

How to Promote Electricity Conservation among Households?

A Field Study in Singapore

Resource resilience requires, among other things, that households are willing and able to conserve resources. In Singapore, where electricity is generated mainly from fossil fuels, electricity conservation not only contributes to resilience, but also lowers carbon emissions and helps to mitigate climate change.

Energy efficiency and conservation programmes have been rolled out around the world to promote electricity conservation. Some of the behavioural nudges employed include the introduction of non-binding conservation goals. We examined the effectiveness of setting such goals to nudge households in Singapore towards the desired behaviour and the conditions to make this effective.

Analysis: In a field study involving 442 households at NTU staff housing in Singapore, we examined whether setting an exogenous goal of a 10% reduction in electricity consumption is effective in decreasing consumption. The baseline electricity consumption of the households in the first two months was observed.

In the next three months, the households were placed in one of the following groups:

1. not given goals or rewards, but given feedback on their consumption (control group)
2. given a goal and provided with feedback on their own performance (treatment group 1)
3. given a goal, feedback on their own performance, and a monetary reward of SGD100 (i.e. self-benefit motivation) should they achieve their goal (treatment group 2)
4. given a goal, feedback on their own performance, and a monetary donation to an environmental charity as a reward (i.e. pro-social motivation) should they achieve their goal (treatment group 3)

After three months, the feedbacks and rewards were removed and the households' electricity consumption was observed for another two months (post intervention phase).

Results: Households that were given goals and feedback decreased their electricity consumption by an average of 13.22% compared to their baseline consumption (see figure 1). They saved considerably more electricity than households in the control group that were not given goals.

Comparing three treatment groups, none of the rewards gave a significant additional boost to the electricity savings. This finding is in line with other recent experiments. For two months, after the goals and feedback were removed, electricity savings of the treated households stayed at a considerably high level. This suggests a lasting change in habits in the course of the study.

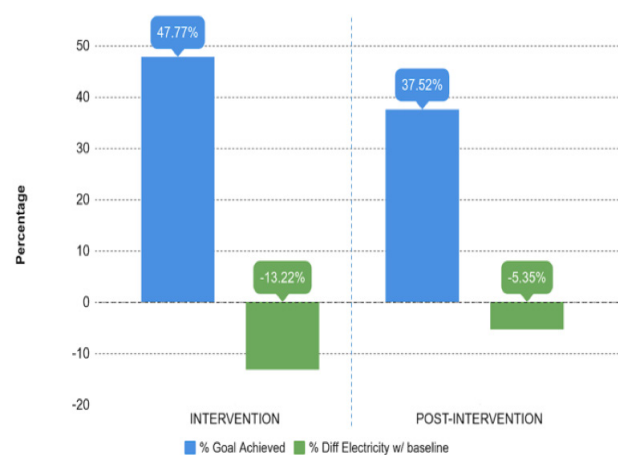


Figure 1: Goal achievement and electricity consumption of households in the treatment groups during the intervention and post-intervention phases.

Conclusion: Combining conservation goals with feedback on goal achievement can result in significant reduction in electricity usage during and after an intervention period. Providing rewards does not enhance the effect. Hence, a combination of goal setting and feedback is effective in promoting electricity conservation, which is decisive for improving a country's resource resilience.

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