NRP 71 Households

Energy efficiency in households

Overview

Context

Price levels of products and services influence the volume of their demand; but essential products and services such as staple food and energy use are assumed to be price-inelastic. Contrary to this, recent studies show that consumer patterns do change if the price signals are strong enough and if sufficient time is allowed for adaptation. This raises the question whether the design of electricity tariffs can encourage increased energy savings (usage of energy efficient appliances or behavioural changes). Two promising types of tariff design are:

- **Feed-in tariff (FIT) :** A financial incentive is paid for each kWh saved by the end-user.
- **Progressive tariff (PT) :** Combines both financial rewards for energy saving and financial punishment for overuse.

Objectives

We aim to investigate if the use of electricity tariffs can result in household electricity savings in Switzerland. The project addresses the following research questions for which clear knowledge gaps have been identified:

1. What is the impact of individual differences in cognitive-affective factors on the acceptance of energy tariffs? Can clusters of costumer profiles be identified?
2. Which other factors influencing individual decision making need to be taken into account?
3. How can this insight be used to develop segment-specific tariffs and marketing frames for these tariffs?
4. Which concrete energy efficiency and behavioural measures are clients likely to implement?
5. What are the related energy savings and the attendant costs and how do these relate to the maximum potential in the case of economic rationality?
6. How can the energy efficiency gap (difference between economic potential and actual practices) be further closed?
7. What interventions (“nudges”) can be derived to mobilise behavioural changes in energy consumption?

Research plan

The research questions are answered by means of four interrelated tasks, which are detailed in Figure 2. The various savings potentials and the derivation of the final energy savings potential is presented in Figure 1.

