® approach developed by the marketing company Sociovision. At the moment, nine quantifiable social milieus are defined along social values, aspirations, lifestyles and socio-economic conditions. Based on this typology we analyze the carbon footprint of distinct social groups, identify the consumption areas generating the highest impacts and subsequently suggest “interventions strategies” addressing distinct Milieus. Each Milieu is represented by one or two typical profiles, created on prominent characteristics of their lifestyle e.g. type of housing, frequency of long distance travels, or food preferences. The personal carbon footprint related to each profile is calculated with a tool developed by the French national energy agency ADEME. It is subdivided into four main categories which account for different aspects of individuals’ lifestyles: (1) housing (2) transportation (3) food and (4) goods and services e.g. clothing, furniture, appliances, and leisure activities. Results show that the personal carbon footprint varies greatly from one Milieu to another for some fields of consumption, particularly regarding transportation. Given those strong differences and the considered consumption areas we will review possible “interventions strategies” targeting specific characteristics of different Milieus. Typically, such measures concern the spheres of communication (e.g. campaigns), regulation (e.g. building regulation), financial incentives (e.g. carbon taxes), the promotion of collective actions (e.g. community initiatives) and changes of “choice architectures” (e.g. attractive public transport).

Keywords: typology of social milieus; personal carbon footprint; intervention strategies



## **Green go for the cheap – the effect of prices on attributable externalities**

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When pollution from production of goods is not reflected in prices it may largely be neglected in consumption decisions. A growing fraction of consumers caring about sustainability is, however, willing to take external effects into account: many reduce or abstain from e.g. flying or purchasing energy intensive goods or food products from suffering animals, in order to reduce their ecological footprint. Producers do not typically offer goods at average or marginal production costs: e.g. price discrimination and remnant sales of exceeding production, or promotions of products, yield consumer prices that strongly differ from average production costs. Purchasing decisions in specific of these pricing-situations do not imply one-for-one changes in equilibrium production levels: as an example, passengers' decisions to benefit from last-minute flight tickets offered at prices below the average per-seat airplane flight costs may in the economic equilibrium imply lower increases of airplanes than a similar increase of the demand for normal tickets. This is intuitive as the revenues from additional demand for last-minute tickets could not cover costs for the respective amount of additional flights. However, to a limited extent flight numbers may still increase, as some flights that would initially be loss-making can become profitable with additional low-fare demand. In order to adequately quantify the impact decisions to fly have on expected pollution in specific "pricing-situations", economic equilibrium analysis, properly accounting for the producers' (here the airlines) profit maximization problem and thus going beyond input-output Life Cycle Analysis (LCA), is required. In this sense, studies such as BOUMAN ET AL. (2000) are misleading as they neglect that LCA results are biased when ignoring important equilibrium responses of pollution to individuals' actions. Here, a methodological equilibrium analysis framework for addressing the issues of how pricing-specific consumption patterns affect equilibrium externality levels is introduced and applied to a number of relevant markets. Some key findings are: (i) Buying a good in a low-price situation may imply only a fraction of the average pollution attached to the same purchase at standard price – examples are last-minute-like flights or other remnant commodities sold regularly on markets for e.g. food products on which produced stocks have an expiration date and meet irregular demand. (ii) As a more extreme case, when producers' strategies include distribution of low-priced or free products for promotional purposes, acceptance of such promotional offers can imply lower equilibrium pollution than their refusal. Beyond the direct implications of these findings the study has broader consequences, for the general field of LCA impact studies: LCA can yield biased results when focusing only on current state material flows and neglecting economic substitution effects which could be dealt with in equilibrium analysis.

Keywords: attributable externalities; pricing-situations; equilibrium modeling; life cycle analysis; LCA

References: BOUMAN ET AL., 2000 "Material flows and economic models: an analytical comparison of SFA, LCA and partial equilibrium models", *Ecological Economics* 32(2): 195-216.

## **Lifestyle aspects influencing the residential energy demand**

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Surveys on the interaction of lifestyle, attitudes and residential energy consumption pose a major methodological challenge, in ways of separating the effects of consumption patterns from effects caused by differences in building isolation or different electrical equipment. Therefore, many studies control for these effects by focusing on occupants inside the same building (e.g. Hackett/Lutzenhiser 1991) or housing estate (e.g. Mack 2007), which prevents random sampling. Furthermore, questions asking directly for the residential energy consumption often result in a large proportion of missing values (around 25% - 50%), as many people are not aware of their energy consumption or the exact price they pay each month or year (e.g. Hinding 2002, Rhein 2006). To address these challenges, a questionnaire asking for specific energy relevant behavior patterns (in terms of cooking, washing clothes, space heating, presence at home, etc. ) and electrical equipment of households was designed and shipped to 4 000 households in Stuttgart (Germany) and Lyon (France), each. The resulting behavior patterns of different lifestyle groups - arranged according to Otte (2005) - show significant differences. These different consumption patterns are the starting point of an agent based simulation of both cities, where the particular behavior can be manipulated independently from the electrical equipment or housing structure. In contrast to regression results, the resulting load curves show electrical consumption over time and are able to take complex interactions into account. The project is a Ph.D. thesis in the framework of the European Centers and Laboratories for energy Efficiency Research (ECLEER) carried out as cooperation between the European Institute for Energy Research (EIFER) and the Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development (ZIRN) at the University of Stuttgart.

Keywords: energy consumption; agent-based simulation; lifestyle

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## **Impact analysis of consumption patterns – use of heat energy in residential buildings**

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From a technical perspective the energy use in buildings for space heating and domestic hot water use is mainly determined by the energy performance of the building envelope and the installed heating system. Through the building operation and consumption patterns, however, the user has a strong influence to increase or reduce heat demand substantially depending on the behaviour and preferences. The manual ventilation, usage of hot water and indoor temperature are examples of variables that exert a strong influence on the overall energy use. Those variables also strongly depend on the user's needs or wants. Within the framework of the project "sustainable consumption of heating energy – consumption of sustainable heating energy" funded by the German Federal Ministry of Education and Research (BMBF), a parameter analysis was carried out simulating different possible cases for residential buildings. To do so, behavioural sources of influence were translated into technical parameters with a defined range. The analysis quantified the influence everyday practices can have on the heat demand. In addition, the calculations were conducted for various building types and standards. Building on the quantitative analysis, the paper proposes to differentiate energy needs of different household types and discusses opportunities for a more sustainable use of energy in residential buildings.

Keywords: behaviour; heat energy; residential buildings; energy needs

## Environmental impacts of the consumption of animal-based foods in Germany

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*Introduction* Taking political considerations into account nutritionally acceptable and environmentally necessary measures have to be found to cope with current agro-ecological challenges: climate change, deforestation, biodiversity lost, water scarcity, pollution etc. Besides technical solutions (efficiency approach) consumption changing (effectiveness approach) and consumption reducing solutions (sufficiency approach) are discussed to address the environmental relevance of the agro-food sector (McDonough & Braungart 2002, Stehfest et al. 2008, Osterburg et al. 2009, Popp et al. 2010). Primary objective of the research project was to quantify nutrition related environmental impacts due to social groups in Germany and further to analyze the influence of social-statistical parameters in the assessment. Taking environmental and public health constraints equally in consideration the potentials of the three mentioned approaches (efficiency, effectiveness and sufficiency) are analyzed. Purpose: Animal-based foods play due to their production intensity a crucial role in the assessment of environmental and health impacts of human nutrition and diets. Based on a representative nutrition survey in Germany in the year 2006 a life cycle assessment (LCA) was conducted to quantify nutrition related emissions of animal-based foods due to the socio-statistical factors gender, age and social status. Materials and methods: The representative data sets in the study used (Max Rubner Institute 2008, Leip et al. 2010, Institute of applied Ecology 2010) allowed a top-down-approach within the analysis. The LCA was conducted in line with ISO 14040/14044. The following food groups have been analysed and their impacts have been compared among each other: meat / products, milk / products, egg / products and fish / products. The analysed impact categories/indicators were: global warming potential (GWP) and ammonia. Reference year of the study is the year 2006. Results and discussion: The results show strong variation between the genders. Even if the physiologically different consumption patterns of animal-based foods among men and women are leveled, men show a higher impact in both analyzed impact categories (GWP +16%, ammonia +21%). This net CO<sub>2</sub> Eq. and ammonia surplus is mainly derived by a higher share of meat products, meat and butter in the usual diet of men. If men would shift qualitatively to the usual diet of women with a lesser share of CO<sub>2</sub> Eq. and ammonia intensive animal products 5,2 Mt CO<sub>2</sub> Eq. and 20,8 kt ammonia emissions could be saved yearly in Germany. Concerning the factors age and gender we find an increasing impact of animal-based foods with the age for women although the food intake is declining. This effect mainly results from a higher share of environmentally intensive products in the diet.

Keywords: input-output-analysis; hybrid-LCA; CAPRI; National Nutrition Survey II; land use change / land use

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## **Towards sustainable lifestyles: Exploring the ecological footprint of food consumption**

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The majority of the final goods consumption takes place at household level, thus consumers impose significant environmental load. Food consumption of households, as a final demand category in Hungary is up to 40 % responsible for the total ecological footprint. Furthermore, this is an influential sector of consumption where residents can make changes (Lorek, 2005). The present study focuses on the analysis of the ecological impacts of food consumption. As for the methodology, the study is based on a survey of a representative sample of 1000 adults in the Hungarian society. In the analysis the ecological footprint is used as an indicator to measure the environmental impact of food consumption at national and sub-national level. The aim of the study was to quantify and compare the ecological footprint of income deciles, concerning the food consumption and to identify clusters using the socio-economic and well-being configuration of the society, which live and consume within the limits of biocapacity. The sustainable pattern of food consumption was investigated, where the dimension of consuming local and imported food was especially analysed. The survey comprised detailed questions on the daily habits of food consumption concerning the frequency and quantity of the various food items. The ecological footprints of the food categories were calculated based on the survey and on the footprint intensity data, which were quantified using the database of the Global Footprint Network (2008). A detailed description is given on the calculation of the ecological footprint intensities of the various food categories; where for each food item the domestic footprint (gha) per kg was calculated. In the ecological footprint both the real land needed to produce the food items and also the carbon-uptake land (carbon footprint) have been quantified. This has a special importance, as a significant part of the carbon-dioxide emissions are due to the increased meat production, contributing to the climate change. The socio-economic configuration of the income deciles were used to allocate the footprint data and make clusters of the households. Results have shown the importance of the economic situation of the households and the regional differences which explain the ecological footprint of food consumption to a great extent. An analysis on the attitude to change consumption patterns has been carried out as well, aiming at finding those clusters of the society which can have a significant impact on decreasing their ecological footprint without a sharp change in their daily consumption. Important conclusions are drawn concerning the consumption shift driving factors and the potential cluster where a sustainable food consumption pattern is likely to be realised. The study has shown that the ecological footprint has proved to be an adequate indicator of measuring and indicating the environmental load imposed by households.

Keywords: food consumption patterns; ecological footprint; dietary change; sustainable food consumption

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## **Market shares and carbon footprints of shopping situations: Assessment and policy options**

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Buying a product at the neighbourhood store in contrast to buying it at a shopping centre or ordering online might lead to different amounts of greenhouse gas emissions (CO<sub>2</sub>e). However, common B2C carbon footprint assessments neglect the impact of the last mile, the shopping trip an individual consumer undertakes to a specific store. Therefore this paper has two objectives: First, to comprehensively assess the carbon footprint of various shopping situations considering warehousing, transportation from the distribution centre to the retail store, retailing as well as the consumers last mile using the car, public transport or a non-motorized mode of transportation. Second, to predict the effects of policy options comprising regulatory measures, price incentives and governmental funding on market shares and CO<sub>2</sub>e emissions in reference to a business-as-usual scenario for the year 2020. Using empirical data on consumption expenditures and shopping trips of Austrian households, we identify consumer segments with distinct shopping patterns taking into account constraints by regional accessibility, social status and everyday trip chaining. Combinations of three commodities (groceries, clothing, and entertainment electronics) and five shopping situations (neighbourhood store/local supplier, city centre, discount store, shopping centre, and online shopping) are investigated. The carbon footprint of these combinations is estimated in terms of g CO<sub>2</sub>e per net value in Euro, drawing on LCA databases and expert interviews with retailers. A computable general equilibrium model predicts changes in market shares of shopping situations due to policy measures. In turn, the carbon footprint of these changed market situations is assessed in order to illustrate potential reductions in greenhouse gas emissions. The impacts of different policy options are contrasted to a non-policy case, a projection of market development until 2020. Greenhouse gas emissions assignable to shopping situations amount to ca. 3% of the overall emissions in Austria. Policy measures may reduce this share by up to 10%. Limiting the number of shopping centres achieves the most, whereas encouraging and facilitating online shopping achieves the least reductions in emissions. Complementary results from a consumer survey indicate that these impacts on market shares and subsequent carbon footprints of shopping situations are severely impeded by strong consumer habits in transport mode choice and store choice.

Keywords: market share; carbon footprint; last mile; shopping mobility; store choice

## **Sustainable consumption and impacts on economy, environment and society**

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This paper deals with evaluation of consumption patterns and their economic, social and ecological impacts. The main question is how consumer behavior adjusted towards a sustainable consumption can affect the economy, the society and the environment (Meyer et al. 2010; Bohunovsky et al. 2010). Using scenario analysis (Blazejczak et al. 2000) and a macroeconomic modeling approach, objective, attainable and quantitatively assessable consumption patterns are in the center of this evaluation. Our understanding of 'sustainable consumption' is based on Belz and Bilharz (2007), in which mainly those consumption patterns are considered, which, in contrast to conventional consumption patterns, reduce problems in the socio-ecological field caused by production and consumption. For the simulation, behavior patterns in several consumption fields, which are described as sustainable in the literature, are selected (for example using more public means of transportation). Based on these assumptions that constitute a scenario, we perform a simulation until the year 2020. The results are then compared with the outcomes of a business as usual scenario which contains the future development of conventional consumer behavior. The comparison allows the evaluation of the impacts of sustainable consumption on economic, social and ecological development. The results show, that in terms of mobility, alimentation and habitation, material consumption and CO<sub>2</sub>-emissions can be reduced by changing consumer habits, also without a radical change of those or implementation of new technology. Furthermore, the economy does not necessarily have to contract. The gross domestic product can still grow and unemployment does not have to rise as the structure of final consumption shifts towards a more sustainable direction. Using this method, all impacts within an overall economic accounting framework can be measured. The modelling applies the macroeconomic model e3.at for Austria (Großmann und Wolter 2010) and the macroeconomic model PANTA RHEI for Germany (Staiß et al. 2006). These models have been tested and gradually extended over the past years. Both combine economic, energetic and environmental aspects of each country on a detailed level. Moreover, the presented approach allows the identification of sustainable consumption patterns which could be adapted by consumers and promoted by policies. It is possible to evaluate whether particular action is efficient or has undesirable side effects. Additionally, it is important to achieve sustainable consumption which is enforceable in a realistic way. In order to achieve sustainable consumption the impacts have to be known, so that education or political measures can reach intended targets.

Keywords: scenario analysis; macroeconomics; impacts

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## CO<sub>2</sub>-effects of shopping patterns in a multi-channel environment

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Shopping causes environmental pollution through the transport of goods and persons. Nowadays, consumers have a wide selection of shopping channels and it is not completely clear which environmental impact is caused by shopping in different channels (Wiese et al., 2010; Cullinane, 2009; Edwards et al., 2009) and what influence consumer behaviour has, for instance information search. Next to the traditional brick-and-mortar channel, in particular the relevance of the online channel has increased a lot. Regarding the purpose of sustainable consumption, it has to be questioned how shopping processes can be designed more sustainable. Therefore, information for consumers and implications for retailers aiming to improve their environmental performance will be deducted from an economic perspective. Using a life cycle analysis approach, the CO<sub>2</sub>-emissions of relevant processes in both supply chains are compared based on company and customer survey data about real shopping done at a German clothing retailer. Besides, a parcel service delivering the parcels from the online channel provided data about the transport processes. The advantage of this procedure lies in picturing the consumer behaviour in an existent shopping environment. Considering one single company offers the possibility to compare both distribution processes directly, starting from the retailer's central warehouse. The main result is that online shopping causes up to ten times less CO<sub>2</sub>-emissions than traditional shopping as the parcel service's well-organized delivery system exceeds customers' travels. In particular huge emissions are caused by customers driving to the stores by car. Sensitivity analyses on the impact of returns and the use of public transport modes show that the advantageousness does not change. Besides, it was analyzed in which situations traditional retail might become favourably, for instance in highly populated urban regions. Interestingly, customers, asked in the traditional channel, were doubtful about the channels' environmental impact. Answers therefore are mixed with 53.7 % of the customers considering brick-and-mortar shopping more environment-friendly, while 32.4 % regard online shopping as the better option (13.9 % were not sure about the advantageousness). The findings expose insights on the environmental impact of consumers' shopping behaviour. Thereby, approaches for mitigating the ecological damage caused by shopping processes are revealed. It was shown that customers are unsure about the environment effects of different channels, therefore more detailed information is needed. All in all, the findings yield important implications for retailers, parcel services and public policy decision makers to achieve more sustainable consumption.

