

Our project stories

Changing energy consumption behaviour at the workplace

COWI Lietuva working with the Make Energy Change Happen Toolkit

Eglė Jaraminienė is an energy expert working at the engineering consultancy *COWI Lietuva* in Vilnius. She used the Make Energy Change Happen Toolkit in a project aiming to change people's attitudes to energy use and people's energy consumption behaviour at the workplace in two office buildings.



How can energy consumption behaviour at the workplace be changed?

The project aims to reduce energy consumption in office buildings by influencing employees' behaviour. Office buildings are often equipped with modern technology, which is used by people in an inefficient way. People even tend to behave in a more energy-wasting manner at work than they do at home, because most often they have no financial incentive to save energy at their workplaces. Therefore, there is quite a challenge to find ways to encourage people to save energy at their workplace.

How did the project develop?



The two participating buildings in the Northtown Technology Park

Employees of the offices in two buildings of the Northtown Technology Park (NTP) were chosen as target group of the project. The NTP is a public institution, providing office space to approximately 50 companies with 270 workplaces at the time of project implementation. The main challenge of the project was that employees have no direct financial incentive to save energy, as their management pays a fixed monthly rent, not dependent on energy consumption. Office employees in the NTP were found to be well educated, environmentally aware, open to new ideas and willing to participate in the project.

In the beginning, we conducted an energy audit in order to identify current consumption and saving potentials. Due to the fact that general information was found to be too abstract and hardly motivating for the target group, an energy meter was used to show people how much energy the devices they use consume. Information on how to reduce energy consumption was distributed regularly among employees.

In the course of the project, electricity consumption for lighting decreased in one building by 5% and in the other one by 20% compared to the same period of time in the previous year. Electricity consumption for computer use decreased in one building by 25% compared to the previous year, but increased in the other one by over 25%. This was mainly due to the fact that new office space had been rented out, and a lot more computers were in use compared to the year before.

COWI Lietuva's experiences with the Make Energy Change Happen Toolkit

We have used all the activities from the Toolkit and have found most of them very useful. Especially valuable were activities related to the selection and adaptation of instruments to interact with the target group. Activities on developing a learning culture also provided quite an interesting experience.

1. Get to know your target group

In order to tailor a project well to its target group, the Make Energy Change Happen Toolkit proposes to get to know the target group at a very early stage of project planning. Following this advice, we arranged several formal informal meetings with stakeholders that know the target group well, mainly from the NTP management group. An important informant about our target group was the technical director of NTP.



Additionally, a questionnaire was designed and some face-to-face interviews were conducted with members of the target group to find out the current level of awareness about energy saving possibilities.

Before distributing the questionnaire among the target group, a preliminary version was tested in the COWI office and with a small group of NTP employees. The Make Energy Change Happen Toolkit recommends this approach in order to make sure that the questionnaire is clear to respondents and is able to deliver relevant answers. By providing tools to design and test questionnaires, the Toolkit has helped to get to know the target group and bring about important findings.

The main findings of the questionnaire were:

- NTP employees are active, receptive to new ideas and (65% of questionnaires were answered) and concerned about energy saving issues;
- answers show some knowledge about energy saving behaviour;
- at the same time only little awareness could be noticed concerning how much energy could be saved based on behavioural change (without monetary investment).

Information received via the questionnaire allowed better design of the following awareness rising campaign. Another important aspect that we have found out about our target group was that they were already involved in NTP community activities and were used to receive information and to communicate by e-mail. Therefore, this email list also became the main channel for communication in our pilot project. Knowing more about our target group we could more efficiently select the channels and frequency of our information dissemination. All information shared with NTP employees during the project was concerned with issues regarding 'why to change', 'how to change' and 'how to acquire new habits'.

2. Metering and feedback: how to tailor to context?

In the design phase of the project we decided to use an energy consumption baseline to compare how behavioural changing could affect heat and electricity demand. Electricity and heat consumption data of both buildings were collected and results visualised in graphs. We presented some preliminary results during face-to-face interviews with the target group and asked them how understandable this information was for them. The results were interesting and understandable to technical staff and administrators of the buildings. The actual target group, however, appeared to be not very interested.

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Thus, we looked for more engaging ways to communicate energy consumption to the target group. The idea to use smart metering of real energy consumption of different office equipment was taken from the EC IEE Program project *Energy Trophy+*. Unfortunately, only one smart meter was available. We arranged a meeting with our target group members demonstrating the use of a smart meter.

