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D5.3 Quantifying the behavioural change and energy savings attributable to the Student Switch Off campaign in academic year #2

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Executive Summary

Student Switch Off (SSO) is an inter-dormitory energy-saving campaign that focuses on a predefined set of activities, encouraging students to save energy in their dormitories. Through a series of engagement activities and instruments students are enabled, empowered and motivated to save energy in their dormitories because of change in their energy behaviour. The dormitory that saves the most energy on each campus is announced winner and rewarded for their efforts.

The SSO campaign runs in fourteen universities in seven European countries – Bulgaria, Cyprus, Greece, Ireland, Lithuania, Romania and the United Kingdom. This is the second academic year that SSO has been rolled out in Bulgaria, Ireland and Romania. In Cyprus, Greece and Lithuania the SSO campaign was first rolled out in 2014 as part of the IEE/13/719/SI2.675836 SAVES project, while in the UK the campaign has been running since 2006.

Research methodology

The purpose of the research presented in this report is to quantify the energy savings and behaviour changes that may be attributed to the SSO campaign. The evaluation period is the academic year 2018-2019.

A methodology to calculate the energy savings was developed based on the International Measurement and Verification Protocol (IPMVP) and the "eeMeasure" methodology (http://eemeasure.smartspaces.eu) developed for the EC ICT Policy Support Programme (ICT-PSP). This included a methodology for the establishment of a baseline at each dormitory and a common approach for calculating and reporting savings. Consumption data collected at each dormitory in the baseline period was used to establish consumption models. These models provided a basis for comparison over the project period to quantify energy savings.

Changes in the behaviour of students in participating dormitories were evaluated through pre- and post-competition incentivised questionnaire surveys completed by students at the beginning and at the end of the academic year, respectively. As well as identical questions to the pre-competition questionnaire (baseline survey), the post-competition survey (follow-up survey) included SSO specific questions involving familiarization of the respondents with SSO and with the energy dashboard.

Energy savings

In 2018-19, 2.704 GWh of electricity were saved across all the participating countries compared to the baseline. This saving equates to over 1,350 tonnes of CO_2 emissions. Extrapolation for data from missing months for Student Switch Off campaigns lasting for less than nine months gives an additional saving of 1.332 GWh.

	Overall SSO savings (2018-19)
kWh saving	2,703,884
% saving	9.28%
CO_2 saving (tonnes)	1,352

Percentage wise, most energy was saved in Bulgaria (26.64%) and in Cyprus (21.45%). The United Kingdom had the highest absolute energy savings (1,337,849 kWh) and carbon dioxide savings (613.4 tCO_2) followed by Bulgaria (634,889 kWh and 387.83 tCO_2). In none of the seven countries were the total energy savings negative.

At university level the biggest energy saving was noted in the University of Cambridge (UK), where 930,485 kWh were saved. The biggest percentage saving has been at Sofia University "St. Kliment Ohridski" (Bulgaria) where a 26.6% saving is noted. The most carbon dioxide was saved in the University of Cambridge (UK) (427 tCO_2).

Changes in behaviour and in influencers of behavior

The findings of the questionnaire survey show positive signs of impact of the SSO campaign on students.

Those questioned in the end of year survey in Greece, Ireland, Lithuania, Romania and the UK felt better informed about what they can personally do to save energy in their hall of residence or college. In Bulgaria and Cyprus, the opposite is observed, however respondents from Cyprus are better informed than respondents from the other countries, showing the highest level of information on what they can personally do to save energy in their hall of residence. As depicted in the follow-up survey, higher proportions of respondents in Bulgaria (+6%) and in Greece (+2%) tried to save energy in everything they did while higher shares of participants in Cyprus (+11%) and in the UK (+5%) tried to save energy in most things they did than in the baseline survey. In Ireland a statistically significant higher (+6%) share of respondents stated "I do quite a few things to save energy" in the end of year survey whereas in Romania the largest proportion of respondents reported that "I do quite a few things to save energy".

Overall, in all countries, the vast majority of respondents in both surveys, think that switching off the lights in empty rooms and opening the windows to cool down instead of using a cooling device or system helps save energy. In addition, with regard to the total sample of respondents, in the follow-up survey, statistically significant higher shares of respondents think that "Put a lid on pans when cooking", (+11%), "Boil the kettle only with the amount of water you intend to use", (+10%) and "Put on a jumper or an extra blanket instead of turning on the heating", (+9%) help to save energy compared to the baseline.

An increase in the frequency of the following six targeted energy saving actions, undertaken in various countries, is observed at the end of the academic year survey: putting a lid on the pan when cooking (Greece, Lithuania and the UK), putting extra layers on instead of the heating (Greece, Romania and the UK), boil the kettle only with the right amount of water (Bulgaria, Cyprus, Lithuania and the UK), open windows to cool down instead of a cooling device/system (Bulgaria, Cyprus, Lithuania and the UK), avoid leaving electronic equipment on stand-by (Bulgaria, Cyprus, Greece and Lithuania) and switch off lights in empty rooms (Cyprus, Lithuania and the UK).

The prevalent reasons for being more energy conscious at the end of the academic year are that it is a habit adopted from home and because it saves energy in all countries. On being less energy conscious, respondents in all countries except for Bulgaria, think that it is because of lack of feedback on how much energy they consume. In Bulgaria the biggest share of respondents thinks that the energy they save in their hall won't save them any money. The latter is also pointed out as an important reason for being less energy conscious in Romania, Ireland and the UK. Other reasons include: the fact that energy saving won't save them any money (Ireland, Lithuania and the UK), limitations of the building and its systems (Cyprus, Greece, Ireland, Lithuania and the UK), lack of inspiration from the hall management (in Greece and Lithuania) and having other things on their mind (Cyprus).

Respondents from all countries in both surveys agreed that: a) global warming is a problem for society, b) energy conservation contributes to a reduction of climate change impacts, c) everyone including myself is responsible for the exhaustion of energy sources and d) everyone including myself is responsible for climate change. Furthermore, in both surveys, a "Disagree" to "Neither agree nor disagree" tendency is reported in all countries with regard to "Most people who are important to me think that I should use less energy" and "Saving energy means I have to live less comfortably". In all countries except for Bulgaria, respondents mostly disagreed that "Saving energy is too much of a hassle".

As depicted in the follow-up survey, respondents from Cyprus agreed to a greater extent (+6%) than in the baseline with the statement "Global warming is a problem for society". In Lithuania, participants agreed more (+6%) than in the baseline on that "Energy conservation contributes to a reduction of climate change impacts" while those surveyed in the UK (+3%) and Bulgaria (+34%) agreed more with the statement "I feel guilty when I use a lot of energy". In Greece, participants reported higher levels of agreement (+8%) with the statement "I feel in complete control over how much energy I use".

Familiarization with SSO

At the end of the academic year a statistically significant higher share of respondents (+18%) had heard about the SSO campaign compared to the beginning of the academic year (39%). In Cyprus all of those surveyed (100%) had heard of the SSO campaign in both surveys. In the other six countries, more respondents had heard about the SSO campaign at the end of the academic year compared to the beginning. The increase in the number of respondents who had heard of the SSO campaign at the end of the academic year compared to the beginning is statistically significant in Bulgaria (+40%), Greece (+23%), Ireland (+7%), Lithuania (+10%) and the UK

(+41%). Furthermore, in all countries the vast majority of respondents agreed that SSO made them more aware on what they can do to save energy in their everyday life.

Use of the energy dashboard

In all seven countries the majority of respondents had visited the dashboard. The biggest share of respondents that had visited the SSO dashboard is found in Bulgaria (88%), followed by Romania, Ireland and Cyprus (78%, 77% and 74% respectively), while in Greece, Lithuania and the UK the share of those who have visited their university's dashboard is 65%, 63% and 58% respectively.

35% from those who had visited the energy dashboard across the seven SAVES 2 countries, stated that they first heard about the SSO energy dashboard from social media, probably their SSO Facebook page. "Emails" (34%) was the second most popular response whereas 15% of the respondents first heard about the dashboard from word of mouth/friends.

Overall, 48% of the respondents used to visit the SSO energy dashboard weekly. Twenty-seven percent (27%) used to view the dashboard every month while 14% viewed the energy dashboard on a daily basis. Nine percent (9%) of those surveyed reported that they visited the dashboard less than once a month whereas only a 2% minority never visited the SSO energy dashboard during the academic year.

In total, 31% of those surveyed stated that their visits to the energy dashboard had increased since the beginning of the academic year, 54% of the respondents reported that their visits to the dashboard stayed about the same whereas 15% of those questioned reported a decrease.

Finally, 91% of the participants reported "To see how my own halls of residence/college is performing" as one of their top three reasons for viewing the dashboard and league tables. "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" were also important reasons, placed in the first three ranking positions by 82% and 77% of the respondents respectively.

Year 1 compared to Year 2

The approach followed in Year 1 in quantifying the increase in energy awareness of students living in dormitories is different from the approach followed in Year 2. Instead of a matched baseline and follow-up sample (Year 1), independent samples were used instead (Year 2). Although the results are not strictly comparable an indicative comparison is performed.

In Year 2, the proportion of respondents having positive feelings about saving energy (content, proud, optimistic) has increased compared to Year 1, while the proportion of those having negative feelings (anxious and frustrated) had decreased.

On the other hand, a decrease was observed between the two years regarding the behavioral antecedents of the respondents on energy related topics, except for the statement "Everyone including myself is responsible for climate change" for which the level of agreement was increased by 5%. Nevertheless, in most cases the observed decrease did not affect the overall level of agreement.

Furthermore, respondents in Year 2 undertook energy saving actions slightly less frequently than those in Year 1 except for "Avoid leaving electronic equipment on stand-by" which was undertaken slightly more frequently. Despite the differences, the overall frequency each of the six targeted saving energy actions was undertaken stayed about the same between the two years. Regarding the reasons for being less energy conscious, a decrease of their importance is observed in most of them compared to Year 1 except for the reason "I have other things on my mind". In Year 2, a statistically significant lower share of respondents stated that "I don't have any feedback on how much I consume" compared to Year 1 and this might be attributed to feedback provided by the SSO campaign including the energy dashboard.

Regarding the SSO campaign, respondents in both years' surveys were almost equally familiarized with the campaign without reporting any statistically significant difference. Significant difference was reported in the visits on the SSO energy dashboard between the two years' surveys where respondents from Year 2 were higher than those in Year 1. As for the frequency of visits, in both years, most respondents visited the platform

in a weekly or monthly basis. However, in Year 2 a statistically significant increase was observed to those that visited the platform on a daily basis.

Furthermore, the share of respondents from Year 2, that decreased their visits throughout the year was lower than in Year 1, while a statistically significant increase was also recorded with regard to the proportion of those visited the dashboard the same as before. Finally, in both years, respondents replied that they will be doing a lot more to save energy or at least a bit more to save energy in future lifestyle.

1 Introduction

1.1 The Student Switch Off campaign

The Student Switch Off (SSO) campaign is an inter-dormitory energy-saving campaign that focuses on a predefined set of activities, encouraging students to save energy in their dormitories. The dormitory that saves the most energy on each campus is announced winner and rewarded for their efforts. Energy savings are determined by comparing pre-intervention electricity consumption, with post-intervention electricity consumption, in each dormitory.

Through SSO a number of engagement activities and instruments are used in order to enable, empower and motivate students to save energy in their dormitories and to change their everyday life to a more energy conscious one. The campaign encourages any action that can help save energy with specific attention given to six energy conservation actions:

- Switch off lights in empty rooms
- Avoid leaving electronic equipment on stand-by
- Put a lid on the pan when cooking
- Boil the kettle only with the amount of water you intend to use
- Put on a jumper or an extra blanket instead of turning on the heating
- Open windows to cool down instead of using a cooling device or system

The SSO campaign runs in fourteen universities in seven European countries – Bulgaria, Cyprus, Greece, Ireland, Lithuania, Romania and the United Kingdom (Table 1). This is the second academic year that SSO has been rolled out in Bulgaria, Ireland and Romania. In Cyprus, Greece and Lithuania the SSO campaign was first rolled out in 2014 as part of the IEE/13/719/SI2.675836 SAVES project, while in the UK the campaign has been running since 2006.

Table 1 Universities, dormitories, and students taking part in the SSO campaign

University	Country	No. of dormitories taking part in SSO	No. of students living in dormitories taking part in SSO
University of Cambridge	UK	16	9,307
Kings College London	UK	12	5,300
University of Liverpool	UK	10	4,711
University of York	UK	9	5,667
National and Kapodistrian University of Athens	EL	4	1,068
Technical University of Crete	EL	1	76
University of Cyprus	CY	12	208
Dublin City University	IE	3	940
National University of Ireland, Galway University	IE	2	1,193
National University of Ireland, Maynooth University	IE	9	1,250
University College Cork	IE	5	1,278
Vilnius Gediminas Technical University	LT	5	3,740
University of Bucharest	RO	15	4,347
The University of Sofia "St. Kliment Ohridski"	BG	17	6,300
Total		**120**	**45,385**

1.2 Student engagement activities in academic year 2018-19

A number of engagement activities were carried out in each university this academic year aiming to increase the students' energy awareness and ultimately achieve energy savings, namely:

- Regular competitions on social media
- Termly climate quizzes
- Face-to-face visits on campus
- Communications training for student ambassadors

Table 2 gives an overview of the engagement statistics in each of the seven countries. Specific activities undertaken as part of the Student Switch Off campaign are described in detail as part of the Annual 2018-19 reports created for each of the seven countries. These are publicly available on the SAVES 2 website (www.saves-project.eu).

Table 2 Summary of engagement statistics for Student Switch Off for academic year 2018-19

Name of University	No. students living in dormitories	No. students signed up to the campaign	% students signed up to the campaign	Number attending the Ambassador training	Climate quiz entries	Photo/ online competition entries	Number of social media followers
University of Cambridge	9,307	2,150	21%	42	2,650	110	Facebook (FB): 3,489
Kings College London	5,300	367	6%	20	383	94	FB: 248
University of Liverpool	4,711	458	10%	5	798	89	FB: 853
University of York	5,667	825	16%	28	1,337	194	FB: 959
National and Kapodistrian University of Athens	1,068	122	11.42%	3	222	27	FB: 319
Technical University of Crete	76	76	100%	2	35	8	FB: 340
University of Cyprus	208	208	100%	14	336	23	FB: 582
Dublin City University	940	940	100%	2	84	12	FB: 94
National University of Ireland, Galway University	1,193	1193	100%	2	84	12	FB: 68
National University of Ireland, Maynooth University	1,250	1250	100%	2	84	11	FB: 76
University College Cork	1,278	1278	100%	3	84	11	FB:110
Vilnius Gediminas Technical University	3,740	3,740	100%	14	345	21	FB: 309

Name of University	No. students living in dormitories	No. students signed up to the campaign	% students signed up to the campaign	Number attending the Ambassador training	Climate quiz entries	Photo/ online competition entries	Number of social media followers
University of Bucharest	4,347	1,074	24,71%	13	315	24	FB: 645
Sofia University "St. Kliment Ohridski"	6,300	4,450	70.6 %	4	24	0	FB: 147
TOTAL	**45,385**	**18,131**	**40%**	**154**	**6,781**	**636**	**8,239**

1.3 Overview of report

The purpose of the research presented in this report is to quantify the energy savings and behaviour changes that could be attributed to the SSO campaign. The SSO campaign run in seven European countries – Bulgaria, Cyprus, Greece, Ireland, Lithuania, Romania and the United Kingdom. The evaluation period is the academic year 2018-2019.

Chapter 2 of this report provides a description of the methodology followed for the quantification of energy savings and evaluation of change in behaviour and in influencers of behaviour.

Chapter 3 presents the energy data analysis and savings achieved over the academic year in all seven countries and participating universities. Analysis of data was performed at project level, country level, university and dormitory level. For this report, the data is presented at university, country and project level.

Chapter 4 presents the findings of the questionnaire survey analysis. Changes in the behaviour and influencers of behavior of students in participating dormitories are evaluated through pre- and post-competition questionnaire surveys completed by students at the beginning and at the end of the academic year, respectively.

Chapter 5 presents a comparison between Year 1 (academic year 2017-18) and Year 2 (academic year 2018-19) of the SSO deployment in all countries.

In Chapter 6 an overview of the main findings of this research is presented.

2 Methodology

The aim of this research is to assess the impact of the Student Switch Off campaign on students living in dormitories. The effectiveness of the SSO campaign is evaluated through the level of achieved:

a) Energy savings
b) Behaviour change

2.1 Calculation of energy savings

A methodology to calculate the energy savings was developed based on the International Measurement and Verification Protocol (IPMVP) and the "eeMeasure" methodology (http://eemeasure.smartspaces.eu) developed for the EC ICT Policy Support Programme (ICT-PSP). This included a methodology for the establishment of a baseline at each dormitory and a common approach for calculating and reporting savings.

The methodology used to calculate energy savings included the following elements:

- Kilowatt hour (kWh) electricity consumption data was collected from the pre-intervention academic year(s) for each dormitory building to form their baseline. For universities previously involved in SSO (those in the UK, Cyprus, Greece and Lithuania), this was data from the 2013-14 (or earlier) academic year. For universities who were not previously involved in the SSO campaign (those in Ireland, Romania and Bulgaria), the data used was from the 2015-16 academic year (or earlier).

- Where feasible, smart meters feeding data from the participating dormitory buildings were connected to an online dashboard[1] developed by the project partner Ecovisum. Where automated data transmission was not possible (i.e. absence of smart meters), manual readings were taken and uploaded to the dashboard. Table 3 illustrates the frequency of the data uploaded to the dashboard, and whether it is automated, or manual.

- The electricity consumption data for each dormitory building during the academic years 2018-19 was compared against the baseline data from that dormitory – so it was competing to beat its own baseline usage.

- To accurately report the energy savings to students, degree day analysis was manually performed on universities that had electric heating, to take into account variations in outside temperature, and this was then manually adjusted on the dashboard.

- Where data for a month was missing or was erroneous, it was extrapolated based on the average of the data available for other months. This was only done for a small number of cases, and is indicated in the results section (section 3.3). As a minimum, electricity data was compared for six months of the year. Where more data was available, it was included (the highest number of months compared was 9).

- Carbon dioxide (CO_2) savings were calculated based on the amount of electricity saved in each university, and the applicable carbon conversion factor for that country. Table 4 shows the conversion factors per country.

Table 3 Frequency and method of uploading data to the dashboard

University	Data received on the dashboard	Data strategy	Data resolution	Data files uploaded
University of Cambridge	Y	semi-automated	daily	c2-monthly
Kings College London	Y	automated (push)	daily	daily
University of Liverpool	Y	manual	half-hourly	c2-monthly

[1] https://switchoff.nus.org.uk/

University	Data received on the dashboard	Data strategy	Data resolution	Data files uploaded
University of York	Y	manual	monthly	c2-monthly
National and Kapodistrian University of Athens	Y	automated (pull)	15-minutely	daily
Technical University of Crete	Y	manual	hourly	c10 days
University of Cyprus	Y	manual	hourly	weekly
Dublin City University	Y	manual	daily	monthly
National University of Ireland, Galway	Y	manual	2-monthly	2-monthly
National University of Ireland, Maynooth	Y	manual	daily	monthly
University College Cork	Y	manual	monthly	monthly
Vilnius Gediminas Technical University	Y	automated (pull)	hourly	daily
University of Bucharest	Y	manual	Monthly	monthly
Sofia University "St. Kliment Ohridski"	Y	manual	monthly	monthly

Table 4 Carbon conversion factors for SAVES 2 countries[2]

Country	carbon conversion factor - $kgCO_2$ per kWh
Bulgaria	0.61086
Cyprus	0.72825
Greece	0.71821
Ireland	0.41925
Lithuania	0.27000
Romania	0.50845
UK	0.45850

2.2 Evaluation of behaviour and influencers of behaviour change

Changes in the behaviour of students in participating dormitories were evaluated through pre- and post-competition questionnaire surveys. Students in participating dormitories were encouraged to complete a baseline survey at the beginning of the academic year (October 2018), in order for existing energy-saving attitudes, behaviours and habits to be identified, and a follow-up survey at the end of the academic year (May 2019).

The target response rate for the baseline and the follow-Up surveys was 15% of students living in each country's dormitories at the beginning of the academic year. This corresponds to 6,808 respondents for the baseline and the follow-up respectively (Table 5).