Keywords: retailing; consumer behaviour; CO<sub>2</sub>-emissions; multi-channel-retailing; online channel

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## **Latvia's ecological footprint**

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Ecological footprint is becoming popular indicator of sustainable consumption. Previous ecological footprint studies show that food consumption is responsible for biggest share of ecological footprint. Therefore this study looks specifically on the ecological footprints of food consumption in Latvia, which was calculated using mixed compound/component method. The goals of the study are to understand food consumption patterns in Latvia and its impacts on environment and drivers behind these trends. National statistics, as well as data from sociological studies were used in the calculations. These calculations show that, on a per capita basis, the footprint of Latvia's inhabitants varies a lot mostly because of the different diets. When looking at the food chain's impacts by food type, we find that meat and dairy products account for around half of food's total ecological footprint. Other foods, such as fruit, vegetables, drinks, make smaller contributions to overall footprint. However the consumption trends indicate that we are moving in more footprint intensive directions. Reviewing the potential for reducing footprint we conclude that much can be done by better management and increasing efficiency. However demand side management is crucial if we want to limit Latvia's FoodPrint.

Keywords: ecological footprint; consumption patterns; food

## Is birdwatching a form of sustainable consumption?

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Recently the social side of birdwatching has attracted much attention, with books and scholarly articles published on the social habits of birdwatchers. A review of the rich literature, combined with the author's own observations, permits to discuss birdwatching within the framework of sustainable consumption. Birdwatching and consumption. Birdwatching is a form of non-consumptive use of nature but, to some extent, some forms of birdwatching involve a symbolic appropriation of birds (Liep 2001). As in the case of other forms of consumption, birdwatching leads to the social stratification of 'consumers' based not on their material status but on knowledge and experience. Although birdwatching focuses on non-market goods and services (birds), a significant market has turned out to be necessary to 'consume' the former. The traditionally important optical equipment and books have been complemented with a number of other categories of consumption goods. Birdwatching-related market also involves travel, accommodation, and numerous birding festivals. In addition to dedicated bird reserves, different trails are set by local authorities to attract birdwatchers. Indeed, birdwatchers often visit remote and marginal areas and 'may revive or sustain some otherwise small and declining places' by spending money there (Connell 2009). As a result, spending and other economic impacts belong to the most often discussed features of birdwatching. Birdwatching and sustainable consumption. Birdwatching is often perceived as 'one of the most ecologically sound and sustainable of versions of wildlife tourism' (Connell 2009). Birdwatchers need birds to pursue their activity and it is in their interest to protect birds as a resource on which they depend for leisure. However, in some circumstances, by their presence, birdwatchers affect the attractiveness of the birds' breeding, migration or roosting sites, flush birds, and increase pressure on different habitats. Thus, birdwatching is affected by the so-called environmental contradictions of ecotourism – the environment is an attraction that is being destroyed by the masses of tourists that it attracts (e.g. Cater 1995). Other environmental impacts of birdwatching result from the consumption of the related market goods and services (travel and optical equipment in particular). However, if we take into consideration the overall contribution of birdwatching in terms of its educational context regarding the importance of birds and bird habitats, it may be broadly treated as contributing to sustainable development, hence a form of sustainable consumption. The positive effects include also funds channelled through membership fees in birdwatching organisations and individual donations; greater availability of information on nature; and greater support for the protection of nature because of the related economic interest. Based on the above considerations, potential solutions to make birdwatching more sustainable are also presented.

Keywords: birdwatching; ecotourism; avitourism; twitching; sustainable consumption

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## **Aggregation bias in "consumption vs. production perspective" comparisons - evidence using the Italian and Spanish NAMEAs**

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This paper tackles the issue of the empirical assessment of the aggregation bias which arises in environmentally extended input-output analyses on embodied emissions. In recent years the methodological debate regarding the comparison of the 'consumption' versus the 'production' responsibility for environmental pressures focused on the alternative hypotheses made on the technology used for the production of imported goods. On the contrary, few works tackled the issue of the bias arising from the use of low resolution input-output tables or with sectoral aggregation different from that in the environmental accounts, the so called 'aggregation bias'. This paper aims at filling this gap. By employing a model of pure 'domestic technology assumption' (DTA), we compare the differences between environmental pressures under the production and consumption perspectives when using different sector aggregations, with a particular focus on aggregations used by recent studies in this field. Results show that aggregation biases significantly the results and that the difference between the DTA and other assumptions on imported goods reduces significantly for Italy and Spain when using a common low-detailed aggregation. Our empirical exercise uses input-output tables for Italy with a medium resolution (50 sectors) and NAMEA (National Accounting Matrix including Environmental Accounts) air emissions data.

Keywords: environmentally extended input output analysis (EE-IOA); NAMEA; consumption-production perspective; aggregation bias

## **Communitarian lifestyles – behavioral and structural aspects of sustainability benefits**

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In our study as part of the BMBF research topic on sustainable economic systems an analysis of the sustainability benefits of communes and eco villages has been presented. Sustainable consumption, in our view, is defined by the level of greenhouse gas emissions resulting from dwelling, nutrition, mobility, as well as by several (non quantitative) indicators describing the “quality of life” the consumption is embedded in (orientors approach). The level of greenhouse gas emissions is calculated using the so-called process chains analysis. We used a the sustainability limit of per capita greenhouse gas emissions of not more than 1.8 tons per year, according to studies on safe emissions corridors. Empirical as well as conceptual information was used to collect data about the consumption of three “alternative modes of living” in Germany (a commune near Kassel, an eco-village in the Altmark, and a project near Bautzen). These projects, compared to an “average consumer” or families of smaller scale, show significant advantages regarding the challenge of a sustainable lifestyle (significantly smaller greenhouse gas emissions). Further discussions show which reduction potentials are due to structural achievements (a kind of economy of scale argument) or individual decisions and behavioral components. Sharing cars and houses, cooking in a communal kitchen, integrating food production, relying on renewable sources of energy, etc. are the main pillars of what makes the difference to other modes of living. Real sustainable consumption patterns could be found in a radical sub-group of an eco-village. The members of that group built their own house using organic materials, do without electricity, and prefer a vegan mode of nutrition. Our analysis tries to combine social science theory components and natural science aspects of sustainability. We see it as important under the viewpoint of sustainability that social diversity is maintained, if not increased. The social experiments we analysed are part of such a diversity. Even if they are really representing a minor sub-culture and their mode of living could not be extended to a mainstream movement we are convinced that the possibility of experimenting with those projects is of high value for visioning more sustainable consumption patterns.

Keywords: lifestyle changes; social experiments; alternative economics; orientors approach

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## **What role has the normalisation of recycling behaviour played in moving towards sustainable consumption?**

**Thomas, Christine** (Open University, GB)

The central aim of this paper is to explore what lessons can be learnt from research and interventions on recycling, reuse and waste avoidance behaviours in the context of achieving more sustainable consumption. Creating unnecessary waste is unsustainable and reuse, waste avoidance and recycling contribute to consuming more sustainably. But what role has a focus on material waste played in the broader sustainable consumption challenge facing society? Recycling has moved from a marginal activity to becoming a normalised behaviour in many countries over the past 20 years. In the UK, interventions to influence recycling behaviour have been many and varied and draw from theoretical foundations including social marketing, 'nudge', behavioural economics, catalyst behaviours, deliberative engagement, communication and education approaches (Collier et al, 2010). Results from quantitative survey and qualitative research by the author on understanding and evaluating the effectiveness of some of these interventions will be used to inform, through analysis of recycling's journey to becoming a common behaviour, the question of what waste and recycling behaviours have and can contribute to a more sustainable society. More recently there has been growing concern that perhaps too much emphasis has been placed on recycling waste as a pro-environmental activity rather than tackling waste avoidance and other sustainable consumption issues. Recycling has been favoured as a small and easy behaviour that can be a 'first step' to catalysing other sustainable consumption behaviours. Such positive spillover undoubtedly exists, although the mechanisms and motivations for it have been found to be complex. However, some studies have found that recycling can 'absolve' individuals from an obligation to act in other areas, perhaps by making them think that recycling solves the waste problem or 'compensates' for not doing other things. Even within waste behaviours, recycling activity can hinder moves towards the more sustainable activity of reducing waste (Barr, 2007). Crompton (2010) argues that negative spillover or rebound effects are more likely to be found where behaviours are not based on environmental attitudes and values; and cite research findings that individuals with a fairly negative attitude to the environment are more likely to justify their car driving on the basis that they recycle. This paper examines the evidence for where the balance for recycling lies between encouraging or blocking the way towards more sustainable consumption?

Keywords: recycling; behaviour; spillover; normalisation; sustainability

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# theoretical and methodological issues of research on sustainable consumption

## **Consumption and social practices – benefits and challenges of practice theory approaches**

**Offenberger, Ursula** (University of St. Gallen, CH); **Jaeger-Erben, Melanie** (Center for Technology and Society, DE); **Shove, Elizabeth** (Department of Sociology / Lancaster University, GB); **Brand, Karl-Werner** (Technical University of Munich, DE)

Although many authors argue for a practice theory approach in research on (sustainable) consumption (e.g. Brand 2010, Røpke, 2009), individual-focused models targeting attitudes, behaviours and choice, are still mainstream. While the theoretical benefits of practice theories are well discussed, there is a lack of empirical research illustrating how consumption forms part of social practices, i.e., how it is intertwined with “the social organization of normality” (Shove 2003). Furthermore, there are still few examples that show concrete implications for policy making and sustainability strategies. The roundtable proposed here encourages the discussion of benefits as well as challenges of applying a practice theory perspective on sustainable consumption. Core questions can be: -Why, and how, does social-ecological research gain from developing practice theory approaches? -How do approaches inspired by practice theories relate to other common approaches in the field? -Does a focus on social practice have any necessary implications for research methods? What are ‘practice-sensitive’ methods/ method combinations? -Which practical implications can be inferred from studies developing approaches inspired by practice theories? How are they accepted by policy makers/ practitioners? The roundtable will start with a short introduction by the session leaders (15 min). Afterwards the aforementioned questions will be broached by the whole audience, pointing out the questions of highest interest (30 min). The group will then be separated into smaller parts where benefits and challenges are discussed for concrete issues in sustainable consumption taking experiences of participants into consideration (30 min). The results of the group work will then be discussed together (15 min) The aim is to develop a ‘research map’ that shows promising thematic areas for developing practice theory inspired approaches in the field of sustainable consumption research. Positive examples will be outlined as well as empirical and methodological gaps. Theoretical, practical as well as ‘political’ obstacles (e.g., science-society relations) will be discussed that might hinder the diffusion of practice theory approaches.

Keywords: practice theory; social practices

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## oral presentations in open sessions

**Recent trend of sustainable consumption & lifestyle research:  
A review**

**Aoyagi, Midori** (National Institute for Environmental Studies, JP); **Tasaki, Tomohiro** (National Institute for Environmental Studies, JP); **Yoshida, Aya** (NIES, JP); **Kanamori, Yuku** (National Institute for Environmental Studies, JP)

Using Social Sciences Citation Index database, we collected papers whose contents are related to "Sustainable Consumption". We found 723 papers as of the end of February 2011. The first paper appeared in 1990, then continuously growing. After 2008, it was more than 100 papers every year. Those more than 700 papers spread very wide in terms of academic fields (micro, and macro economics, Input-Output Analysis, psychology, sociology, etc.), environmental fields (Climate change, waste treatment, biodiversity conservation) regions (Europe, North America, East Asia, especially China, etc.), target (Energy, food, transportation, housing, household, etc), scale (individuals, household, town, city, sub-national, national, sub-continent, and global), focus (material flow, human behavior, servicising, etc.), conceptual proposals or case studies. Among more than 700 papers, we summarized about 200 papers in several journals that focused on the people's behavior and social systems of sustainable consumption. We found that 1) papers about developing countries, especially about China is rapidly growing, 2) sustainable consumption sometimes discuss with sustainable lifestyles, 3) one of the important findings from those papers is that increasing efficiency of material consumption does not bring decreasing resource use, rather increase consumption of resources. 4) Recent new trends includes a practice theory which includes the discussion of "systems of provision".

Keywords: review of research trend; collaboration of international organization; work of academia

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## **New practices and emerging routines in local food niches. The case of 'food teams'**

**Crivits, Maarten** (Ghent University, Centre for Sustainable Development, BE); **Paredis, Erik** (Ghent University, Centre for Sustainable Development, BE)

This paper reports on a research project (Consensus) in which a short-chain niche of the Flemish food system is analyzed on the basis of a practice approach. In Flanders an initiative called Voedselteams (Food teams) has slowly grown over the last ten years: it concerns groups of households closely tied to local, mainly organic, farmers in function of the direct trade of local, fresh and minimally processed products. The research takes a consumer perspective to analyse patterns of interconnected elements that constitute the routine behaviour and the emergence of new routines of practices related to food. Using a combination of in-depth interviews, focus group sessions, observation, document analysis and literature review, the research aims at discerning the constituting elements of the new food practices in Voedselteams and clarifying the linkages between discursive events, motivations, bodily routines, artefacts and other elements typical of practices. In this paper we aim at reporting on three aspects of the research. First, we stress the importance of taking a practice perspective as a necessary complementary unit of analysis in addition to the more typical socio-technical approach (focusing primarily on producers and technology), often prevalent in transition research. Our research shows e.g. that the changes in everyday behaviour (in purchase, cooking, kitchen, relationship with producer, etc....) are conspicuous and clearly discriminated vis-a-vis previous more mainstream routines. These changing routines seem to be a condition for the advancement of local food niches, in that they are a necessary complement to and even co-constitute the new, more sustainable practices of the involved farmers. Second, we wish to illustrate the importance of niche analysis with regard to gaining understanding in re-routinization of everyday behaviour and its ties to enhanced sustainability. In presenting the results of the research we try to show how the routines that sustain the practice at the same time confirm and re-interpret typical doings and sayings as they are enacted within the food regime. Finally, a methodological aim is to give some indications on the applicability of practice theory on empirical data. Although the practice approach is not (yet) fully structured in a theoretically systematic way, its non-essentialist logic does provide a promising endeavour to purport on the intrinsic heterogeneity of social activities. We systematically reconstruct and reflect upon the research design.

## **A practice approach to understanding energy consumption in Norwegian households**

**Eriksen, Kristin Gregers** (Telemark University College, NO); **Wilhite, Harold** (Centre for Development and the Environment, NO)

In the bulk of theory and policies associated with sustainable energy use, consumption has been decontextualized and reduced to a matter of technical efficiency, economic rationality and consumer information. There is by now a significant body of evidence showing that this decontextualization eliminates much of what is important for determining the ways households use energy. In this paper the authors present and discuss the findings of a project which aimed at accounting for the missing social and material contexts. Based on in-depth interviews with a sample of 20 households, we examined the relationship of energy use to the spatial, temporal and material arrangements of everyday routines in Norwegian homes. Starting from concrete practices such as washing up, doing laundry and drying clothes, we suggest a rethinking of the social role of domestic technologies in shaping and reshaping energy consumption patterns. Household technologies bring with them potentials or scripts for different practices and so do users, in the form of habitual procedures, background knowledge, competencies, desires and visions of normality. These are not inherent qualities to either the appliances or human individuals, but rather attributes of practices. Drawing on perspectives from social practice theory and Social Studies of Technology (SST), we explore household energy consumption at micro-level and situate it in its material, social, cultural and historical contexts. In this nexus, the very concept of agency is also challenged by accounting for its distributional character throughout the web of influences. Taking concrete practices as point of departure we avoid the static picture of behavioral and technological change as something happening in independent and separate spheres, and maintain an open outlook as to what really matters for energy consumption. The analysis questions which aspects of practices carry potentials for encouraging sustainable energy consumption, and how policy might discourage unsustainable outcomes. We argue that the practice orientation helps account for both reproduction and innovation in the organization of everyday life, providing a fuller understanding of stability and change in domestic energy consumption patterns and routines.

