Acceptance of decentralized sustainable energy systems: Psychological exploration of the individual pursuit of autarky.

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Background

1. Autarkie Aspiration in different Supply Scenarios
Method: An experimenter study (Study 1) was conducted with qualitative and quantitative interviews (Study 2) to examine the psychological factors of autonomie aspiration and their relevance for purchase decisions regarding innovative energy systems.

2. Study of homeowners acceptance of electrical storage systems
Method: An experimental variation of autonomie & autonomy (Study 3) in study 3, we followed a 2x2-mixed design and experimentally varied the level of energy autarkie (90% vs. 30%) and the level of autonomy (self-determined vs. external controlled).

3. Study 4: Influence of information and the value of self-produced electricity
Method: An experimental variation of information and the value of self-produced electricity (Study 4).

4. Discussion
The present research illustrates that the autonomie that is attained by ESS constitutes a crucial factor in the adoption of the technology that can be leveraged to accelerate its market share. We demonstrate that this factor goes beyond mere energy-related or financial considerations, encompassing psychological motivs such as self-sufficiency and control that can be specifically addressed by policy makers and industry. Our results emphasize that autonomy reflected by individual control over the systems is a desired attribute that should be addressed by policy makers and external grid energy providers that strive to centralize optimized distribution and storage units. However, while autonomy aspirations are promising in stimulating the adoption of ESS, they can likewise render homeowners more likely to assign higher prices for self-generated energy. In decentralized energy projects that aim at optimizing energy flows within local energy networks, higher assigned energy prices might impede exchange of energy and thus effective optimization. Policy makers and project designers can tackle this drawback by addressing sense of community from the very beginning of local energy projects - eventually expanding the sphere of autonomie from the individual to the group level.

Publications