Table 5 Target responses for the baseline and follow-up surveys

Country	Total number of students living in SSO dorms in the beginning of the academic year	Surveys' target: 15% of students living in dorms
Cyprus	208	31
Bulgaria	6,300	945

[2] https://iq-tools.com/files/International_elec_2015.pdf

Country	Total number of students living in SSO dorms in the beginning of the academic year	Surveys' target: 15% of students living in dorms
Greece	1,144	172
Romania	4,347	652
Ireland	4,661	699
Lithuania	3,740	561
UK	24,985	3,748
TOTAL	**45,385**	**6,808**

2.2.1 Questionnaire surveys and analysis methods

Online versions of the questionnaire surveys were created on LimeSurvey[3] in Bulgarian, English, Greek, Lithuanian and Romanian. Channels used to disseminate the questionnaire surveys were mainly university and students' unions mailing lists. Moreover, questionnaire surveys were also distributed through social media platforms and in hardcopy format.

The majority of questions in the follow-up questionnaire were identical to those asked in the baseline survey in order to allow for comparison and evaluation of possible change from the beginning to the end of the academic year.

There was also a number of questions asked at the end of the academic year that were not relevant for the baseline questionnaire. Those involved familiarization of the respondents with the energy dashboard (https://switchoff.nus.org.uk/) and students' future lifestyle with regard to their energy saving efforts. The findings from the survey analysis are found in chapter 4 of this report.

The questionnaire included multiple-choice, dichotomous and rating scale questions. In the first type of close ended questions, participants were offered a set of answers they had to choose from while in the second type respondents could choose from "yes" or "no" options. The third type of questions was Likert-scale and preference rank order type. In Likert scale questions respondents were asked about the level of agreement with specific statements. Each option was given a score, which was used to analyze results. The preference rank order questions required sequential ranking from high to low until all factors were ranked.

Two proportion z-test was used for testing the difference between the baseline and follow-up survey proportions.

- The null hypothesis (H_0) for the test is that the proportions are the same.
- The alternate hypothesis (H_1) is that the proportions are **not** the same.

Independent samples t-test was used to determine whether the differences between the baseline and follow-up survey are statistically significant for each of the two groups.

- The null hypothesis (H_0) for the independent t-test is that the population means from the two unrelated groups are equal.
- The alternate hypothesis (H_1) is that the population means from the two unrelated groups are **not** equal.

In both tests, a significance level to either reject or accept the alternative hypothesis is set at 0.05.

In addition, P-values are calculated to support or reject the null hypothesis.

- A small p (≤ 0.05), reject the null hypothesis.

[3] https://www.limesurvey.org/

- A large p (> 0.05) does not reject the null.

P-values smaller than 0.05 indicate statistically significant results.

Descriptive statistics were used to analyze the collected data. Mean values and percentages are presented in the results section.

2.2.2 Data collection from questionnaire surveys

The baseline and the follow-up questionnaires were incentivized. In both cases two €25 and one €50 prize incentive were provided. In the case winners were from the UK, prizes were given in local currency (GBP). The three winners for each survey were chosen through common draws for all countries.

In both surveys the criteria for inclusion in the analysis were: i) respondent lives in a participating university dormitory, ii) respondent is older than 18 years old and iii) respondent answers at least one question related to current lifestyle with regard to saving energy.

The total number of baseline survey entries was 2,842. Out of those respondents, 2,200 were valid entries, meaning that they met the criteria for inclusion in a possible baseline survey analysis (Table 6).

The number of entries that were considered valid for the follow-up analysis was 2,157, although 2,597 participated in total.

Except for Cyprus and Greece, it has been a challenge for the other five countries to meet their target responses. However, it must be noted that these two countries had the lowest response targets. Cyprus received 35 responses in each survey meeting the target of 31 responses. Greece received 189 and 191 responses in the follow-up and the baseline survey respectively meeting the target of 172 responses. In absolute terms, Bulgaria received the lowest number of responses in both surveys. With regard to the baseline survey, Ireland received the highest number of responses (563) followed by the UK (547). In the follow-up survey, UK (823) received the highest number of responses followed by Romania (490).

For the next academic year all country partners will evaluate the strengths and weaknesses of their approach for meeting the target responses in order to ensure that the adequate number of students will participate in the survey.

Table 6: Survey response rate in follow-up survey

		Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK	Total
Baseline	**Valid entries**	31	35	191	563	362	471	547	2200
Follow-up	**Valid entries**	34	35	189	396	190	490	823	2157

The actual number of responses to individual questions for each country and for each survey (baseline and follow-up) are tabulated in Annex I.

3 Energy data analysis and results

This chapter presents the energy data analysis and savings achieved over the academic year 2018-19 in all seven countries and participating universities. Analysis of data was performed at project level, country level, university and dormitory level. For this report, the data is presented at university, country and project level. The Common Performance Indicators report, includes the full data analysis and is accessible through the project website (www.saves-project.eu).

3.1 Europe wide savings

In 2018-19, 2.704 GWh of electricity were saved across all the participating countries compared to the baseline. This saving equates to 1,352 tonnes of CO_2 emissions.

It is noted that in the Common Performance Indicators report for academic year 2018-19 extrapolated energy savings are also presented. The extrapolation is for data from missing months for Student Switch Off campaigns lasting shorter than nine months. The extrapolation gives an additional saving of 1.332 GWh to what is presented in Table 7. Data was available for 77% of months (90 out of 117) and was only extrapolated for 23% of months (27 out of 117).

Table 7 Energy and carbon saving in the fourteen SAVES 2 universities

	Overall Student Switch Off savings
Baseline usage (kWh)	29,140,615
2018-19 usage (kWh)	26,436,731
kWh saving	2,703,884
% saving	9.28
CO_2 saving (tonnes)	1,352

3.2 Country specific savings

Table 8 shows the savings per country. Carbon dioxide savings are based on carbon conversion factors in participating countries (Table 4) therefore it is worth noting that whereas in some countries there may be high energy savings, their carbon dioxide savings may appear to be low because of the low carbon conversion factor (attributed to a cleaner electricity grid). Also, the number of dormitory buildings varies between countries thus leading to differences in the level of absolute kWh savings.

Percentage wise, the most energy was saved in Bulgaria (26.64%) and in Cyprus (21.45%) however, in absolute energy savings, Cyprus reported the lowest savings (44,968 kWh). On the other hand, the United Kingdom had the highest absolute energy savings (1,337,849 kWh) and carbon dioxide savings (613.4 tCO_2) followed by Bulgaria (634,889 kWh and 387.83 tCO_2).

As per Table 8, it is noteworthy that data consumed by the UK universities accounts for 64% of all usage so the results from this country have a significant impact on the overall savings of the project. Table 9 -Table 15 in section 3.3 detail university-specific savings (electricity and carbon) for each of the seven participating countries.

Table 8 Country specific kWh, percentage and carbon dioxide savings based on meter readings

Country	Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK
Baseline usage (kWh)	2,383,316	209,662	1,786,400	3,224,085	1,555,649	2,105,780	18,246,505

Country	Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK
Usage 2018-19 (kWh)	1,748,427	164,655	1,685,561	2,951,413	1,039,137	1,911,220	16,908,656
kWh saving	634,889	44,968	100,839	272,672	116,512	194,560	1,337,849
% saving	26.64	21.45	5.64	8.45	10.08	9.24	7.33
CO_2 saving (tonnes)	387.83	39.30	72.42	114.31	31.46	98.92	613.40

3.3 University specific savings

This section details energy and carbon savings in each university participating in SAVES 2 in 2018-19. Savings are presented per participating university in each country.

As per Table 9, energy saving was noted in **Bulgaria**; 26.64% was saved at Sofia University 'St. Kliment Ohridski'. This equates to a saving 634,889 kWh and 387.83 tonnes of CO_2.

Table 9 Energy and carbon savings in Bulgarian SAVES 2 universities

	Sofia University "St. Kliment Ohridski"
Baseline usage (kWh)	2,383,316
2018-19 usage (kWh)	1,748,427
kWh saving	634,889
% saving	26.64
CO_2 saving (tonnes)	387.83
Months used in analysis	7
Extrapolations/ additional analysis	

As per Table 10, energy saving was noted in **Cyprus**; 19.49% was saved at the University of Cyprus. This equates to a saving 46,563 kWh and 33.91 tonnes of CO_2.

Table 10 Energy and carbon savings in Cypriot SAVES 2 universities

	University of Cyprus
Baseline usage (kWh)	238,880
2018-19 usage (kWh)	192,317
kWh saving	46,563
% saving	19.49
CO_2 saving (tonnes)	33.91
Months used in analysis	8
Extrapolations/ additional analysis/notes	

As per Table 11, energy saving was noted at both the **Greek** universities, 12.10% and 4.86% at Technical University of Crete and National and Kapodistrian University of Athens respectively. This equates to a total saving of 100,839 kWh and 72.42 tonnes of CO_2.

Table 11 Energy and carbon savings in Greek SAVES 2 universities

	National and Kapodistrian University of Athens	Technical University of Crete
Baseline usage (kWh)	1,621,311	165,089
2018-19 usage (kWh)	1,542,455	143,106
kWh saving	78,856	21,983
% saving	4.86	12.10
CO_2 saving (tonnes)	56.63	15.79
Months used in analysis	8	8
Extrapolations/ additional analysis/notes		

As can be noted from Table 12 below, energy was saved across the **Irish** universities taking part in Student Switch Off. A saving of 272,672 kWh and 114.3 tonnes of CO_2 was observed, which equates to 8.46% saving when compared to the baseline.

University College Cork savings seem higher than anticipated, but due to some gaps in the data available it is not possible to run a regression analysis with the necessary integrity.

NUI Galway data is not available, because NUI Galway's participation in the 2018-19 academic year is based on newly commissioned buildings with no baseline data. This year's usage will constitute the baseline data for next year.

Table 12 Energy and carbon savings in Irish SAVES 2 universities

	Dublin City University	National University of Ireland, Galway	National University of Ireland, Maynooth	University College Cork
Baseline usage (kWh)	334,465	n/a	598,739	2,290,881
2018-19 usage (kWh)	326,718	n/a	571,996	2,052,699
kWh saving	7,747	n/a	26,743	238,182
% saving	2.32	n/a	4.47	10.40
CO_2 saving (tonnes)	3.2	n/a	11.2	99.9
Months used in analysis	8	n/a	8	8
Extrapolations/ additional analysis	Baseline adjusted by degree day regression analysis		Baseline adjusted by degree day regression analysis	Interpolation of data undertaken on a zero savings basis.

As per Table 13, energy saving was noted in **Lithuania**; 10.08% was saved at the Vilnius Gediminas Technical University. This equates to a saving 116,512 kWh and 31.46 tonnes of CO2.

Table 13 Energy and carbon savings in SAVES 2 Lithuanian universities

	Vilnius Gediminas Technical University
Baseline usage (kWh)	1,555,649
2018-19 usage (kWh)	1,039,137
kWh saving	116,512
% saving	10.08
CO_2 saving (tonnes)	31.46
Months used in analysis	9
Extrapolations/ additional analysis/notes	n/a

As per Table 14, energy saving was noted in **Romania**; 9.24% was saved at the University of Bucharest. This equates to a saving 194,560 kWh and 98.92 tonnes of CO_2.

Table 14 Energy and carbon savings in SAVES 2 Romanian universities

	University of Bucharest
Baseline usage (kWh)	2,105,780
2018-19 usage (kWh)	1,911,220
kWh saving	194,560
% saving	9.24
CO_2 saving (tonnes)	98.92
Months used in analysis	8
Extrapolations/ additional analysis/notes	

As can be noted from Table 15 below, energy was saved across the four **UK** universities taking part in Student Switch Off. A saving of 1,337,849 kWh and 613 tonnes of CO_2 was observed, which equates to 7.33% saving when compared to the baseline.

Table 15 Energy and carbon savings in UK SAVES 2 universities

	Kings College London	University of Liverpool	University of Cambridge	University of York
Baseline usage (kWh)	2,204,849	3,340,351	11,066,074	1,635,231
2018-19 usage (kWh)	2,118,205	3,239,195	10,135,589	1,415,667

	Kings College London	University of Liverpool	University of Cambridge	University of York
kWh saving	86,644	101,156	930,485	219,564
% saving	3.93%	3.03%	8.41%	13.43%
CO_2 saving (tonnes)	39,726	46,380	426,627	100,670
Months used in analysis	6	4	6	3
Extrapolations/ additional analysis (if applicable)				

4 Survey Results

This chapter presents the findings of the questionnaire survey analysis. Changes in the behaviour of students in participating dormitories were evaluated through pre- and post-competition questionnaire surveys (baseline and follow-up surveys) completed by students at the beginning and at the end of the academic year. The analysis of these questionnaires helps identify attitudinal, behavioural and habitual changes relating to energy conservation that could be attributed to the SAVES 2 project.

The majority of questions in the follow-up questionnaire were identical to those asked in the baseline survey in order to allow for comparison and evaluation of possible change from the beginning to the end of the academic year. The findings from the analysis are found in section 4.1 of this chapter.

There was also a number of questions asked at the end of the academic year that were not relevant for the baseline questionnaire. These involved familiarization of the respondents with the energy dashboard (https://switchoff.nus.org.uk/). The findings from the SSO energy dashboard specific analysis are found in section 4.2 of this chapter.

The actual number of responses to individual questions for each country and for each survey (baseline and follow-up) are tabulated in Annex I.

4.1 Pre- Post- survey analysis

4.1.1 Respondent characteristics

In total, at the end of the academic year survey, 67% of the respondents were women and 31% were men. In addition, 1% preferred not to state their gender whereas 1% reported their gender as being non-binary or in another way. Compared to men respondents, the number of women in both surveys was higher in all countries, except in Lithuania and Bulgaria. Baseline respondents in Bulgaria were 72% men whereas in the follow-up were 50% men. In Lithuania the vast majority of participants in both surveys were men (>56% in both surveys). The biggest proportion of women respondents in the follow-up survey was found in the UK and in Ireland (76% and 71%, respectively). At the end of the year, 6% of the respondents in Cyprus stated that their gender is described in another way. In Cyprus and Greece, 6% of the follow-up participants preferred not to state their gender.

In total, the majority of follow-up (59%) and baseline (62%) survey respondents were between 18-20 years of age. Moreover, almost equal shares of respondents (34% baseline, 35% follow-up) were 21-24 years of age in both surveys. In Greece the proportion of respondents that were between 21-24 years of age was higher than the proportion of respondents between 18-20 in both surveys. In Cyprus and Greece at least 11% of the participants were between 25-29. Ireland, Cyprus and the UK had the youngest population of respondents in both surveys with the majority being between 18-20 years of age.

Respondents studied all main subjects of study. Overall, in the follow-up survey, the biggest share of respondents studied arts or humanities (30%) followed by social sciences (23%). In the baseline survey 25% of the total sample studied humanities whereas 22% studied social science. In Ireland, the proportion of respondents studying arts or humanities was >42% in both surveys, whilst in Lithuania the vast majority (>72% in both surveys) studied architecture, engineering or technology. In Bulgaria, even though social sciences courses are offered, less than 10% of those surveyed in the follow-up survey studied social sciences; this share was even lower in the baseline survey (3%).

Overall, in both surveys, 89% of respondents were undergraduates and 11% were postgraduates. Most of the respondents in the baseline (45%) and follow-up (51%) surveys were in their 1st year of studies followed by those over their 2nd year of studies (>20% in both surveys). The highest proportion of 1st year respondents was recorded in the UK (73% in baseline and 70% in follow–up) something that is expected since 1st year students in the UK normally live in dormitories. On the contrary, in Greece only 4% of those participated in the baseline survey and 16% of those surveyed in the follow-up were in their first year of studies. However, in Greece the biggest percentage of under-graduate respondents over their 2nd year of studies was recorded (>60% in both surveys). Finally, the biggest share of post-graduate respondents (approximately 20% in both surveys) was recorded in Romania.

The vast majority of the respondents were students studying in their country. Eighty-two percent (82%) of respondents in the baseline survey and 75% in the follow-up studied in their country of origin. In addition, in both surveys, 10% of those questioned were international students originating from outside the European Union (EU). The highest share of international students from outside the EU was recorded in the UK (20% baseline, 23% follow-up). On the other hand, in Cyprus, 23% in both surveys were international students from within the EU. Interestingly, 60% of those surveyed in Ireland at the end of the academic year, were international students from within the EU. The demographics of respondents are presented in Table 16; the letter B denotes "Baseline" and the letter F "Follow–up" survey.

Table 16 Demographics of respondents

	Bulgaria		Cyprus		Greece		Ireland		Lithuania		Romania		UK		Total	
	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F
Gender																
Woman	24%	50%	58%	59%	54%	47%	73%	71%	43%	39%	73%	67%	72%	76%	65%	67%
Man	72%	50%	35%	29%	42%	46%	26%	27%	56%	59%	25%	31%	25%	21%	33%	31%
In another way/ Non - binary	0%	0%	0%	6%	0%	1%	1%	2%	0%	1%	0%	1%	2%	2%	1%	1%
Prefer not to say	4%	0%	7%	6%	4%	6%	0%	0%	1%	1%	2%	1%	1%	1%	1%	1%
Age																
18-20	35%	50%	57%	77%	24%	22%	72%	69%	53%	47%	55%	45%	79%	74%	62%	59%
21-24	58%	47%	26%	11%	63%	59%	25%	28%	45%	51%	44%	51%	17%	21%	34%	35%
25-29	6%	3%	14%	11%	12%	16%	2%	3%	2%	2%	2%	3%	3%	4%	3%	5%
30+	0%	0%	3%	0%	2%	2%	0%	0%	0%	1%	0%	0%	1%	2%	1%	1%
Field of study																
Architecture / Engineering / Technology	55%	21%	15%	9%	18%	13%	11%	10%	72%	75%	5%	9%	8%	6%	21%	14%
Arts / Humanities	13%	35%	18%	27%	29%	28%	42%	49%	2%	1%	22%	28%	27%	30%	25%	30%
Health Sciences / Medicine	3%	9%	6%	0%	13%	14%	18%	12%	1%	1%	27%	18%	23%	24%	17%	17%
Mathematics / Physical Sciences	26%	29%	26%	21%	20%	27%	14%	15%	12%	11%	14%	12%	13%	16%	14%	16%
Social Sciences	3%	9%	36%	42%	20%	19%	15%	13%	13%	12%	32%	34%	28%	24%	22%	23%
Year of study																
Under Graduate - 1st Year University/College	17%	26%	29%	46%	4%	16%	50%	59%	30%	37%	36%	35%	73%	70%	45%	51%
Under Graduate - 2nd Year University/College	27%	41%	18%	26%	15%	15%	19%	17%	23%	20%	16%	25%	9%	10%	17%	17%
Under Graduate - >2nd Year University/College	50%	24%	35%	14%	75%	61%	25%	18%	40%	38%	28%	22%	4%	9%	28%	21%
Post Graduate - Studying for Masters	7%	9%	12%	11%	5%	8%	5%	5%	6%	5%	18%	18%	13%	8%	10%	10%

	Bulgaria		Cyprus		Greece		Ireland		Lithuania		Romania		UK		Total	
	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F
Post Graduate - Studying for Doctorate	0%	0%	6%	3%	1%	1%	0%	1%	0%	0%	2%	1%	1%	2%	1%	1%
Nationality																
Students studying in their country of origin	100%	96%	77%	77%	93%	92%	83%	29%	97%	97%	96%	98%	65%	65%	82%	75%
International students from within the EU	0%	4%	23%	23%	2%	2%	7%	60%	1%	1%	1%	1%	15%	12%	8%	15%
International students from outside the EU	0%	0%	0%	0%	5%	6%	10%	11%	2%	2%	2%	1%	20%	23%	10%	10%

4.1.2 Energy saving efforts

Students were asked to rate their energy saving effort in their everyday life out of a predefined list of options (Figure 1).

Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions are statistically significant. P-values smaller than 0.05 indicate statistically significant differences. The results are illustrated in Figure 1 and presented in Table 17.

According to the follow-up survey results, in Bulgaria (56%), Ireland (34%), Lithuania (31%) and the UK (35%) those surveyed stated that "I do one or two things to save energy". In Cyprus (54%) and in Greece (33%) most of the respondents stated that "I try to save energy in most things I do". In Romania (34%), more than one third of those participated stated that "I do quite a few things to save energy".

According to the baseline survey results, in Bulgaria (42%), Ireland (35%), Lithuania (29%) and the UK (38%) the most frequent response was "I do one or two things to save energy" whereas in Cyprus (42%) and in Greece (33%) the most popular response was "I try to save energy in most things I do". In Romania (34%), as also depicted in the follow-up survey, participants mostly stated that "I do quite a few things to save energy".

