

# Rebound Effects and Lifestyle Concepts

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## Can behavioral and social aspects of rebound effects be a starting point for policy interventions?

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The following paragraphs contain our thoughts and ideas on behavioral and social aspects of rebound effects. We will start with a brief investigation of the potential drivers and restraints of rebound effects on the individual level. Then, we will focus on the use of lifestyle concepts for the analysis of rebound effects as well as on the design of policy intervention strategies.

Please take note that the ideas laid out here evolve from the research project “REBOUND – The Social Dimension of the Rebound Effect”, which is funded by the German Federal Ministry of Education and Research. This project aims at developing a better understanding of the rebound effect from an economical, psychological as well as sociological perspective.

For further information, please see: <http://kooperationen.zew.de/en/rebound/home.html>

### What are the drivers and constraints of rebound effects on the individual level?

Research on the rebound effect has so far been dominated by economic approaches. However, there is a growing appreciation that behavioral and social factors could add explanatory power. Economic approaches mainly focus on price effects as a driver of rebound effects (elasticity effect). However, there may be other drivers. In addition to drivers of rebound effects, there may be constraints that are worth taking into account, because by learning from positive examples, one can improve the design for potentially successful policy intervention strategies.

In the following, potential drivers and constraints of rebound effects are listed and shortly described:

- **Price effect (substitution + income effect):** Price signals are the most obvious driver of rebound effects. They are the starting point for economic analysis on the micro level. However, it has to be noted that these price signals are not objectively perceived by “rational” consumers. In contrast, consumers’ perception of prices is biased and, therefore, their rationality is “bounded” (Simon 1959; Kahnemann and Tversky 1979). In particular, there may be thresholds that determine the boundary between negligible price effects and noticeable price effects. Very often customers of electricity are not aware of the electricity costs since they constitute only a small percentage of their income.
- **Saturation effects:** Rebound effects may depend on an individual’s saturation level regarding a specific good (Wörsdorfer 2010). Where needs are satisfied, rebound effects are smaller in their magnitude. Consequently, a couple of studies were able to show that the magnitude of

rebound effects varies with income level (e.g. Small and van Dender 2005: 24; Frondel et al. 2010). Moreover, rebound effects are higher in developing countries (van den Bergh 2011). Where needs are unsatisfied, a high magnitude of rebound effects can be expected.

- **Changes in (personal and social) norms:** Energy efficiency investments may change personal norms and, thus, lower the psychological costs of ownership of specific goods (Haan et al. 2006; Haan 2008: 14). E.g., the purchase of a hybrid car can weaken the personal norm of energy-saving so that the individual feels free to consume more energy in other fields of everyday life (e.g. heating).
- **Spillover effects:** On the one hand, energy-efficiency investments may trigger rebound effects. On the other hand, there is evidence that energy-efficiency investments may lead to spillover effects by motivating people to save even more energy (Thøgersen and Ölander 2003).
- **Attitudes and values:** Attitudes and values are an important driver of individual behavior (Rokeach 1973; Ajzen 1991). Internalized values (e.g. frugality) and deduced attitudes (e.g. environmental consciousness) may both positively and negatively influence the magnitude of rebound effects. Whereas environmental consciousness may prevent people from overconsumption and steer their investments towards low emission goods and services (thereby avoiding indirect rebound effects), a strong hedonistic value orientation may prevent people from taking into account the environmental impacts of their behavior.
- **Habits:** Habits are extremely resistant to change (Hobson 2003). Therefore, where habits are strong, behavioral changes and, thus, (indirect) rebound effects may be unlikely.
- **Conspicuous consumption** (Alcott 2004): Some scholars argue that conspicuous consumption is the main cause of most consumption activities that go beyond the pure satisfaction of biological and physical needs (Veblen 2007 [1899]; Schor 1999). Especially, car ownership and use is closely linked to conspicuous consumption (Steg 2005). The use of goods and services that are at least partly used for conspicuous consumption may be likely to be expanded when additional income is available.

