

Energy Scarcity and Behavioral Science: Interdisciplinary Considerations

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Abstract

This note discusses the potential of behaviorally informed approaches to address energy scarcity within large organizations. Drawing on insights from a variety of disciplines and the experiences made with interventions in the COVID-19 period, we emphasize the importance of social norms in influencing human behavior. Two practical strategies receive particular focus, namely, the use of local voting by employees on energy-related topics and the collection of opinion data for reference.

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1 Introduction

Energy scarcity poses significant challenges to societies worldwide, as it directly impacts the economy, environment, and overall quality of life. With the growing global population and increasing demand for energy resources, finding sustainable solutions becomes crucial (Sovacool 2016). While the winter of 2022/23 has passed without major energy shortages for most Western countries, in light of the ongoing Russia-Ukraine war, the question of how to prepare for a possible shortage in the winter 2023/24 already looms large.

Encouraging individually responsible behavior can play a vital role in addressing energy scarcity, as people's everyday actions can significantly affect energy consumption and conservation (Gardner and Stern 2008). By understanding the psychological and behavioral factors that drive individual choices, policymakers and institutions can develop targeted strategies to promote energy-efficient behaviors and contribute to sustainable energy management (Allcott and Mullainathan 2010). In general, the systematic application and transparent discussion of researched behavioral findings can effectively strengthen the goals and mechanisms of policy instruments (Rinfret, Scheberle, and Pautz 2021; Bowen and Zwi 2005).

Most existing studies on the psychological aspects of energy consumption and energy efficiency focus on the individual or household context (Andor and Fels 2018). Studies in the corporate or organizational context have mainly emerged in the last ten years (Staddon, Cycil, Goulden, Leygue, and Spence 2016; EnergieSchweiz 2021). This article focuses on insights that might be relevant in particular to large organizations. It draws on learnings from interventions in the COVID-19 pandemic and on insights from a broad range of disciplines, with the authors coming from anthropology, economics, evolutionary medicine, and psychology. In particular, it concludes from the existing work in a range of academic disciplines that (a) (local) voting of employees of an organization on energy scarcity-relevant topics can be an effective way to engage employees, and that (b) the prompt collection of opinion data is essential so that reference points for later measurements are available.

2 Voting

A central finding of behavioral research is that human action is strongly influenced by the behavior of others ("descriptive norms") and by assumptions about what others perceive as appropriate behavior ("injunctive norms"); see among many others Cialdini (2003) and Bicchieri (2005). The effectiveness of such social norms with regard to energy consumption has already been demonstrated in several international studies (Allcott 2011). For example, a recently conducted representative survey of more than 1,000 Swiss citizens on the topic of climate change also underlined the role of social norms (Cousse, Kubli, and Wüstenhagen 2020). The three most frequently mentioned aspects for combating climate change were: Technological innovation (78%); Changing consumer behavior (67%); and the behavior of others (60%).

A challenge in applying norms for interventions, however, is the possible perception that the body communicating the norms (e.g., university management) is not considered legitimate for this purpose. "Nudging" through norms could be perceived as manipulative. The fixed, regulatory determination of behavior, on the other hand, is justifiable but may also meet resistance.

Therefore, we propose that organizations consider (local) voting by employees as a first step. This instrument can be used for various topics. An example, the focus could be on a vote on the target room temperature in one's own building ("local"), as the temperature in winter offers a comparatively "large lever" regarding energy consumption. For example, two options could be up for vote:

Option 1: Minimal reduction of temperature (within the legally prescribed parameters)

Option 2: Greater reduction than legally required (e.g., an additional 1 degree)

There are several reasons to use voting. First, people want to be self-efficacious: If employees can vote, no one can complain that the temperature at their workplace has been reduced or other energy-relevant aspects have been changed without their consent. Indeed, evidence suggests that letting employees express their opinion improves job satisfaction and reduces turnover (Adhvaryu, Molina, and Nyshadham 2022; Cai and Wang 2022). Second, as everyone bears responsibility through their vote, approval for reducing temperatures or other measures may

increase. Third, the topic of "energy saving" is brought to the forefront, as a vote also leads to discussions in the workplace. This, in turn, can lead to positive "spillover" effects. Finally, in settings where general democratic participation is highly regarded (for example, when direct democratic participation occurs frequently), the approach can potentially contribute to an organization's general reputation in the public.

3 Opinion Data

Large organizations regularly use "pulse surveys" to better prioritize their activities. The COVID-19 pandemic has shown how important people-generated data is for assessing, containing, and planning measures in crisis management. This data helps to understand the development of the crisis, make decisions on measures, implement them, and verify their effectiveness. Accordingly, for large organizations collecting current opinion data is essential to empirically determine the effects of interventions later on. It is also important to evaluate existing data points to identify and utilize useful opinion data for planning potential interventions.

Conducting a survey before an actual energy shortage crisis escalates would be an initial signal to an organization's employees (and the public) that energy conservation is taken as an increasingly relevant issue by an organization's management. Simultaneously, a survey serves as a tool to (i) understand the initial engagement with the issue of energy scarcity and the willingness to contribute, and (ii) later measure the effectiveness of a possible voting intervention (see Section 2) or other measures regarding employee engagement, mental well-being, feelings of uncertainty or autonomy. Thus, a survey would represent a two-way communication in which an organization can emphasize the relevance of energy scarcity while employees can express their opinions.

Furthermore, in crisis situations, it is often not enough to appeal to the common good; it is better to recognize that different people have different interests and social networks and must be targeted accordingly (Boyd, Richerson, and Henrich 2011; Henrich and McElreath 2003). In general, appeals to helpfulness should take into account that helpfulness is higher when the need is not self-inflicted, towards people who are similar or close to oneself, and when one can benefit directly or indirectly from the assistance (Nettle, Johnson, Johnson, and Saxe 2021; Petersen, Sznycer, Sell, Cosmides, and Tooby 2013; Sznycer et al. 2017). One can more

successfully influence behavior by presenting role models (prestige bias) or information about the behavior of others (conformity bias) but must pay attention to the specific role models and social networks of the target group (Arnot et al. 2020; Moya, Cruz y Celis Peniche, Kline, and Smaldino 2020). In the context of the voting intervention at UZH, this could be, for example, professors or colleagues from one's own institute or faculty whose (positive) opinion is presented as a role model before the vote.

Possible topics that a survey could cover include: (a) Initial knowledge of energy-saving topics and willingness to act, (b) General employee engagement and satisfaction, (c) Feelings of autonomy, competence, and connectedness (Bandura 2001; Deci and Ryan 2012), (d) Mental well-being, resilience, psychological safety (Oswald and Wu 2010; Edmondson 1999), (e) prevailing social norms.

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