In the end of year survey, a higher proportion of respondents tried to save energy in everything they did (+2% increase) and in most things they did (+6% increase) than in the baseline survey while a smaller share of respondents stated "I do quite a few things to save energy" (-2% decrease) and "I do one or two things to save energy" (-7% decrease). On the other hand, +2% respondents in the follow-up survey stated that they didn't really do anything to save energy. Differences between the baseline and the follow-up survey are not statistically significant. In total, 31% of the follow-up survey respondents stated that "I do quite a few things to save energy" (-2% decrease) followed by 30% of those who stated that "I do one or two things to save energy" (-7% decrease) and those that tried to save energy in most things they did (26%, +6% increase). The most popular responses given by respondents in each country are described in the following paragraphs.

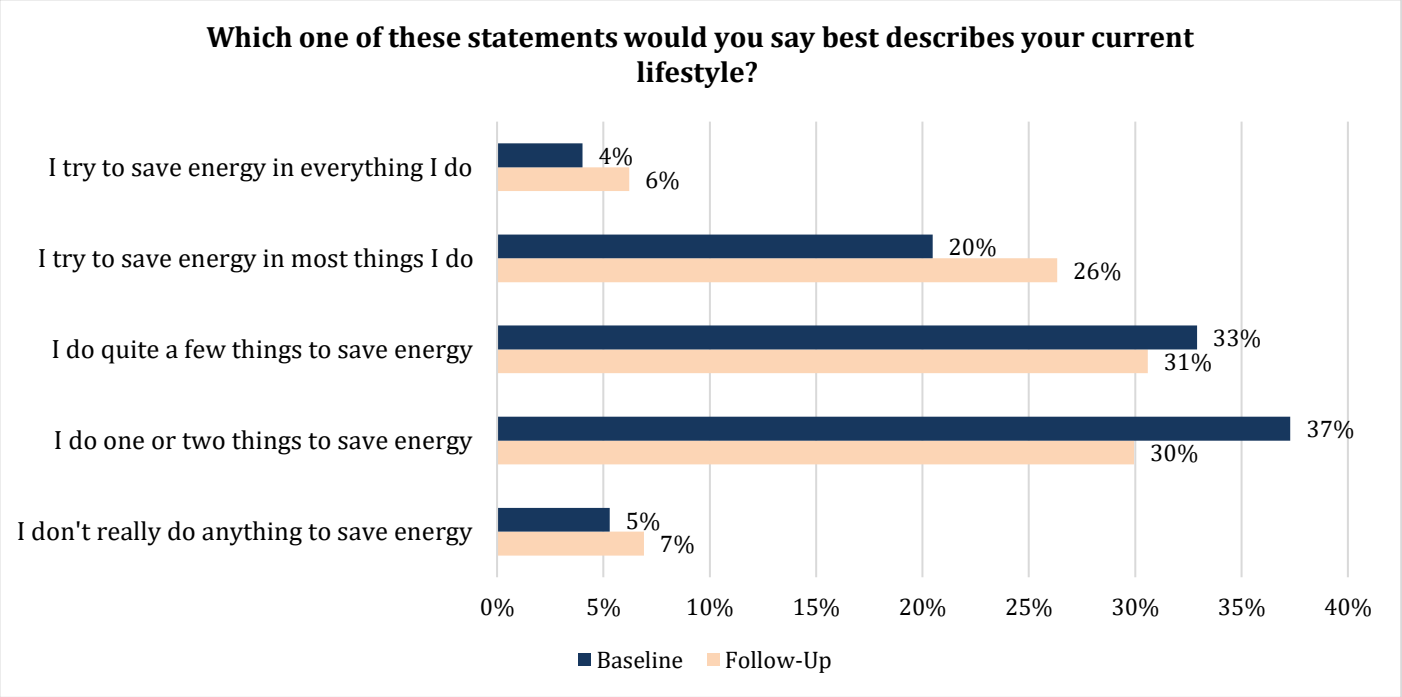

Figure 1. Energy saving efforts - Total sample

In **Bulgaria**, at the end of the academic year, the majority of the respondents (56%) stated that they do one or two things to save energy (+14% increase from baseline), followed by those that were doing quite a few things (24%). In the beginning of the academic year 42% of those surveyed stated "I do one or two things to save energy" and 29% "I try to save energy in most things I do".
A statistically significant difference was observed between the baseline and follow-up survey in the statement:

- "I try to save energy in most things I do", -23% decrease, *(z=-2.486, p=0.01)*

In **Cyprus**, 54% of the participants in the follow-up survey responded that they try to save energy in most things they do, followed by those that did quite a few things to save energy (23%). Forty-three percent (43%) of those questioned in the baseline survey stated "I try to save energy in most things I do" and 26% "I do quite a few things to save energy". A +11% increase is observed in the share of those who stated "I try to save energy in everything I do" and a -11% decrease with regard to "I try to save energy in everything I do" statement. However, the observed differences between the baseline and the follow-up survey were of no statistical significance.

In **Greece**, 33% of the follow-up respondents replied that they try to save energy in most things they do, followed by those that did quite a few things to save energy (28%) while 25% reported "I do one or two things to save energy". Except for the latter (-4% decrease) neither of the first two shares changed through the academic year. No statistically significant differences were observed between the baseline and the follow-up survey.

In **Ireland**, 34% of those who participated in the follow-up survey stated that they did one or two things to save energy, followed by those who did quite a few things (33%) whereas 21% tried to save energy in most things they did. In the baseline survey, 35% of those questioned stated "I do one or two things to save energy" and 27% replied "I do quite a few things to save energy. Another 27% reported that "I try to save energy in most things I do".
One statistically significant difference was observed, between the beginning and the end of the academic year in the statement:

- "I do quite a few things to save energy", +6% increase, *(z=2.05, p=0.03)*

In **Lithuania**, those that participated in the follow-up survey were mostly those that did one or two things to save energy (31%) and those that tried to save energy in most things they did (31%). In both cases a +2% increase from the baseline is observed. Another 25% of the respondents stated that they did quite a few things to save energy (no change from baseline). In the baseline survey, 29% of the respondents stated that "I do one or two things to save energy" and another 29% said that "I try to save energy in most things I do". No statistically significant differences were observed between the baseline and the follow-up survey.

In **Romania**, 34% of those surveyed in the follow-up survey responded that they did quite a few things to save energy (no change from baseline), 27% responded that they tried to save energy in most things they did (-3% decrease from baseline) and 20% stated "I do one or two things to save energy". In the baseline survey, 34% stated that "I do quite a few things to save energy" and 30% replied that "I try to save energy in most things I do". No statistically significant differences were observed between the baseline and the follow-up survey.

Finally, in the **UK**, 35% of the participants in the follow-up survey responded that they did one or two things to save energy, 30% of those surveyed did quite a few things to save energy (-3% decrease from baseline respectively) and 26% stated "I try to save energy in most things I do" (+5% increase from baseline).
Statistically significant differences were observed, between the beginning and the end of the year in the statement:

- "I try to save energy in everything I do", +1% increase, *(z=2.155, p=0.03)*

Table 17 Energy saving lifestyle – per country and total sample

Which one of these statements would you say best describes your current lifestyle?		**Bulgaria**	**Cyprus**	**Greece**	**Ireland**	**Lithuania**	**Romania**	**UK**	**Total**
I don't really do anything to save energy	**Follow-Up**	9%	0%	6%	5%	9%	11%	5%	7%
	Difference from Baseline	+2%	0%	+2%	0%	+1%	+2%	0%	+3%
I do one or two things to save energy	**Follow-Up**	56%	9%	25%	34%	31%	20%	35%	30%
	Difference from Baseline	+14%	+3%	-4%	-1%	+2%	+3%	-3%	+2%
I do quite a few things to save energy	**Follow-Up**	24%	23%	28%	33%	25%	34%	30%	28%
	Difference from Baseline	+1%	-3%	0%	**+6%***	0%	0%	-3%	0%
I try to save energy in most things I do	**Follow-Up**	6%	54%	33%	21%	31%	27%	26%	28%
	Difference from Baseline	**-23%***	+11%	0%	-6%	+2%	-3%	+5%	-2%
I try to save energy in everything I do	**Follow-Up**	6%	14%	8%	7%	4%	8%	5%	7%
	Difference from Baseline	+6%	-11%	+2%	0%	-5%	-2%	**+1%***	-1%

*statistically significant difference

4.1.3 Perceived level of information about saving energy in the hall

Respondents were asked about the level of information that they feel they have about what they personally can do to save energy in their hall of residence. Results are presented in Table 18 and illustrated in Figure 2 on a 1 to 5 scale (1 = Very badly informed, 3 = Neither well nor badly informed, 5, = Very well informed). Mean values over 3.5 indicate good perceived level of information on the specific topic. A low standard deviation (SD) indicates that the given answers tend to be close to the mean value, while a high standard deviation indicates that the given answers are spread out over a wider range of values. Independent samples t-test was used to determine whether the differences in the mean values recorded in the baseline and follow-up survey are statistically significant. P-values smaller than 0.05 indicate statistically significant differences in the mean value.

Overall, respondents felt neither well nor badly informed about what they can personally do to save energy in their hall in both baseline and follow-up surveys. In the follow-up survey (M=2.92, SD=5.79) respondents felt

slightly less informed than those responded in the baseline survey (M=3.04, SD=1.03) presenting a statistically significant decrease of -4% in the mean value, (*t(4349)= -6.043, p<0.01*).
At the end of the academic year, those questioned in Greece, Ireland, Lithuania, Romania and the UK felt better informed about what they can personally do to save energy in their hall of residence or college. In Bulgaria and Cyprus, the opposite is observed, however it must be pointed out that respondents from Cyprus, as a starting point, felt better informed than respondents from the other countries.

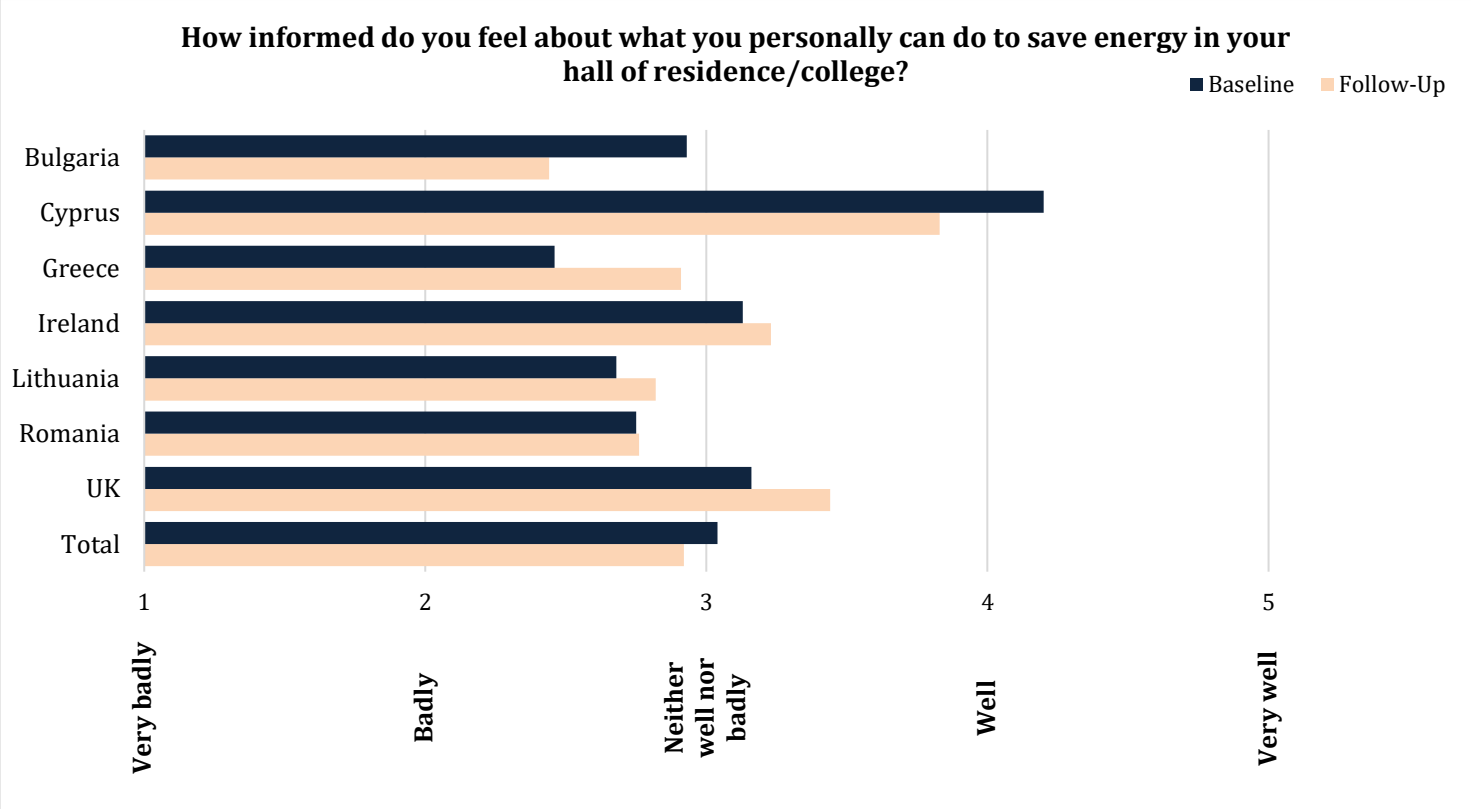

Figure 2 Level of information about what respondents can do to save energy in their hall -Total sample

In **Bulgaria,** those surveyed in the follow-up survey stated that they felt rather "Badly" informed (M=2.44, SD=1.21) than "Neither well nor badly". However, those that responded in the baseline survey felt "Neither well nor badly" informed (M=2.93, SD=0.94) presenting a -17% decrease in the mean value, which was of no statistical significance.

In **Cyprus**, respondents of the follow-up survey felt rather "Well" informed than "Neither well nor badly" informed (M=3.83, SD=0.89) while those responded in the baseline survey felt "Well" informed (M=4.20, SD=1.05). A decrease of -9% was observed, being however of no statistical significance.

In **Greece,** in the follow-up survey, respondents felt rather "Neither well nor badly" informed than "Badly" informed (M=2.9, SD=1.27) while those participated in the baseline survey felt less informed than those in the follow-up (M=2.46, SD=1.07), presenting a statistically significant change of +18% in the mean value, *(t (376) = -3.745, p<0.01).*

In **Ireland**, respondents in the follow-up survey felt "Neither well nor badly" informed (M=3.23, SD=1.00). Those that responded in the baseline survey seemed to be feeling slightly less informed (M=3.13, SD=1.09), however the change in the mean value was of no statistical significance.

In **Lithuania,** those questioned in the follow-up survey said that they were feeling rather "Neither well nor badly" informed than "Badly" informed (M=2.82, SD=1.07) while those that responded in the baseline survey felt

relatively badly informed (M=2,68 SD=1,01), however the change in the mean value was of no statistical significance.

In **Romania**, respondents in the follow-up survey (M=2.76, SD=1.12) felt between "Badly" and "Neither well nor badly" informed. The same level of information was observed also in the baseline survey (M=2.75, SD=1.04).

Finally, in the **UK,** respondents in the follow-up survey (M=3.44, SD=0.86) felt "Neither well nor badly" informed while those questioned in the baseline survey felt less informed than those in the follow-up (M=3.16, SD=1.00), however the change in the mean value was of no statistical significance.

Table 18 Level of information about what respondents can do to save energy in their hall- per country and total sample

How informed do you feel about what you personally can do to save energy in your hall?							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.93	0.94	2.44	1.21	-0.49	-17%	0.08
Cyprus	4.20	1.05	3.83	0.89	-0.37	-9%	0.12
Greece	2.46	1.07	2.91	1.27	0.45	**18%***	0.00
Ireland	3.13	1.09	3.23	1.00	0.09	3%	0.17
Lithuania	2.68	1.01	2.82	1.07	0.14	5%	0.13
Romania	2.75	1.04	2.76	1.12	0.01	0%	0.92
UK	3.16	1.00	3.44	0.86	0.28	9%	0.00
Total	3.04	1.03	2.92	5.79	-0.13	**-4%***	0.00

*statistically significant difference

4.1.4 Feelings about Saving Energy

Respondents were asked to describe from a targeted list of words their feelings about saving energy. Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions are statistically significant. The results are illustrated in Figure 3 and presented in Table 19.

In the follow-up survey, 61% of the total sample selected words with positive meaning (Content to Optimistic) while 29% selected words with a negative meaning (Guilty to Frustrated). Moreover, at the end of the academic year slightly more participants (+0.5%) stated that they felt indifferent about saving energy. On the other hand, in the baseline survey, 65% of the total sample had positive feelings, 23% had negative feelings and 11% felt indifferent about saving energy.

In total, 34% of the respondents in the follow-up survey felt optimistic about saving energy followed by those that felt content (19%) and guilty (15%). In the baseline survey, 39% of the respondents felt optimistic followed by those who felt content (20%). Moreover, in the follow-up survey more respondents (+2%) felt proud about saving energy.
Statistically significant differences were observed, between the beginning and the end of the year surveys in the following feelings:

- "Frustrated", +3% increase, *(z=3.128, p<0.01)*
- "Optimistic", -5% decrease, *(z= -4.914, p<0.01)*
- "Content", -1% decrease, *(z =-2.344, p<0.01)*

The most frequently given responses by those surveyed in each country are described in the following paragraphs.

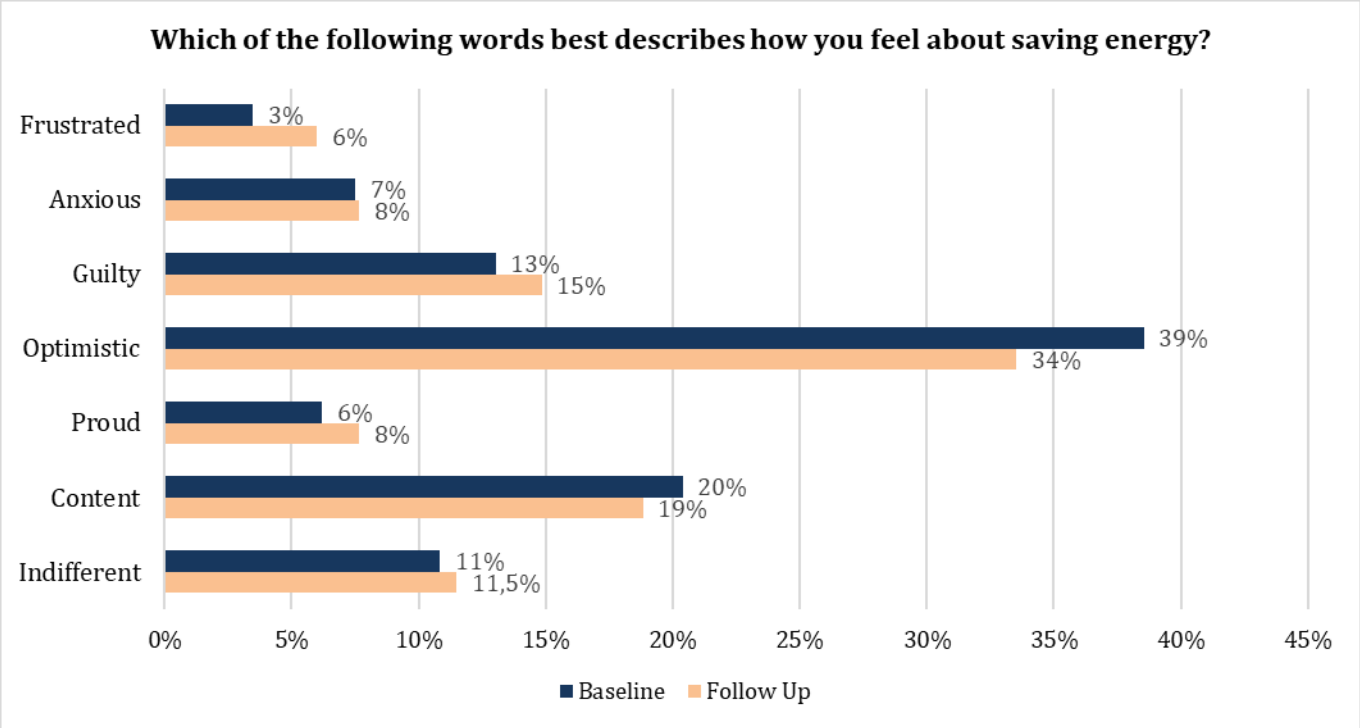

Figure 3 Feelings about saving energy - Total sample

In **Bulgaria**, at the end of the year, 29% of the participants responded that they felt optimistic towards saving energy, followed by those that felt indifferent (29%). In the baseline survey, respondents felt mostly indifferent (48%) and optimistic (19%).
Statistically significant differences were observed, between the beginning and the end of the year in the feelings:

- "Frustrated", -11% decrease, *(z=-1.993, p=0.046)*

In **Cyprus**, half of the respondents (50%) felt content about saving energy, followed by those that felt optimistic (18%) while an equal percentage of the respondents felt proud about energy saving (18%). Forty-five percent (45%) of the respondents at the baseline survey felt content, followed by those that felt optimistic (36%) and proud (9%). Those differences between the baseline and the follow-up survey were of no statistical significance.

