**Extended Abstract**

**SOCIAL INFORMATION AND ENERGY CONSERVATION: ENVIRONMENTAL**

**IDENTITY AND SOCIAL NORMS**

The influence of social information on behaviour has been demonstrated in a variety of settings.

Research shows that telling people how their actions compare with those of similar others leads them to modify their energy and water consumption, their contributions to charitable causes, and their saving decisions. Despite growing interest in social comparison research, several open questions remain. In particular, relatively little is known about the sources of heterogeneity in the effect of a well-known experiment of social comparison, such as the one provided by the Opower program through the Home Electricity Report.

In our paper we speculate that environmental values represent an important source of heterogeneity in the effect of the Opower peer comparison. While the conservation behaviour of people with high biospheric values has been largely studied in the literature, little is known about the response of these individuals to peer comparison. In this paper we test the effect of social comparison on energy conservation and whether this depends on the extent to which individuals endorse high environmental values.

Another important gap in research is the understanding of the mechanisms behind individuals' reaction to the Opower Home Energy Report (HER) in the field of energy use. The HER delivers different elements, from a static neighbour comparison on energy consumption (descriptive norm), to feedbacks on how well an individual is performing (injunctive norm), as well as energy saving tips. A second objective of this paper is to test possible mechanisms that make the HER effective. First, we test if the HER shapes individuals' perceptions of the norm in the domain of energy conservation. A stronger perception of the norm in the direction of energy conservation may then influence energy consumption. Second, while environmental values tend to be stable in everyone's life, environmental self-identity can be influenced, for example, through information regarding energy conservation. A second mechanism could therefore be that the information delivered in the HER increases one's environmental self-identity. By activating biospheric values, the HER strengthens people's focus on benefiting the environment.

The analysis combines data from a large randomized program conducted by Opower in Italy, with survey data collected among utility customers. The data available from the utility details whether a person receives the social information through the Home Energy Report, the frequency and type of social information, customers' engagement with it and energy consumption. Survey data includes measures of environmental values, environmental self-identity, social norms and other household characteristics.

The first objective of the analysis is the impact evaluation of the HER program on energy consumption and digital engagement with the portal. The empirical analysis is conducted on a sample of customers of an Italian utility company (ENI gas and Luce), for the time period ranging from January 2015 to December 2017. The sample consists in 4’535 customers, of which 3,720 and 815 from the treatment and control group, respectively.

A second objective of the paper is to assess the heterogeneous effects of the program along two dimensions. We aim to test how treatment effects vary with respect to pre-treatment energy consumption as well as baseline environmental values. This analysis aims to answer the question on which customers' characteristics make them more likely to respond to the HER communication.

A third objective of the study is the question on the mechanisms behind the effect of the program. To shed light on the role of two possible mechanisms, we conduct manipulation checks. We first test if the communication received through the eHER affects environmental self-identity. We also test if HER influences a perception of the social norm related to energy conservation.

A very robust finding of the analysis is that pre-treatment usage along with environmental values are the major sources of heterogeneity. Families with higher pre-consumption respond to the intervention by curbing energy consumption. Conditional on high pre-consumption, people who strongly endorse environmental values, are more likely to respond to the social information by cutting energy consumption. Second, the HER increases environmental self-identity among people with high pre-consumption. Another important result is that the HER increases the perception of the social norm in favour of energy conservation. Interestingly, this effect holds for both high-consumption and low-consumption households.

Taking all these results together, one can infer that high pre-consumption households are induced to reduce home energy consumption by the HER because the HER increases their environmental self-identity. On the contrary, the HER influences the social norm among low pre-consumption households but this effect does not translate in lower energy consumption among this type of families. One can therefore argue that the social norm mechanism is less effective in conducting a final outcome in terms of energy conservation.