

Energy and Behaviour

What do you think of the energy saving measures at our campus

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1 Introduction

1.1 Background

The energy bill of the WUR next year, is likely to be more than four times higher than in previous years. At the same time, climate change and the desire to become independent from the use of Russian gas and oil make energy conservation and transition increasingly urgent. The WUR's broad interventions in the field of energy conservation offer excellent opportunities to investigate how behavioral interventions can lead to energy savings. This way, we can not only save costs by reducing our own energy consumption but also make a significant contribution to research that will play a major role in reducing energy consumption throughout Europe in the coming years.

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The survey was filled in by 849 participants. It was initially intended to get a better feel of the range of motivations that employees have when choosing whether to comply with the envisioned energy saving measures. It was not intended to verify whether the intervention was a success. However, since the data that was intended to be used for that purpose was not available, it was decided to take more extensive look at the survey.

1.2 Focus of the results

1.2.1 Distinguishing between different groups in the data

To better understand how interventions change behaviour, it is important to distinguish the situations in which behaviour occurs. As an example, some participants of the survey had control over energy saving measures, where in some buildings, such as Atlas, control is very limited. We cannot expect these participants to change their behaviour in the same way.

When addressing the question how to change behaviour, it additionally makes sense to distinguish the behaviour of participants with a positive attitude towards the energy saving measures, as opposed to the participants with a negative attitude, or an “in between” attitude. A certain intervention is likely to have a different effect on someone with a positive attitude towards the goal than a negative one. Although we are primarily interested in mechanisms that apply to everyone, those might not always be available. However, if you can influence one group, that might be interesting enough.

A participant with a positive attitude might already take a lot of measures (the participant likely had a positive attitude because the intervention corresponded with the values the participant already had). A person with a negative attitude towards the measure might be extremely reluctant to change their behaviour in response to the intervention. It is therefore possible that two groups that function very differently, have the same response to the same intervention, but for different reasons. As a result it is important to understand the underlying mechanisms.

1.2.2 Unwanted behavioural responses

The goal of the intervention is to save energy. However probably not at all costs. Interventions might have negative spillover effects. We already know that the decline in temperature led to frustration with the employees in some buildings. Firstly such responses might not be ethically desirable, and although the intervention will lead to short term gains, in terms of energy saving where the employees cannot control the temperature, it is unlikely to contribute to the willingness of employees to do their part with respect to other measures that require voluntary participation. In other words it might decrease the voluntary compliance with respect to other measures.

Another undesired behavioural response is that people stayed home because it was too cold in the office. In addition, it essentially shifts the heating bill from the WUR to the employee. From an environmental perspective it perhaps should additionally be taken into account that heating one office building is more efficient than heating individual homes.

1.2.3 Focus on differences between buildings

An downside of many survey questions is that they collect quite subjective information. Even when asking whether an employee had control energy saving measures, two colleagues from the same department might give very different answers, because they have a different definition of control, or different knowledge about what is possible. We do however have relatively objective information on what can be controlled building by building. As a result, it makes sense to split the answers by building, so that we can see whether the differences between buildings might also explain differences in behaviour (please note that there are other reasons why behaviour from building to building might differ, for example study background).

1.3 Communication advice for next year

For next year it is important to focus on the communication of the measures. Many people have been very unhappy with last year's approach. Without proper communication, especially focusing on how things will be done differently this year, there will likely be a resurgence of complaints, before the measures have even started.

We believe that it is important to own up to the mistakes that have been made last year, and address how these issues will be mitigated in the current year. It would be advisable to have communication that is specific to each building. This makes it possible (with the help of the survey) to very specifically address last year's concern. Such an approach is likely to provide employees with more confidence that their complaints were heard and their issues will be addressed, even if only partly. It will additionally help to address why measures are chosen. Why 19 degrees, how much would that save etc. Research has shown that such elements improve voluntary compliance.

Summary:

- What went wrong last year.
- What will be changed this year.
- Explain why these temperatures are chosen, and other changes are made (why 19 degrees for example)
- Where can complaints be sent to.

For extra goodwill:

- Provide employees with thermometers at request, so they can check their workplace and identify cold spots.
- Shorten the period to which the intervention applies when temperatures are sufficiently high (for example, when the difference between inside and outside temperatures are within 5 degrees, and the cost for WUR to have a slightly higher temperature would be lower).
- Perhaps use a slightly higher temperature if this can ensure a better minimum temperature.