Keywords: energy use; household technologies; everyday life; routines; practice theory

## **Conflict, compromise and ConsEnSus: Opportunities and challenges of policy relevance in sustainable consumption research**

**Fahy, Frances** (National University of Ireland, Galway, IE); **Rau, Henrike** (National University of Ireland, Galway, IE)

Sustainable consumption projects are frequently expected to be policy relevant in their questions and results and to provide concrete solutions to consumption problems. This affects at least three key aspects of the research process: the formulation of research questions and their theoretical underpinnings, the choice of methodology and the dissemination of findings. To what extent is there a reduction in conceptual complexity to accommodate diverse audiences? Are conventional research methods simply incorporated to satisfy common perceptions of what social research is supposed to look like? Is cross-sectional work prioritised over longitudinal approaches to meet expectations of quick results? An emphasis on interdisciplinarity both aids and constrains SC research more generally. This paper offers a critical examination of these methodological challenges and assesses their impact on one particular policy relevant research project on sustainable household consumption in Ireland and Northern Ireland – the ConsEnSus project. As regards theoretical and conceptual challenges, the issue of responding to what is widely perceived to be a pressing policy problem caused by individuals' unsustainable material practices in particular sectors will be discussed in detail. It is argued that framing consumption as an economically necessary but environmentally problematic activity carried out by individual householders clearly overlooks its wider social and cultural significance, its multi-scalar effects and its structural root causes. Innovative methodological approaches to SC research frequently challenge expectations among many policy makers and members of the public about how 'proper' scientific research should be done. At the same time, SC research has opened up opportunities for multi-method work and relational data analysis (RDA) that contest the persistent dominance of quantitative methods for data collection and analysis in policy research. ConsEnSus combines both conventional and innovative research methodologies and tools including surveys, interviews, participatory action research and visioning techniques. Their interactions will receive particular attention in this paper. The paper concludes with a critical reflection on the need for compromise when disseminating SC research results. Undoubtedly, sustainable consumption debates have opened up opportunities for diverse academic and non-academic contributors to exchange ideas and to communicate their visions of sustainability. On the other hand, the task of appealing to policy makers, practitioners, various publics and academic audiences can create tensions over terminology, presentation of results, or the choice of media for dissemination. While the concept of sustainable consumption has become common parlance in some academic and policy circles, it often remains detached from everyday lived experiences.

Keywords: sustainable consumption; policy relevance; methodology

## Time-use and energy consumption: A socioecological model for the city of Vienna

**Gaube, Veronika** (Institute of Social Ecology, AT); **Haselsteiner, Edeltraud** (Institute of Social Ecology, AT); **Remesch, Alexander** (Institute of Social Ecology, AT); **Smetschka, Barbara** (Alpen-Adria University, AT)

Goal of this paper is to present the currently starting project "UTE – Urban time and energy: A socioecological model for assessing time-use and energy metabolism." UTE aims to analyse the link between time use and energy consumption in cities. Time-use structure of urban household members (phenomena such as "time squeeze" or synchronization of activities of different persons), the energy demand of households and the spatial organisation of cities entail each other. Available time - as much as available money - governs everyday decision making of household members concerning living space, consumption patterns and means of transportation. All of these activities are energy consuming (transport energy, heating/cooling energy, etc.). Consequently, lack of time often translates into spending more money and more energy, severely constraining individual and household choices. With UTE we aim to develop a model which allows us to explore the options for future development which depend on internal choices (of households) as well as on changes in the framework conditions, such as time-policy measures. Several policy measures such as public transport intervals, flexibility of working time, opening hours of public services, spatial planning and infrastructure have changed and will change society's patterns of time use and have an effect on both the economic performance (production and consumption patterns, income, etc.) and the natural environment (energy flows). The project analyses the decision-making process of households according to their energy use (mostly transport and heating energy) using a 'sustainability triangle' in which each corner represents one of the core sustainability dimensions (social / ecological / economic dimension). The UTE model will be built upon a residential location decision model currently developed for Vienna in the FP 7 project SUME (Sustainable Urban Metabolism in Europe). This agent-based decision model refers to the city of Vienna, the capital of Austria. Since the early 1990s, after decades of negative population growth, Vienna has been experiencing a steady increase in population, mainly driven by immigration. Model results can be used to assess spatial patterns of energy use caused by different household types in different scenarios. Outcomes show the importance of the distribution of different household types regarding spatial patterns of energy use. UTE will make major steps forward extending this simple model with assumptions about time-use requirements of households and time-affecting services and infrastructure in urban areas. The model will be developed together with stakeholders and with the aim to be easily handled by stakeholders of communal administration, urban development and planning bodies in politics and civil society outside the scientific community through its user-friendly interface. This tool can trigger and guide time-policy measures of the city's administration and planning processes.

Keywords: time use; energy use; urban metabolism; agent-based modelling; participative modelling

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## **'Practicing the daily consumption of distance' - is a practice approach fruitful for analysing daily commuting?**

**Heisserer, Barbara** (National University of Ireland, Galway, IE)

Many developed countries today are highly car dependent. According to the European Environmental Agency (2008), Ireland's situation is even more severe compared to other EU countries. This over-reliance on motor vehicles does not only cause serious damage to the environment but also promotes inequality through the systematic exclusion of members of carless households and other vulnerable groups such as young people, low-income households, the disabled and the elderly. Since the 1970s the negative consequences of excessive car use for society and the environment have been recognised as a major challenge for policy makers. Despite various efforts to reduce private car use, significant improvements have yet to be made. Therefore it is crucial to explore the 'consumption of distance' further in order to gain a deeper understanding of possible avenues to instigate change towards sustainable mobility practices such as active commuting, car pooling and virtual mobility. In recent years practice approaches have offered a promising sociological alternative to commonly used economic and psychological models portraying a mainly individualistic picture of human behaviour, as they aim to 'bring the social back in'. Practice approaches move beyond the duality of structure and agency and instead put practices centre stage. The aim is to contribute to the current theoretical debate in sustainable consumption research by examining the merits and drawbacks of this sociological approach. This paper draws mainly on Theodore R. Schatzki's (1996, 2002) practice approach to explore people's mobility behaviour in Ireland. In addition, it takes up the efforts made by other practice theorists (Shove/Pantzar 2005, Shove et al. 2007, Røpke 2009) to materialise the practice approach. It explicitly takes objects and bodies as well as the built environment into account. Initially, the paper focuses on key aspects of Schatzki's practice approach. According to Schatzki, practices are the constitutive elements of social life. People engage in social practices by performing doings and sayings, which in turn compose that particular practice. By being part of a social practice, people (re)produce the practice itself as well as elements of social order related to it. Practices and their effects on social order are thus regarded as social backdrop against which people's doings and sayings occur. The second part of the paper examines the suitability of Schatzki's practice approach as theoretical framework for empirical social research on physical mobility and the 'consumption of distance' in Ireland. It will use data from mobility-centred qualitative interviews with employees of a large company to illustrate the merits and drawbacks of 'operationalising' practice approach mainly inspired by Schatzki as well as by the work of other practice theorists.

Keywords: sustainable consumption of distance; mobility practices; travel behaviour; car use; practice approach

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## **Geothermal living: The social impact of geothermal use in Iceland**

**Jónsson, Örn** (Dept. of Business, University of Iceland, IS)

The impact of the innovative and widespread utilization of geothermal water in Iceland has been a critical part of modernisation and still is. The paper is an attempt to clarify why the abundance of renewable resources is becoming one of the most important characteristics of Icelandic society as nearly 80% of energy used could be categorized as clean. The multiple impact of its on the lifestyle of Icelanders is for the most part an unexpected and increasingly important aspect. The main focus of this paper will be on a partial aspect of geothermal use, i.e. the culture of the rhythm of daily life and, particularly how public outdoor bathing has become one of the most significant features of the Icelandic way of living. The hot tubs of the swimming pools in Iceland have by far become the most frequented places for social gatherings. The city as a place “where strangers are likely to meet” is the well-known definition by Richard Sennet (Sennet 1977, 16). Public places in which people feel comfortable conducting routine social interactions with acquaintances as well as unfamiliar persons are crucial for every community.. Edward T. Hall has defined the ‘proxemics’ of intimate space as the closest ‘bubble’ of space surrounding a person and he maintains that the sphere is culturally embedded, (Hall 1973). For Henri Lefebvre, the ‘rhythm of everyday life’ manifests itself in the neighbourhood where ‘locatedness’ or repetition and place converge (Lefebvre 2004). The rules are subtle and vary from one culture to another. In the case of the Icelandic public pools, visitors quickly become aware of these rules, sublime or tacit as they may be. The curiously impersonal intimacy of the pool is a clear manifestation of the above traits of modernity with a ‘carnavalesque’ (Darren 2005, Scott 2009, 2010). People are constantly shifting roles in a decidedly or in a conditionally restrained manner. Role-playing is a crucial part of the pool-goers’ everyday communal living (Goffman 1959). The much-needed greening of the world by increasing the use of clean energy is a road already taken in Iceland. What is probably more important is not only a question of renewable energy but also the overall increase of wellness or quality of life.

Keywords: everyday life; sustainability; public space

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## **,'Same, same – but different!' Sustainable consumption in catching-up countries?**

**Lange, Hellmuth** (University of Bremen, Research Center for Sustainability Studies, artec, DE)

During the last decade, in public debates and particularly in the media unsustainable consumption in catching-up countries developed into a major concern. The focus is mainly on what is called 'the new middle class'. Its members are predominantly imputed to lack any sense of responsibility in both civic and environmental respect and, by their sheer number, to undermine any progress made in the Global Northwest in protecting the climate by making consumption more sustainable. However, although daunting examples use to be presented in order to make this view plausible, most of the public debate remains shallow in conceptual as well as empirical respect. While this is not really surprising, it is all the more remarkable that, in spite of relevant data available, the scholarly debate of the issue remains pretty unsatisfactory too. The best that can be said is that it is still in its infancy, due to its predominant focus on wealthy societies of the OECD world while in respect of developing countries there seems to be a high level of uncertainty about how to make sense of the existing data in theoretical respect. As a consequence, there is an urgent need for - screening, systematising and assessing the prevalent assumptions about consumption patterns among the new middle class(es) in catching-up countries - discussing theoretical frameworks that meet the specific mix of 'same, same – but different' distinguishing the social, cultural and political reality of catching-up countries from the more wealthy societies of the Global Northwest. In this spirit the presentation will draw on four aspects: 1. Consumption vs. consumerism: how significant is the dividing line. In developing countries, does the line follow the same characteristics that are more or less accepted in the Global North? 2. Trans-cultural norm diffusion and hybridisation: what do we really know about globalisation of environmental concern regarding contents and temporal gradients? Does it mean diffusion of bad habits (consumerism) only? 3. New middle class vs. new middle classes: internal diversities regarding pilot groups and entry topics of environmental concern? 4. Conducive policies aiming at encouraging more sustainable patterns of consumption in developing countries? Based on empirical and theoretical literature, the presentation will be exploratory by nature. India and China will serve as (in some respect similar, in some respect contrasting) countries of reference.

## **Linking sustainable consumption and growth debates – using systems mapping to reveal different world-views, approaches and mind-sets**

**Martinuzzi, André** (WU Vienna, Research Institute for Managing Sustainability, AT)

Sustainable consumption has gained broad attention in policy making as well as in research. Although definitions vary, two strands in the debate on sustainable consumption can be identified: (a) eco-efficiency concepts focussing on innovation and heading for lower resource use while increasing prosperity and (b) eco-sufficiency concepts focusing on a change of consumers needs and putting them into a broader context, as quality of life, wellbeing, or happiness. While the first approach is linked to different green growth concepts (e.g. EU 2020, UNEP's Green Economy Initiative, OECD's Green Growth Strategy), the second is in line with approaches generally questioning economic growth (e.g. Stiglitz Report, Tim Jackson's report "Prosperity without Growth", the De-Growth Movement in France). In order to link researchers and policy-makers of different communities we used the method of "participatory systems mapping" to reveal their different world-views, approaches and mind-sets. This method combines the advantages of systems thinking, soft system analysis and modelling: - It fosters a shared understanding of the complex systems of consumer decision making, economic growth and sustainability, their drivers and behavioural trends. Constructing the map should help to elicit participants' views about the problem causes and causal connections and thereby enabling a process for overcoming paradigmatic differences. - Using systems mapping in a participatory setting leads to an improved understanding of the system by the involved actors. Policy makers will benefit from a more systemic understanding and from the ability to consider a more concrete range of effects of policy options. Researchers will benefit by better understanding the rationality of decision makers and improving the mutual understanding across different paradigms. - The map will support the formulation of clear questions and provision of usable answers, scoping of the problem and will serve as an internally consistent basis for comparison of policy options. In addition, the map serves as the framework for organization of data and as the basis for identification of data needs, formulation of policy-relevant indicators and the future collection of qualitative and quantitative data. In the course of the FP7 RESPONDER project ([www.SCP-RESPONDER.eu](http://www.SCP-RESPONDER.eu)) we set up a fully fledged knowledge brokerage system based on Systems Mapping and combining direct face-to-face interactions with an innovative internet-based platform. This approach offers a particular mix of qualitative and quantitative methods and combines different action theories to explain different phenomena of consumer behaviour. The presentation will start from the different communities involved, present the application of Systems Mapping in the course of the RESPONDER project and discuss the first experiences with a special focus on methodological issues of research on sustainable consumption.

Keywords: sustainable consumption; economic growth; green growth; de-growth; policy-making; knowledge brokerage



## **Transitions in practice – domestic actors in the smart grid transition**

**Nyborg, Sophie** (DTU Management, DK); **Røpke, Inge** (DTU Management, DK)

Many governments are in the process of planning for transitions from fossil-based energy systems towards low carbon energy systems. One of the important elements in the transition is the development of smart grids that will make it easier to manage the integration of renewable energy sources like wind and solar energy, for instance, through the use of demand management. In Denmark the visions related to the smart grid are much hyped at the moment, and experiments are undertaken and planned by many actors. It is obvious to consider this development as an example of a transition-in-the-making and to apply a transition theory perspective in a study of the niche processes and possible transition pathways (Verbong & Geels 2010, Foxon et al. 2010). An underexposed aspect of transition studies, in this case and in general, is the role of domestic actors in the processes (a recent exception is Nye et al. 2010). This role, however, may be important for the course of the process, the actual shaping of the transition, and the extent to which the transition will encourage energy savings and not only the replacement of fossil fuels by renewable energy. The aim of this paper is to explore the role of domestic actors and the co-evolution of domestic practices, systems of provision and emerging technologies in the ongoing smart grid transition in Denmark. The theoretical contribution of the paper is to investigate how a practice theory perspective on domestic activities may inform the study of transition processes, and how this perspective may add to or differ from other insights regarding the role of users. The empirical basis of the paper is a desk study of reports from various actors, participation in events in the field, a survey of actual and planned experiments involving users, and interviews with key actors. The practice theory perspective suggests to consider which domestic practices become involved in the transition, how practitioners may change the configurations of artefacts, skills and meanings in various practices, whether new practices emerge, and whether practices interact in new ways. The dynamics arise from changes in the elements constituting the practices, from the interplay between practices as well as the interplay with changes in the systems of provision.