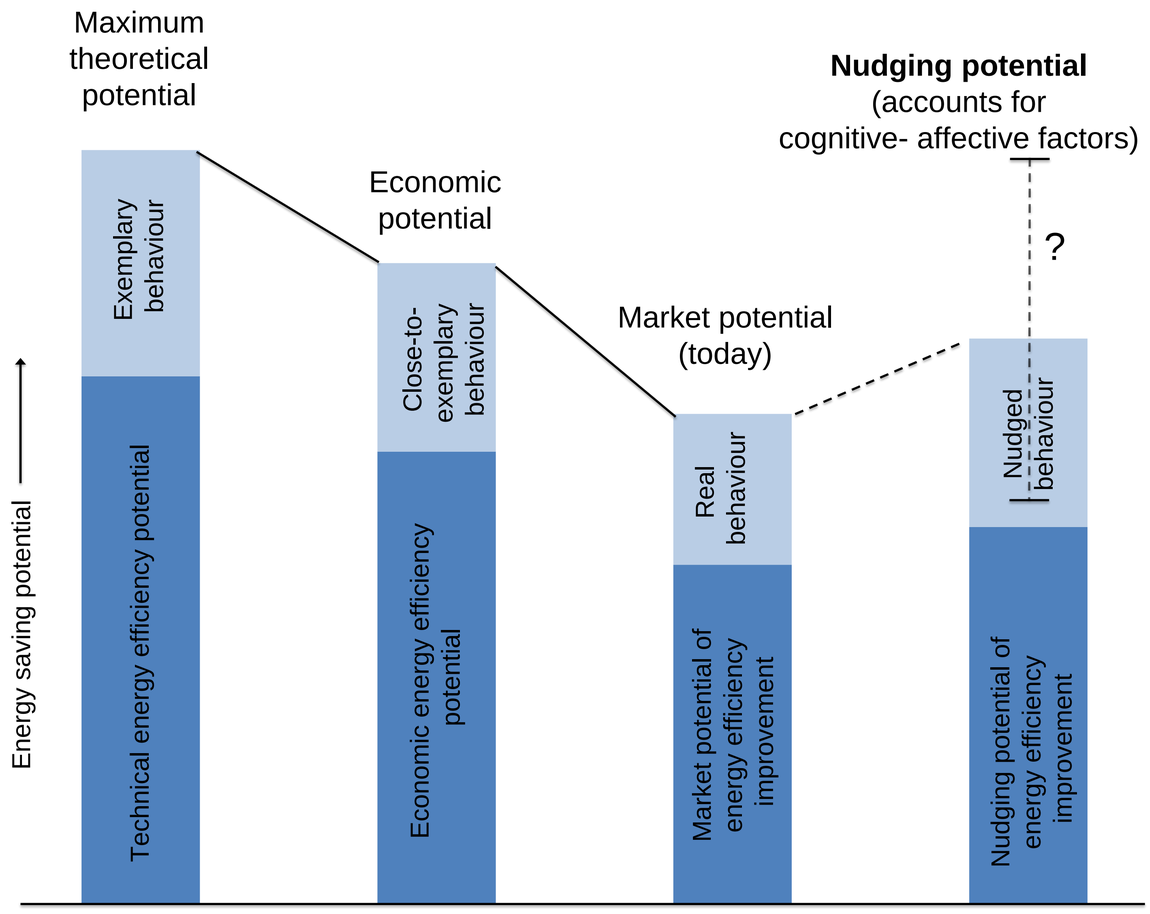

Figure 1. Types of energy efficiency potentials.

Partners and Collaboration

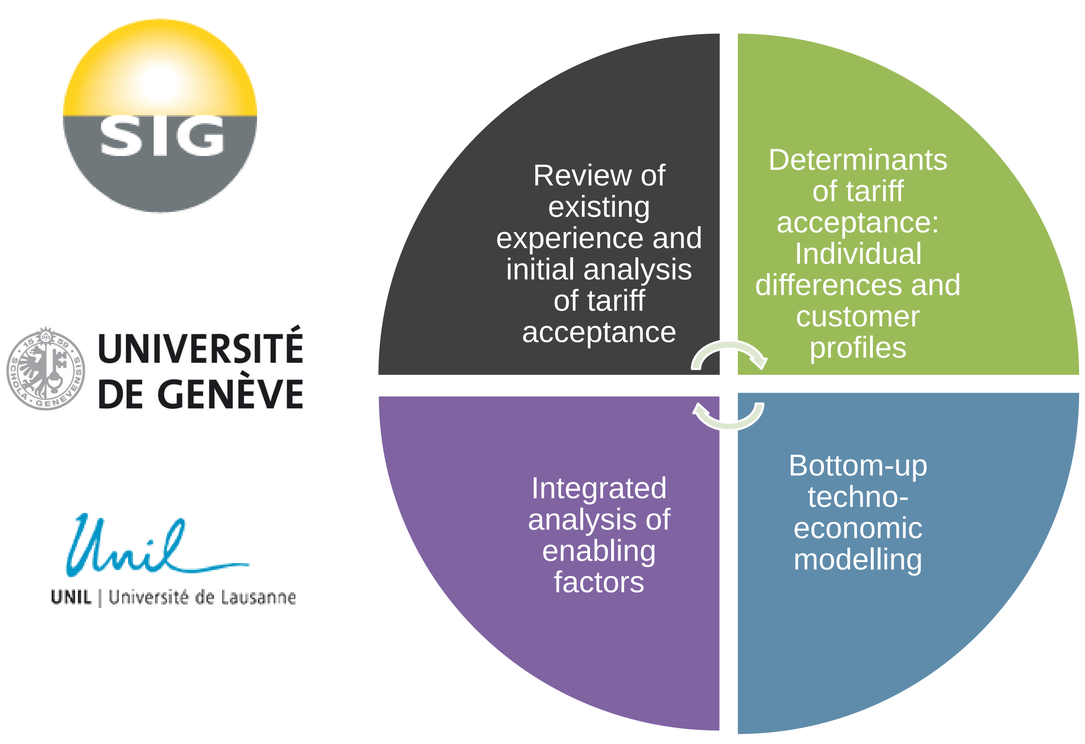

Figure 2. Research plan and collaborating partners.

Energy Turnaround

Electrical utilities are foreseen to be main stakeholders to achieve the Energy Strategy 2050, which has a goal of reducing the per capita electricity consumption by 18% between 2000 and 2050. In this context, tariffs incentivizing higher energy efficiency and knowledge about the behavioural components underlying sustainable consumer behaviour become relevant.

Our main research objective to identify **which tariff structure can best mobilise energy savings,** is directly relevant to achieving the goals of ES2050.

To date, little is known about the behavioural components driving energy savings in households. By identifying behavioural determinants, such as **cognitive-affective factors** (e.g., emotional reactivity, value hierarchies) and **clusters of consumer profiles**, concrete strategies and recommendations can be derived that take into account everyday behaviours (e.g., switching off lights) and purchase decisions (e.g., buying A+++ appliances).

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