1.4 Intervention advice for next year

Last year's intervention showed that saving energy also comes at a cost. Right now it is not possible to properly evaluate the effect of the intervention, or the adverse effects caused by the intervention.

A proper evaluation of an intervention requires a counterfactual; What would have happened without the intervention. A counterfactual can be created in a few different ways. The best approach would be to have a treatment and control group. However, unless it is both feasible and desirable to exempt some buildings from the intervention, that can be compared to buildings with an intervention, our best bet is to log before and after data instead. Such an approach would work well enough if the period before the intervention is comparable to period after the intervention.

1.4.1 Find a way to measure office presence (Before - During - After)

The most important piece of information missing last year was office presence. It would additionally be extremely valuable to know how many people work in each office building (not presence, but more have a building as their standard work spot). Having this information not only means we could establish a survey response rate by building, but we could even to some degree account for survey response biases. In turn this would enable us to provide accurate sentiments for each building.

1.4.2 Temperature Data (Before - During - After)

Last year it was discussed that it would be possible to get temperature and humidity readings for a cold day and a warm day for each of the office buildings. This is necessary to get an idea of how warm, but especially cold it can get in some buildings. Without this information it would be hard to interpret results.

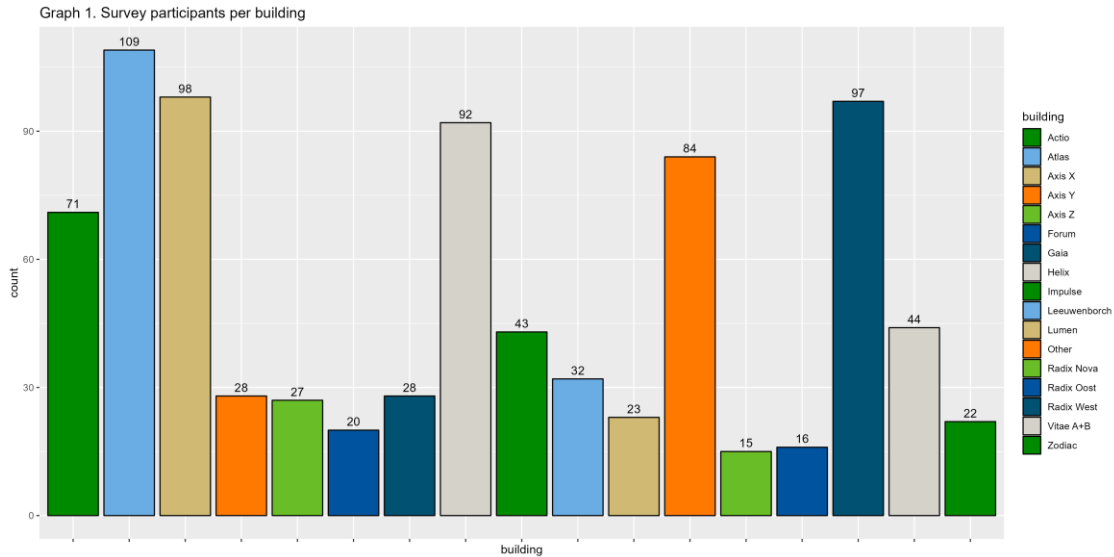
2 Main Results

- 41% of participants wanted to change their behaviour for the environment, but more than 27% was not affected by the message at all.
- 33% of participants report they did not change their behaviour. More than 20% responded that they changed their behaviour by not coming to the office. Only 27% tried to use less energy in the office.
- Only 36% of the participants thought that all measures were a good idea. 43% answered that reducing the temperature was not a good idea.
- Many respondents report unnecessary energy use, without that leading to crowding out effects (participants not complying because of unnecessary use elsewhere).
- Almost everyone saw the announcement.

The most basic results of the survey questions can be found by clicking this [link](#).