In **Greece** 34% of those surveyed, responded that they felt content about saving energy, followed by those that were feeling optimistic (34%) and guilty (20%). In the baseline survey, respondents were feeling mainly content (27%) and optimistic (21%).
Statistically significant differences were observed, between the beginning and the end of the year in the feelings:

- "Optimistic", +12% increase, *(z=2.317, p=0.02)*

In **Ireland**, less than one third of the respondents (31%) felt optimistic about saving energy, while another 16% felt content and another 18% felt guilty. Those who responded to the baseline survey replied that they felt optimistic (33%) and content (21%).
Statistically significant differences were observed, between the beginning and the end of the year in the feelings:

- "Content" -5% decrease, *(z=-2.203, p=0.03)*

In **Lithuania**, 44% of the respondents were feeling optimistic about saving energy, while 16% of the respondents felt anxious and 18% of the respondents stated that they felt content. The respondents in the baseline survey felt mainly optimistic (43%), followed by those that felt content (15%). Differences between the baseline and the follow-up survey were not of statistical significance.

In **Romania**, 44% of the respondents felt optimistic about saving energy, statistically significant decreased compared to the baseline percentage -11% decrease, *(z=-4.910, p<0.01)*. Other than that, 21% of the

respondents reported that they felt content while 13% felt indifferent. In the baseline survey, respondents were feeling mainly optimistic (55%) followed by those that felt content (19%).

Finally, in **UK,** at the end of the year, 27% of the respondents reported that they felt optimistic about saving energy and 16% felt content. On the other hand, 18% felt guilty about saving energy.
Statistically significant differences were observed, between the beginning and the end of the year in the feelings:

- "Optimistic", -8% decrease, *(z=-3.566, p<0.01)*
- "Content", -4% decrease, *(z=-2.297, p<0.01)*
- "Frustrated", +5% increase, *(z=2.972, p<0.01)*
- "Anxious", +4% increase, *(z=2.518, p<0.01)*

Students in the UK, being informed about the impact that energy wastage has on global warming, are willing to do more on saving energy however they might see the actions they can do in their hall (e.g. switching off lights) as not enough to tackle climate change. In addition, the way the buildings and their systems are designed limit the things respondents can do to save energy and they do not feel in complete control over how much energy they use in general. As a result, an increase in negative feelings [Frustrated, Anxious, Guilty] about saving energy is observed.

Table 19 Feelings about saving energy - total sample and per country

Feelings about saving energy		**Bulgaria**	**Cyprus**	**Greece**	**Ireland**	**Lithuania**	**Romania**	**UK**	**Total**
Frustrated	**Follow-up**	0%	0%	2%	3%	2%	5%	10%	6%
	Baseline	11%	0%	3%	3%	3%	2%	5%	3%
	difference from baseline	**-11%***	0%	-1%	0%	-1%	+3%	**+5%***	**+3%***
Anxious	**Follow-up**	18%	3%	8%	8%	16%	1%	9%	8%
	Baseline	8%	0%	12%	6%	19%	2%	4%	7%
	difference from baseline	+10%	+3%	-4%	+2%	-3%	-1%	**+4%***	+1%
Guilty	**Follow-up**	6%	6%	14%	18%	8%	11%	18%	15%
	Baseline	0%	3%	20%	14%	9%	8%	17%	13%
	difference from baseline	+6%	+3%	-6%	+4%	-1%	+3%	+1%	+2%
Optimistic	**Follow-up**	29%	18%	34%	31%	44%	44%	27%	34%
	Baseline	19%	36%	21%	33%	43%	55%	35%	39%
	difference from baseline	+10%	-19%	**+13%***	-2%	+1%	**-11%***	**-8%***	**-5%***
Proud	**Follow-up**	3%	18%	4%	15%	3%	5%	7%	8%
	Baseline	4%	9%	3%	10%	2%	4%	8%	6%
	difference from baseline	-1%	+9%	+1%	+5%	+1%	+1%	-1%	+2%
Content	**Follow-up**	15%	50%	27%	16%	18%	21%	16%	19%
	Baseline	11%	45%	29%	21%	15%	19%	20%	20%
	difference from baseline	+4%	+5%	-2%	**-5%***	+3%	+2%	**-4%***	**-1%***

Feelings about saving energy		Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK	Total
Indifferent	**Follow-up**	29%	6%	12%	9%	9%	13%	12%	11%
	Baseline	48%	6%	12%	12%	9%	10%	9%	11%
	difference from baseline	-19%	0%	0%	-3%	0%	+3%	+3%	0%

*statistically significant difference

4.1.5 Behavioural antecedents on energy related topics

Respondents were asked to consider and indicate the extent to which they agree or disagree with given statements regarding the following topics:

- Energy use
- Saving energy
- Climate Change

Results are presented in Table 20 - Table 33 and illustrated in Figure 4 on a 1 to 5 scale (1 = Strongly disagree, 3=Neither agree nor disagree, 5 = Strongly agree). The higher the mean value (M) the greater the agreement with the statement. Mean values over 3.5 indicate agreement with the statement. A low standard deviation (SD) indicates that the given answers tend to be close to the mean value, while a high standard deviation indicates that the given answers are spread out over a wider range of values. Independent samples t-test was used to determine whether the differences in the mean values recorded in the baseline and follow-up survey are statistically significant.

In total, at the end of the academic year, respondents mostly agreed that "Global warming is a problem for society" (M=4.59, SD=0.79) whereas respondents disagreed with the statement "Saving energy is too much of a hassle" (M=2.2, SD=0.92). Statistically significant differences between the baseline and the follow-up surveys were observed in the following statements:

- "Global warming is a problem for society", +1% increase in mean value, *(t(4019)= -2.302, p=0.01)*
- "Energy conservation contributes to a reduction of climate change impacts", +1% increase in mean value, *(t(4009)=-2.042, p= 0.04)*
- "I feel guilty when I use a lot of energy", +2% increase in mean value, *(t(4011)= -2.566, p=0.01)*
- "Saving energy means I have to live less comfortably", +3% increase in mean value, *(t(4007)= -2.185, p=0.02)*
- "As a student living on campus, I should be more concerned about my energy use during my stay there", -2% decrease in mean value, *(t(4009)= 2.164, p=0.03)*
- "In general, I can reduce my energy use quite easily", -2% decrease in mean value, *(t(4009)=0.01, p=0.01)*
- "Most people who are important to me try to pay attention to their energy use", +4% increase in mean value, *(t(4007)= -3.499, p<0.01)*
- "I feel morally obliged to save energy, regardless of what others do", +2% increase in mean value, *(t(4010)= -2.683, p<0.01)*

Respondents from all countries, in both surveys, agreed on four out of the nine provided statements. Those were a) global warming is a problem for society, b) energy conservation contributes to a reduction of climate change impacts, c) everyone including myself is responsible for the exhaustion of energy sources and d) everyone including myself is responsible for climate change.

Furthermore, in both surveys, a "Disagree" to "Neither agree nor disagree" tendency is reported in all countries with regard to "Most people who are important to me think that I should use less energy" and "Saving energy means I have to live less comfortably". In all countries except for Bulgaria, respondents mostly disagreed that "Saving energy is too much of a hassle".

In **Bulgaria**, respondents from the follow-up questionnaire, agreed that everyone including themselves are responsible for the exhaustion of energy resources (M=4.21, SD=1.01), that global warming is a problem for society (M=4.29, SD=1.31) and that everyone including themselves is responsible for climate change (M=4.29, SD=1.06). However, they disagreed with the statement "Most people who are important to me think that I should use less energy" (M=2.32, SD=1.27).

Statistically significant differences are observed in the following statements:

- "Energy conservation contributes to a reduction of climate change impacts", +20% increase in mean value, *(t(56)= -2.410, p=0.02)*
- "I feel guilty when I use a lot of energy", +34% increase in mean value, *(t(57)= -2.697, p<0.01)*
- "Everyone including myself is responsible for the exhaustion of energy sources", +20% increase in mean value, *(t(57)= -1.848, p=0.03)*

In **Cyprus**, follow – up respondents agreed that energy conservation contributes to a reduction of climate change impacts (M=4.44, SD=0.71), that everyone including themselves is responsible for the exhaustion of energy sources (M=4.21, SD=0.81) as well as for climate change (M=4.18, SD=0.90) and that global warming is a problem for society (M=4.68, SD=0.53) while they disagreed that saving energy is too much of a hassle (M=1.79, SD=0.88)
Statistically significant differences are observed in the following statements:

- "Global warming is a problem for society", +6% increase in mean value, *(t(63)= -2.028, p=0.04)*

In **Greece,** respondents at the end of the academic year also agreed that global warming is a problem for society (M=4.43, SD=0.68), while they were leaning to agree that everyone including themselves is responsible for the exhaustion of energy sources (M=3.98, SD=0.85) as well for climate change (M=3.88, SD=0.90) and that they feel morally obliged to save energy regardless of what others do (M=3.9, SD=0.86).
Statistically significant differences are observed in the following statements:

- "I feel in complete control over how much energy I use in general", +8% increase in mean value, *(t(359)= -2.318, p=0.02)*
- "Most people who are important to me try to pay attention to their energy use", +6% increase in mean value, *(t(361)=0,01, p=0.01)*
- "I intend to try harder to reduce my energy use this academic year", +7% increase in mean value, *(t(361)= -2.626, p<0.01)*

In **Ireland**, at the end of the academic year, respondents agreed that global warming is a problem for society (M=4.6, SD=0.8), that everyone including themselves is responsible for climate change (M=4.3, SD=0.8) as well for the exhaustion of the energy sources (M=4.22, SD=0.81) and that energy conservation contributes to a reduction of climate change impacts (M=4.2, SD=0.74). No significant alternation was observed between the beginning and the end of the year.

In **Lithuania,** follow-up respondents agreed that global warming is a problem for society (M=4.4, SD=0.84), that energy conservation contributes to a reduction of climate change impacts (M=4.25, SD=0.79) and that everyone including themselves is responsible for climate change (M=4.27, SD=0.86) as well for the exhaustion of the energy sources (M=4.33, SD=0.72).
Statistically significant differences are observed in the following statements:

- "Energy conservation contributes to a reduction of climate change impacts", +6% increase in mean value, *(t(511)= -2.770, p<0.01)*

In **Romania**, respondents at the end of the academic year agreed that global warming is a problem for society, (M=4.47, SD=0.80), that everyone including themselves is responsible for the exhaustion of energy sources (M=4.17, SD=0.83) as well that everyone including themselves is responsible for climate change (M=4.05, SD=0.92) and that energy conservation contributes to a reduction of climate change impacts (M=4.09, SD=0.82).
Statistically significant differences are observed in the following statements:

- "Saving energy means I have to live less comfortably", +12% increase in mean value, *(t(849)= -4.640, p<0.01)*
- "Saving energy is too much of a hassle", +15% increase in mean value, *(t(849)=-5.284, p<0.01)*
- "Global warming is a problem for society", -3% decrease in mean value, *(t(854) = 2.467, p=0.01)*
- "Everyone including myself is responsible for climate change", -4% decrease in mean value, *(t(845) = 2.074, p<0.05).*

The observed perception that saving energy is a hassle might be attributed to the lack of motivation; ıt is likely respondents considered that the reward they got was not in line with the effort they made. Furthermore, the

term "saving energy" might be falsely related to less temperature levels inside the room and as a consequence, respondents might think they have to live less comfortably, wearing several clothes to keep warm inside their room.

Finally, in the **UK**, follow-up respondents also agreed that global warming is a problem for society (M=4.69, SD=0.78), that everyone including themselves are responsible for the exhaustion of energy sources (M=4.21, SD=0.87) as well as that they are equally responsible for climate change (M=4.29, SD=0.90), that energy conservation contributes to a reduction of climate change impacts (M=4.22, SD=0.72) and that they feel morally obliged to save energy regardless of what others do (M=4.11, SD=0.83).

Statistically significant differences are observed in the following statements:

- "I feel in complete control over how much energy I use in general", -6% decrease in mean value, *(t(1289)= 3.373, p<0.01)*
- "I feel guilty when I use a lot of energy", +3% increase in mean value, *(t(1284)= -2.223, p=0.02)*
- "Saving energy is too much of a hassle", -5% decrease in mean value, *(t(1283)= 2.061, p=0.03)*

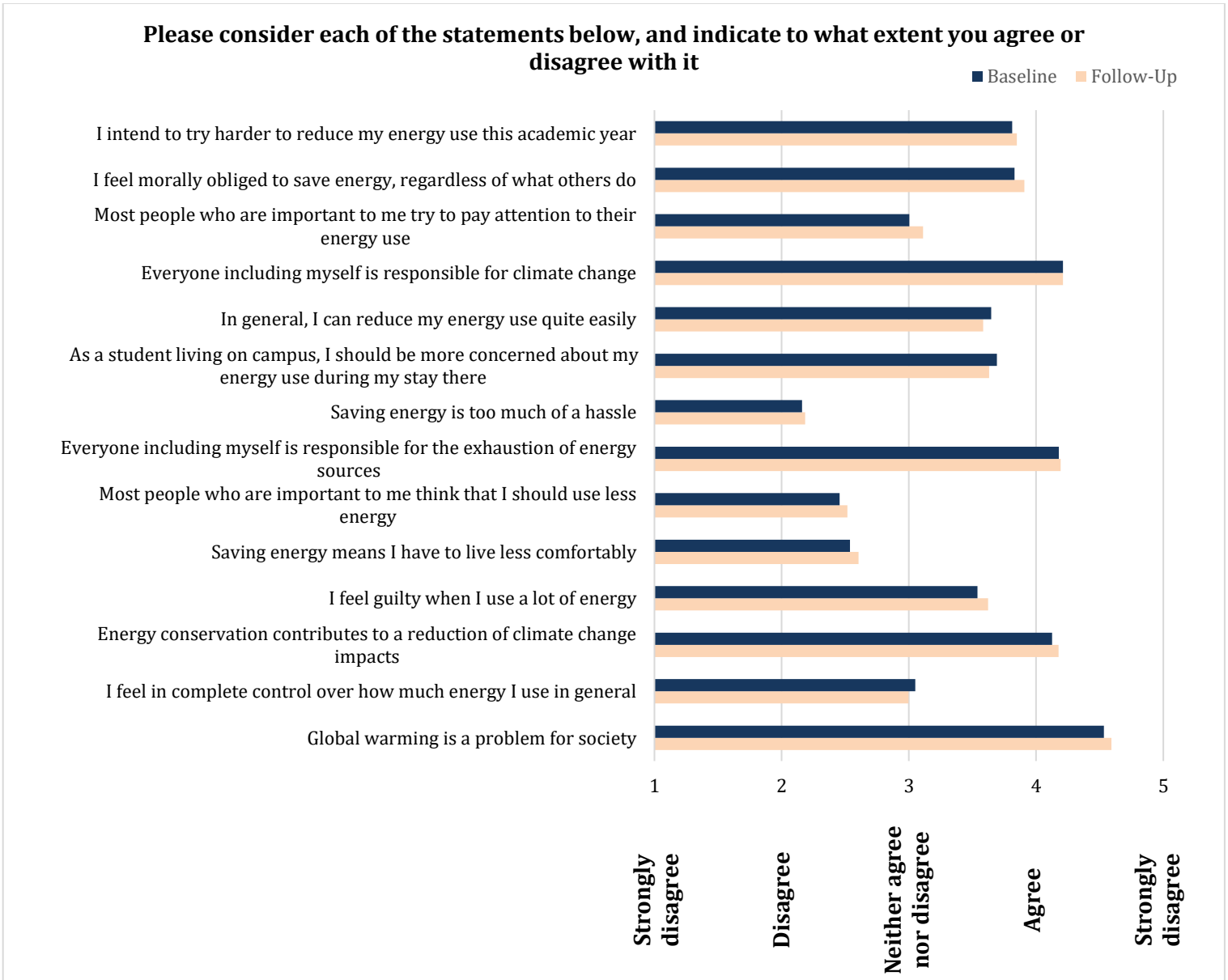

Figure 4 Behavioural antecedents on energy related topics – Total sample

Table 20 Behavioural antecedents on energy related topics – Perceived behavioural control

I feel in complete control over how much energy I use in general							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.72	1.28	3.74	1.05	0.02	1%	0.96
Cyprus	3.59	0.95	3.38	0.82	-0.21	-6%	0.37
Greece	2.93	0.88	3.15	0.93	0.22	**8%***	0.02
Ireland	2.96	0.94	2.97	0.97	0.01	0%	0.84
Lithuania	3.19	0.90	3.21	0.86	0.02	1%	0.80
Romania	3.23	0.93	3.33	0.92	0.09	3%	0.14
UK	2.87	0.89	2.69	0.93	-0.18	**-6%***	0.00
Total	3.0	0.93	3.0	0.97	-0.05	-2%	0.07

*statistically significant difference

Table 21 Behavioural antecedents on energy related topics – Awareness of consequences

Energy conservation contributes to a reduction of climate change impacts							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.50	1.25	4.21	0.98	0.71	**20%***	0.02
Cyprus	4.34	0.65	4.44	0.71	0.10	2%	0.61
Greece	4.15	0.84	3.99	0.91	-0.16	-4%	0.08
Ireland	4.13	0.79	4.20	0.74	0.06	1%	0.22
Lithuania	4.02	0.96	4.25	0.79	0.23	**6%***	0.01
Romania	4.11	0.78	4.09	0.82	-0.02	0%	0.74
UK	4.20	0.76	4.22	0.72	0.02	0%	0.58
Total	4.1	0.82	4.2	0.78	0.05	**1%***	0.04

*statistically significant difference

Table 22 Behavioural antecedents on energy related topics – Emotions

I feel guilty when I use a lot of energy							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.44	1.23	3.26	1.12	0.82	**34%***	0.01
Cyprus	3.44	1.19	3.88	0.88	0.44	13%	0.08
Greece	3.43	1.00	3.32	0.93	-0.11	-3%	0.27
Ireland	3.85	0.92	3.86	0.98	0.01	0%	0.92
Lithuania	3.10	1.11	3.15	1.04	0.05	2%	0.61
Romania	3.41	1.00	3.33	1.09	-0.08	-2%	0.28
UK	3.74	0.94	3.86	0.96	0.12	**3%***	0.03
Total	3.5	1.03	3.6	1.04	0.08	**2%***	0.01

*statistically significant difference

Table 23 Behavioural antecedents on energy related topics - Attitudes

Saving energy means I have to live less comfortably							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.68	1.35	3.00	1.26	0.32	12%	0.35
Cyprus	2.34	1.00	2.41	0.89	0.07	3%	0.81
Greece	2.58	0.95	2.59	0.94	0.01	0%	0.92
Ireland	2.48	0.94	2.38	0.88	-0.10	4%	0.11
Lithuania	2.68	1.02	2.71	0.96	0.03	-1%	0.72
Romania	2.53	0.92	2.83	0.97	0.30	**12%***	0.00
UK	2.50	0.88	2.55	0.93	0.06	2%	0.27
Total	2.5	0.94	2.6	0.95	0.07	**3%***	0.03

*statistically significant difference

Table 24 Behavioural antecedents on energy related topics – Subjective norms

Most people who are important to me think that I should use less energy							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.04	1.06	2.32	1.27	0.28	14%	0.37
Cyprus	2.22	1.01	2.29	1.12	0.08	4%	0.61
Greece	2.48	0.94	2.65	1.00	0.16	6%	0.11
Ireland	2.44	0.97	2.55	0.92	0.11	5%	0.09
Lithuania	2.05	1.02	2.05	0.97	0.00	0%	0.97
Romania	2.74	1.05	2.76	1.09	0.01	0%	0.88
UK	2.52	0.92	2.46	0.91	-0.05	-2%	0.30
Total	2.5	1.00	2.5	0.99	0.06	2%	0.05

Table 25 Behavioural antecedents on energy related topics – Ascription of responsibility