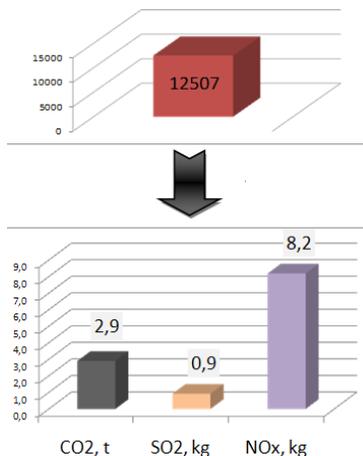
During this on-site demonstration visit we tried to show that it is important to switch off electrical equipment when it is not in use for some time. Thereby, we wanted to show NTP employees how much energy they can save if they do so.

During the demonstration we checked equipment such as computer, monitor (LCD and CRT), laptop, drinking water automat, printer and mobile phone recharger. Results showed that a laptop is more energy efficient than stationary computer with monitor. Results also indicated that older computers use twice as much energy compared to newer models. Contrary to expectations, mobile phone chargers did not consume electricity when being plugged into the grip without mobile phone attached. Other equipment checked were LCD and CRT monitors and laser and ink jet printers. During the presentation and testing with the smart meter, NTP staff appeared motivated to reduce energy consumption by learning about actual consumption of equipment they use. An inventory of electrical equipment used at Northtown Technology park offices to ensure the future energy advice provided would be relevant to these particular facilities.

We noticed that our target group often could not relate to real energy consumption data. The Make Energy Change Happen Toolkit has triggered the idea to look for more engaging metering and feedback activities. Thus we decided to use a smart meter to demonstrate personal consumption.

Eglė Jaraminiene, COWI Lietuva

3. Energy audits: how to tailor to context



An energy audit was performed in one of the buildings in order to attain an energy consumption baseline and to calculate the energy efficiency of the building. Knowledge about real monthly consumption of the office building increased motivation for office workers to save energy. Converting the electricity use, CO₂, SO₂ and NO_x emission factors specific for Lithuanian electricity production were used.

The knowledge gained through the energy audit was also communicated to office employees who thought that changing electrical equipment rather than engaging in behavioural change could lead to energy consumption reduction. The audit has shown that the potential of economically feasible technical solutions to increase energy efficiency of the building is almost fully exploited already and now it is up to employees to save energy by changing their habits.

As NTP is planning to build a third office building in the near future, the audit of the existing building has provided some insight on energy saving technical measures to be considered in the building design phase. We discussed such measures with the NTP management and the person responsible for the maintenance of the technical systems.

4. Energy advice: how to tailor to context?

The energy audit and our knowledge base at COWI Lietuva provided us with input on what kind of advice to reduce energy consumption based on behavioural change could be communicated to NTP employees. The Make Energy Change Happen Toolkit provided support concerning the right format and communication channel to disseminate advice. We arranged meetings with the NTP management group to discuss the target group's information needs and adjusted energy advice given accordingly.

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With respect to advice relating to issues well known to the target group, emphasis was put on how to change habits and actually achieve changes in energy consumption. Concerning issues we found less knowledge among target group members, detailed information was presented. By means of the questionnaire and interviews conducted in the beginning of the project we knew that the majority of people did not know about thermostatic valves, how they function and how they could help to save energy to heat the offices. Thus we provided detailed information on this issue, including pictures and descriptions. In As many members of the target group are technically educated and curious persons, we decided to even include comprehensive technical information on thermostatic valves, see picture above. We have received positive feedback on this.

5. Develop a learning culture

Self-evaluations

We have performed the MECHANisms mid-project and end-of project self-evaluations. It helped us to find out that we did not pay sufficient attention to evaluation and the use of evaluation results in our project. We improved this issue by providing more feedback to the target group. It seems to us it would be also very useful to perform this self-check in the initial design phase of the project.

The main message we used in our information campaign was: "Everybody knows what he or she needs to do to reduce energy consumption, but new behaviour is not a habit – constituent reminders are needed" Office employees were invited to participate by making labels and placing them near switches. Examples of such reminders were provided via email.



Mid-project self-evaluation

Mid-project self-evaluation led to some improvements of the ongoing project. We realised that we need better ways to engage and motivate our target group and then decided to use the idea of smart metering that had been employed in another project. The idea of to develop an inventory of electrical equipment used by our target group also came up during the brainstorming with colleagues based on the Make Energy Change Happen tools.

End-of-project reflection questions

The toolkit reflection questions helped us to think about what we learnt from this project and how we could perform better in similar projects. We have learnt that attention to the target group needs can be far more important than technical aspects and financial indicators of a project.