



## Perspective

# Can't get no satisfaction? Motivating organisational energy efficiency efforts in Germany



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## ABSTRACT

It is increasingly recognized that participatory interventions (PIs) are an effective means to enhance organisational members' energy-saving behaviours. However, the mechanisms behind why PIs successfully raise motivation towards energy-conservation have yet to be examined. To fill this gap, we argue that satisfaction with a PI triggers a positive affect towards energy-savings, and thereby, helps participants to internalize energy-saving motivation. Accordingly, it is proposed that those participants who had low autonomous energy-saving motivations prior to the PI benefit more from a satisfactory intervention than those participants who already felt self-determined to engage in energy-conservation. These hypotheses were tested and supported within the higher educational context. Compared to the control group ( $N = 77$ ) that received a lecture-based intervention, subjects in the PI condition ( $N = 142$ ) reported more autonomous motivation to engage in energy-savings after the session. Furthermore, satisfaction with the PI resulted in more autonomous energy-saving motivation and this effect was moderated by the energy-saving motivation prior to the PI. This study underlines the importance that PIs should be led by facilitators who are a) capable of providing satisfactory PIs, and b) address specifically those participants who are not yet autonomously motivated to save energy in non-residential buildings.

## 1. Introduction

### 1.1. Reducing energy-consumption in non-residential buildings

Although user behaviour has a significant impact on a building's energy performance [1,2], the question of how organisational members can be motivated to behave in an energy-conscious manner at their workplace remains an under-examined research area [3,4]. Given that there are various factors that account for residential, but not for non-residential energy-consumption, such as financial responsibility, one can say that saving energy at home versus saving energy at work are two different types of behaviour [5].

Within the work context, individuals act in a social setting, making it necessary to account for the social dynamics that emerge from the interactions among organisational members [6,7]. Furthermore, organisational goals might interfere with energy-efficiency. Thus energy-saving measures should not only align to user perspectives, but also adhere to organisational demands and structures [8]. Regardless of these features that require a special focus on the non-residential context, most studies examining energy-saving interventions have focused on the domestic sector [9]. Therefore, there is a need to develop tailored interventions that take into account the demands posed by the

organisational setting. In this instance, universities assume a critical role, as they provide an environment in which new procedures can be tested before they are transferred to other organisational contexts [10]. For instance, previous studies within universities showed that informational campaigns or signs were insufficient to achieve the necessary energy-saving demands [11,12]. Instead, establishing a culture that fosters energy-saving behaviours is crucial [13]. Such an energy-conscious environment helps organisational members ascribe themselves with the responsibility to conserve energy [14]. Moreover, as energy-behaviours within organizations can only be insufficiently monitored, individuals need to engage in these behaviours in a self-determined manner, due to autonomous motivation [15,16]. A promising tool to achieve this goal are participatory interventions (PIs; [17]). Although PIs can take many forms, in this study we refer to PIs as workshops in which a facilitator leads through a structured process that allows participants to discuss and decide which energy-saving measures are applicable in their work environment.

Despite their efficacy, there still lacks a clear understanding of how PIs enhance organisational members' motivation to engage in energy-conservation [18,19]. Therefore, this study examines whether (a) PIs are more effective than informative interventions to facilitate energy-saving motivation, (b) satisfaction with a PI drives the internalization of

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energy-saving motivation, and (c) participants who are low in energy-saving motivation benefit more from a well-delivered PI than participants who possess high motivation prior to the PI.

### 1.2. The importance of enhancing energy-saving motivation

One cannot expect organisational members to engage in energy-saving behaviours only for the joy they derive from engaging in these activities. Rather, policymakers should strive to create opportunities for organisational members to reduce their energy-consumption out of some sort of inner commitment and autonomous motivation. The “taking in” of external regulations, such as the request to save energy at the workplace, is called internalization [20]. Internalization refers to the process during which energy-saving behaviour becomes a personally endorsed value and organisational members feel self-determined while acting on it [20]. Accordingly, individuals with higher autonomous pro-environmental motivation are more likely to show behaviours that coincide with their internalized values [21,22].

Social regulations that are not fully internalized, but still initiate behaviour, can be understood as controlled motivation [23]. In a controlled state, individuals do not see the self as the origin of an action, but rather, act because of external factors, such as rewards or anticipated disapproval from colleagues [22,23]. One might say that these regulations are only superficially internalized without much reflection on how the behaviour relates to personal values [24].