Everyone including myself is responsible for the exhaustion of energy sources							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.52	1.48	4.21	1.01	0.69	**20%***	0.04
***Cyprus**	4.22	0.91	4.21	0.81	-0.01	0%	0.95
Greece	3.94	0.99	3.98	0.85	0.03	1%	0.73
Ireland	4.17	0.86	4.22	0.81	0.04	1%	0.45
Lithuania	4.25	0.80	4.33	0.72	0.08	2%	0.27
Romania	4.25	0.80	4.17	0.84	-0.08	-2%	0.13
UK	4.19	0.86	4.21	0.88	0.02	0%	0.67
Total	4.2	0.87	4.2	0.84	0.01	0%	0.63

*statistically significant difference

Table 26 Behavioural antecedents on energy related topics - Attitudes

Saving energy is too much of a hassle							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.65	1.09	3.06	1.41	0.40	15%	0.23
Cyprus	1.88	0.83	1.79	0.88	-0.08	-4%	0.61
Greece	2.24	0.95	2.28	1.00	0.04	2%	0.72
Ireland	2.06	0.87	2.00	0.83	-0.06	-3%	0.33
Lithuania	2.31	0.91	2.30	0.89	-0.01	0%	0.93
Romania	2.15	0.82	2.48	1.00	0.33	**15%***	0.00
UK	2.14	0.84	2.04	0.82	-0.10	**-5%***	0.04
Total	2.2	0.88	2.2	0.92	0.02	1%	0.39

*statistically significant difference

Table 27 Behavioural antecedents on energy related topics – Awareness of consequences

Global warming is a problem for society							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.96	1.37	4.29	1.31	0.33	8%	0.35
Cyprus	4.41	0.61	4.68	0.53	0.27	**6%***	0.05
Greece	4.36	0.83	4.43	0.68	0.07	2%	0.35
Ireland	4.63	0.81	4.69	0.75	0.06	1%	0.24
Lithuania	4.33	0.92	4.44	0.84	0.11	3%	0.20
Romania	4.59	0.63	4.47	0.80	-0.12	**-3%***	0.01
UK	4.62	0.84	4.69	0.78	0.07	2%	0.12
Total	4.53	0.82	4.59	0.79	0.06	**1%***	0.02

*statistically significant difference

Table 28 Behavioural antecedents on energy related topics – Perceived behavioural control

In general, I can reduce my energy use quite easily							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.23	1.18	3.35	1.28	0.12	4%	0.71
Cyprus	3.81	0.74	3.82	0.90	0.01	0%	0.93
Greece	3.53	0.83	3.55	0.85	0.03	1%	0.76
Ireland	3.85	0.74	3.86	0.77	0.01	0%	0.89
Lithuania	3.42	0.91	3.34	0.92	-0.08	-2%	0.38
Romania	3.66	0.80	3.63	0.87	-0.03	-1%	0.60
UK	3.64	0.76	3.49	0.89	-0.15	**-4%***	0.00
Total	3.6	0.82	3.6	0.89	-0.06	**-2%***	0.02

*statistically significant difference

Table 29 Behavioural antecedents on energy related topics – Ascription of responsibility

Everyone including myself is responsible for climate change							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.69	1.46	4.29	1.06	0.60	16%	0.07
Cyprus	4.16	0.81	4.18	0.90	0.02	0%	0.94
Greece	3.92	1.04	3.88	0.89	-0.04	-1%	0.71
Ireland	4.30	0.84	4.36	0.83	0.06	1%	0.29
Lithuania	4.17	0.94	4.27	0.86	0.10	2%	0.26
Romania	4.17	0.88	4.05	0.92	-0.13	**-3%***	0.04
UK	4.31	0.81	4.29	0.91	-0.02	0%	0.72
Total	4.2	0.90	4.2	0.90	0.00	0%	0.98

*statistically significant difference

Table 30 Behavioural antecedents on energy related topics – Subjective norms

Most people who are important to me try to pay attention to their energy use							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.73	1.40	3.12	1.22	0.39	14%	0.22
Cyprus	3.31	0.82	3.12	0.91	-0.19	-6%	0.37
Greece	2.91	0.86	3.14	0.87	0.23	**8%***	0.01
Ireland	3.24	0.98	3.24	0.97	0.00	0%	0.90
Lithuania	2.57	1.01	2.55	0.96	-0.03	-1%	0.77
Romania	2.98	0.90	3.05	0.95	0.06	2%	0.32
UK	3.10	0.91	3.20	0.99	0.11	4%	0.07
Total	3.0	0.97	3.1	0.98	0.11	**4%***	0.00

*statistically significant difference

Table 31 Behavioural antecedents on energy related topics – Role beliefs

As a student living on campus, I should be more concerned about my energy use during my stay there							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.81	1.42	3.03	1.17	0.22	8%	0.51
Cyprus	4.06	0.84	3.82	0.90	-0.24	-6%	0.34
Greece	3.85	0.82	3.81	0.97	-0.04	-1%	0.69
Ireland	3.89	0.82	3.85	0.76	-0.04	-1%	0.44
Lithuania	3.16	1.02	3.20	1.03	0.04	1%	0.71
Romania	3.79	0.80	3.70	0.89	-0.09	-2%	0.13
UK	3.73	0.82	3.56	0.90	-0.17	**-5%***	0.00
Total	3.7	0.90	3.6	0.92	-0.06	**-2%***	0.03

*statistically significant difference

Table 32 Behavioural antecedents on energy related topics – Personal norms

I feel morally obliged to save energy, regardless of what others do							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.92	1.44	3.56	1.24	0.64	22%	0.19
Cyprus	4.25	0.76	4.35	0.73	0.10	2%	0.94
Greece	3.91	0.85	3.90	0.86	-0.01	0%	0.96
Ireland	3.95	0.81	3.92	0.90	-0.03	-1%	0.71
Lithuania	3.55	0.96	3.68	0.98	0.14	4%	0.09
Romania	3.72	0.89	3.60	0.98	-0.11	-3%	0.09
UK	3.98	0.88	4.11	0.83	0.13	**3%***	0.01
Total	3.8	0.91	3.9	0.93	0.08	**2%***	0.00

*statistically significant difference

Table 33 Behavioural antecedents on energy related topics – Personal norms

I intend to try harder to reduce my energy use this academic year							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	2.92	1.40	3.47	0.99	0.55	19%	0.18
Cyprus	4.16	0.72	4.03	0.78	-0.13	-3%	0.40
Greece	3.40	0.87	3.63	0.82	0.23	**7%***	**0.01***
Ireland	4.08	0.68	4.06	0.75	-0.02	0%	0.66
Lithuania	3.49	0.91	3.56	0.88	0.08	2%	0.27
Romania	3.84	0.79	3.74	0.89	-0.10	-3%	0.09
UK	3.92	0.77	3.93	0.82	0.02	1%	0.70
Total	3.8	0.84	3.8	0.85	0.04	1%	0.18

*statistically significant difference

4.1.6 Energy saving in everyday life

Respondents were asked to choose which of the six following targeted behaviors can help save energy.

- Switch off lights in empty rooms
- Avoid leaving electronic equipment on standby
- Put a lid on pans when cooking
- Boil the kettle only with the amount of water you intend to use
- Put on a jumper or an extra blanket instead of turning on the heating
- Open windows to cool down instead of using a cooling device or system

Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions are statistically significant for each of the two groups. Findings are summarized for the total sample in Figure 5 and presented in more detail for the total sample and per country in Table 34.

Overall, in all countries, the vast majority of respondents in both surveys, think that switching off the lights in empty rooms and opening the windows to cool down instead of using a cooling device or system helps saving energy.

In total, at the beginning of the year, 89% of the respondents selected "Switch of lights in empty rooms" as an action they think helpful towards energy saving. This share was slightly decreased in the follow-up survey (88%). "Avoid leaving electronic equipment on standby" and "Open windows to cool down instead of using a cooling

device or system" were the second most popular selected actions in both surveys, considered by respondents helpful towards saving energy. These actions were selected by 76% of respondents in the end of the academic year survey and 75% of those that participated in the baseline survey, respectively.

Between the two surveys the following statistically significant differences were observed with regard to the total sample:

- "Put a lid on pans when cooking", +10% increase, *(z= 6.497, p<0.01)*
- "Boil the kettle only with the amount of water you intend to use", +4% increase, *(z= 2.443, p<0.01)*
- "Put on a jumper or an extra blanket instead of turning on the heating", +4% increase, *(z= 2.597, p<0.01)*

The most popular responses given by respondents in each country are described in the following paragraphs.

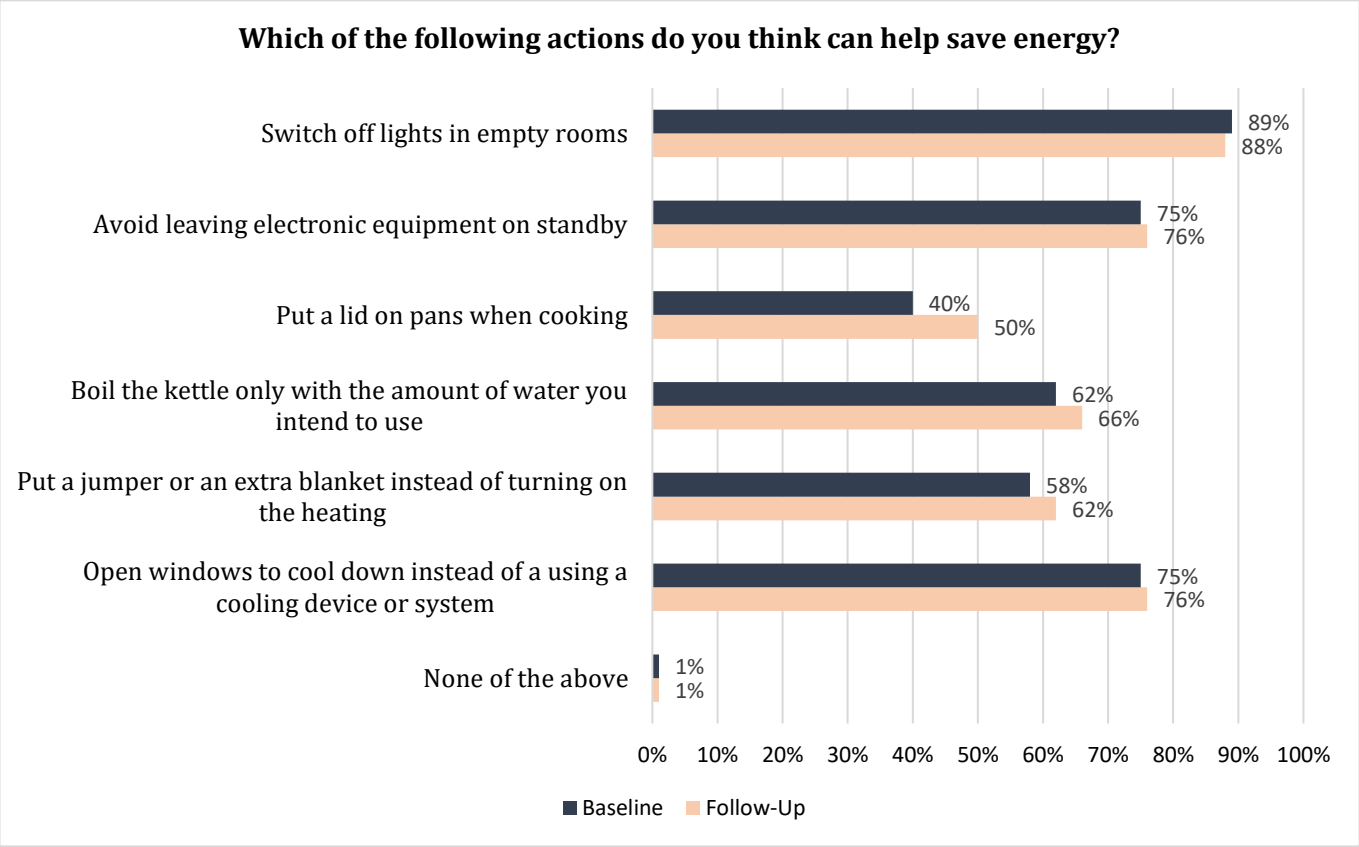

Figure 5 Energy saving in everyday life – Total sample

In **Bulgaria**, 85% of the respondents in the follow-up survey, replied that "Switch off lights in empty rooms" is an action that they think can help save energy, 74% of the respondents said that "Open windows to cool down instead of using a cooling device or system" and 74% picked "Avoid leaving electronic equipment on standby". In the baseline survey, the actions that were most frequently chosen were "Switch of lights in empty rooms" (80%) and "Put on a jumper or an extra blanket instead of turning on the heating" (58%). The biggest differences observed were with regard to "Avoid leaving electronic equipment on standby", +22% increase from baseline, and "Open windows to cool down instead of using a cooling device" +19% increase from baseline. However, these differences were not statistically significant.

In **Cyprus,** 94% of the respondents in the follow-up survey said that "Switch off lights in empty rooms" is an action they think helps in saving energy, 83% picked "Open windows to cool down instead of using a cooling device or system", 77% of the respondents picked "Avoid leaving electronic equipment on standby" and 74% chose "Boil the kettle only with the amount of water you intend to use".

In the baseline survey, respondents mainly chose the actions "Switch of lights in empty rooms" (91%) and "Open windows to cool down instead of using a cooling device or system" (83%). The biggest difference observed was with regard to "Boil the kettle only with the amount of water you intend to use", +17% increase from the baseline, however, this difference was not statistically significant.

In **Greece**, 84% of those questioned in the follow-up survey chose "Switch off lights in empty rooms", as an action they considered more helpful towards saving energy, 66% chose "Avoid leaving electronic equipment on standby" and 54% of the respondents believed that "Open windows to cool down instead of using a cooling device or system" was helpful for energy saving. Participants in the baseline survey, replied that the actions they considered important were "Switch of lights in empty rooms" (80%) and "Open windows to cool down instead of a using a cooling device or system" (64%).
Statistically significant differences from the baseline survey were observed for the actions:

- "Boil the kettle only with the amount of water you intend to use", 51% in follow-up survey, +13% increase, *(z=2.466, p=0.01)*
- "Open windows to cool down instead of using a cooling device or system", -10% decrease, *(z=-1.962, p=0.0498)*. This decrease can be attributed probably to the country's weather conditions during the circulation of the surveys' as the autumn of 2018 was warm but during the springtime of 2019 the weather was colder than usual with heavy rains.

In **Ireland**, 92% of the respondents in the follow-up survey, considered "Switch off lights in empty rooms" helpful in saving energy whereas 85% pointed out "Avoid leaving electronic equipment on standby" and 84% chose "Open windows to cool down instead of using a cooling device or system". The respondents of the baseline survey reported the same actions as important for saving energy scoring 87%, 80% and 78%, respectively.
Statistically significant differences from the baseline survey were observed for the actions:

- "Boil the kettle only with the amount of water you intend to use", +6% increase, *(z=1.992, p=0,046)*
- "Open windows to cool down instead of using a cooling device or system", +6% increase, (*z=2.289, p=0.02)*

In **Lithuania**, in the follow-up survey, 92% of the respondents chose "Switch off lights in empty rooms" as a helpful action for energy saving, 84% chose "Open windows to cool down instead of a using a cooling device or system", 71% chose the action "Boil the kettle only with the amount of water you intend to use" and 69% picked "Avoid leaving electronic equipment on standby". In the baseline survey, the actions mainly considered important were "Switch off lights in empty rooms" (90%) and "Open windows to cool down instead of using a cooling device or system" (76%).
Statistically significant differences, were observed for the actions:

- "Open windows to cool down instead of using a cooling device or system", +8% increase, *(z=2.238, p=0.02)*

In **Romania,** 78% of the follow-up survey participants chose "Switch off lights in empty rooms" as an action that helps save energy. The action "Avoid leaving electronic equipment on standby" received 57%, -6% lower than the baseline, a difference of no statistical significance. Fifty-four percent (54%) of the respondents chose "Open windows to cool down instead of using a cooling device or system". Those questioned in the baseline survey, picked "Switch of lights in empty rooms" (87%) and "Open windows to cool down instead of using a cooling device or system" (66%).
A decrease of -10% from the baseline is observed for the action "Boil the kettle only with the amount of water you intend to use", however having no statistical significance.
Statistically significant differences were observed for the actions:

- "Switch off lights in empty rooms", -9% decrease, *(z=-3.679, p<0.01).* The observed decrease in switching off lights in empty rooms might be attributed to the lack of motivation; it is likely respondents considered that the reward they got was not in line with the effort they made.
- "Open windows to cool down instead of using a cooling device or system", -12% decrease, *(z=2.238, p<0.01)*. This decrease might be attributed to colder weather conditions than usual during the circulation of the follow-up survey.

Finally, in **UK**, 93% of the follow-up survey respondents picked "Switch of lights in empty rooms" as an action they believe that can help with energy saving, 89% picked "Open windows to cool down instead of using a cooling device or system", 86% picked "Avoid leaving electronic equipment on standby", 84% chose "Put on a jumper or

an extra blanket instead of turning on the heating" and 79% chose "Boil the kettle only with the amount of water you intend to use". Findings from the baseline survey showed that the actions that were considered important were "Switch of lights in empty rooms" (93%) and "Open windows to cool down instead of a using a cooling device or system" (86%).
Statistically significant differences, were observed for the actions:

- "Put a lid on pans when cooking", +12% increase, *(z=4.261, p<0.01)*
- "Boil the kettle only with the amount of water you intend to use", +8% increase, *(z=3.569, p<0.01)*
- "Put on a jumper or an extra blanket instead of turning on the heating", 65% follow-up, +6% increase, *(z= 2.637, p<0.01)*

Table 34 Energy saving in everyday life – Per country and total sample

Which of the following actions do you think can help save energy?		Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK	Total
Switch off lights in empty rooms	**Follow-Up**	85%	94%	84%	92%	92%	78%	93%	88%
	Difference from Baseline	+5%	+3%	-4%	+5%	+2%	**-9%***	0%	-1%
Avoid leaving electronic equipment on standby	**Follow-Up**	74%	77%	66%	85%	69%	57%	86%	76%
	Difference from Baseline	+22%	+6%	+6%	+5%	-4%	-6%	+1%	+1%
Put a lid on pans when cooking	**Follow-Up**	53%	57%	52%	55%	53%	20%	65%	50%
	Difference from Baseline	+14%	+3%	+24%	+11%	0%	+4%	**+12%***	**+10%***
Boil the kettle only with the amount of water you intend to use	**Follow-Up**	53%	74%	51%	79%	71%	36%	79%	66%
	Difference from Baseline	+5%	+17%	**+13%***	**+6%***	+4%	-10%	**+8%***	**+4%***
Put on a jumper or an extra blanket instead of turning on the heating	**Follow-Up**	53%	63%	46%	76%	53%	24%	84%	62%
	Difference from Baseline	-5%	-6%	-4%	+2%	+3%	-1%	**+6%***	**+4%***
Open windows to cool down instead of using a cooling device or system	**Follow-Up**	74%	83%	54%	84%	84%	54%	89%	76%
	Difference from Baseline	+19%	0%	**-10%***	**+6%***	**+8%***	**-12%***	+3%	+1%
None of the above	**Follow-Up**	6%	3%	4%	2%	1%	2%	0%	1%
	Difference from Baseline	-1%	+3%	+4%*	0%	-1%	+1%	0%	0%

*statistically significant difference

4.1.7 Frequency of energy saving action

Respondents were asked to rate the frequency in which they perform a number of energy saving actions on a scale of 1 to 5 (1= Never. 2 = Rarely. 3 = Sometimes. 4 = Often. 5= Always). The higher the mean value (M) the higher the frequency that the action is performed. A low standard deviation (SD) indicates that the given answers tend to be close to the mean value, while a high standard deviation indicates that the given answers are spread out over a wider range of values. Independent samples t-test was used to determine whether the differences in the mean values recorded between the baseline and follow-up survey are statistically significant for each of the two group. The results are illustrated in Figure 6 and tabulated in Table 35 - Table 40.

In the follow-up survey, respondents in total said that the actions they take more often are "Switch off lights", (M=4.47, SD=0.76) and "Open windows to cool down instead of using a cooling device or system", (M=4.43, SD=0.90). Respondents, regarding the action "Boil the kettle only with the amount of water you intend to use" replied that they take it more often than sometimes (M=3.75, SD=1.17).