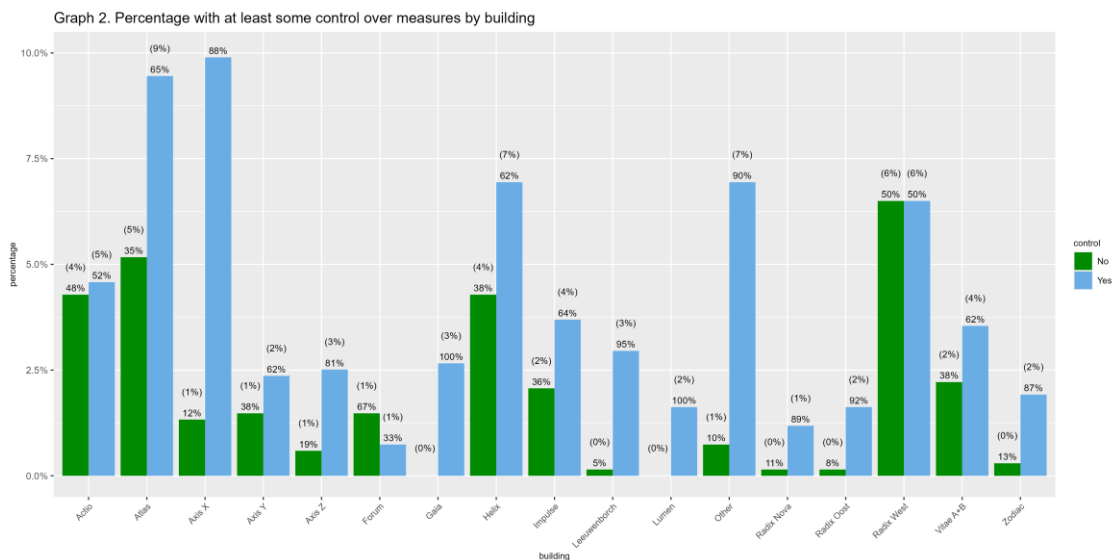
2.1 Responses by building

In order to get an idea of which buildings house the most employees, we show the respondents per building below. Please note that responses are likely higher for buildings in which there have been more complaints.



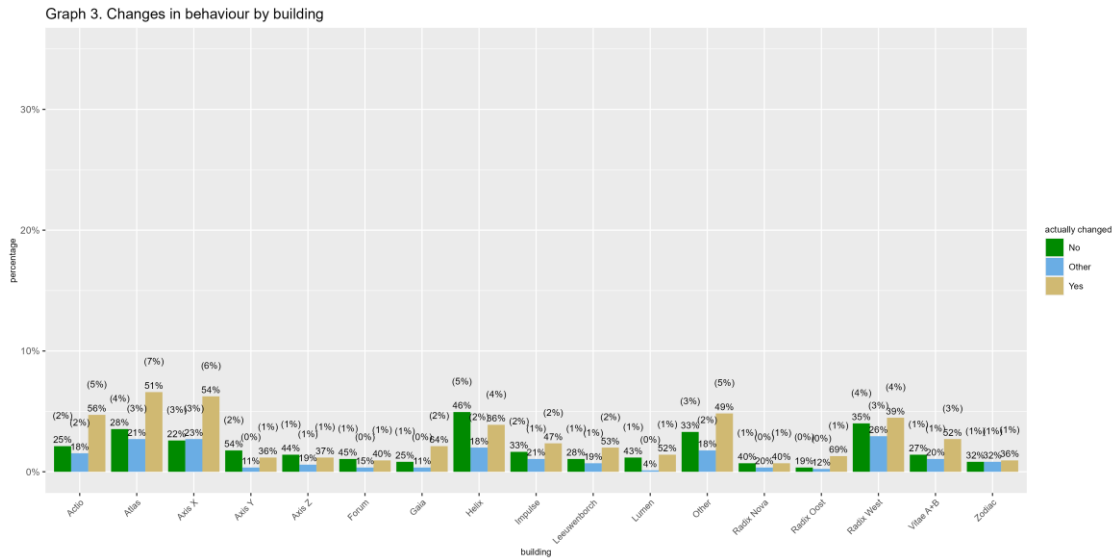
2.2 Control by building

The graph below shows the amount of perceived control splits out by building. The green bar represents participants who felt that they had no control whatsoever regarding energy saving measures. The blue bar represents the group of people that felt they had at least some control (like turning off the lights). If there is a discrepancy between perceived control and actual control in a certain building, it might be a good idea to communicate to the possibilities to help save energy in the respective building.