**Keywords:** energy systems; transition theory; smart grid; practice theory; domestic actors

**References:** Nye, M., Whitmarsh, L., Foxon, T. (2010) Sociopsychological perspectives on the active roles of domestic actors in transition to a lower carbon electricity economy, *Environment and Planning A*, 42, 697-714 | Verbong, G.P.J. & Geels, F.W. (2010) Exploring sustainability transitions in the electricity sector with socio-technical pathways, *Technological Forecasting & Social Change*, Volume 77, Issue 8, pp. 1214-1221 | Foxon, T.J., Hammond, G.P., Pearson, P.J. (2010) Developing transition pathways for a low carbon electricity system in the UK, *Technological Forecasting & Social Change*, Volume 77, Issue 8, pp. 1203-1213

## **New ideas on action research design: Linking internal and external factors in transitions towards sustainable consumption**

**Rauschmayer, Felix** (UFZ-Helmholtz-Centre for Environmental Research, DE); **Schäpke, Niko** (UFZ-Helmholtz Centre for Environmental Research, DE)

All too often, policies aimed at initiating local and individual transition pathways towards sustainable consumption have not achieved the expected level of change. Individuals are often reluctant to change their behavioural patterns and consumption modes if their intrinsic empowerment is lacking (Rauschmayer et al. 2011). We assume that two contexts shaping individual behaviours can be distinguished: - the external context to individual behaviour: politics, policies, infrastructure, social institutions, culture, habits, lifestyles (societal or structural factors). - the internal context to individual behaviour: knowledge, personal interests, values, belief systems, priorities and needs (individual or agent-based factors). We develop a model to investigate to what degree the explicit inclusion of psychological variables such as needs and values in participatory processes enhance transitions to sustainability. In our paper we discuss possibilities on how internal and external contexts of behaviour may get addressed jointly in action research (Di Giulio et al. 2010). Therefore we take the transition arena concept as contemporaneous action research approach as a starting point (Loorbach 2007). This approach aims at creating alternative developmental pathways for local communities via transition management and is in our project enriched by internal context aspects such as values, needs, and feelings which are crucial for consumption behaviour (Di Giulio et al. 2010). Addressing the inner context overtly in giving an appropriate frame for self-reflection may prove essential for an enduring change of behaviour. Resulting innovative practices have the potential to then get institutionalized and catalyze changes of social, economic or political structures. Changing these external contexts may facilitate further behavioural changes. The developed approach is part of the wider theoretical and methodological basis of the EU funded 'InContext – Individuals in Context' research project. The project includes a number of case studies in the area of sustainable consumption as well as three pilot projects of sustainable and participatory community development. The main challenges of this project consist in designing settings that allow for introspection and individual self-interpretation (e.g. of needs and values) as well as for the considerations of outside realities such as current practices, natural and political characteristics and constraints. The design of such settings calls for combined capacities in scientific translation and facilitation. This work has to involve new participatory methods that allow exploring the inner context; it thus has to go beyond the current state-of-the-art.

Keywords: transition management; needs; values; structures; intrinsic empowerment

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## **Towards sustainable consumption in the Philippines: Considering environmentalism, responsibility and trust**

**Sahakian, Marlyne** (Graduate Institute of International and Development Studies, CH)

The focus of this paper is on responsibility when it comes to (un)sustainable consumption. Consumption is seen here as both a biophysical activity that involves the using up of resources and resulting environmental impact, based on multi-disciplinary approaches such as ecological economics and industrial ecology; and as a part of everyday life made up of social practices, drawing from social and cultural theories. One conceptual and normative issue is the perception that consumption is driven solely by individual, rational choice. As a result, responsibility for transitions to more sustainable consumption patterns is often placed at the level of the atomized, consumer-individual, with a focus on providing information and price incentives – as the proliferation of eco-labels and eco-taxes suggest. Increasingly, researchers in sustainability are pointing to the important role of consumer-citizens for charting pathways towards more sustainable practices and for challenging consumption norms, as well as the importance of social networks as necessary for broader institutional change. Through qualitative research based on fieldwork in Metro Manila, the Philippines, a tension is apparent when it comes to responsibilities in relation to “environmentalism”, defined as a concern for environmental issues as well as the public discourse around this concern. The individualization of responsibility is an increasingly globalized message, as ascertained through discourse analysis, directed towards households and specifically in the area of energy consumption: global and local civil society organizations, utility companies and government entities alike place an emphasis on individual actions. In turn, these messages are picked up in the discourse of people from varying socio-economic groups, who express uneasiness and confusion as to their role in relation to complex socio-environmental problems. This is reflected in contradicting consumption practices in relation to “environmentalism”. Both semi-structured interviews and observations were used towards understanding consumption practices among households in Metro Manila. This main finding leads to interrelated issues: first, the strength of formal and informal social capital in Metro Manila represents great potential for civil action towards change. Trust emerges as a key factor: there is general mistrust of the public sector and utility companies in this context, but high trust in existing social networks. However, environmental organizations tend to focus on narrow, project-based issues, with little bridging between topics and between different types of social networks. More generally, there is a lack of life cycle thinking when it comes to understanding environmental problems, among households, the private sector, public policy campaigns and civil society organizations alike. A more systemic and institutional understanding of society-environment problems is necessary.

Keywords: environmentalism; energy consumption; responsibility; social capital; the Philippines

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## Changing consumption patterns: The restructuring effect of life events

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Consumption is mainly embedded in everyday routines which have evolved over a considerable period of time. They are adapted to social demands, personal needs, financial and time resources and can be seen as effective strategies to minimize the effort of organizing daily life. Therefore, it is a considerable challenge for sustainability strategies on the micro level to motivate change of unsustainable everyday routines. Evidence from several studies suggests that following life events people are more likely to change daily consumption routines (e.g. Schäfer et al. 2010, Bamberg 2006). Results from a qualitative study will be presented derived from the project “Life events as windows of opportunity for changes towards sustainable consumption patterns”, the aim of which was to reconstruct the process of how people change their everyday consumption routines in the context of two life events: the birth of a child and relocation. An important object was to identify the potential for changes towards sustainable consumption. The results are based on 40 qualitative interviews which were analysed using Grounded Theory. The analysis revealed that the two life events are different in their effects on everyday consumption. The birth of the first child is a fundamental life event accompanied by far-reaching changes regarding personal identity and social networks. Everyday consumptive life becomes organised around the child’s needs. Compatibility with these needs is an important orientation for parents when using products and infrastructures. Concerning consumption habits, there is potential for change towards sustainable nutrition while, contrariwise, change towards more unsustainable patterns happen in everyday mobility and energy use. In comparison, relocation is in most cases not such a far-reaching life event, and the process of re-establishing every day routines is shorter. In order to understand changes in everyday life among this group, parallel events and reasons for relocation (e.g. new job, beginning of studies) have to be considered. Routines are formed while becoming acquainted with the new environment and in interaction with the given infrastructure. In the case of relocation, change towards sustainable patterns could be observed in the areas of mobility and energy consumption. The study further revealed that, in both cases, the preparation phase before the life event is important for consideration. Activities in this phase – e.g. acquisition of knowledge, purchase of products, rearrangement of the home, or the choice of a new place to live – “prestructure” later consumption patterns. This means that there is an important window of opportunity for sustainability strategies even before the life events themselves. The presentation will present the process of re-establishing routines after life events in more detail and highlight their potential for change towards sustainable consumption and intervention strategies that may help to bring this about.

Keywords: everyday routines; everyday consumption; life events

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## Family and sustainable consumption: What practices?

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Ethics and responsibility are emerging as main issues in individuals' consumption. As a result, consumers adopt three strategies within the market (Özça lar-Toulouse, 2009). The strategy of cohesion with the market enables continued consumption while minimizing its negative consequences. The consumer remains loyal to the market through "buycotts" and believes s/he can improve it by purchasing goods and services with ethical added-value. The withdrawal strategy leads the consumer to avoid consumption and/or to make the most of a product/service in order to minimize negative consequences of consumption. For example, this strategy can consist of using collective laundries, cultivating a garden or refusing to own a car, taking part in community-supported agriculture, reducing meat consumption. Finally, a responsible consumer, through a mobilization strategy, tries to transform the consumer system from the outside, by organizing a boycott or petition or reclaiming advertising space. While this literature contributed to our understanding of sustainable consumption on the individual level, it did not consider the family level. Indeed, separating the recyclables, making choices in terms of energy, or means of transportation are decisions involving and restricting the whole family. In this research, we provide the opportunity to better understand sustainable consumption in families and to identify their environment-friendly consumption practices. Sustainable behaviours within the family are studied thanks to practice theory (Warde, 2005). Therefore, sustainable consumption is approached with a double originality: studying practices instead of discourses and having families and not individuals as units of analysis. The research entails an on-going ethnographic study on three major practices in families: household waste-sorting, energy choices and use of public transportation. The interpretive boundaries require a wider knowledge of environmental practices (Hand, Shove and Southerton, 2005). We also search for institutional, ideological and technological evolutions to better understand the modified practices of daily environmental consumption. This study is a work-in-progress, however we will present at the conference our findings based on the data of 6 families. We carry out observations of families during mealtimes (based on observation and pictures) and filmed semi-directive interviews with parents and children (based on pictures and mimes).

Keywords: sustainable consumption; family; social practice theory; ethnography

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## **Supporting evidence-based policy-making for sustainable consumption – experiences from a European research project on knowledge brokerage**

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Sustainable consumption has become an increasingly significant topic on the European political agenda. The publication of the European Action Plan on Sustainable Consumption and Production (SCP) in 2008 underlined this political relevance; indeed the SCP Action Plan was one important outcome of two decades of international debate. At the same time, European research exploring sustainable consumer behaviour has also rapidly developed. The existing scientific evidence provides a sound basis for policy-making on sustainable consumption. Yet the huge body of existing research has until now been underutilised: Hence the initiation of the EU-funded project “CORPUS – Enhancing the Connectivity Between Research and Policymaking in Sustainable Consumption”, scheduled to run between 2010 and 2012. The aim of this project is to develop novel approaches to knowledge brokering (KB) between policy-making and research, by means of testing a combination of online and offline tools. The knowledge brokerage system developed by CORPUS consists of a web platform and three series of interaction exercises. Only a few months since its inception in September 2010 the CORPUS Web Platform ([www.scp-knowledge.eu](http://www.scp-knowledge.eu)) has become a central reference point for high quality information and networking among European professionals working with sustainable consumption. At present (April 2011) the knowledge hub provides more than 300 policy documents and scientific articles, and the community of users comprises over 400 professionals from over 50 countries. The repository is continually growing as users upload new knowledge items. A search engine facilitates a targeted search of experts, documents, and other information available on the website. A “questions & answers” functionality enables thematic dialogues among community members. The Interaction Exercises – “Policy Meets Research” workshops – in three priority areas of sustainable consumption (food, mobility, housing) explore novel modalities of knowledge brokerage through different forms of face-to-face dialogues. They provide specifically tailored arenas for personal exchange, information provision, and offline community-building. Three workshops are conducted in each policy domain. The first focuses on the main characteristics and sustainability challenges facing each domain, the second workshop deals with policy strategies and policy instruments, and the third workshop explores the role of participatory scenario-building within policy planning. The presentation will start from the barriers to knowledge brokerage between science and policy-making, elaborate on the approach taken in CORPUS to overcome these obstacles, and display preliminary insight into effective tools of knowledge brokerage in sustainable consumption.

Keywords: sustainable consumption; policy-making; knowledge brokerage

## **Planning sustainable consumption and quality of life in the Baku City**

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The sustainable consumption and quality of life study in Baku city was undertaken as part of the Baku Strategic Plan prepared by the Azerbaijan Architecture and Construction University, Department of Architecture and Urban Planning and partially supported by the Society of Urbanists of Azerbaijan, Research Group. The key purpose of the research was to provide useful information for developing planning and design strategies that will foster sustainable urbanization through enhancing quality of life and consumption, which is one of the most important principles of sustainable urbanization. Another purpose was to explore the impact of environmental, economic, social, physical, and health related indicators on sustainable consumption and quality of life satisfaction among Baku residents. Ultimately, the research will provide recommendations which will further enhance the sustainable consumption and quality of life in Baku city at a number of levels, from empowering communities at a local level to participate in the evolution of their neighbourhoods to influencing institutional and corporate objectives and sustainability policies. The information collated will feed into the Baku Strategic Planning Process and help to determine developed strategies for urban development and urban regeneration. In this paper the methodology of the research and initial findings related satisfaction with dwelling, micro neighbourhood and macro neighbourhood will be presented. Urban environments have become the prime reflection of the changes in today's world of constant flux. Globalization, internationalization and the rapid flow of information, as is the case in the rest of the world, have also played a significant role in changing the city of Baku and her people. While today's cities are being shaped with the effect of global restructuring processes, Azerbaijan influenced by these processes in the last twenty years, has sped up its integration to the global world, thus embrace urban transformation as a tool of the sustainable consumption and enhancing quality of life. The paper based on changing process of the social and spatial restructuring in inner-city housing areas as current research focuses on consumption, the process of regeneration in which historical housing districts regained by consumption. It will develop a theoretical framework that displays the multi-dimensionality of urban consumption concept. To make the Baku districts as a contemporary residential in terms of socio-economical, the evaluation was made whether the project to give respond to urban development dynamics, increase the sustainable consumption and the life quality of people.

Keywords: sustainable; urbanization; developing; planning; strategy

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## 5

conceptual and normative issues  
related to sustainable consumption



## **Can we signal status through sustainable consumption? Exploring variation in perceptions of status associated with different groupings of consumption practices**

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Understanding how social norms and other socio-cultural and psychological forces influence consumption will be critical for reducing environmental impacts and contributions to climate change. One important force to consider is the degree to which consumption signals characteristics like wealth, personality traits, biological fitness, and/or social status (Miller 2009). Research on the signaling value of consumption has largely sought to explain consumption that is conspicuous and wasteful. More recently, however, scholars have begun to ask whether evolutionary perspectives on social signaling can help us understand sustainable consumption (overall reductions in consumption or the use of goods with less environmental impact. Practicing sustainable consumption may signal a pro-social/altruistic orientation, which has been shown to build prestige-based status within a group. Recent studies suggest that some forms of high-cost sustainable consumption (e.g. purchasing a hybrid vehicle) can enhance one's status (Griskevicius et al 2010). Conversely, reductions in consumption and practices with low monetary cost (e.g. taking the bus, line-drying clothing) are associated with low status (Sadalla & Krull 1995). Therefore, fostering the adoption of the most environmentally friendly practices (reducing overall consumption rather than consuming more efficiently) will be difficult. Taking the bus may be motivated by pro-sociality, but to an observer it is indistinguishable from a low-status practice resulting from a lack of resources. However, our consumption decisions and behaviors are neither made, nor observed, in a vacuum. Two shortcomings of prior studies are that (1) they examine isolated behaviors/decisions absent any broader context about the actor, and (2) they do not investigate how perceptions of status associated with consumption vary among socio-economic or cultural groups. With this study, we experimentally test whether visual displays of different combinations of high- and low-cost forms of sustainable consumption and displays of cultural capital (i.e. education, knowledge, or skills that are also associated with status), relate to perceptions of status among subjects from different socio-economic and cultural backgrounds. If one line-dries their clothing, but also has a hybrid vehicle, are they perceived as being high or low status? If one rides the bus or a bicycle but otherwise displays high cultural capital, how is this perceived? Does this perception depend on the socio-economic or cultural background of the observer? If status is based on more than isolated consumption behaviors, then a status-enhancing display of sustainable consumption in one domain could allow for reduced consumption in other domains without concerns about signaling low status.

Keywords: status; costly signaling; evolutionary perspectives on conservation; variation in sustainable consumption; socio-cultural variation

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## **Between consumption and performance. A proposal for sustainable embodiment**

**Cereda, Ambrogia** (Università Cattolica del Sacro Cuore, IT)

Among the diverse issues related to sustainability, the human body seems to scarcely appear in the debate or to be reduced to a marginal part of the wider questions on essentialism and nature, generally hosted by ecofeminist theorizations. The thesis of this contribution, instead, is that to focus on the body might provide useful examples to manage the theoretical dualism which impinges on sustainable consumption behaviour and according to which individuals and nature are analytically severed and opposed. Starting from the body as a centre for social agency, the oppositional couple (nature vs consumption) will be deconstructed between body as reminder of our natural embeddedness and body as a site for the promotion of consumer culture. Providing data from a qualitative research about the modifications of individual's bodies via different techniques (tattooing, cosmetic surgery, piercing, scarification), a bodily model, which I will call the "convivial body" will be outlined and discussed as a useful tool to provide knowledge in the arena of sustainability.