When values are integrated into individuals’ self-concepts, they engage in these behaviours volitionally due to autonomous motivation [20]. For instance, someone who only turns off the lights when leaving a room because colleagues want him/her to (controlled motivation) has a lower internalization of energy-saving values than someone who can identify with the ends of such means (autonomous motivation).

The transformation of controlled motivation into autonomous motivation is more likely to occur when organisational members do not feel pressured or controlled, but instead, decide in a self-determined manner to engage in a target behaviour [25]. A theoretical framework that helps to understand this process is the *behaviour change wheel* [26,27]. This model suggests that capability (i.e., referring to individual ability) and opportunity (referring to contextual feasibility) act on an organisational members’ motivation and prompt behaviour [26]. Moreover, the social context and group processes influence the internalization process of external regulations [28,29]. For instance, how colleagues and peers engage in energy-consumption might prime an individual’s attitude and motivation towards this matter [30]. Accordingly, interventions that create social and physical opportunities to enable organisational members to engage in energy-savings are among the most promising approaches towards enhancing energy-conservation [27].

PIs adhere to these requirements as they seek the engagement, participation, and decision making of the ones who are expected to change their behaviours [31,32]. Such an involvement also overcomes unidirectional forms of engagement (e.g., providing information) and has the potential to align energy-saving measures into organisational structures [33]. Furthermore, PIs might raise acceptance and prevent a diffusion of responsibility as organizational members recognise that energy-efficiency is not only the task of facility managers, but also requires the efforts of all individuals [34]. Thus, we propose that PIs are more effective in helping organisational members to internalize energy-saving motivation than other interventions, such as informative sessions [11,12].

**Hypothesis 1.** Compared to informative interventions, PIs facilitate organisational members’ autonomous energy-saving motivation.

### 1.3. How PIs empower organisational members to save energy at their work place

Creating opportunities to involve organisational members in the decision making process with regard to how to save energy is the most successful method of achieving the desired behaviour change [27]. One mechanism that can explain the effectiveness of PIs might be *empowerment*, which means that individuals experience meaningfulness, competence, choice, and sense of impact [35]. Meaningfulness highlights that the values and goals of a PI align to a participant’s own standards. Competence means that organisational members perceive that they have the capability to solve given tasks. Choice refers to organisational members’ experience that their behaviour is self-determined. Impact refers to participants’ experience of achieving a significant change in one’s environment. Taken together, empowerment should facilitate a process of organisational members becoming autonomously motivated to engage in energy-saving behaviours [31].

However, the level of empowerment depends on participants’ experience of having the capability and legitimation to participate in decisions regarding new energy-saving measures [36,37]. If a PI is well-structured, communicates the rationale of the intervention, and develops solutions as well as defines future action steps, it helps organisational members to make sense of an intervention aimed to promote energy-saving behaviours [38,39]. Moreover, when organisational members perceive that a PI provides them with the opportunity to voice their perspectives and produces results that align to their preferences, they should perceive themselves as capable of enhancing their energy-saving behaviours at the workplace [40]. Such an opportunity for all stakeholders to express their interest also ensures that the burden is equally distributed among organisational members. The perception that organisational changes are fair and just is a critical component for individuals’ acceptance of changes that affect their energy-consumption behaviours [41]. Accordingly, satisfaction with a PI should facilitate participants’ feelings of empowerment, and thereby, enhance their autonomous energy-saving motivation [42]. Thus, we understand a PI as an affect-generating event, whose impact might reach beyond the actual workshop [43] and propose that satisfaction with the PI is a predictor for organisational members to engage in energy-savings in a self-determined manner.

**Hypothesis 2.** Satisfaction with a PI enhances participants’ autonomous energy-saving motivation.

Nonetheless, despite the positive effects of a satisfactory PI, we suggest that the beneficial aspects of a well-delivered PI should be more pronounced for organisational members who are not yet motivated to save energy at work. A practical reason for this assumption is a ceiling effect: For those participants who are already motivated, a PI has no impact on their energy-saving intention because there is little room for improvement.

In this context, it might be helpful to understand the occurrence of pro-environmental behaviour as a person passing through different stages of change: Some individuals might not have thought yet about changing their behaviours (lower stages); meanwhile, others might have already shown a strong commitment and plan to follow-up on their intention (higher stages; [44]). Thus, for those individuals who have high autonomous energy-saving motivations, a satisfactory PI might not be as important as it would be for those who find themselves in lower motivation stages.

**Hypothesis 3.** The effect of satisfaction with the PI on energy-saving motivation after the PI is moderated by participants’ motivation prior to the PI. For participants with initial low motivation, the relationship between satisfaction and motivation after the PI is more positive than for participants with high motivation prior to the PI.

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