2.3 Changes in behaviour by building

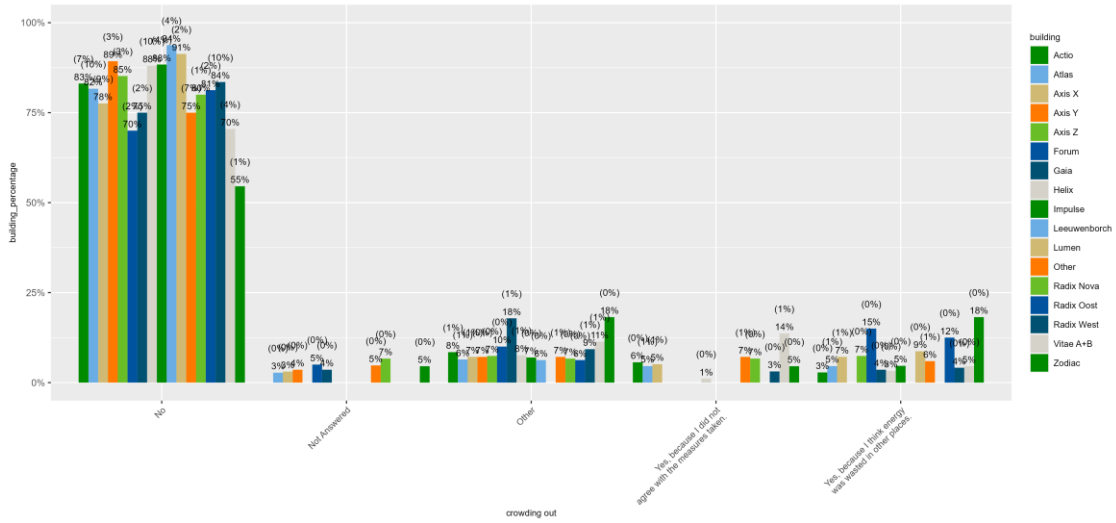
The graph below gives an overview of the motivation by building. The number without brackets is the percentage of a building which chose a particular answer. For example, 24% of Actio respondents answered that the message did not make them want to change their behaviour. The number within brackets (2%) shows that 24% of Actio respondents equals 2% of all respondents, hence giving an indication of the overall size of the group.



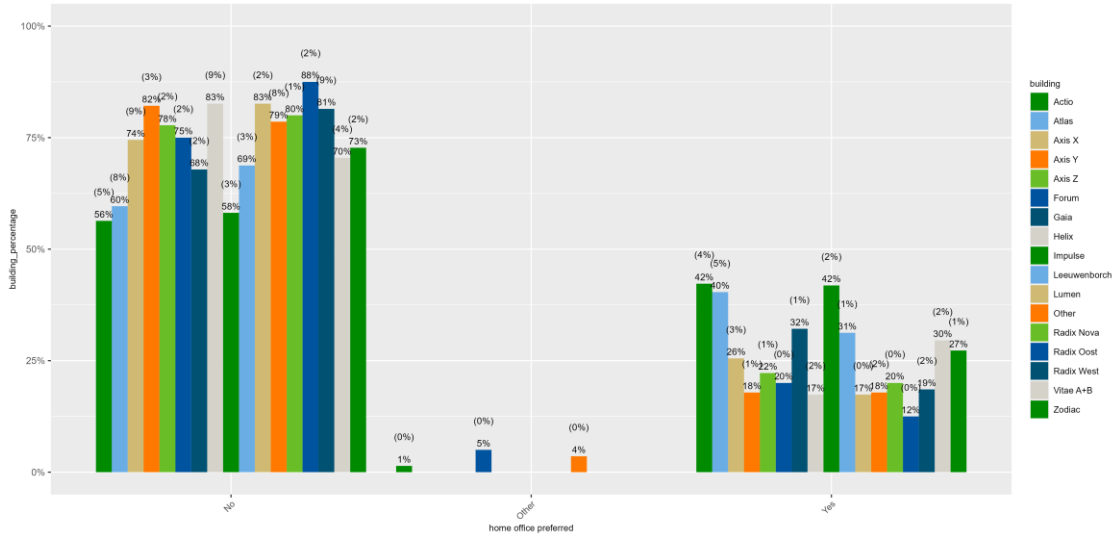
2.4 All questions by building

The graphs below simply split out the original questions by building. With the knowledge that there have been some issues in certain buildings, this information can be used to see how these issues might have affected behaviour by directly comparing them to other buildings.

Graph 10. Did the fact that you did not agree with certain measures, or the lack of measures, stop you from taking energy saving measures in the office yourself? [Multiple Answers Possible]



Graph 11. Do you prefer to work at home normally (or mainly)?



Graph 12. In what capacity do you come to the campus?