For sure, there may be additional drivers of rebound effects beyond the ones mentioned above. Unfortunately, to date there is only little research on this topic (except price effects). This may be partly due to the fact that the study of rebound effects has so far been neglected by psychologists as well as sociologists. The careful analysis and understanding of these drivers would be a good starting point for the design of policy interventions strategies that aim at changing individual behavior. Thereby, drivers and constraints of rebound effects need to be investigated more intensely.

### **Which societal milieus are most likely to cause rebound effects? Why?**

In recent years, a growing interest in lifestyle research can be observed. Especially in the face of growing environmental problems, lifestyle research has become the “holy grail for environmental policy” (Evans and Jackson 2007: 14), since the application of lifestyle concepts is expected to identify crucial strategic points for the “greening” of consumption patterns.

Lifestyle research is based on the assumption that social differences in modern societies are no longer singularly due to the unequal distribution of material resources. To an increasing degree, such social differences can be explained by the different use of these resources. This, in turn, is largely

dependent on individual values, attitudes, and aesthetic preferences (Otte 2005: 4). The question of whether somebody can afford to buy a specific product has become less important in comparison to the question of which product he or she prefers. Thus, lifestyle approaches are a popular tool for analysing private consumption in several domains of everyday life (e.g. mobility, nutrition, and clothing). Lifestyles build the amalgam that connects and structures individual's behavioural patterns. Since changes in individual behavioural patterns have been identified as the crucial starting point for a reduction of rebound effects (Polimeni et al. 2008: 169; Druckman et al. 2010: 25), lifestyle concepts could be a sound approach for analysing the social dimension of rebound effects. They enable the development of intervention strategies that are tailored to individuals' everyday lives. An adequate understanding of people's everyday practices builds the prerequisite for sound intervention strategies. Since lifestyle concepts could help adapt such intervention strategies to individual's life world (*Lebenswelt*), they may be more likely to yield desired results.

Given that the assumption holds true that rebound effects vary across lifestyle groups, the essential question is, how these lifestyles structure and modify individual behaviour and energy consumption patterns. There may be two types of influential factors: structural and psychological. Structural reasons refer to the access to resources. This means that lifestyle groups differ from each other with respect to income, education (knowledge) etc. Psychological reasons refer to differences in values, attitudes, perception and cognitive ability. Please note that the structural and the psychological dimension are likely to be interlinked, e.g. education (cultural resources) can influence attitudes.

By applying lifestyle concepts to the study of rebound effects, those societal milieus could be identified that are most likely to experience rebound effects. The aforementioned drivers and constraints of rebound effects are likely to be distributed unequally over lifestyle groups (e.g. value orientations).

Since consumption depends on values and available resources (Jager et al. 1997; Sheth et al. 1991; Gatersleben and Vlek 1998), which vary across lifestyle groups, the propensity to consume energy may vary across lifestyle groups. For example, there may be lifestyle groups that are more prone to "conspicuous consumption" (Veblen 2007 [1899]) and, therefore, more likely to produce rebound effects.

Saturation effects regarding different goods (Wörsdorfer 2010) may vary across lifestyle groups as well. Such saturation effects may depend both on the material resource level and on internalized values (e.g. environmental awareness, frugality), which are distinctive for a specific lifestyle group. Environmental awareness may be more or less pronounced in different lifestyle groups, which in turn may influence consumption choices and, therefore, the occurrence of rebound effects.

Looking at empirical results, it appears as if many lifestyle patterns favour the use of electricity over other forms of energy. For example, the substitution of gas appliances and ovens by electric equipment has been typical for urban and suburban households. Moreover, the replacement of old energy consuming appliances has often resulted in using the old appliances as a backup or as additional service for cooling or cooking. Time constraints and dual career strategies reinforce the use of frozen food and functional food which in turn leads to higher overall energy consumption. For these and many other reasons, the electricity demand of German households increased from 1985 to 2005 by 23% in spite of the fact that the electricity consuming appliances and equipment consume 37% less energy per unit energy service.

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