

Newsletter
October 2018



Psychological, social and
financial barriers to energy
efficiency





The PENNY project

What is our aim?

The primary goal of the project PENNY is to understand consumer behaviour in the domain of energy efficiency. The project aims to provide an empirical and numerical assessment of the psychological, social, economic and financial factors that influence energy efficiency in the residential and industry sectors.

Past events

- In April the 2nd contractors meeting took place in Brussels.
- On the 11th of June 2018 the 3rd PENNY project meeting took place. This time the team met in Groningen to discuss results and future plans of the project.
- From 10 to 13 June 2018 the International Association for Energy Economics International Conference was held in Groningen. The PENNY team organized a session on 'Demand/ efficiency behaviour'.

Save the date

On 06/06/2019 the final conference of PENNY will be organized in Brussels.

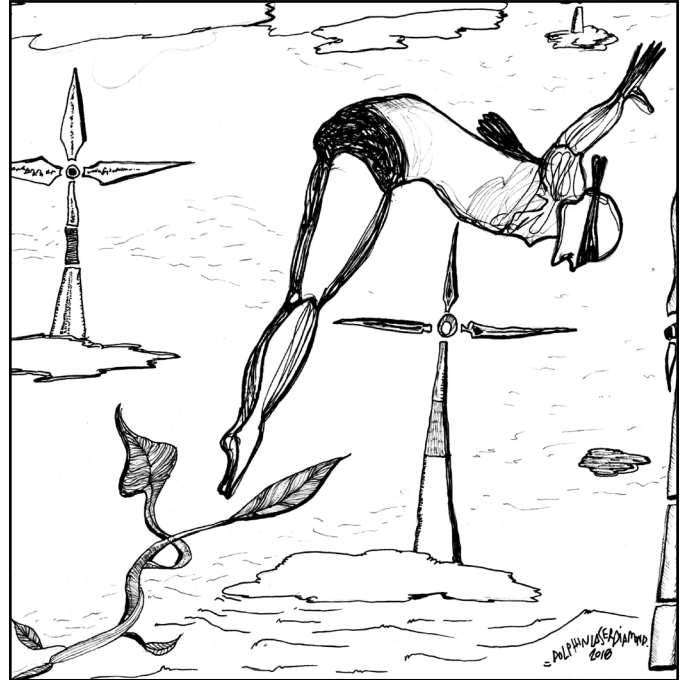
PENNY highlights

The PENNY project is well on its way. We hereby present you some highlights of the findings from the project team. For more information you can find the report on the [PENNY website](#).

Investing in wind energy

Among utility customers we tested the influence of two messages on the intention to invest shares in wind energy production. Respondents either received a message promoting wind energy as pro-environmental or as financially attractive. We also measured the extent to which participants think that the utility aims to reduce its environmental impact. We did not find a difference in the intention to adopt wind shares between the two messages. However, when participants think the utility does not strongly aim to reduce its environmental impact, the environmental message is less effective than the financial message in promoting investment in wind energy shares.

Our results suggest that when organizations are perceived as aiming to reduce their environmental impact an environmental message is more likely to effectively promote sustainable energy behaviour. However, when people think the organization does not aim to reduce its environmental impact an environmental message is not effective. In that case, a different message such as a financial message may be more effective in promoting sustainable energy behaviour.