Keywords: embodiment; consumption; sustainability

## **The sustainability social representation: A triangulation approach study**

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The theoretical frame refers to the Social Representations Theory (Moscovici, 2000). It underlines the role of the communication processes in shaping the consumer attitudes, values and behavior. It is clear in the education sphere, especially when the targets are children and adolescents. This work aims at analyzing how mass media communication channels and communication systems refer to the sustainability concept. We work using a triangulation approach (Erzberger, 2003). The three different sources allow us to control bias in the recording phase and to carry out a mutual comparison in terms of process and content. We rely on both triangulation of sources and methods, using a mixed methodological approach. We used different information sources to increase the research validity and to improve both the process strength and the scientific rigor. Our data come from print media, blogs, tweets and Italian television channels. Two major Italian daily newspapers were analyzed for the print media; eight of the most widely read blogs in the Italian language were analyzed for the web. As for tweets concern, were analyzed more than 300 tweets broadcasted communications. Finally, the six hyper-protected television networks with the highest share for the 4-14 years old were analyzed for the television. We used different tools to carry out data analyses. Daily newspaper and tweets data were analyzed through quantitative content analysis. Television and blog data were analyzed through qualitative content analysis. The findings show that mass media (daily newspapers and television) and communication system (tweets and blogs) play a relevant role both in the knowledge spread and in the sustainability social representations. It is clear, even if mass media and communication system have diverse targets and cover sustainability in different way and with different contents. This research can be helpful because provides shared methodology and tools to investigate such a complex and constantly re-defining concept. A limitation is the absence of largely shared and approved sampling methods that could be applied to different type of medium such as television and web. Future studies might consider the international context and the nutrition sphere within the sustainability concept.

Keywords: sustainability; triangulation; mass media; communication

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## **Green appeal: The social organization of green consumption in the United States**

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The paper provides a sociological interpretation of green consumption as a socially organized practice, based on an interpretation of the empirical findings of a logistic regression analysis on national data from a 2008 ABC News/Discovery Channel/Stanford University survey of American adults. The empirical findings show that increasing educational capital is positively related to the odds of engaging in green consumption. Women and those who identify as environmentalists are also more likely to consume green. These findings are interpreted using the theoretical contributions of Pierre Bourdieu in *The Social Structures of the Economy* (2005). I argue that green consumption, like consumption more generally, acts as a site of social differentiation, with implications for coalition-building in environmental politics. The paper situates the empirical question in the context of existing research on green consumers, with attention to how asking and answering the question sociologically responds to many of the problematic simplifications in the predominant understandings of this category.

Keywords: green consumption; class; habitus; gender; environmental politics

References: Bourdieu, Pierre. 2005. *The Social Structures of the Economy*.

## Concepts of sustainable development, measurement and receptions within German population

**Krause, Peter** (Deutsches Institut für Wirtschaftsforschung, DE); **Masson, Torsten** (Helmholtz Zentrum für Umweltforschung UFZ, DE)

Concepts of sustainable development (SD) have gained much attention over the last years. Consequences of global warming, tsunamis and hurricanes, gen production and shrinking biodiversity fostered ecological debates. Limits of natural resources initiated research on new (technological) solutions for mobility, energy and consumption. Global economic and financial crisis strengthened the sensitivity of citizens for economic burdens by public debts and initiated new discussions on political benchmarks for welfare developments towards future generations beyond GDP. However, despite these intensive debates on the pillars of sustainability, the links between the ecological, economic and social system as the keystones for most concepts of sustainable development to preserve living conditions for future generations are still rather vague. Although issues of sustainability are deep-seated in current political debates, there doesn't exist yet generally accepted concepts for sustainable development (SD). This paper addresses the conceptual linkages of SD and Sen's Capability Approach (CA) in the light of sustainable consumption within three steps. (1) The first part of the paper deals with the conceptual background of sustainable development using the integrative Helmholtz concept of SD developed by Coenen/Grunwald (2003) and Kopfmüller et al. (2001). On the basis of three normative core elements, justice (within and between generations), the global perspective and the anthropocentric view, the Helmholtz concept derives general SD goals as well as substantial and instrumental SD rules, all relating to cross-cutting issues (e.g. protection of human health) rather than relying on a single disciplinary perspective (economic, social etc.). Complemented by Sen's CA, which provides a heterodox welfare economics based framework for individual well-being, this offers a theoretical basis to identify individual scopes of action for SD compatible consumption. The focus here is on the opportunities and constraints invoked by resources and conversion factors (individual abilities and institutional settings) that influence individual consumption patterns and hence potentially foster or hinder transitions to sustainable consumption. (2) The second part illustrates ways to break down the conceptual framework of SD and CA towards quantitative measurements for sustainable consumption and describes the operationalization within a questionnaire (which is appointed for 2012 as part of the SOEP-Pretest). (3) The third part gives selected quantitative empirical results for the development of worries on ecological disasters, the distribution and use of modern energy saving heating systems and the impact of regional environmental indicators on individual subjective well-being. The empirical analyses are based on the German Socio-Economic Panel study (SOEP) (Wagner et al., 2008), an ongoing representative longitudinal survey for social and economic living conditions.

Keywords: sustainable development; capability approach; sustainable development indicators; well-being; soep

References: Coenen, Reinhard; Grunwald, Armin (eds.) 2003: Nachhaltigkeitsprobleme in Deutschland: Analyse und Lösungsstrategien. Berlin: Edition Sigma. | Kopfmüller, J., Brandl, V., Jörissen, J., Paetau, M., Banse, G., Coenen, R., Grunwald, A. (2001): Nachhaltige Entwicklung integrativ betrachtet: konstitutive Elemente, Regeln, Indikatoren. Berlin: Edition Sigma. | Wagner, Gert G.; Goebel, Jan; Krause, Peter; Pischner, Rainer; Sieber, Ingo; (2008): Das Sozioökonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland – Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender). AStA Wirtschafts- und Sozialstatistisches Archiv, 2 (4), 301-328.

## **Re-conceptualising sustainable development on the basis of the capability approach: A model and its difficulties**

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This paper sketches a re-conceptualisation of sustainable development (SD) on the basis on the capability approach (CA) and names difficulties when applying the concept to sustainable consumption issues. The notion SD was developed as a political compromise - most prominently by the Brundtland commission. Their definition of SD includes two key concepts: needs and limitations. The first one has been lost in most scientific and political discussions. This may be due to the two diverging interpretations given to needs as (1) material or (2) psychological needs. The CA looks at both the objective living conditions and the opportunity to choose a life one has reason to value. Hence, it alludes to both conceptions of needs. However, understanding SD in terms of capabilities rather than in terms of needs (Anand/Sen 2000) raises questions. What does it mean to sustain the freedom to lead a life one values for future generations? In what way does a CA-model of SD Brundtland's idea of limitation imposed by the state of technology and social organisation? When modelling SD through the lens of the CA, difficulties occur that are at the core of SD and of CA or that arise because of their combination. The CA lacks a model of temporal interaction as well as a concept of collective capabilities, but provides a comprehensive conception of individual well-being (Leßmann 2011). In contrast, current SD discussions focus on the systemic level, future development and generations sometimes overlooking issues of intragenerational justice and how this affects individuals today. Our model links the individual to the systemic level and combines insights from literatures dealing with intra- and intergenerational justice. However, some issues come up that are difficult to deal with in our model: collective capabilities, governance, morality, uncertainty (including ignorance, risk, and ambiguity), systemic developments and the role of the environment in the capability formation and which have to be dealt with when one wants to go beyond a mere theoretical reflection and apply this model to sustainable consumption (DiGiulio et al. 2010). The CA-based model has to be substantiated and related to real-life phenomena. Therefore, for applying it empirically it is first of all necessary to select evaluative dimensions. While it is possible to benefit from the vast number of empirical studies on quality of life in general and the CA in particular as well as of the work on sustainability indicators (see the report of the Stiglitz-Sen commission for an overview), selecting evaluative dimensions is far from trivial. The various lists used in these studies (e.g. Max-Neef's needs, Nussbaum's central functional capabilities, more empirical domains of life quality) overlap largely and yet they differ substantially and are difficult to implement. We will name some desirable characteristics of the evaluative dimensions in models of SD as a next step towards its empirical application.

Keywords: capability approach; needs; sustainable development; freedom

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## **The importance of social class for sustainable consumption**

**Paddock, Jessica** (Cardiff University, GB)

This paper explores the conceptual link between social class analysis and sustainable consumption (Jackson 2006) as part of the wider normative agenda of sustainable development (Baker 2007). Crucially, I argue that a sound commitment to sustainable development is essential to meeting challenges posed in everyday life faced daily by consumers across all social strata, both locally and globally. Moreover, it seems that given this agenda's dedication to equity and social justice that class analysis should become central to any venture that imagines pathways to sustainable consumption. To explore the importance of social class for the sustainable consumption agenda has become central to the research aims of a project carried out in South Wales (2009-2011) at sites that profess their commitment to building 'alternatives' to an un-sustainable food system. Here, it was apparent that social class figured prominently in consumer discourses surrounding practices of food consumption. Farmer's markets in particular were considered by some as sites for performative engagement with alternative political, social and economic practices. Moreover, the means by which consumers positioned themselves in relation to 'others' - performed in corporal and discursive forms - served the reproduction of distinctiveness under the guise of rearticulated 'simplicity'. Such articulations of distinction (Bourdieu 1984) amongst consumers at sites that profess commitment to particular visions of the 'good life' appear to serve the reproduction of class inequalities. Following a discussion of the qualitative data collected over the duration of this research project, this paper explores their theoretical and normative implications for future research spanning the social sciences and indeed disciplines endeavouring to realise change towards a sustainable future. In so doing, this paper recognises the complexity of practices that reproduce and transform material culture (Shove et al 2005) whilst paying greater attention to the inequalities reproduced by the growing individualisation of consumer responsibility (Barnett et al 2005). Fundamentally, a clear link is made between the need to realise sustainable consumption and the need for a nuanced understanding class culture and its reproduction. To consider the (classed) context within which efforts to realise sustainable consumption operate is seen to begin removing the barriers that currently obstruct pathways to equitable sustainability.

Keywords: sustainable consumption; social class; food; discourse

## **Does the capability approach sensu Nussbaum constitute a promising normative basis for the conceptualization of sustainable consumption?**

**Voget-Kleschin, Lieske** (Greifswald University, DE)

The capability approach (CA) argues that an evaluation regarding the question if a person lives a good human life should not focus on the goods (resources) the person has at her disposal but rather on the functionings a person is able to achieve, that is, on what the person is able to do and to be (Sen 2010, Nussbaum 2007). Furthermore, Martha Nussbaum's interpretation of the CA holds that a good human life can be delineated by an absolute threshold. The threshold is given in the form of a list of capabilities, that is, abilities to achieve certain functionings. If a person is able to achieve these functionings, the person can be said to have the opportunity to live a good human life (Nussbaum 2007). The proposed contribution aims to explore the role that the capability approach as developed by Nussbaum can play in a conceptualization of sustainable consumption. At first view Nussbaum's approach seems very promising because first, she focuses on capabilities instead of goods (resources) and second, because she determines an absolute threshold and holds that once a person is above this threshold, being able to access further goods will not necessarily improve quality of life. However, the CA attaches great importance to the ability of persons to develop and live according to an own conception of what it means to live a good human life. This ability features a central aspect of Nussbaum's capability list. One could conceive of the possibility for unlimited consumption as one potential conception of a good human life and argue that limiting consumption precludes individuals from choosing this conception and is therefore in conflict with Nussbaum's capability list. The contribution will outline a normative theory of sustainability that integrates the CA (as developed by Nussbaum) as description of what it means to live a good human life. This theory will be used first to outline what kind or level of consumption could actually claim to be sustainable and second to address the question if and in how far governmental measures aiming at advancing sustainable consumptions can or cannot be said to violate individual's abilities to choose and live according to an own conception of the good human life.

Keywords: capability approach; normative theory of sustainability; sustainable consumption

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## **Fashion ecology: Knowledge and habits of young fashion consumers**

**Waight, Emma** (University of Southampton, GB)

Ethical fashion is a growing market area, although the comparative market share within the fashion industry is still small. For the industry to move towards a more sustainable future it is vital that consumers are actively seeking sustainable alternatives to fast fashion. Little information is available on consumer shopping habits and awareness levels. The purpose of this research is to provide information on the shopping habits of young consumers in the UK and to better understand their needs and values. The methodology involved conducting an online survey study within Southampton Solent University. The survey sample consisted of eighty nine respondents within the eighteen to thirty age range who shopped for clothing at least annually. The sample group was chosen due to being easily accessible and it was considered beneficial to focus on young consumers as they are often deemed the most regular shoppers. It was also considered that this age range could make the greatest impact on consumption through changing their shopping habits for life. The survey questionnaire consisted of four sections; demographic information, personal values, shopping habits and personal knowledge. The survey was based strongly but not solely on environmental ethics rather than social. Quantitative results were analysed using a scale response scoring system, and using statistical testing, whilst qualitative results were theme coded using NVivo8 software. Half of the respondents fell into the 18 to 21 age group and 78% of all respondents were female. Results concluded that the majority of those surveyed had strong ethical values, but this did not often correspond to their shopping habits. Most believed that the Western world consumes too much and that everyone should take responsibility for preserving the planet. 54% of respondents purchased new clothing at least monthly. It was found that very few respondents read product labels before purchasing or considered how a garment was made before purchasing. Respondents were also asked to define key words within the ethical fashion topic and although most attempted to provide definitions, they lacked specific knowledge. There was a strong view amongst respondents that ethical fashion is different to mainstream fashion, and a minority cited this difference as negative by describing ethical fashion as expensive and unfashionable. This study is a suitable pilot for greater research to help boost fashion retailers corporate social responsibility strategies. It is necessary to understand the consumer's point of view if ethical fashion ranges are to be effectively marketed.

Keywords: ethical fashion; consumption; sustainability; retail

## **Understanding corporate sustainability communications – a practice theory approach**

**Welch, Dan** (University of Manchester, Sustainable Consumption Institute, GB)

This paper is based on participant observation in a specialist ‘sustainability communications’ agency and interviews with elite practitioners in the field of sustainability communications. The research is theoretically orientated by sociological theories of practice. It seeks to provide a more sociologically adequate account of the relation between ‘corporate sustainability’ and sustainable consumption through examining the key role played by practitioners of sustainability communications in processes of cultural intermediation between production and consumption. The role of sustainability communication practitioners as cultural intermediaries and of corporate communications more widely are under-studied areas in the sociology of sustainable consumption. Production and consumption are intermediated by both the attempts of civil society organisations to influence corporate behaviour and governance by claiming to represent ‘the sustainable consumer’, and the strategic efforts of corporations to understand consumer practices and motivations around ‘sustainability’. At the interface of these two processes ‘sustainability communications’ has emerged as a field in its own right. Theories of practice have proven fertile ground for the study of end-use consumption in the sociology of sustainable consumption (Warde 2005). In focusing on cultural intermediation the paper explores the heuristic value of theories of practice for studying sustainable consumption more widely, beyond end-use consumption. Following Warde and Lury (1997) and Slater and Tonkiss (2001), the paper argues that practitioners of corporate sustainability communications construct a proxy or virtual ‘sustainable consumer’ which plays a performative role in the construction of ‘consumer demand’ for ‘sustainability’. Rather than making a strong case for the instantiation of this figure of ‘the sustainable consumer’ in the social world, the paper charts the attempts to realise it on the part of practitioners of sustainability communications. In so doing, sustainability communication professionals potentially challenge and pre-empt civil society organisations’ claims to represent ‘the sustainable consumer’. However, rather than simply rehearsing a story of ‘corporate sustainability’ hijacking environmentalism, the practice orientation allows a more nuanced account; in which the artefacts of sustainability communications (Corporate Social Responsibility reports, marketing materials, internal corporate communications) are understood as produced through negotiated and conflictual interactions between different groups of expert knowledge workers (both within the corporate and civil society spheres) mobilising different understandings of sustainability.