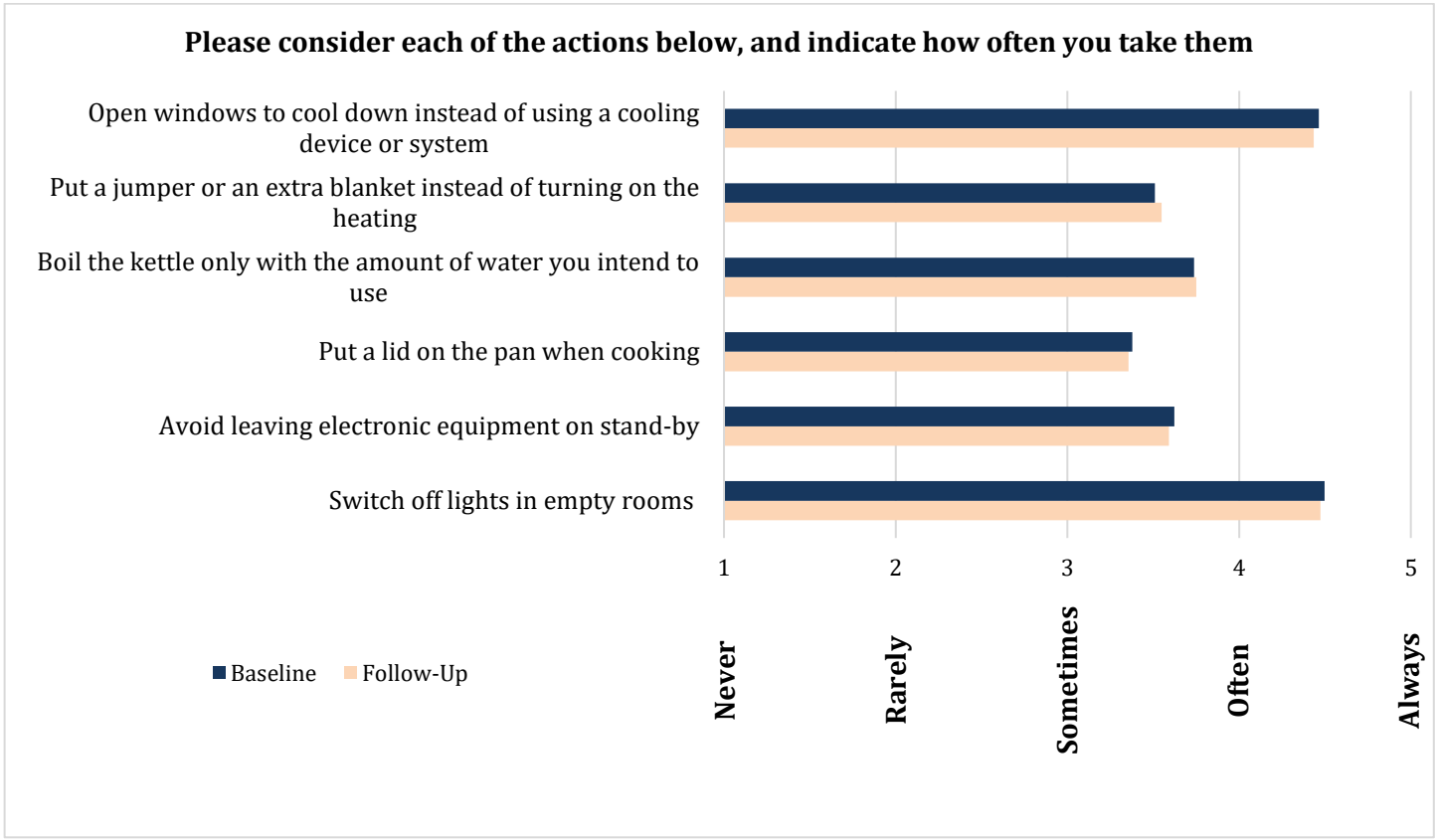

Figure 6 Frequency of energy saving actions -Total sample

In **Bulgaria**, respondents in the follow-up survey, replied that the actions undertaken often in order to save energy were "Switch off lights in empty rooms", (M=4.27, SD=1.10) and "Open windows to cool down instead of using a cooling device or system", (M=4.12, SD=1.14). On the other hand, the actions "Put on a jumper or an extra blanket instead of turning on the heating" (M=3.03, SD=1.47), and "Put a lid on the pan when cooking" (M=3.33, SD=1.36) were less frequently undertaken.
Differences between the baseline and the follow-up survey were observed, however they were statistically insignificant.

In **Cyprus,** it was observed that the actions mostly undertaken in the follow-up survey by the respondents, were "Switch off lights in empty rooms", (M=4.79, SD=0.92) and "Boil the kettle only with the amount of water you intend to use", (M=4.47, SD=0.71). The actions "Put on a jumper or an extra blanket instead of turning on the heating" (M=3.85, SD=0.93), "Put a lid on the pan while cooking" (M=4.06, SD=1.02) and "Open windows to cool down instead of using a cooling device or system", (M=3.79, SD=0.98) were less frequently undertaken.
Statistically significant differences, were observed for the actions:

- "Put on a jumper or an extra blanket instead of turning on the heating", -12% decrease in mean value, *(t(63)=2.58, p=0.01).*

This decrease might be related to the country's rising temperatures during the follow-up survey circulation (May 2019) when respondents were aligned to save energy from cooling rather from heating.

In **Greece,** "Switch off the lights in empty rooms" was the action that was most frequently undertaken by the respondents, (M=4.21, SD=0.93) in the follow-up survey, followed by "Open windows to cool down instead of

using a cooling device or system" (M=3.71, SD=1.08). On the other hand, the actions, "Put a lid on the pan while cooking" (M=3.47, SD=1.18), "Put on a jumper or an extra blanket instead of turning on the heating" (M=3.47, SD=1.14) were undertaken less frequently, between 'Sometimes' and 'Often'.
Statistically significant differences, were observed for the actions:

- "Switch off lights in empty rooms", -5% decrease in mean value, *(t(355)=2.504, p=0.01)*

In **Ireland,** respondents in the follow-up survey reported that the actions that were taken almost always were "Switch off lights in empty rooms" M=4.57, SD=0.67) and "Open windows to cool down instead of using a cooling device or system", (M=4.64, SD=0.70). The less frequently undertaken actions were "Avoid leaving electronic equipment on stand-by" (M=3.73, SD=1.05) and "Put a lid on the pan when cooking" (M=3.21, SD=1.26). Those were undertaken between 'Sometimes' and 'Often'. Differences between the baseline and the follow-up survey were statistically insignificant.

In **Lithuania,** respondents in the follow-up survey, took almost always the actions "Open windows to cool down instead of using a cooling device or system" (M=4.60, SD=0.75) as there aren't any sort of cooling device installed in Lithuanian dormitories and "Switch of lights in empty rooms" (M=4.49, SD=0.74). "Avoid leaving electronic equipment on stand-by" (M=3.31, SD=1.16) and "Boil the kettle with the amount of water you intend to use" (M=3.82, SD=1.11) were undertaken less frequently. Differences between the baseline and the follow-up survey were statistically insignificant.

In **Romania,** follow-up survey respondents replied that the actions they frequently took were "Open windows to cool down instead of using a cooling device or system" (M=4.21, SD=1.01) and "Switch off lights in empty rooms" (M=4.24, SD=0.89). On the other hand, the actions "Put a lid on the pan when cooking" (M=3.15, SD=1.25) and "Put on a jumper or an extra blanket instead of turning on the heating" (M=2.87, SD=1.25) were taken rather "Often" than "Rarely".
Statistically significant differences, were observed for the actions:

- "Open windows to cool down instead of using a cooling device or system", -3% decrease*, (t(809)=2.316, p=0.002).*
- "Boil the kettle only with the amount of water you intend to use", -7% decrease in mean value, *(t(806)=3.054, p<0.01)*
- "Switch off lights in empty rooms", -3% decrease in mean value, *(t(814)=2.47, p=0.01)*

In the **UK,** respondents at the end of the year, replied that the actions that they took almost always were "Open windows to cool down instead of using a cooling device or system" (M=4.64, SD=0.73) as almost no UK accommodation has any sort of cooling device or system, and "Switch off lights in empty rooms" (M=4.61, SD=0.63). The actions "Avoid leaving electronic equipment on stand-by" (M=3.60, SD=1.04) and "Put a lid on the pan when cooking" (M=3.34, SD=1.23) were undertaken between 'Sometimes' and 'Often'.
Statistically significant differences, were observed for the actions:

- "Boil the kettle only with the amount of water you intend to use", +5% increase in mean value, *(t(1249)=-2.852, p<0.01)*
- "Switch off lights in empty rooms". +2% increase in mean value, *(t(1249)=-2.767, p<0.01)*

Table 35 Frequency of energy saving action – Open windows for cooling

Open windows to cool down instead of using a cooling device or system							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	4.08	1.35	4.12	1.14	0.04	1%	0.88
Cyprus	3.65	1.08	3.79	0.98	0.15	4%	0.48
Greece	3.87	1.02	3.71	1.08	-0.17	-4%	0.10
Ireland	4.69	0.66	4.64	0.70	-0.04	-1%	0.37
Lithuania	4.55	0.87	4.60	0.75	0.05	1%	0.53
Romania	4.36	0.90	4.21	1.01	-0.15	**-3%***	0.02
UK	4.57	0.78	4.64	0.73	0.06	1%	0.14
Total	4.46	0.87	4.43	0.90	-0.03	-1%	0.30

*statistically significant difference

Table 36 Frequency of energy saving action – Put on extra layers

Put a jumper or an extra blanket instead of turning on the heating							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.12	1.42	3.03	1.47	-0.09	-3%	0.82
Cyprus	4.39	0.72	3.85	0.93	-0.54	**-12%***	0.01
Greece	3.40	1.19	3.47	1.14	0.07	2%	0.60
Ireland	3.82	1.09	3.75	1.11	-0.07	-2%	0.39
Lithuania	3.43	1.26	3.36	1.34	-0.06	-2%	0.60
Romania	2.85	1.20	2.87	1.25	0.02	1%	0.79
UK	3.83	1.11	3.88	1.10	0.05	1%	0.40
Total	3.51	1.22	3.55	1.23	0.04	1%	0.33

*statistically significant difference

Table 37 Frequency of energy saving action – Boil only the right amount of water

Boil the kettle only with the amount of water you intend to use							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.48	1.58	3.53	1.55	0.05	1%	0.75
Cyprus	4.13	1.06	4.47	0.71	0.34	8%	0.13
Greece	3.60	1.30	3.48	1.20	-0.12	-3%	0.35
Ireland	3.81	1.06	3.73	1.17	-0.08	-2%	0.30
Lithuania	3.63	1.13	3.82	1.11	0.19	5%	0.08
Romania	3.82	1.10	3.56	1.28	-0.26	**-7%***	0.00
UK	3.71	1.11	3.89	1.07	0.18	**5%***	0.00
Total	3.74	1.13	3.75	1.17	0.01	0%	0.72

*statistically significant difference

Table 38 Frequency of energy saving action – Put a lid on the pan when cooking

Put a lid on the pan when cooking							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.52	1.30	3.33	1.36	-0.19	-5%	0.63
Cyprus	4.06	1.03	3.85	1.02	-0.21	-5%	0.41
Greece	3.27	1.29	3.47	1.18	0.20	6%	0.12
Ireland	3.23	1.26	3.21	1.26	-0.02	-1%	0.87
Lithuania	3.93	1.12	3.99	1.09	0.06	2%	0.59
Romania	3.25	1.21	3.15	1.25	-0.10	-3%	0.26
UK	3.25	1.16	3.34	1.23	0.09	3%	0.21
Total	3.38	1.23	3.36	1.24	-0.02	-1%	0.57

Table 39 Frequency of energy saving action – Avoid leaving electronic equipment on stand-by

Avoid leaving electronic equipment on stand-by							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	3.28	1.31	3.42	1.17	0.14	4%	0.64
Cyprus	4.03	0.91	4.12	1.07	0.09	2%	0.73
Greece	3.59	1.13	3.69	1.11	0.10	3%	0.38
Ireland	3.78	1.08	3.73	1.05	-0.05	-1%	0.52
Lithuania	3.41	1.10	3.31	1.16	-0.10	-3%	0.34
Romania	3.64	1.08	3.50	1.09	-0.14	-4%	0.06
UK	3.60	1.10	3.60	1.04	0.00	0%	0.98
Total	3.62	1.10	3.59	1.08	-0.03	-1%	0.39

Table 40 Frequency of energy saving action – Switch off lights in empty rooms

Switch off lights in empty rooms							
	Baseline		Follow-Up		Change in mean value	Change in mean value (%)	P Value
	M	SD	M	SD			
Bulgaria	4.52	1.12	4.27	1.10	-0.25	-6%	0.48
Cyprus	4.70	0.47	4.79	0.41	0.09	2%	0.39
Greece	4.44	0.78	4.21	0.92	-0.23	**-5%***	0.01
Ireland	4.64	0.63	4.57	0.67	-0.08	-2%	0.10
Lithuania	4.44	0.81	4.49	0.74	0.05	1%	0.48
Romania	4.38	0.81	4.24	0.89	-0.15	**-3%***	0.01
UK	4.50	0.73	4.61	0.63	0.11	**2%***	0.01
Total	4.50	0.75	4.47	0.76	-0.02	0%	0.33

*statistically significant difference

4.1.8 Reasons for being more energy conscious

Respondents were asked to choose up to three important reasons for taking the abovementioned energy saving actions. Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions are statistically significant. The results for the total sample are illustrated in Figure 7 and total sample results and per country are presented in Table 41.

At the end of the academic year, the total sample of respondents recognised "It's a habit I adopted from home" (64%) and "It saves energy" (56%), as the main reasons for being more energy conscious. The reasons "It's the right thing to do" (45%) and "It helps reduce global warming" (41%), were also popular among respondents. The statement "It makes me feel good about myself" (20%) was picked by the one fifth of the respondents while the reasons "I don't know why, I just do it" (10%), "Someone asked me to" (4%), "I want to fit in with other residents of the hall who are energy conscious" (2%) and "I earn money/prizes out of it" (1%) were chosen by fewer respondents. Responses in the baseline survey appeared to be similar to those in the follow-up survey. Statistically significant differences between the two surveys were observed for the reasons:

- "It helps reduce global warming", +7% increase, *(z= 4.884, p<0.01)*
- "Someone asked me to", +2% increase, *(z=-6.482, p<0.01)*
- "I don't know why. I just do it", -2% decrease, *(z=-7.020, p<0.01)*

In the follow-up survey, the vast majority of respondents in all countries except for Cyprus reported "It's a habit I adopted from home" as the prevalent reason for being more energy conscious and "It saves energy" as the second most important reason for being more energy conscious in all countries as well. In Cyprus the most

important reason was "It saves energy" whereas "It's a habit I adopted from home" was the second most important. The third most important reason varies among countries. In Bulgaria (41%), Ireland (48%), Lithuania (41%), Romania (38%) and the UK (54%) is "It's the right thing to do". In Cyprus (40%) and Greece (48%) is "It helps reduce global warming".

The most popular responses given by respondents in each country are described in the following paragraphs.

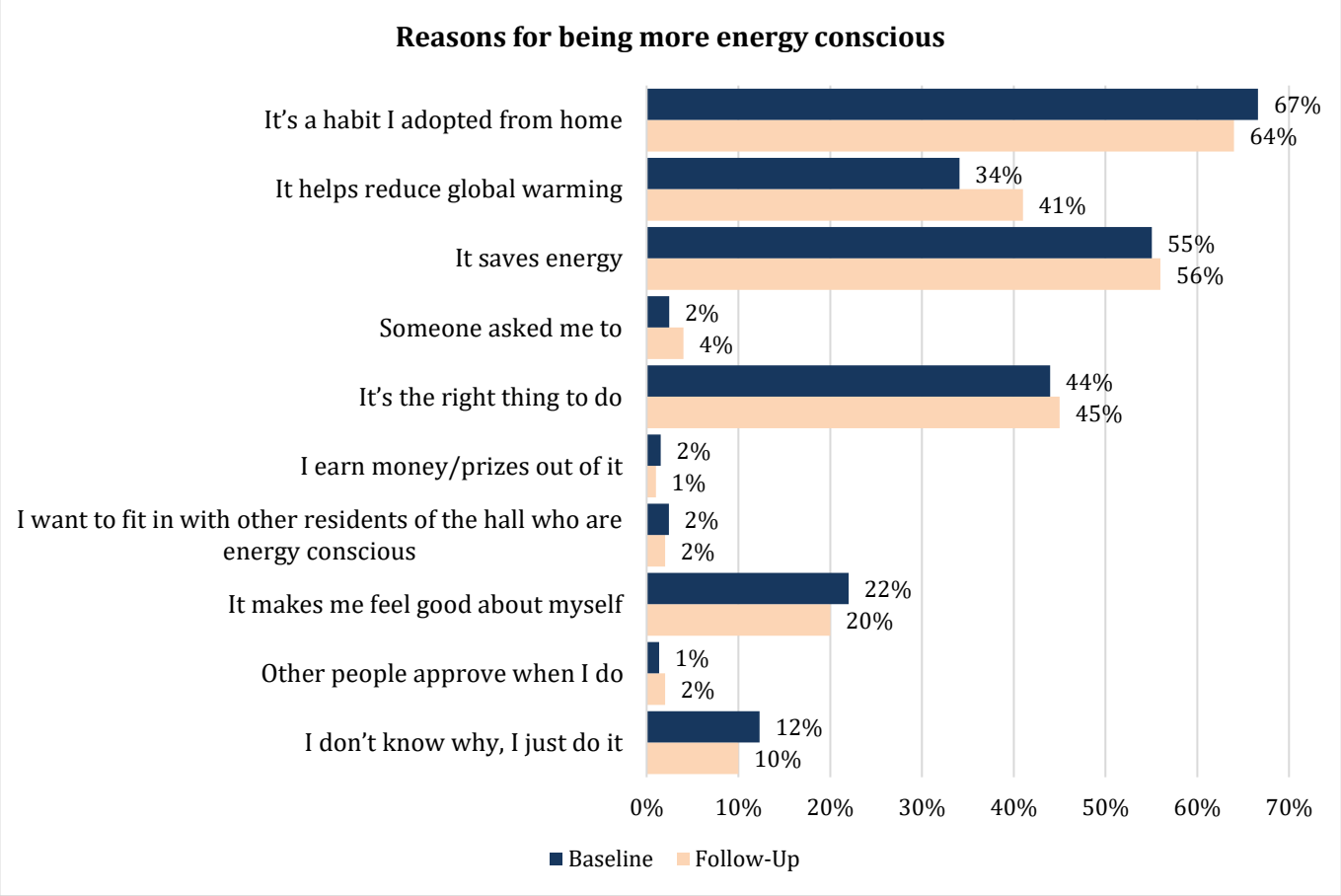

Figure 7 Reasons for being more energy conscious -Total sample

In **Bulgaria,** 74% of the respondents considered "It's a habit I adopted from home", 56% "It saves energy" and 41% the action "It's the right thing to do" as the main reasons for being more energy conscious. The same reasons appear to be equally important to those questioned in the baseline survey.

In **Cyprus,** "It saves energy" (89%), and "It's a habit I adopted from home" (66%) were the main reasons that made the respondents more energy conscious. "It helps reduce global warming" (40%) and "It makes me feel good about myself" (32%) were also popular responses given by the follow-up survey participants. The same opinions were dominant also in the baseline survey. A difference between the baseline and the follow-up survey was observed for the action "It saves energy", +17% increase, without having any statistical significance.