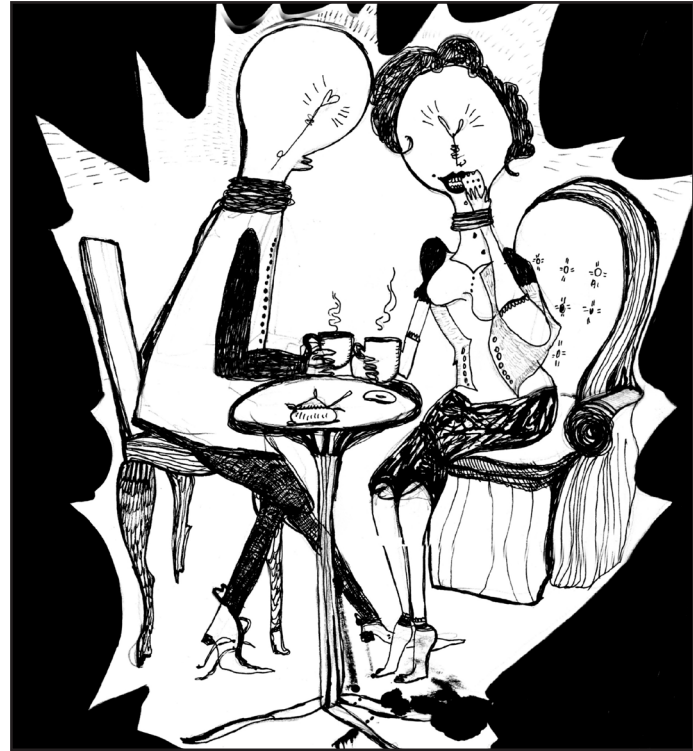


The impact of energy literacy on the level of energy efficiency



It is important for policy makers to have an estimate of the potential electricity saving in households and it is also crucial to know the determinants of the level of efficiency in the use of electricity, and the role of some of the barriers. Therefore, we studied the following questions: What is the level of efficiency in the use of electricity of European households? How large is the potential for electricity savings in the residential sector for a given level of energy services? Which are the factors that influence the electricity demand at the household level and in particular, what is the role of energy-related financial literacy? In collaboration with utilities in Switzerland, Italy and the Netherlands the PENNY team collected data on electricity behaviours, literacy, and actual electricity demand. The concept of “energy-related financial literacy” was developed that combines both the energy-relevant knowledge and the skills to perform an investment calculation, that households need to take informed decisions with respect to energy consumption.

Results indicate significant inefficiency in the use of electricity in the sample households. Moreover, the level of energy-related financial literacy seems to play an important role in explaining the level of electricity consumption. The more consumers have the ability to do investment calculations the more efficient their electricity consumption.

These findings indicate that there is considerable potential to save electricity in the residential sector. The inefficiency can be explained by consumers not adopting energy efficient appliances and not using their appliances in an optimal way. By promoting the diffusion of life-time cost calculators for appliances households can be helped to make better investment calculations.



Social and institutional factors influencing energy efficiency projects

Energy		Washing machine
Manufacturer Model		
More efficient		
A		A
B		
C		
D		
E		
F		
G		
Less efficient		
Energy consumption kWh/cycle (based on standard test results for 60°C cotton cycle) <small>Actual energy consumption will depend on how the appliance is used</small>	0.95	
Washing performance <small>A: higher G: lower</small>	A B C D E F G	
Spin drying performance <small>A: higher G: lower</small> Spin speed (rpm)	A B C D E F G 1400	
Capacity (cotton) kg	5.0	
Water consumption l	55	
Noise (dB(A) re 1 pW)	Washing 5.2 Spinning 7.0	
Further information is continued in product brochures		

Case studies were conducted in Hungary to analyze the social and institutional conditions influencing energy efficiency investments. Two models were distinguished to promote energy efficient technologies: a redistributive governance model and a market-led governance model. Insulation was organized via a redistributive governance model: organized top-down, but involving several people; whole communities, and the project being financed by subsidies and bank loans. The beneficiaries were communities consisting of lower middle class people, whose main aim was to reduce their living costs, and make their homes a bit more comfortable and more valuable. Solar panels were mostly adopted via a market-led governance model. Households investing in solar panels belong to the upper middle class and middle class, their income level is higher, they are usually middle-aged couples. It is a typical bottom-up, individual action.

The case study showed that local governments have almost no effect on energy efficient projects, thus their interests, impacts, attitudes and the barriers are shadowed. The development agency has a leading role in initiating and managing local energy-efficiency projects: although they are a project-oriented organization, they are highly interested in developing energy efficiency projects. The organizations have a direct and strong influence on insulation projects. Furthermore, planners have very little, indirect influence; their environmental attitudes are basic, and highly professional. Main barriers for them to reach their aims are administrative constraints. Finally, development agencies have an eminent role in energy efficiency investments, but these organizations are not interested in increasing locals' environmental awareness. These enterprises are bounded by the constraints of national legislations.



Short outlook for 2018

PENNY will continue to understand which interventions better overcome the barriers to energy efficiency. A theoretical behavioural framework which can guide the modelling work foreseen in the project will be developed.

In the living labs set up in collaboration with the companies in Germany, Italy, Switzerland and the Netherlands we will test which interventions are most effective in reducing energy use and promoting the adoption of energy efficient appliances.

PENNY will develop an innovation that brings the classic gamification approach beyond what is usual in the energy efficiency domain. The idea is to experiment with an original mix of digital and non-digital games, which may better convey the stimuli towards efficient energy consumption behaviour.

Barriers to energy efficiency vary depending on the type of consumers but also across sectors and firm size. While a lot of attentions is given to understanding energy efficient behaviour related to individuals, strong improvements may exist for firms as well. PENNY will quantitatively investigate determinants for investments in energy efficiency and their respective effects on energy consumption in the manufacturing industry.

Upcoming PENNY meetings

3rd project meeting
06/06/2019
Brussels

PENNY consortium

 <p>FONDAZIONE ENI ENRICO MATTEI</p>	Fondazione Eni Enrico Mattei (FEEM), Italy
 <p>Centre for Energy Policy and Economics Swiss Federal Institutes of Technology</p>	Swiss Federal Institute of Technology Zurich (ETH Zurich), Switzerland
 <p>WESTFÄLISCHE WILHELMS-UNIVERSITÄT MÜNSTER</p>	Westfälische Wilhelms-Universität Münster (WWU), Germany
 <p>university of groningen</p>	University of Groningen (RUG), the Netherlands
 <p>University of Debrecen Debreceni Egyetem</p>	University of Debrecen (UD), Hungary
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