Keywords: cultural intermediation; practice theory; sustainability communications

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## **Fashion and ecology: An ambivalent relationship with consequences on sustainable consumption in the textile sector**

**Weller, Ines** (University of Bremen, Research Center for Sustainability Studies, artec, DE)

The market for ecologically and fairly produced clothing is still a niche market in Germany. Despite a slight increase in supply there is little indication that production and consumption patterns in the textile sector are substantially changing towards more sustainability (Kloos 2009). From a consumer's point of view there is a large gap between fashion and ecological requirements. This is considered to be an important factor which impedes the implementation of sustainable consumption in this field (Schneidewind et al. 2003). However, there is still a considerable lack of research regarding the importance of cultural issues for sustainable consumption and production patterns in general, and this also applies to the textile sector. This subject is the starting point for an interdisciplinary research project funded by the German Research Foundation, DFG. In the project (Eifler, C, I. Weller, o. Jg.: Nachhaltiger Konsum und das Wechselverhältnis von kulturellen und ökologisch-technischen Faktoren: das Beispiel schwarzer Damenbekleidung. Bremen) the importance of cultural norms for both production and consumption is analysed by using black coloured women's outerwear as an example. This includes conventionally produced clothing as well as sustainable garment. The focus is on the colour black due to its extraordinary significance in the fashion world and its relevance regarding environmental issues. Therefore, the colour black is a good example to illustrate in detail the interrelationship between fashion trends and ecological problems as well as the influence of cultural norms. Background of the project is an understanding of sustainable consumption with a particular focus on the integration of cultural aspects. In connection with this it was analysed to what extent clothing products in general as well as black coloured textiles in particular are relevant topics in the field of ecological consumer information. For this purpose a document analysis was carried out using the data released in the journal „ÖKO-TEST“, an information medium which has published all relevant ecological- and health-related issues of everyday life products in German-speaking countries since 1985. Firstly, the analysis aims to determine the quantitative development concerning the issues with (black coloured) textiles from an ecological and sustainable point of view. The study covered the period from 1985 to 2009. Secondly, the main points in the area of clothing products were analysed. In this context the perception of the relation between fashion and ecology were observed during the analysis period. The results of the study and preliminary theses on their relevance for sustainable consumption patterns in the textile sector will be presented.

Keywords: sustainable consumption; cultural dimensions of sustainable consumption patterns; fashion and ecology

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# gender issues in connection with sustainable consumption

**Domestic energy consumption: Inhabitants' practices, rationality and motivation**

**Flamand, Amélie** (UMR Lavue/CNRS, FR); **Roudil, Nadine** (CSTB-Laboratoire SPI, FR)

In this paper, we will investigate private consumption dynamics based on the characteristics of energy-consuming residents. Our initial postulate is that energy consumption in the home may not be solely analyzed through the prism of the supply / demand rationale or of an economic and technical rationale. Our hypothesis is therefore that inhabitants' relationships with energy are part of the more complex "dwelling system" that includes the dwelling's usage and practices, the cultural habitus and models, and the connection with the comfort standards. We will thus set out to apprehend this articulation between housing practices and energy consumption in order to identify how certain housing habits may imply specific energy consumption modes, and, inversely, how constraints pertaining to energy consumption may influence dwelling modalities. We will then focus on the characteristics of the "creator-consumer" inhabitant, conveying "ways of doing" and capable of adaptation and DIY activities. We will pay special attention to the gender aspect of his relationships with energy. To do this, we will rely on the results of our ANR collective research work (by CNRS UMR Lavue, CSTB, EDF) entitled: "Energy consumption: from the Residence to the City. Social, technical and economic aspects" (2009-2011). These results are the fruit of a complex, experimental method that combines qualitative tools (60 interviews, log books), with quantitative (1950 questionnaires) and technical tools (sensor energy consumption readings), and calls on a multidisciplinary team. This paper will thus enable us to have an approach to methodological issues resulting from the search for information regarding consumption practices.

Keywords: energy consumption; inhabitants; housing

## **Gender and sustainable consumption – results and conceptual insights from six projects in the research programme ‘sustainable consumption – from knowledge to action’**

**Jaeger-Erben, Melanie** (Center for Technology and Society, DE); **Offenberger, Ursula** (University of St. Gallen, CH); **Nentwich, Julia** (University of St. Gallen, CH); **Schäfer, Martina** (Center for Technology and Society, DE)

Although the relevance of gender issues in research on sustainability and sustainable consumption has been emphasized by different authors over the last decade (e.g. Weller 2004; Martine/Villarael 1997), there are still ‘gender gaps’ as well as a lack of differentiated research (Vinz 2009) in this area. The integration of a gender perspective has been a prominent demand in the call for proposals of the research programme ‘Sustainable consumption – from knowledge to action’ funded by the German Federal Ministry of Education and Research in 2006. The presentation will discuss results related to gender and sustainable consumption from six projects conducted within this programme. These projects dealt with different aspects of the field of sustainable consumption, and results were gained on three different dimensions of ‘doing gender’: - individual dimension: differences between the sexes concerning attitudes, behaviours and orientations, -structural dimension: role of gendered social structures and the distribution of work in families and/or couples, and -symbolic dimension: gendered patterns of interpretation, knowledge structures and artefacts. Approaches at the individual level revealed for example that – even if there are some areas where tasks are distributed ‘traditionally’ among men and women (e.g. women being more often responsible for cooking and washing) – responsibilities are shared and decisions are made jointly in most areas. Considering structural and symbolic dimensions allows for contextualising and explaining differences and similarities between the sexes. It shows for instance how life course transition changes consumption patterns and demands in households as well as the related distribution of tasks. Furthermore, it illustrates how single consumption decisions and activities are embedded in the broader context of social practices in the areas of homemaking and everyday life. Overall, the results indicate a rather complex relationship between gender and consumption that goes beyond merely analysing individual differences. For a more developed understanding of the intertwined practices of ‘doing gender’ and ‘doing consumption’, we conclude that future research should therefore provide further analysis of the relevance of structural and symbolic dimensions and their mutual interrelatedness with the individual dimension. These findings have consequences for research programmes on sustainable consumption. The analysis of gender and consumption as intertwined practices cannot be facilitated by simply adding gender as another variable. It rather requires a major shift of perspective: individual behaviour is not only embedded in a social context, but structural and material aspects of action become more prominent when gender is analyzed as a situated practice. With regard to methodology and research design, recommendations will be provided on how to integrate gender analyses into sustainability research programmes.

Keywords: doing gender; everyday consumption; gender analysis

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## **Intertwined practices of gender and technology: The case of home heating**

**Offenberger, Ursula** (University of St. Gallen, CH); **Nentwich, Julia** (University of St. Gallen, CH)

Embracing 70 % of household energy consumption, space heating accounts for the largest energy end-use in households in the EU-15 (EEA, 2005, p. 33). The further development, market diffusion, and use of technologies based on renewable resources and the home production of heat and electricity in private households, such as pellet heating, solar plants, and the cogeneration of heat and power, are becoming increasingly important for EU's current strategy aiming at sustainable development (European Commission, 2006). However, energy consumption and energy efficiency are not merely an issue of technological fixes, but of how technologies are used on an everyday basis (Shove, 2003). This paper focuses on the everyday practices of technology acquisition. Acquisition decisions not only have a large and long-term impact on the structural possibilities for sustainability as an everyday practice and have so far been mainly ignored by research on everyday consumption, also interpretative flexibility (Bijker, Hughes & Pinch, 1987) is especially visible here. Our research focuses on the question how heat energy technologies based on renewable resources become part of people's everyday life. We argue that the use of technologies can be analyzed as a socio-technical system in which the social construction of technology is intertwined with practices of doing gender. We apply a double perspective on gender as a social and discursive practice (Bruni, Gherardi, & Poggio, 2005; Gherardi, 1994) as well as a symbolic resource inscribed and re-inscribed into the materiality of the technology (Akrich, 1992). Analyzing gender as shifting, fluid, and multiple in practice (Martin, 2003) and at the same time re-inscribing a symbolic binary into the materiality (Faulkner, 2000), our analysis shows how gender, sustainability and technology are "done". The empirical data consist of marketing material and ethnographic observations collected at trade fairs for building and living exhibiting home heating technologies as well as interviews with couples conducted within a reasonable time after their buying decision for a new home heating technology. So far, our analysis focused on the design of the oven and its placement in a family home and how gender is done here as a binary symbolic resource (Offenberger & Nentwich, 2009). In our conference presentation, we will broaden our analytical scope and further investigate the discursive construction of subject-technology interactions in the context of the buying process. Our analysis will show how gendered symbolic repertoires are used by different users when accounting for a specific acquisition decision. The research contributes to an understanding of how the symbolic and interactive gender order is made relevant in the context of sustainable energy technology.

Keywords: gender and technology; home heating; domestication; doing gender

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## **Gendered access to green electricity: Motivations and barriers for changing the energy provider**

**Röhr, Ulrike** (LIFE e.V./genanet – Focal Point Gender, Environment, Sustainability, DE);  
**Kösters, Johanna** (Freie Universität Berlin, DE)

Sustainable energy supply is a prerequisite for sustainable development. Through their energy consumption consumers influence the extent of energy use, by choosing their energy provider they can additionally influence how electricity is produced. Gendered roles and responsibilities have an impact on the purpose and the level of energy consumption as well as on attitudes towards energy technologies and energy production. It is proven by research from various countries, that women reject nuclear energy stronger than men do. How do they implement these attitudes in their daily routines and decisions? Do they purchase nuclear free energy? If not so, how can they be motivated to decide for a respective energy provider? The interdisciplinary research project we are presenting brought together researchers from political sciences, sociology, and natural sciences. The data related to motivations and obstacles to change the energy provider was generated by an online questionnaire with more than 1.000 respondents, and by qualitative interviews reflecting the heterogeneity of female lifestyles. With the interviews we are aiming at getting a better understanding of how the decisions related to energy consumption are made, who is involved in this process and of gender as a decisive criteria for the decision-making process. Furthermore, interventions to initiate the shift to nuclear free energy were developed, tested and evaluated, suggestions for future interventions will be deducted. The interventions are based on the hypothesis, that women trust much more in face to face communication and in experiences communicated by people they know, than in anonymous, seemingly objective information and estimations – which are preferred by men. Therefore, by trainings for multipliers, a pyramid scheme was triggered off, reaching more and more people by constantly spreading the message. An experience in organising the trainings is that these interventions activate primarily older people (50+), thus currently we are testing an intervention addressing a younger target group via social networks (Web2.0). Results from the online-questionnaire and qualitative interviews brought up some additional issues that should be taken into account for further interventions. It often takes a long time to put the decision for a green electricity provider into practice - how could this process be accelerated? Furthermore, the data suggests that energy consumption and electricity in general are not perceived as an area of consumption but are rather linked to the area of bureaucracy and contracts. What does that mean for future interventions?

Keywords: energy consumption; energy provider; interventions; gender



## **Gender aspects of consumption patterns: What do they mean for communication strategies to promote sustainable consumption?**

**Schultz, Irmgard** (Institute for Social-Ecological Research, ISOE, DE); **Stieß, Immanuel** (Institute for Social-Ecological Research, ISOE, DE)

Following the differentiation between three consumer roles as developed by Lucia Reisch (2004), one can say that studies on sustainable consumption behaviour focus mostly on just one role or on two roles of the consumers: as market actors and as everyday life actors or as consumer citizens. Consumers as participants in everyday life are very much focused in gender studies on sustainable consumption which bring in a perspective on paid and unpaid work of the genders as well as their time and money resources for fulfilling the different tasks in households (Schultz and Stieß 2009). Furthermore, in recent years, a considerable amount of literature on consumption and citizenship has emerged. Particularly, political scientist Michele Micheletti (2003) interprets new emerging forms of consumer behaviour related to environmental-friendly products with reference to citizenship and gender. She develops a theoretical perspective on consumerism as a form of political participation. Hereby, consumers are conceptualized as political actors and citizens not only with respect to collective actions and initiatives for greener consumption, but also with respect to individualized citizen actions as for example 'boycotting': which means buying according to ethical and/or political considerations. The concept of gendered consumer-citizens reflects the political and participatory dimension of gendered political engagement and environmental responsibilities. It is linked to consumers as citizens and market participants. This aspect of gendered consumer citizenship is reflected in the theoretical debate of sustainable consumption, but not reflected in the making of scp political instruments and strategies so far. Focussing on an understanding of political instruments and strategies for sustainable consumption as developed in an EU funded project on 'Policies to Promote Sustainable Consumption Patterns', the contribution discusses the question: What would it mean to address the aspect of gendered consumer citizenship in strategies to promote sustainable consumption (scp)? This question will be discussed on behalf of examples of the action fields of nutrition and energy use in the household which stem from literature and own empirical studies. It will be shown which problems arise by referring to gender aspects which are situated on the level of everyday life when 'translating' them into the level of consumer citizenship for developing instruments and strategies to promote scp. This problem is specifically relevant for scp communication strategies insofar gendered structures of responsibility for everyday life could be reproduced when addressing gender aspects on the level of consumer citizenship. A not intended side effect would be that gendered stereotypes would be reproduced. Thus, the contribution reasons some conclusions on how to deal with the gender dimension in SCP communication instruments and strategies.

Keywords: food behaviour; energy consumption; gender aspects; scp communication strategies

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thematic symposium: "do households save electricity through feedback based on smart metering systems?"

## Household appropriation of electricity monitors

**Wallenborn, Greg** (Université Libre de Bruxelles, BE); **Orsini, Marco** (ICEDD, BE); **Vanhaverbeke, Jeremie** (ICEDD, BE)

This paper explores how households appropriate an electricity monitor and what they learn when using it. The paper addresses the question of appropriation of such “immediate direct feedback” and how its use is related to different dimensions: comfort, values, knowledge, skills, material culture. We rely on different theoretical perspectives and other empirical findings to frame our research questions. Concepts at the crossroads of STS (Science Technology Society) theory and practice theory approaches have been found particularly useful in interpreting and explaining our results. On the basis of an original protocol that intends to interfere as little as possible with users, we installed two different electricity monitors (Chacon Ecowatt 850 and Current Cost Envi CC128) in 21 Belgian households. We paid attention to include very different households’ profiles in our sample: households already involved in energy reduction, households already aware of their electric consumption and interested in reducing consumption for different reasons, low-income households, households not interested in their energy consumption. Our protocol is thus qualitative, and relies on the competences of an interdisciplinary team (engineer, psycho-sociologist, economist, philosopher, designer). At the first step of the survey, an engineer installs the measuring equipment, and gives a brief explanation of the monitor to the household. The user’s manual is left and householders are invited to play with the power meter display options. The meter is left in the households for 2 to 4 weeks. After this period of time, the engineer comes back and downloads the data, displays graphics, decrypts and discusses with the household their electricity consumption. Three to six weeks afterwards, an in-depth interview is led by a psycho-sociologist. Based on the collected data (consumption + questionnaire on appliances), the researcher stayed around 2 hours in the household in order to discuss the way the household members perceive and understand their consumption of energy, and analyse the experience with the monitor (in particular what they have learned and which practices have changed). By installing “real time” meters in households, we have collected data on energy consumption, material culture (appliances, heating system, etc.), representations of energy, energy-using practices, and the effects induced by the introduction of the meter. We have observed that the monitor can change electricity perception, but that only households already interested or involved in energy savings are willing to use and learn with the monitor. We conclude that these devices should accompany a deeper transformation of the ‘culture of energy’ but they have to become much ‘smarter’ if their aim is to support more sustainable energy consumption patterns.

Keywords: electricity monitor; appropriation; practice

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## **Smart metering pilot study with 345 customers of German municipal utility group MVV Energy**

**Globisch, Joachim** (IREES GmbH, DE); **Roser, Annette** (IREES GmbH, DE); **Gözl, Sebastian** (Fraunhofer ISE, DE); **Schaefer, Christian** (MVV Energie AG, DE)

With the EU Directive 2006/32/EC on energy end-use efficiency and energy services directive (ESD), the European Union aims to reduce greenhouse gas emissions by 9 percent until 2016. One measure proposed to reach this target is the introduction of 'smart meters'. Smart meters shall raise customer's awareness of actual consumption and thus lead to a reduction of energy consumption, energy costs and CO<sub>2</sub> emissions. In order to reach this target, it is necessary to create a win-win situation for costumers (energy costs), energy suppliers (demand-response-management) and system operators (new business opportunities). The project Smart Metering – Technology and potentials of Smart Metering systems for energy savings and increase of efficiency executed a pilot field trial with about 345 customers of MVV Energy Group in Germany to analyze the impact of smart me-tering on the customers' behaviour. In order to quantify energy saving effects of smart metering on consumer behaviour, the analysis was based on a before and after research design including 345 households in Mannheim (MVV Energy AG), Offenbach (Energieversorgung Offenbach AG) and Kiel (Stadtwerke Kiel AG). There were two treatments set: The first treatment was a web portal providing information about household consumption of electricity, water, gas and district heating. In a second treatment six months later, the customers had the possibility to choose a variable tariff with three different prices based on average prices of price forward curves. The special focus of the socio-scientific evaluation was the appraisal of the participating households in relation to user-friendliness, the usefulness of the provided information, the supporting effect of the information for energy saving measures and potential barriers of their realization. The first trial showed a very enthusiastic attitude regarding the smart metering technology. But after having used the web portal, the positive ratings of the participants decreased. The comparison showed that the expectations of increasing transparency of energy consumption were fulfilled but the test persons were not satisfied with the amount of energy savings potentials. The analysis of the barriers led to two important reasons for a low perception of energy saving capabilities. First, the customers stated that they had already implemented energy saving behavioral patterns and there was not much left to do. The second reason for refraining from additional energy saving efforts is that these would be too expensive. Furthermore, the results from regression analysis showed that the use of the web portal did not cause a significant decrease in energy consumption. On the other hand, people with the variable tariff consumed significantly less electricity. Effects on consumption of thermal energy will be presented as well. Financial support is acknowledged from the German Federal Ministry of Economy and Technology (Contract 0327448A/B Smart Metering).