In **Greece,** 57% of the respondents chose "It's a habit I adopted from home" and 51% chose "It saves energy" as the most important reasons for being more conscious towards energy, while the reason "It helps reduce global warming" was chosen by 48% of the respondents. In the baseline survey, respondents agreed with those in the follow-up survey regarding the main reasons while the reason "It helps reduce global warming" was chosen by statistically significant lower proportion of the respondents (26%).
Statistically significant differences between the baseline and the follow-up survey were observed for the reasons:

- "It's a habit I adopted from home", -1% decrease, *(z= -2.477, p=0.01)*
- "It helps reduce global warming", +22% increase, *(z= 4.432, p<0.01)*

- "Other people approve when I do", +3% increase *(z=2.2628, p=0.02)*

In **Ireland,** 67% of the respondents picked "It's a habit I adopted from home" while another 51% picked "It saves energy" as the main reasons for being energy conscious**.** "It helps reduce global warming" (47%) and "It's the right thing to do" (48%) were also among the most popular responses.
Statistically significant difference between the two surveys were observed for the reason:

- "It helps reduce global warming", +9% increase, *(z=t 2.735, p<0.01)*

In **Lithuania,** the reasons "It's a habit I adopted from home" (71%) and "It saves energy" (54%) were the dominant reasons for the respondents. "It's the right thing to do" (41%), "It helps reduce global warming" (29%) and "It makes me feel good about myself" (26%) were considered less important. The findings from the baseline survey were similar to those of the follow-up survey.
Statistically significant differences between the two surveys were observed for the reason:

- "It's a habit I adopted from home", -2% decrease *(z=-2.533, p=0.01)*

In **Romania**, 59% of the respondents replied that the main reason for being energy conscious was "It's a habit I adopted from home". Reasons like, "It saves energy" (47%), "It's the right thing to do" (38%) were also important while "It makes me feel good about myself" (26%) was of less importance to the respondents. Respondents in the baseline survey, agreed with those in the follow-up regarding the first reason, however 60% considered the reason "It saves energy" as important in the baseline survey.
Statistically significant differences, were observed for the reasons:

- "It's a habit I adopted from home", -8% decrease, *(z= -2.534, p=0.01)*
- "It saves energy", -13% decrease, *(z=-4.146, p<0.01)*
- "Someone asked me to", +2% increase, *(z= 2.622, p<0.01)*
- "I earn money/prizes out of it" +2% increase, *(z=-2.480, p=0.01)*

In **UK,** reasons "It's a habit I adopted from home" and "It saves energy" were equally chosen by 65% of the respondents as the most dominant reasons for being energy conscious, while 54% chose "It's the right thing to do". The same reasons for being more energy conscious were recorded in the baseline survey as well, nonetheless those responded "It saves energy" were 55% of the respondents, -10% lower than in the follow-up.
Statistically significant difference was observed for the reason:

- "It saves energy", +10% increase, *(z= 3.749, p<0.01)*

Table 41 Reasons for being more energy conscious – Total and per country

Reasons for being more energy conscious		**Bulgaria**	**Cyprus**	**Greece**	**Ireland**	**Lithuania**	**Romania**	**UK**	**Total**
It's a habit I adopted from home	**Follow-up**	74%	66%	57%	67%	71%	59%	65%	64%
	Difference from Baseline	+9%	+6%	**-1%***	+1%	**-2%***	**-8%***	-2%	-3%
It helps reduce global warming	**Follow-up**	29%	40%	48%	47%	29%	27%	49%	41%
	Difference from Baseline	+10%	+3%	**+22%***	**+9%***	+4%	-2%	+5%	**+7%***
It saves energy	**Follow-up**	56%	89%	51%	51%	54%	47%	65%	56%
	Difference from Baseline	+7%	+17%	-4%	-1%	0%	**-13%***	**+10%***	+1%
Someone asked me to	**Follow-up**	6%	0%	7%	4%	3%	3%	3%	4%
	Difference from Baseline	-4%	0%	+3%	+1%	0%	**+2%***	0%	**+1%***
It's the right thing to do	**Follow-up**	41%	29%	22%	48%	41%	38%	54%	45%
	Difference from Baseline	+12%	+6%	-6%	+5%	-3%	-6%	0%	+1%

Reasons for being more energy conscious		Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK	Total
I earn money/prizes out of it	**Follow-up**	3%	6%	4%	1%	2%	2%	0%	1%
	Difference from Baseline	0%	+6%	-2%	-1%	0%	**+2%***	0%	0%
I want to fit in with other residents of the hall who are energy conscious	**Follow-up**	0%	0%	1%	2%	1%	6%	1%	2%
	Difference from Baseline	0%	-3%	-1%	0%	-2%	+1%	0%	0%
It makes me feel good about myself	**Follow-up**	21%	37%	32%	15%	26%	26%	13%	20%
	Difference from Baseline	+1%	-14%	-9%	0%	-2%	0%	-1%	-2%
Other people approve when I do	**Follow-up**	3%	0%	3%	1%	2%	2%	2%	2%
	Difference from Baseline	+3%	0%	**+3%***	+1%	-1%	0%	+1%	0%
I don't know why. I just do it	**Follow-up**	6%	9%	7%	12%	19%	8%	9%	10%
	Difference from Baseline	-10%	-3%	-3%	-1%	+2%	-1%	-3%	**-2%***

*statistically significant difference

4.1.9 Reasons for being less energy conscious

Respondents were asked to select the three most important reasons for being less energy conscious about their energy use from a list provided to them. Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions are statistically significant. The results for the total sample are illustrated in Figure 8 whereas total sample results and per country are presented in Table 42.

In total, 41% of the follow-up respondents replied that the main reason for being less energy conscious was "I don't have any feedback on how much I consume" followed by "The way the building and its systems are designed limit the things I can do to save energy" (27%) and "The energy I save in the hall won't save me any money" (27%)."I have other things on my mind" (23%) and "My personal actions to save energy would have minimal impact on the energy consumption of the hall" (23%) were also considered as important reasons for being less energy conscious for more than one fifth of the participants.
Statistically significant differences, were observed for the reasons:

- "I have other things in my mind", +3% increase, *(z=2.487, p=0.01)*
- "The way the building and its systems are designed limit the things I can do to save energy", +6% increase, *(z= 4.517, p<0.01)*
- "Nothing prevents me from being energy conscious", -2% decrease *(z=-2.148, p=0.03)*

The most frequently recorded responses given by respondents in each country are described in the following paragraphs.

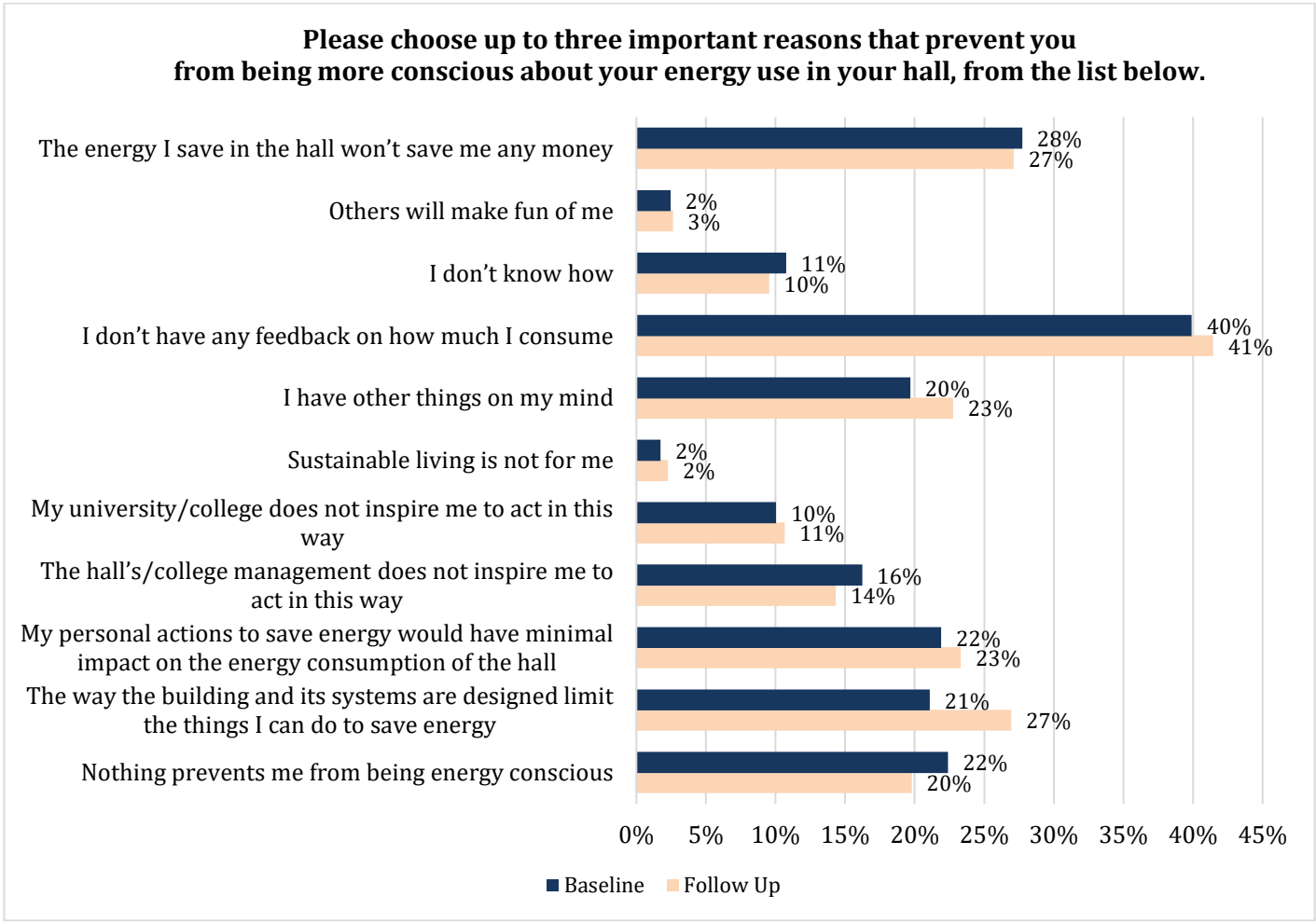

Figure 8 Reasons for being less energy conscious – Total sample

In **Bulgaria**, 35% of the follow-up survey respondents reported that "The energy I save in the hall won't save me any money" and "My personal actions to save energy would have minimal impact on the energy consumption of the hall" as the two primary reasons that prevented them from being more energy conscious. Furthermore, lack of feedback on how much energy they consumed (32%) was another factor considered as a barrier towards being more energy conscious about their energy use in their halls. On the other hand, approximately one fifth of them (21%) reported that nothing prevented them from being energy conscious.
The respondents in the baseline survey gave similar reasoning, however the proportions for the reasons "I don't have any feedback on how much I consume" (19%) and "My personal actions to save energy would have minimal impact on the energy consumption of the hall" (22%) were lower than those in the follow-up, having however no statistical significance.

In **Cyprus**, 20% of the follow-up respondents stated that "the way the building and its systems are designed limit the things I can do to save energy" whereas the lack of feedback on how much energy they consumed (34%) was an extra burden for them to become more energy conscious about their energy use in their halls. In addition, 14% of those surveyed stated that "I have other things on my mind". On the contrary, 57% of the respondents stated that "Nothing prevents me from being energy conscious".
In the baseline survey, those who stated "I don't have any feedback on how much I consume" were -14% less than in the follow-up whilst "The way the building and its systems are designed limit the things I can do to save energy" was chosen by -11% less. "Nothing prevents me from being energy conscious" was pointed out from 43% of those surveyed in the baseline survey. However, these differences are not statistically significant.

In **Greece** 37% of the respondents, replied in the follow-up survey that the lack of feedback on how much energy they consumed was the main reason for being less energy conscious. Twenty-five percent (25%) said that the

way the building and its systems are designed limit the things they could do to save energy, while 21% reported that the hall management did not inspire them to save energy. A lower proportion of respondents reported "I don't know how" (11%) whereas 28% stated that "Nothing prevents me from being energy conscious".
Statistically significant differences between the two surveys were observed for the reasons:

- "I don't have any feedback on how much I consume", -11% decrease, *(z=-2.198, p=0.03)*
- 'I don't know how", =-7% decrease, *(z=-1.983, p=0.047)*
- "My university/college does not inspire me to act in this way", +8% increase, *(z=2.262, p=0.02)*

In **Ireland**, in the end of the year survey, the lack of feedback on how much energy they consumed was reported by 44% of respondents as the main factor which prevented them from being more energy conscious. Over a quarter (28%) added that the energy they save in the hall won't save them any money and 23% of the participants chose "The way the building and its systems are designed limit the things they can do to save energy".
Statistically significant differences between the baseline and the follow-up surveys were observed for the reason:

- I don't have any feedback on how much I consume", +7% increase, *(z=2.312, p=0.02)*

In **Lithuania** 42% of those surveyed in the follow-up survey said they hadn't any feedback on how much energy they consumed while 32% said that the hall's management did not inspire them to act in an energy efficient way. In addition, the way the building and its systems are designed limited the things 32% of the participants could do to save energy. On the other hand, 20% of the respondents stated that nothing prevented them from being energy conscious.
Statistically significant differences between the baseline and the follow-up survey were observed for the reason:

- "I have other things on my mind", +6% increase *(z=2.128, p= 0.03)*

Thirty-four percent (34%) of the respondents in **Romania** agreed that lack of feedback on how much energy they consumed prevented them from being more conscious about their energy use in their halls of residence. "The energy I save in the hall won't save me any money" was pointed out by 25% of those surveyed as a reason for being less energy conscious. In parallel, 25% stated that their personal actions to save energy would have had minimal impact on the energy consumption of the hall. Lower proportions of the respondents stated that "I have other things on my mind" (15%) and that "The hall's/college management does not inspire me to act in this way" (13%).
Statistically significant differences, were observed for the reasons:

- "Others will make fun of me", +2% increase, *(z=2.383, p=0.01)*
- "I have other things on my mind", +5% increase *(z= 2.285, p=0.01)*

In the **UK**, the main reason that prevented respondents from being energy conscious was the lack of feedback on how much energy they consumed (47%), followed by the fact that "The way the building and its systems are designed limit the things I can do to save energy" (36%). Thirty-one percent (31%) of the respondents replied that the energy they save in the hall won't save them any money while 30% said that they had other things on their mind.
Statistically significant differences, were observed for the reasons:

- "The energy I save in my halls won't save me any money", -6% decrease, *(z=-2.423, p=0.01)*
- "The way the building and its systems are designed limit the things I can do to save energy", +15% increase, *(z= 5.855, p<0.01)*

Table 42 Reasons for being less energy conscious – per country and total sample

Reasons for being less energy conscious		**Bulgaria**	**Cyprus**	**Greece**	**Ireland**	**Lithuania**	**Romania**	**UK**	**Total**
The energy I save in the hall won't save me any money	**Follow-Up**	35%	6%	14%	28%	29%	25%	31%	27%
	Difference from Baseline	+3%	-3%	-5%	0%	0%	+4%	**-6%***	-1%
Others will make fun of me	**Follow-Up**	9%	0%	5%	4%	2%	4%	1%	3%
	Difference from Baseline	-1%	-3%	+3%	0%	0%	**+2%***	-1%	0%

Reasons for being less energy conscious		Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK	Total
I don't know how	**Follow-Up**	12%	11%	11%	12%	4%	7%	10%	10%
	Difference from Baseline	+2%	+6%	**-7%***	-1%	-1%	-1%	-1%	-1%
I don't have any feedback on how much I consume	**Follow-Up**	32%	34%	37%	44%	42%	34%	47%	41%
	Difference from Baseline	+13%	+14%	**-11%***	**+7%***	-2%	-4%	+4%	+2%
I have other things on my mind	**Follow-Up**	12%	14%	20%	22%	17%	15%	30%	23%
	Difference from Baseline	-8%	-6%	-1%	-2%	**+6%***	**+5%***	+2%	+3%
Sustainable living is not for me	**Follow-Up**	9%	0%	3%	1%	2%	4%	2%	2%
	Difference from Baseline	+9%	-6%	0%	0%	-1%	**+2%***	0%	+1%
My university/college does not inspire me to act in this way	**Follow-Up**	26%	0%	18%	13%	9%	13%	6%	11%
	Difference from Baseline	+10%	-6%	**+8%***	+2%	-2%	+3%	-1%	+1%
The hall's/college management does not inspire me to act in this way	**Follow-Up**	21%	6%	21%	14%	32%	13%	10%	14%
	Difference from Baseline	-5%	+6%	+1%	+3%	-1%	-4%	+1%	-2%
My personal actions to save energy would have minimal impact on the energy consumption of the hall	**Follow-Up**	35%	11%	20%	17%	25%	25%	26%	23%
	Difference from Baseline	+13%	-6%	+1%	0%	+4%	-3%	+2%	+1%
The way the building and its systems are designed limit the things I can do to save energy	**Follow-Up**	21%	20%	25%	23%	32%	15%	36%	27%
	Difference from Baseline	-5%	+11%	+3%	+4%	+4%	-4%	**+15%***	**+6%***
Nothing prevents me from being energy conscious	**Follow-Up**	15%	57%	28%	19%	20%	23%	14%	20%
	Difference from Baseline	+2%	+14%	+4%	-1%	-4%	-5%	-2%	**-2%***

*statistically significant difference

4.1.10 Familiarization with the SSO campaign

Respondents were asked whether they had heard of the Students Switch Off (SSO) campaign. Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions

are statistically significant. The results for each country and for the total sample are shown in Figure 9 and tabulated in Table 43.

At the end of the academic year a higher share of respondents (+18%) had heard about the SSO campaign compared to the beginning of the academic year. This increase is statistically significant *(z=-14.713, p< .0001)*. The share of respondents that had heard of the SSO campaign was 57% in the follow-up survey and 39% in the baseline.

Apart from Cyprus, in the other six countries, more respondents had heard about the SSO campaign at the end of the academic year compared to the beginning. The increase in the number of respondents that had heard of the SSO campaign at the end of the academic year compared to the beginning is statistically significant in Bulgaria, Greece, Ireland, Lithuania and the UK.

The highest statistically significant increases are observed in **Bulgaria** (+40%) and the **UK** (+41%) where 52% and 85% of the respondents respectively had heard of the campaign at the end of the year (BG: *z=-3.135, p=0.002*, UK*: z=-14.988, p<0.001*). In the UK this high share may be attributed to the fact that most students living in halls are first year undergraduates, and thus would not have been exposed to the campaign before. Whereas in other countries there may be more students who have previously lived in the halls and heard about the campaign in a previous year.

Table 43 Familiarization with the SSO campaign - per country and total sample

Have you heard of the Student Switch Off (SSO) campaign?		**Bulgaria**	**Cyprus**	**Greece**	**Ireland**	**Lithuania**	**Romania**	**UK**	**Total**
Yes	**Follow-up**	52%	100%	47%	43%	32%	37%	85%	57%
	Baseline	12%	100%	24%	36%	22%	35%	44%	39%
	difference from baseline	**+40%***	0%	**+23%***	**+7%***	**+10%***	+2%	**+41%***	**+18%***
No	**Follow-up**	48%	0%	53%	57%	68%	63%	15%	43%
	Baseline	88%	0%	76%	64%	78%	65%	56%	61%
	difference from baseline	**-40%***	0%	**-23%***	**-7%***	**-10%***	-2%	**-41%***	**-18%***

*statistically significant difference

In **Cyprus**, all of the respondents had heard of the SSO campaign in both baseline and follow-up surveys.

In **Greece**, a statistically significant increase of +23% is recorded *(z=-4.667, p<0.001)*. In the baseline survey 24% of those surveyed had heard of the SSO campaign before whereas that share in the end of the year increased to 47%.

In **Ireland** a statistically significant increase of +7% is observed *(z=-2.076, p=0.019).* The share of respondents who had heard of the SSO campaign in the beginning of the academic year was 36% and reached 43% in the end of the academic year.

In **Lithuania**, a statistically significant increase of +10% is observed and 32% of the respondents stated they had heard of the SSO campaign by the end of the academic year *(z=-2.571, p=0.005)*.

In **Romania**, at the beginning of the academic year 35% stated that they had heard of the SSO campaign before whereas this share was 37% at the end of the academic year (+2% increase). However, this increase was not statistically significant.