Keywords: smart metering; feedback systems; trial; energy saving; barriers

## **The relation between feedback use and energy saving – results from a large field trial in Germany and Austria**

**Gözl, Sebastian** (Fraunhofer ISE, DE); **Hahnel, Ulf** (Fraunhofer ISE, DE); **Götz, Konrad** (ISOE, DE); **Sunderer, Georg** (ISOE, DE); **Klobasa, Marian** (Fraunhofer ISI, DE); **Schleich, Joachim** (Fraunhofer ISI, DE)

**Design of the Presented Study** In this paper we present results from a large field trial with Smart Metering and Feedback in eight medium sized cities in Germany and one Austrian city. Objectives of the project include gaining insights into potential target groups, their needs and preferences concerning energy consumption information and energy behavior while using feedback instruments based on smart metering. Participating households were split in two groups - households in the pilot group received information on the energy consumed and energy saving measures, while households in the control group did not receive such information. Participants in the pilot group could choose between a printed monthly consumption information sent by mail or a web portal with a personally secured access. All groups have been interviewed at least twice during the field trial which lasted at least 12 months. During that time energy consumption was measured hourly. Also, the use of the feedback web portal was constantly monitored for the relevant households. For our analysis data of 2091 participants was available. 977 of these belong to the control group, 533 participants of the pilot group selected the web portal and 581 of the pilot group chose the printed information. Findings to be presented In this paper we present the main effects on the energy consumption behavior. To evaluate the impact of feedback information, we econometrically estimated household electricity consumption. Also we present feedback use patterns received from cluster center analysis and results from regression analysis on motives, attitudes and household variables towards the de facto feedback use. Finally, findings from a detailed analysis with the sub sample of the web portal user to test the causal relation between de facto use of specific feedback information and the energy consumption will be presented. Relevance of the Findings for Thematic Symposium Interestingly, existing research on feedback focuses on energy savings and on selected factors influencing the size of these savings. However, motivation, cognitive processing and decision making as well as concrete behavioral adaptations and social and socio-economic constraints in relation to feedback use have not yet been at the center of scientific studies. The findings from our study are expected to highlight these topics and will contribute to a better understanding of the mechanisms of the feedback effect. Our findings may also help improving the design of future feedback instruments targeting different social groups among private households. Acknowledgements Financial support is acknowledged from the German Federal Ministry of Education and Research under the program "From Knowledge to Action – New Paths towards Sustainable Consumption" (Contract 01 UV0804 Intelliekon). Scientific advice was given by Prof. W. Glatzer from Goethe-University of Frankfurt.

Keywords: households; energy saving; feedback use; field trial; feedback effect

## **Ireland's residential electricity smart meter trials** (invited presentation)

**Durkan, Joe** (Sustainable Energy Authority of Ireland, IE)

A national smart meter pilot, consisting of over 6,000 electrical smart meters in homes and businesses all over Ireland, was conducted to determine the most cost beneficial and effective way of achieving a full scale national smart metering rollout. The aim of the behavioural trials was to see if: - Smart meters can effect an overall reduction in electricity / energy consumption - If time of use tariffs can cause peak shifting (i.e. causing load to shift away from peak times), and if some of this load shift results in lower consumption - The effect of various informational stimuli, in conjunction with time of use tariffs. 4 tariffs (with day, night and peak rates) and 4 associated stimuli (monthly and bi-monthly detailed bills, in-home displays and an overall load reduction reward) were tested in the residential trial. The tariffs varied from modest to more onerous (e.g. from 20 cents to 38 cents for peak rate) with commensurate off-peak and night rates. The overall load reduction incentive offered participants a cash reward ( 20) if they could reduce their consumption by 10% over the trial. The trial was one of the largest carried out to focus exclusively on the behaviour of customer in response to various stimuli / time of use tariffs. The 5,000 plus residential participants are nationally representative the pre and post trial interviews provide a wealth of socio economic data. The presentation will examine: - The design of a nationally representative smart meter trial focusing on the impact on customer behaviour - The effect of Time of Use tariffs on peak load shifting and overall load reduction - The impact of various methods of information provision (detailed billing – monthly and bi-monthly, in home displays etc) to enable customers to modify or reduce their electricity consumption.

Keywords: smart-meters; customer-behaviour; time-of-use tariffs

References: Irish Smart meter Customer Behaviour Trials findings, report 1

<http://www.cer.ie/GetAttachment.aspx?id=45b739e9-8eee-4300-b87f-c7f1400ce0d5> & report 2:

<http://www.cer.ie/GetAttachment.aspx?id=fa5f2b08-9774-4878-9617-01709eda5bfc>

## smart metering II: perspectives forward for business/legislation

### **Conclusions for households from a project with 14.000 train drivers and a 30 mio. saving result**

**Strößenreuther, Heinrich** (Verkehrs Innovations Partner, DE)

Deutsche Bahn is the state-of-the-art railway company worldwide for its energy cost management system. It is based on 3.500 energy meters, 14.000 trained train drivers, energy consumption displays, precise data warehouse tools for personnel feedbacks and a very specific change approach. I was the responsible project manager for 30 mio. realized energy savings within my former Projekt "EnergieSparen". My contribution for that conference will be about learnings, key success factors and recommendations for the intended target private individuals within families and households. It will be the result of some transdisciplinary thoughts from first hand experiences to a similar, but different challenge. It is not a classical scientific study. The introduction will describe the change challenge and the attitudes at the beginning of that project. 14.000 train drivers believed mostly drive energy efficient. As well, the majority neglected the feasibility of savings through their driving styles. A first study based on statistical data proved for the train drivers as well as senior management that substantial savings were reachable. A train driver could save easily on one trip of one year consumption of an average household. The second part will target the general approach and the key success factors. First, energy meters had to be developed and installed on 3.500 locomotives and ICEs. Secondly, a data warehouse system was developed to combine energy data and personnel data. Thirdly, a change system approach tackled various areas of personnel behavior, group thinking and hierarchy challenges. That comprised individual feedback, ranking with colleagues, tools for the management to monitor performance as well as competition elements and incentives. The third part will elaborate learnings and recommendations for the target households. Topics to be discussed are the right individuals, the training program, the content and origin of feedback flows, the change hierarchy and the prevailed obstacles to overcome. The role of change agents will be discussed: Who would be in general favor, who would intend to dare, who will actually act, who will be influenced by whom. Probably it could be worthwhile to set priorities on specific consumers within a household, to introduce elements of competition in combination with pupils based initiatives.

Keywords: metering; data warehouse; change project; train drivers; feedback system

References: CO2 Strategie in der Implementierung: Beratungsauftrag Klimawandel; in: Zeitschrift für Unternehmensberatung, Februar 2008, S. 35 - 41 | "Keep Kyoto on track – The EnergieSparen Project: Interim Report of the project on energy efficient driving", UNFCCC (06/2004, Bonn) 20th sessions of the Subsidiary Bodies of the United Nations Framework Convention on Climate Change (UNFCCC), side-event, Bonn, 23.06.2004 | "Projekt EnergieSparen im Personenverkehr –Energiekosten-management für die Traktionsenergie der Deutschen Bahn AG", in: ZEV Rail, Glasers Annalen Nr. 129, Zeitschrift für das gesamte System Bahn, Sept. 2005, 356 – 362 (mit Halbach, J.).

## **Economic potential of smart electricity meters in German households**

**Bothe, David** (Frontier Economics, DE); **Perner, Jens** (Frontier Economics, DE); **Göddeke, Anna** (Frontier Economics, DE); **Riechmann, Christoph** (Frontier Economics, DE)

A national roll out of smart meters in Germany would entail the replacement of approximately 40 million standard, or "dumb", electricity meters. This would require an estimated investment of 3.8 to 5.7 billion euros (depending on meter features), as well as additional ongoing operating costs. Given the significant investment required, it is important to understand whether the expected benefits of a smart meter roll out justify these costs, and to assess which approach to the roll-out has the greatest economic benefits. Frontier Economics investigated the economic potential of smart electricity meters for German households. This study assesses the overall economic benefit and the respective costs that would be generated by the installation of smart meters in various types of household. As part of this evaluation, the costs and benefits accruing to all relevant parties were considered. In addition, we identify the minimum methodological requirements for conducting a cost benefit analysis of a smart meter roll out. Key of our analysis is a differentiated analysis of the varying saving potentials across households, e.g. depending on - Annual electricity consumption; - Specific consumption patterns due to specific electricity uses; or - Acceptance of meters and household motivation. Altogether, more than 200 different types of household were identified in our cost benefit analysis. For each type of household we then investigated whether the installation of smart electricity meters is worthwhile; and which type of smart meter installation and technology has the greatest net benefit. Five broad conclusions can be drawn from our analysis: - The consumption structure and behaviour of private households are key for realizing the potential benefits of a smart meter and have to be accounted for in a cost-benefit analysis. - Smart electricity meters have net economic benefits for a proportion of German households as the individual advantages vary significantly between households. - Net benefits will be maximised if households retain the freedom to decide whether to install a smart meter, and choose which technology to install - If smart meter installation is made mandatory, the obligation should be targeted at certain types of household, and should still allow for freedom of choice regarding technology options - If households can voluntarily install smart meters, the cost of reducing consumption by one kilowatt hour is significantly lower than in a mandatory nationwide installation scenario.

Keywords: cost-benefit-analysis; smart metering; electricity; energy efficiency

References: Bothe / Göddeke / Perner (Forthcoming): "Ökonomisches Potential spricht für Wahlfreiheit von Haushalten bei Smart Metern", in: et-Energiewirtschaftliche Tagesfragen.



## **Metering and informative billing in the proposal for the EU directive on energy efficiency** (invited presentation)

**Gierulski, Krzysztof** (European Commission, DG Energy, BE)

On 22 June 2011, a new set of measures for increasing energy efficiency was proposed by the European Commission to enable the EU to achieve its ambitious objective of reducing energy consumption by 20% by 2020. Among the major Europe-wide changes that are proposed by the Directive, there is an improved setting of the legal framework for metering and billing of individual consumption of electricity, natural gas, heating/cooling and domestic hot water. The new Directive does not mandate the roll-out of smart metering as such but rather sets clearer minimum requirements on feedback from metering and billing that should be provided to the final consumers free of charge. The impact assessment to this legislative proposal revealed major potential for savings with 5-15% in case of electricity/gas and 10-30% in case of heating/cooling/hot water. However, a strong interlink has been identified between the introduction of smart metering and the introduction of improved and frequent individual billing based on actual consumption. As regards electricity, the new legislative proposal introduces a number of new requirements including monthly billing based on actual individual consumption and provision of interfaces for consumers to enable them to access both real-time and historic data on their individual consumption. The interfaces should also allow the final consumer to easily consult time-of-use tariffs with real-time pricing, peak-time pricing and peak time rebates, when such systems are available. The final consumer will also be able to request that data concerning individual consumption can be made available to third parties (e.g. energy service companies). The new legislative proposal also sets more precise requirements for the content of individual billing and advice to be provided to final consumers to help them save energy.

Keywords: EU legislation; energy efficiency; metering & billing

References: - COMMISSION STAFF WORKING PAPER, IMPACT ASSESSMENT to DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on energy efficiency and amending and subsequently repealing Directives 2004/8/EC and 2006/32/EC, SEC(2011) 779 final, Brussels, 22.6.2011

[http://ec.europa.eu/energy/efficiency/eed/doc/2011\\_directive/sec\\_2011\\_0779\\_impact\\_assessment.pdf](http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/sec_2011_0779_impact_assessment.pdf)[http://ec.europa.eu/energy/efficiency/eed/doc/2011\\_directive/sec\\_2011\\_0779\\_ia\\_annexes.pdf](http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/sec_2011_0779_ia_annexes.pdf)

## **Determinants of reductions in household energy consumption: Preliminary results of the CO<sub>2</sub> management smart metering pilot**

**Seebauer, Sebastian** (University of Graz, Wegener Center for Climate and Global Change, AT); **Kufleitner, Angelika** (University of Graz, Wegener Center for Climate and Global Change, AT)

The CO<sub>2</sub> Management pilot is implemented by three energy suppliers in urban and rural regions in Austria. Our accompanying research explores the effects of this intervention on the test subjects. The smart meter integrates the measurement of electricity, hot water and heating. Feedback on energy consumption in terms of Euro, kWh and carbon footprint is given via a web portal that depicts goal achievement and historical comparisons with previous consumption patterns of the individual household as well as energy efficiency benchmarks. Furthermore, a handheld device provides real-time data readout in <10 sec intervals. CO<sub>2</sub> Management goes beyond giving continuous feedback: The smart metering system is complemented by personal energy audits for all participating households. Monetary incentives are given through a general reduction in energy expenses, time-variant tariffs and by rewarding CO<sub>2</sub> saving with micro emission certificates. Households receive programmable sockets in order to better benefit from on-/off-peak tariffs by activating electrical appliances automatically. Starting in July 2011, 295 households will participate in a one year test period. The sample covers all segments of the Austrian population regarding type of housing, heating technology and household structure. Environmental values and technophilia of participants are assessed and compared to secondary data to control for potential self-selection. The evaluation applies a before-after-design. All test households are subject to an identical intervention, there is neither a variation of experimental conditions nor a control group. A standardized survey at the beginning of the test period assesses building status, household facilities and consumption practices in the household. In addition, psychological determinants of energy use such as personal norm, knowledge how to save energy, self-efficacy and convenience are investigated. Preliminary results on behavioural changes as recorded by the smart meter during the first three months of the pilot study are presented. The impact on household energy consumption is compared to a baseline of past energy consumption derived from the electricity and heating bills of the last three years. Impacts are referenced to energy consumption in typical households in the same Austrian population segments and to households receiving only energy audits without smart meter. Interrelations between psychological factors, structural conditions and the reductions in energy consumption observed in the starting phase of CO<sub>2</sub> Management are discussed.

Keywords: smart meter; household energy consumption; evaluation; psychological determinants of energy use.



thematic symposium: "interactive value creation, participation and open innovation – drivers towards sustainable consumption?"

## **Expected benefits of lead-users: A netnographic study in the field of electric cars**

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Consumers are not only passive beneficiaries of goods and services, they also assume an active role as product innovators. Eric von Hippel acknowledged these consumers as “lead users” (von Hippel, 1986). Their involvement in innovation activities is driven by high expected benefits from obtaining solutions to their personal, specific needs, which are not satisfied by present market offers. This is consistently shown in a number of empirical studies regarding industrial and consumer goods (Schreier and Prügl, 2008). However, innovations may also imply benefits for the greater of society. This is especially true for novel sustainable products, which satisfy customer needs as well as significantly improve the social and environmental performance along the entire life cycle in comparison to conventional or competing offers (Belz and Peattie, 2009). We assume that lead users in the context of sustainability expect high social benefits in addition to high individual benefits. We suggest high expected social benefit as a novel characteristic of lead users (theoretical contribution). For the purpose of our research we conducted a netnographic study in the field of electric cars. Mobility is accountable, along with housing and food, for the highest share of environmental impact caused by private consumption (EEA 2010). Electric cars may thus be one solution to make this key consumption area more sustainable. We selected the “Electric Car Forum” ([www.electricforum.com/cars](http://www.electricforum.com/cars)) for our study, because it is an active and innovative, yet quite small (212 members) online community. We analysed the entire population of the online community by means of netnography, a new approach for systematic analysis of online communities (Kozinets, 2010). During September and December 2010 we collected around 5,000 posts and imported them to Maxqda 2007, a software programme for qualitative data analysis. In addition to expected individual benefits, we analysed also expected social benefits and innovative activity and coded the posts of each member accordingly. The empirical results show that a surprisingly high number of the online community members can be classified as lead users which innovate for themselves, e.g. convert or build electric cars or come up with novel ideas and solutions (ca. 16%). We identified a number of posts in the online community regarding expected social benefits which can be categorised as follows: 1) protection of the natural environment (reduction of air emissions; reduction of noise; decrease of use of non-renewable resources; increase of use of renewable resources), 2) contributions to societal transformations (setting a good example; providing education and raising awareness), and 3) promotion of social equity (present generations; future generations). Interestingly, based on the total number of posts we can say that expected social benefits seem to be as important as expected individual benefits for innovative users regarding electric cars.

Keywords: lead users; individual benefits; social benefits; sustainability innovations; netnography

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## **User-integration and triggered organizational learning as drivers for sustainability innovations**

**Diehl, Benjamin** (Technische Universität Berlin, DE); **Schrader, Ulf** (Technische Universität Berlin, DE)

Companies, which foster sustainability innovations, are central drivers for a sustainable development. Whereas an innovation, in general, is understood as the generation of a novel idea plus its successful commercialization, the sustainability innovation, in addition, must qualify itself by its realized impact on sustainable consumption and production patterns (Fichter 2005). User-integration is seen as a promising way to enhance the development of those effective sustainability innovations: The direct integration of users can lead to the generation of novel ideas with heightened creativity, market acceptance and diffusion potential. Current research concentrates on Lead-Users (von Hippel 1986). Lead users are a progressive, highly involved and competent user segment. Their inputs often lead to radical (product) innovations. But concerning the diffusion potential non-lead users are of interest, too. Those "normal" users have specific needs, detect barriers of usage and can find corresponding solutions. Both user-groups therefore generate different - but valuable - innovative input. Based on this our central research hypotheses are: a) The distinct user-groups differ concerning their product-related creativity, b) the direct interactions with users lead to deeper insights in (latent) user-needs and c) those external inputs require specific organizational learning types (lower- and higher-order learning) to exploit the value creation potential comprehensively. To test that, we conducted twelve innovation workshops in different fields of needs together with seven business-partners. In this paper we concentrate on two workshops aiming at innovative energy-efficient house concepts (Diehl 2011). An evaluation of the ascertained qualitative and quantitative data shows, that there are essential differences concerning the input of both user-groups: Lead users are highly motivated and show superior creativity. Their concepts consist mainly of novel recombinations and improvements of existing products. Those concepts trigger mostly lower-order organizational learning. Non-lead users broaden the scope of reflection, bringing up concepts dealing with local residential communities and sustainability-oriented urban planning. Those concepts challenge basic entrepreneurial routines and assumptions. Therefore they would require higher-order organizational learning. Through our analysis we get a comprehensive picture of diverse value creation potentials and challenges, when integrating different user-groups in the sustainability innovation process. By including the concept of specifically triggered organizational learning types, this paper contributes to the current research on user-integration in the sustainability context and concludes with defined proposals for the practical implementation of user-integration methods.

Keywords: sustainability innovations; user-integration; open innovation; lead users; organizational learning

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## Exploring emerging customer needs for smart grid applications

**Heiskanen, Eva** (National Consumer Research Centre, FI); **Matschoss, Kaisa** (National Consumer Research Centre, FI)

There is limited research on smart grid applications from the customer perspective. Most of the services are still in a pilot phase and relate to smart meters or dynamic pricing. Yet the visions based on smart grid applications extend much further. Smart grids are expected to accelerate the development of services for small-scale feed-in of distributed electricity production, enhanced customer self-sufficiency in electricity, increased use of home automation and smart home applications, and load management using the batteries of electric cars. Our presentation builds on a project called Customer value from smart grids, which aims to explore whether some small-scale customers can become active players in electricity markets. The project aims to develop guidelines for electricity companies to communicate with customers, explore customer needs and co-create new services that provide added value for several parties in the value chain. This is challenging, because customer needs do not pre-exist, but emerge in the interaction between new technologies and social and market environments (Oudschoorn et al. 2004). Smart grid applications are particularly challenging because the main link between the various services is the two-way digital communication offered by the smart grid. From the customers' perspective, the link between, for example, electrical cars, PV panels and smart meters is not obvious. Moreover, electricity itself does not offer direct benefits to customers; benefits arise from using the electricity in various appliances. Customers' own capabilities and experience with electricity are limited because they cannot configure their own electricity systems due to safety regulations. Finally, the expected user context for many applications is partly different from currently existing user contexts. Many applications assume other products and technologies that are not yet widely used. Our project aims to overcome these problems by identifying and engaging lead users – i.e., customers with needs and capacities that are ahead of the market trend (von Hippel 2005). We start by (1) building on existing customer experiences from ongoing pilots and (2) engaging and identifying lead users. Our data consist of interviews with managers and customers in pilots for early smart grid applications and a survey to identify various types of lead users, as well as 8-10 focus groups (with some lead-user workshop elements) with lead users. Our paper presents first findings concerning customers' concerns, ideas and service experiences regarding smart grid applications. We discuss key aspects of the service experience and offer insights on problems in the development or application of new products/services. Further, we explore how easy is it to identify lead users and what improvements to existing service concepts lead users can contribute. We hence offer insights on whether lead users can offer innovative new ideas for new services based on smart grid applications.

Keywords: co-creation; user participation; service development; innovation; smart grids

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## **Living lab: Research and development of sustainable products and services through user-driven innovation**

**Baedeker, Carolin** (Wuppertal Institute for Climate, Environment, Energy, DE)

The presentation depicts and discusses the results of the LIVING LAB project conducted at the Wuppertal Institute within the 7th Framework Programme of the European Union. It shows how processes of open innovation can lead to sustainable and competitive domestic innovations, by means of an experimental infrastructure. The project applied practice theory to research on sustainable product design. According to practice theory, focusing on technical solutions and individual behaviour while assuming people's needs as fixed entities, disregards the dynamics of everyday life in which technologies themselves create needs. The project aimed at strengthening the position of the consumer by focusing on user-driven innovation. LIVING LABs are combined lab-/household systems which put the user, i.e. the home occupant, on centre stage in the innovation process. From an applied research perspective, the main objective was to work with the industry to develop sustainable alternatives with a better chance of succeeding in the market. In order to find these sustainable solutions three stages of research were conducted: 1. Insight-research: the behaviour of users and the human-technology interaction was analysed and evaluated in real settings (for example households) in regard to specific thematic areas. 2. Co-creation and alpha-testing: departing from the obtained insights prototypes were developed. The prototypes were tested by users in the LIVING LABs (alpha-testing) 3. Field-testing: here the innovative product is integrated in real households where human-technology interaction is evaluated again. At the end of this user-integrated innovation process the final product is developed. The presentation will start with a description of the design and functioning of LIVING LABs. It will be shown how the LIVING LAB research infrastructure can promote the development of a user-centred sustainable design, of prototyping, and testing. In a second step, the potentials of LIVING LABs will be described for the following five application fields: - Design, construction, and maintenance of sustainable homes - Integrated approaches to home energy management - The connected home - Resource-efficient lifestyles and social networks - New product and service development The presentation contains multiple insights for the topic "Interactive value creation, participation and open innovation - drivers towards sustainable consumption": The research infrastructure of LIVING LABs is not only a typical example of open innovation processes, it also aims at promoting the successful market introduction of sustainable domestic innovations. The findings mainly arise from technological research and as well as from design studies and social research on human behaviour.

Keywords: living lab; open innovation; user-driven innovation; participation; sustainable consumption

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# cross-topic issues

## **Transatlantic dialogue and collaboration on SCP**

**Vergragt, Philip J** (Clark University, US); **Brown, Halina** (Clark University, US); **Cohen, Maurie** (New Jersey Institute of Technology, US); **Lorek, Sylvia** (Sustainable Europe Research Institute, DE); **Schrader, Ulf** (Technische Universität Berlin, DE); **Scholl, Gerd** (Institute for Ecological Economy Research, IÖW, DE)

The proposed roundtable aims to explore possibilities for closer collaboration between North American and European researchers and networks on sustainable consumption and production (SCP). In Europe, a strong research tradition in SCP research is well-established, with much of it being funded by the European Commission and national scientific research councils. This work is often pragmatic, oriented toward policy intervention, grassroots experiments, and modest lifestyle changes. Although a sizable research community exists, there is no formal platform for continuing the learning process and debate when funded projects come to their end. In the United States and Canada, funding for SCP research has been a matter of individual initiative, and the research has been driven more by advancement of basic knowledge (often within disciplinary boundaries), and much less by policy imperatives. The virtual lack of SCP informed public policies in North America has led research in a more conceptual and prospective direction. Over the course of the last few years, the Sustainable Consumption Research and Action Initiative (SCORAI), a network of researchers and practitioners based primarily in North America, has come to serve as an intellectual platform for a dialogue among the members of this research community. The network also connects with practitioners engaged in grassroots innovations and local experiments with new economies and lifestyles. Furthermore, the new research tradition emerging on the economics of consumption, economic growth and degrowth, and the role of technology and social practices in consumerism has expanded the SCORAI-based dialogue. Most recently, the interest has grown among the SCORAI community to link this emerging multidisciplinary body of knowledge with policy processes and with empirical initiatives. We contend that there is much to learn from a focused exchange of knowledge, experience, and perspectives across the Atlantic. We intend to use this proposed session to discuss the following issues (each set up by a short introduction): 1. Provide concise information about research on SCP in North America; emergence of SCORAI network of researchers and practitioners (see <http://www.scorai.org>) 2. Discuss similarities and differences between North American and European research traditions and highlight strengths and weaknesses of North American and European networks and possible complementarities. 3. Invite response by 1-2 European researchers 4. Engage in roundtable discussion on these and related issue (30 minutes) with the aim of: a. Organizing a possible trans-Atlantic SCORAI workshop in late spring/summer 2012. b. Discussing possibilities and themes for joint projects under FP-8. c. Considering participation in the Global Research Forum on SCP being held in Rio in 2012 in conjunction with the Rio+20 Conference 5. Conclusions and follow-up

References: <http://www.scorai.org>

## synthesis results of the focal topic

### **Needs, consumption and sustainability - the conceptual system developed in the focal topic**

**Di Giulio, Antonietta** (University of Bern, IKAÖ, CH); **Brohmann, Bettina** (Oeko-Institut e.V., DE); **Clausen, Jens** (Borderstep Institut für Innovation und Nachhaltigkeit gGmbH, DE); **Defila, Rico** (University of Bern, IKAÖ, CH); **Fuchs, Doris** (University of Münster, Chair of International Relations and Development Policy, DE); **Kaufmann-Hayoz, Ruth** (University of Bern, IKAÖ, CH); **Koch, Andreas** (European Institute for Energy Research, DE)

For a scientific debate about consumption in the context of sustainable development, a concept of need must be defined that is compatible with the concept of consumption, as well as with the idea of sustainability and the notion of good life. This concept of need must provide an adequate basis for the discussion of normative issues (e.g. What type of consumption can be referred to as “sustainable”? What criteria must be used to assess the level of sustainability of consumption and consumer behaviour? What issues about responsibility and justice are raised in the context of sustainable consumption?), as well as the orientation of empirical (disciplinary, interdisciplinary, transdisciplinary) research. In the focal topic synthesis, such a concept of need and a linked conceptual system were developed. This system is composed of the following related terms: individual constructs of wanting (objective needs, subjective wants, ideas about the degree and extent of the satisfaction of objective needs and subjective wants, demands as to consumer goods), consumer goods (products and services/infrastructures), natural resources and resource services, as well as demands in terms of quantity and quality of natural resources and resource services. In the presentation, this conceptual system will be presented, followed by a short discussion of the resulting obligations of individuals and of the state in view of sustainable consumption and the questions open to further inquiry, discussion and political decision.

### **Deliberations on how to assess sustainability in consumption**

**Fischer, Daniel** (Institute for Environmental & Sustainability Communication, INFU, Leuphana University Lüneburg, DE); **Michelsen, Gerd** (Leuphana University Lüneburg, DE); **Blättel-Mink, Birgit** (Goethe-University Frankfurt am Main, DE); **Di Giulio, Antonietta** (University of Bern, IKAÖ, CH)

All efforts to promote sustainable consumption are challenged to distinguish between sustainable and unsustainable consumption. This pivotal distinction at the heart of the discourse on sustainable consumption was a central point of discussion in the synthesis framework of the inter- and transdisciplinary research programme. The aim was not to generate a set of criteria that can be directly applied to any individual consumer behaviour. Instead, possible ways were elaborated in which sustainability can be determined in individual consumption behaviours in the first place. This was underpinned by an understanding of sustainable consumption that builds on the formerly introduced distinction between objective needs and subjective wants and that resolves some shortcomings of the widely-spread Oslo definition. As a result, the paper presents two such approaches to determine sustainability in individual consumption behaviours and illustrates these using case examples from two projects in the research programme.

## **Combining qualitative and quantitative methods in sustainable consumption research**

**Jaeger-Erben, Melanie** (Center for Technology and Society, DE); **Schäfer, Martina** (Center for Technology and Society, DE); **Dalichau, Dirk** (Goethe University Frankfurt am Main, DE); **Dehmel, Christian** (University of Münster, Chair of International Relations and Development Policy, DE); **Götz, Konrad** (ISOE, DE); **Fischer, Daniel** (Institute for Environmental & Sustainability Communication, INFU, Leuphana University Lüneburg, DE); **Homburg, Andreas** (Hochschule Fresenius, DE); **Schulz, Marlen** (ZIRN University of Stuttgart, DE); **Zundel, Stefan** (University of Applied Sciences Lausitz, DE)

The relation between qualitatively and quantitatively oriented social research is not completely unproblematic, and an approach based on one single method is usually the preferred strategy in everyday disciplinary scientific research. However, in research projects on sustainable consumption, both qualitative and quantitative methods are often used, which was also the case for focal topic project groups. This led to some reflection about the reasons for this. The objective of the synthesis discussions was to identify possible patterns or circumstances which could point to why the combination of methods is a promising starting point for research on sustainable consumption. Also, the aim was to find out whether this is linked to the nature of the object of research, as described in the respective synthesis result concerning the structuring of the phenomena of consumer behaviour. In this paper, examples from two or three project groups are given, which illustrate what was expected from the combination of qualitative and quantitative methods. The choice of the forms of the method combinations is explained, and the various challenges faced are described. Based on the experience gained, the added value, both in terms of content and strategy, will be specifically discussed for research on sustainable consumption, focussing on research whose results aim to promote changes in consumer behaviour patterns towards more sustainable consumption.

## Structuring the phenomena of consumer behaviour - results of an interdisciplinary endeavour

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Consumption takes place through the behaviour of individuals or rather through the single consumption actions of choosing, acquiring, using/consuming and disposing of/passing on goods. That is why a core issue when dealing with sustainable consumption is the identification of which theories of action are relevant for the different phenomena in the context of (sustainable) consumption, and the discussion of their performance. In order to do this, we need to structure the phenomena of consumer behaviour in a way, which offers connecting points to different theories from different disciplines. This paper presents – as a result of the collaboration of all involved in the synthesis process of the Focal Topic – the structuring of the phenomena of individual consumer behaviour in its social and cultural context and in its changing forms over time. Also the allocation of theories of action to the phenomena and their profiles are explained on the basis of examples.

## Steering consumer behaviour – perspectives and challenges

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How can consumption be steered toward sustainability? This is probably one of the most important questions addressed to the inter- and transdisciplinary scientific community investigating (sustainable) consumption. Coming up with consolidated answers and delivering useful knowledge for evidence-based policy making requires the integration of research findings from different disciplines – findings related to fundamental questions of such steering (e.g. its legitimacy in the sphere of private consumption, appropriate models of social regulation) as well as findings on the design and effectiveness of single instruments, instrument mixes and specific measures. The researchers involved in the synthesis process of the Focal Topic took a step forward toward such integration by bringing together the perspectives of (amongst others) political science and psychology on different types of policy instruments and interventions and on the challenges of capturing their effects through scientific studies. This paper presents some of the results of this collaborative work.

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# scientific committee and organisation

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