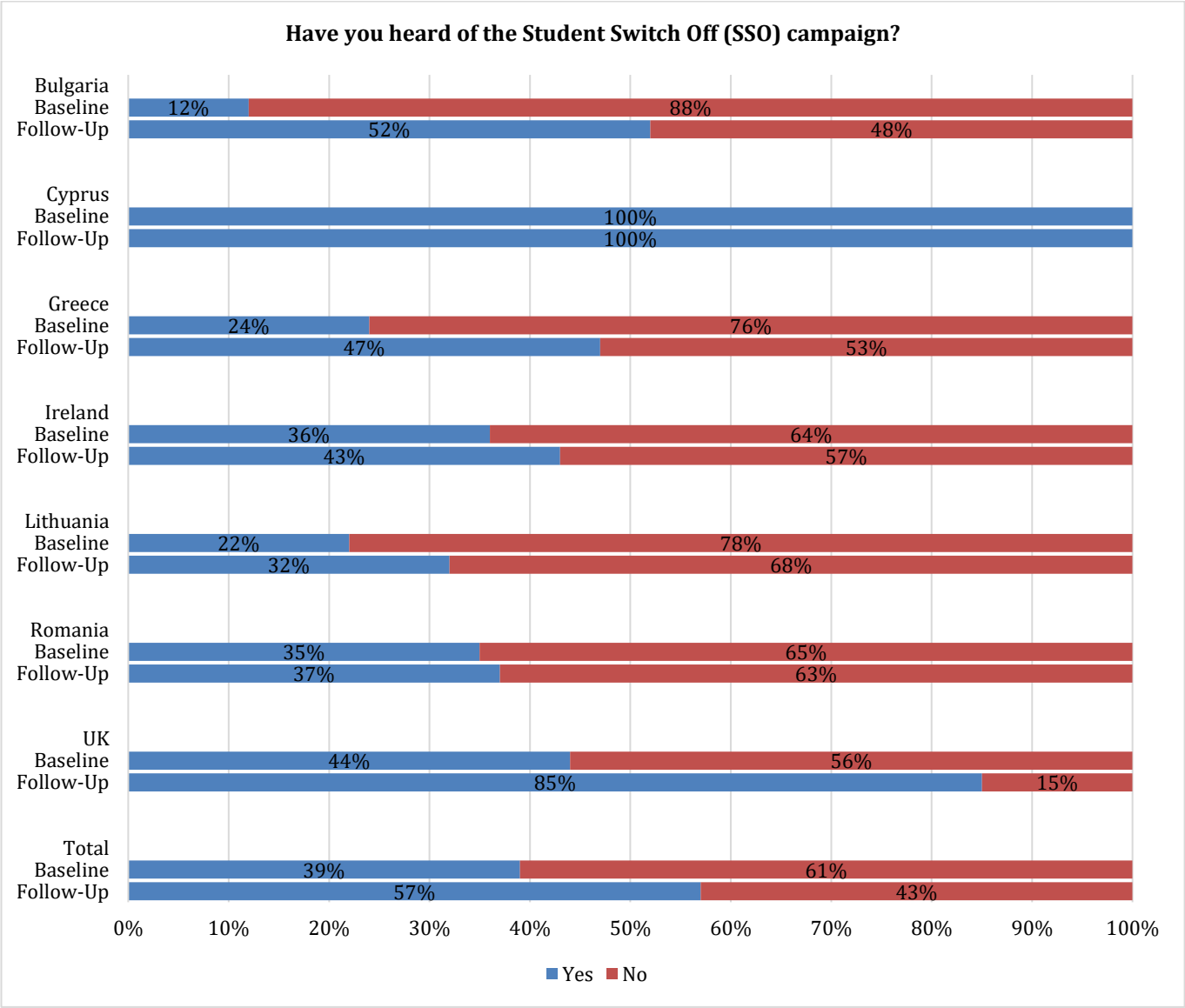

Figure 9 Familiarization with the SSO campaign – per country and total sample

4.1.11 Influence of SSO

Respondents who answered that they have heard of SSO were subsequently asked if SSO raised their awareness on what they can do to save energy in their everyday life. Two proportion z-test was used to determine whether the differences between the baseline and follow-up survey proportions are statistically significant. The results are shown in Figure 10 and tabulated in Table 44.

In the baseline survey, 74% of the respondents agreed that SSO has made them more aware on what they can do to save energy in their everyday life. At the end of the academic year this share was -2% less (72% of follow-up respondents). This decrease is statistically significant *(z=3.099, p=0.002)*

In all countries the vast majority of respondents agreed that SSO made them more aware on what they can do to save energy in their everyday life. None of the country specific differences are statistically significant.

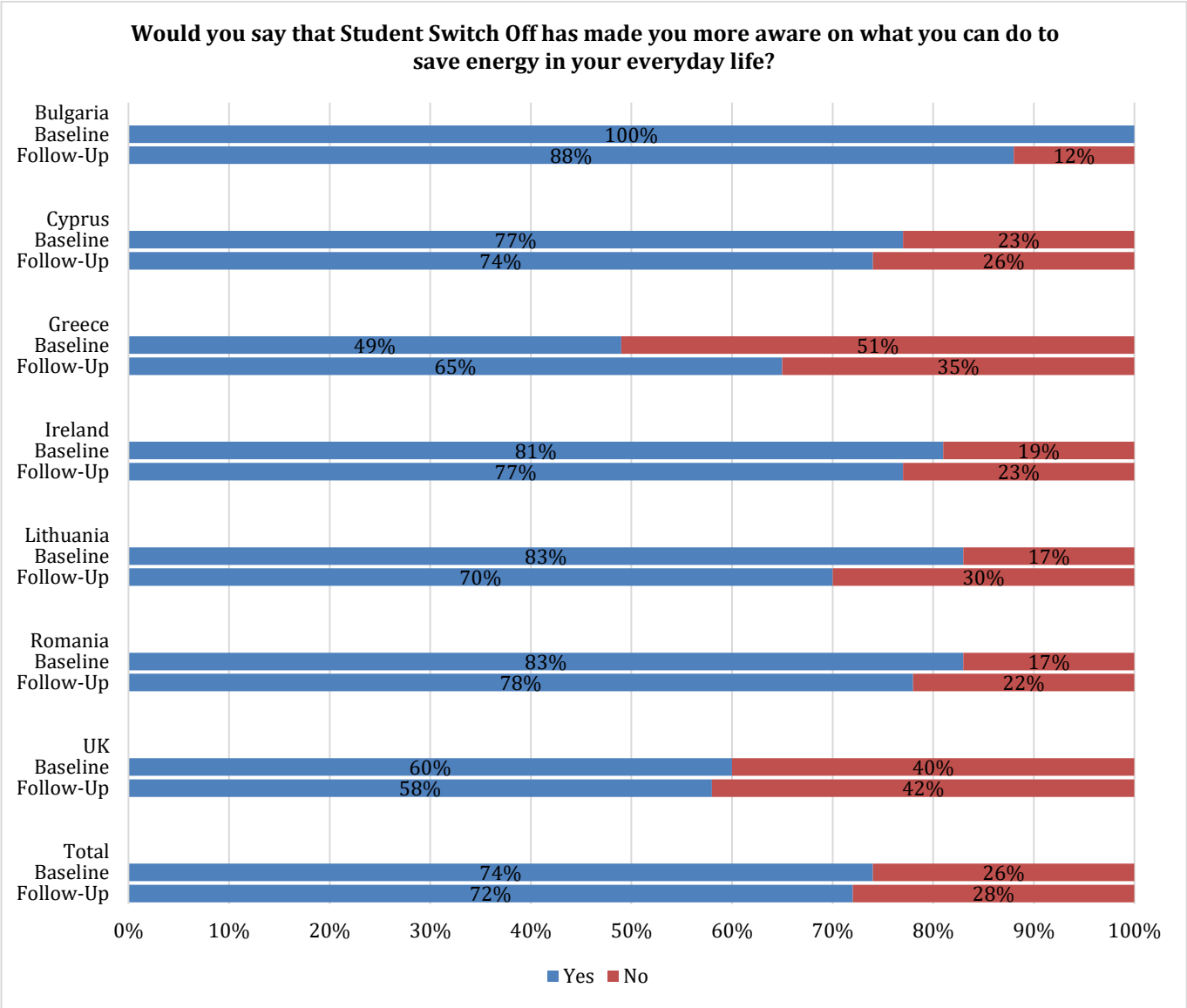

Figure 10 SSO influence per country and total sample

In **Bulgaria**, 88% of the follow-up survey participants would say that SSO has made them more aware on what they can do to save energy in their everyday life. In the baseline this proportion was 100%.

In **Cyprus**, the share of respondents in the follow-up survey that SSO increased their awareness on what they can do to save energy in their everyday life was 74%, -4% decreased from the baseline survey.

In **Greece**, a +16% increase is observed in the follow-up survey however of no statistical significance. At the end of the academic year, 65% of the respondents stated that SSO raised their awareness on what they can do to save energy in their everyday life compared to 49% at the beginning of the academic year.

In **Ireland**, 77% of those questioned in the follow-up survey stated that SSO has made them more aware on what they can do to save energy in their everyday life. In the baseline this proportion was +4% higher (81%).

In **Lithuania**, the share of those that SSO raised their awareness on what they can do to save energy in their everyday life decreased from 70% to 63% in the follow-up survey.

In **Romania**, at the end of the academic year, 78% of the respondents stated that SSO made them more aware on what they can do to save energy in their everyday life compared to 83% at the beginning.

In the **UK** the share of respondents in the follow-up survey that SSO increased their awareness on what they can do to save energy in their everyday life was 72%, -2% decreased from the baseline survey.

Table 44 Influence of SSO - per country and total sample

Would you say that Student Switch Off has made you more aware on what you can do to save energy in your everyday life?		Bulgaria	Cyprus	Greece	Ireland	Lithuania	Romania	UK	Total
Yes	Follow-up	88%	74%	65%	77%	63%	78%	58%	72%
	Baseline	100%	77%	49%	81%	70%	83%	60%	74%
	difference from baseline	-12%	-3%	+16%	-4%	-7%	-5%	-2%	**-2%***
No	Follow-up	12%	26%	35%	24%	37%	22%	42%	28%
	Baseline	0%	23%	51%	20%	30%	17%	40%	26%
	difference from baseline	+12%	+3%	-16%	+4%	+7%	+5%	+2%	**+2%***

*statistically significant difference

4.2 Energy dashboard

4.2.1 Familiarization with the SSO dashboard

Respondents were asked whether they have visited their university's SSO energy dashboard. Only respondents that had heard of SSO were directed to this question. The results are illustrated in Figure 11.

In all countries the majority of respondents had visited the dashboard. The biggest share of respondents that had visited the SSO dashboard is found in Bulgaria (88%), followed by Romania, Ireland and Cyprus (78%, 77% and 74% respectively), while in Greece and Lithuania the share of those who have visited their university's dashboard is 65% and 63% respectively. In the UK 58% of those surveyed had visited their university's SSO energy dashboard.

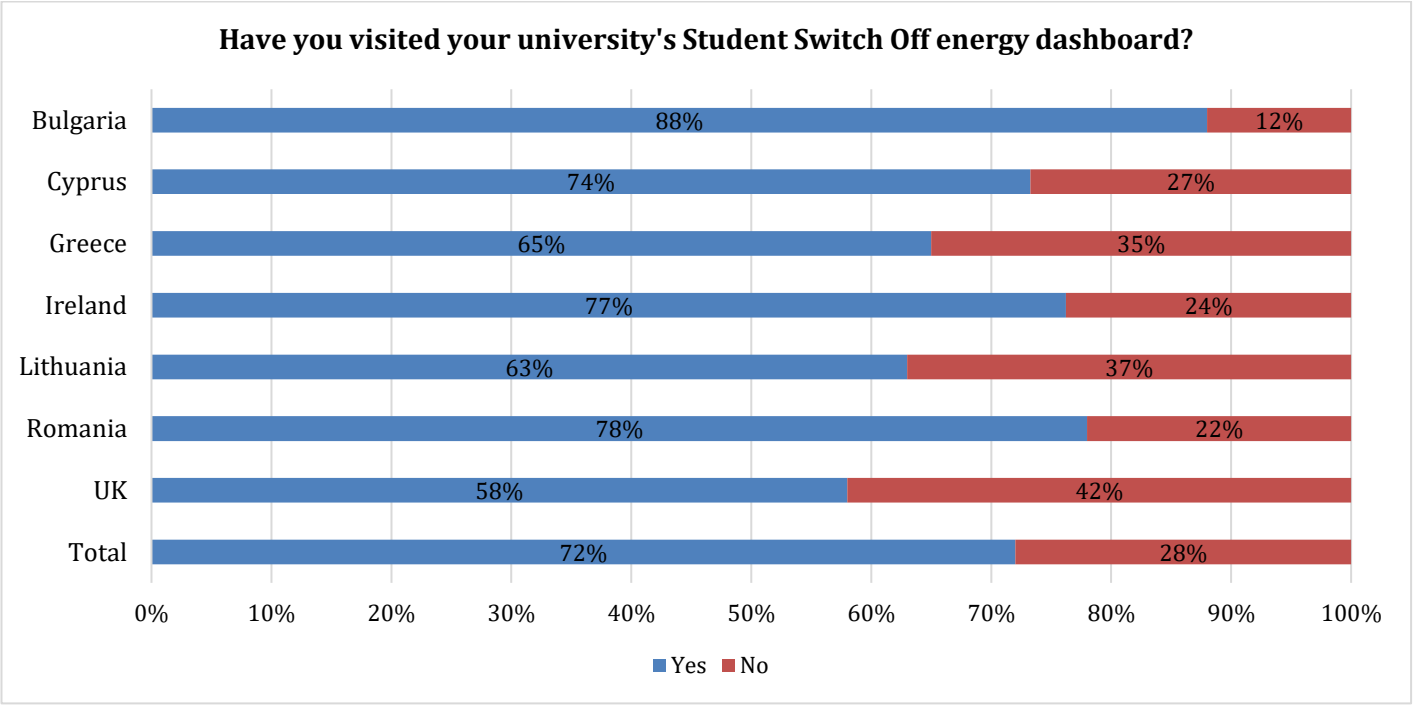

Figure 11 Familiarization with the SSO dashboard

4.2.2 First contact with the SSO energy dashboard

Respondents who had visited their university's SSO energy dashboard were later asked about how they first heard about it. The results are illustrated in Figure 12.

Thirty-five (35%) of the respondents across the seven countries stated that they first heard about the SSO energy dashboard from social media, probably their country specific SSO Facebook page. "Emails" (34%) was the second most popular response whereas 15% of the respondents first heard about the dashboard from word of mouth/friends. Eight percent (8%) of the participants first heard about the dashboard from a display screen in their halls of residence / college and 4% from a display screen at their university. Three percent (3%) first heard about the SSO energy dashboard from a search engine.

As it is depicted in Figure 12, "Emails" and "Social Media" were the most popular responses in each country. Interestingly, none of the respondents in Cyprus, Greece, Lithuania and the UK had first heard about the dashboard from a search engine. Moreover, none of those surveyed in Greece and Lithuania had first heard about the SSO energy dashboard from a display screen at university. In addition, none of the respondents in Lithuania and Romania had first heard of the dashboard from a display screen in their halls of residence.

The highest share of those who first heard about the dashboard from emails was recorded in the UK (52%) and the lowest in Greece (22%). With regard to social media the highest share was observed in Lithuania (53%) and the lowest in the UK (25%). The option "Search engine" was chosen by respondents in Bulgaria (11%), Ireland (6%) and Romania (5%). The highest percentage of those who first heard about the SSO energy dashboard from word of mouth or friends was observed in Greece (35%) and the lowest in Romania (5%). The option "Display screen at university" recorded its highest percentage in Romania (11%) and its lowest in the UK (3%) and in Bulgaria (3%). With regard to "display screen in your halls of residence / college" the highest share was observed in Cyprus (23%) and the lowest in Ireland (3%). The most popular responses in each country are described in the following paragraphs.

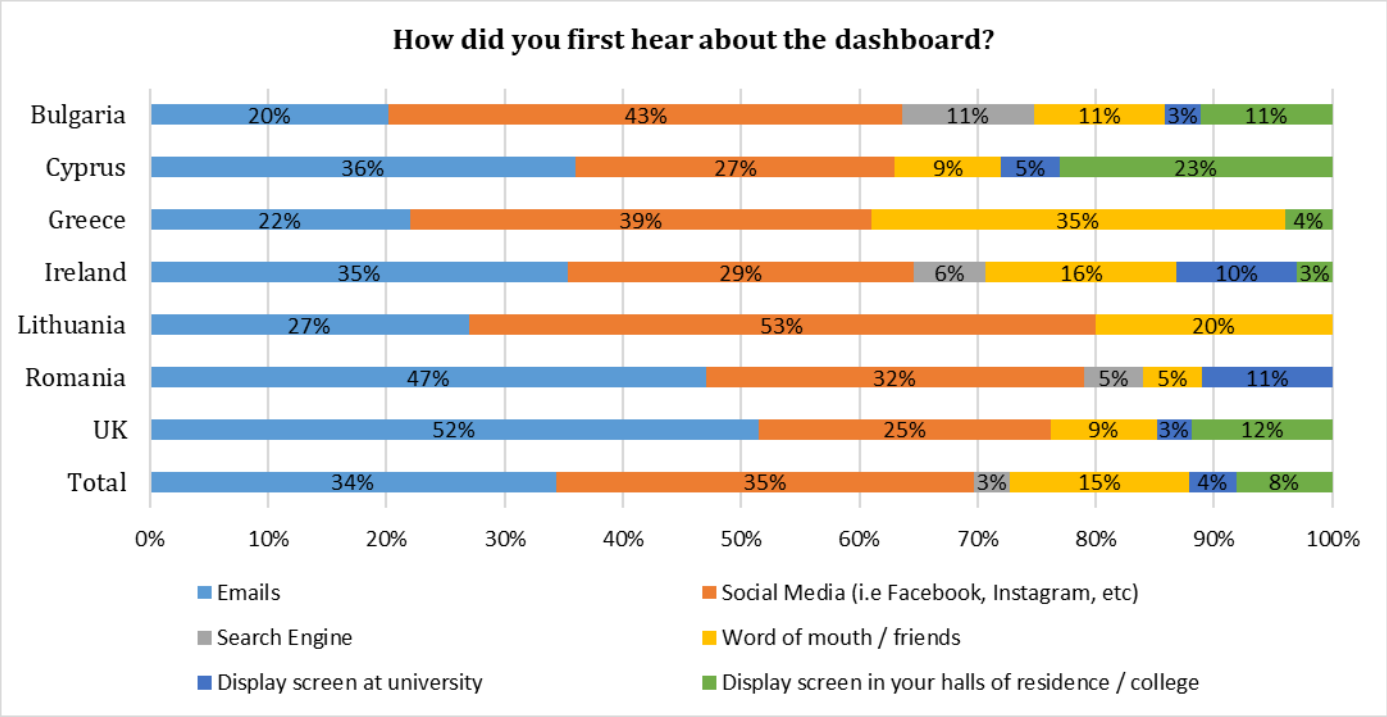

Figure 12 First contact with the SSO energy dashboard

In **Bulgaria** 43% of the respondents reported that they first heard about the SSO energy dashboard from social media followed by those informed from emails (20%). "Search engine", "Word of mouth/friends" and "Display screen in your halls of residence/college" were each selected by 11% of the respondents.

In **Cyprus** 36% of those questioned reported that they first heard about the SSO energy dashboard from emails. Twenty-seven percent (27%) of those surveyed stated they first heard about the dashboard from social media whereas 23% of the respondents first heard about the SSO energy dashboard from display screens in their halls of residence.

In **Greece**, 39% of the respondents stated that they first heard about the SSO energy dashboard from social media. Word of mouth/friends (35%) was the second most popular response in Greece, whereas 22% of the respondents first heard about the dashboard from emails.

In **Ireland**, 35% of those surveyed reported that they first heard about the SSO energy dashboard from emails. In addition, 29% of the respondents stated that they first heard about the energy dashboard from social media. Word of mouth/friends (16%) was the third most popular response in Ireland.

In **Lithuania** 53% of the respondents were first informed about the SSO energy dashboard via social media. Furthermore, 27% of the participants were first informed about the energy dashboard from emails and 20% of those surveyed first heard about the energy dashboard from word of mouth or friends.

In **Romania** 47% of those questioned, reported that they first heard about the SSO energy dashboard from emails. Social media (32%) was the second most popular response in Romania whereas 11% of the respondents first heard about the dashboard from a display screen at their university.

In the **UK** 52% of the respondents first heard about the SSO energy dashboard from emails. Twenty-five percent (25%) of those questioned stated they first heard about the dashboard from social media whereas 12% of the respondents first heard about the SSO energy dashboard from display screens in their halls of residence/ college.

4.2.3 Frequency of visits to the SSO energy dashboard

Respondents who had visited their university's SSO energy dashboard were also asked how often they had viewed the dashboard since the beginning of the academic year. The results are presented in Figure 13.

Overall, 48% of the respondents used to visit the SSO energy dashboard weekly. Twenty-seven percent (27%) used to view the dashboard every month while 14% viewed the energy dashboard on a daily basis. Nine percent (9%) of those surveyed reported that they visited the dashboard less than once a month whereas 2% never visited the SSO energy dashboard over the academic year. Across the seven countries, the highest percentage of those who had viewed the dashboard "Daily" was recorded in Bulgaria (33%) followed by Cyprus (27%) whereas the lowest was in the UK (6%) and Greece (6%). Interestingly, in Ireland and Lithuania none of the respondents had viewed the dashboard daily. In the UK (74%), Lithuania (70%), Romania (48%) and Cyprus (36%) most respondents had viewed the dashboard on a "Weekly" basis whereas in Ireland (45%) and Greece (39%) on a "Monthly" basis. The highest share of those who had viewed the dashboard less than a month was observed in Greece (16%) followed by Lithuania (15%) whereas the lowest share was observed in the UK (5%) and Cyprus (5%).

Interestingly, in Ireland (10%), Romania (3%), Greece (2%) and the UK (1%) a share of respondents stated they had "Never" viewed the dashboard although they responded positively when asked if they had visited the dashboard. The three most popular responses given per country are described below.

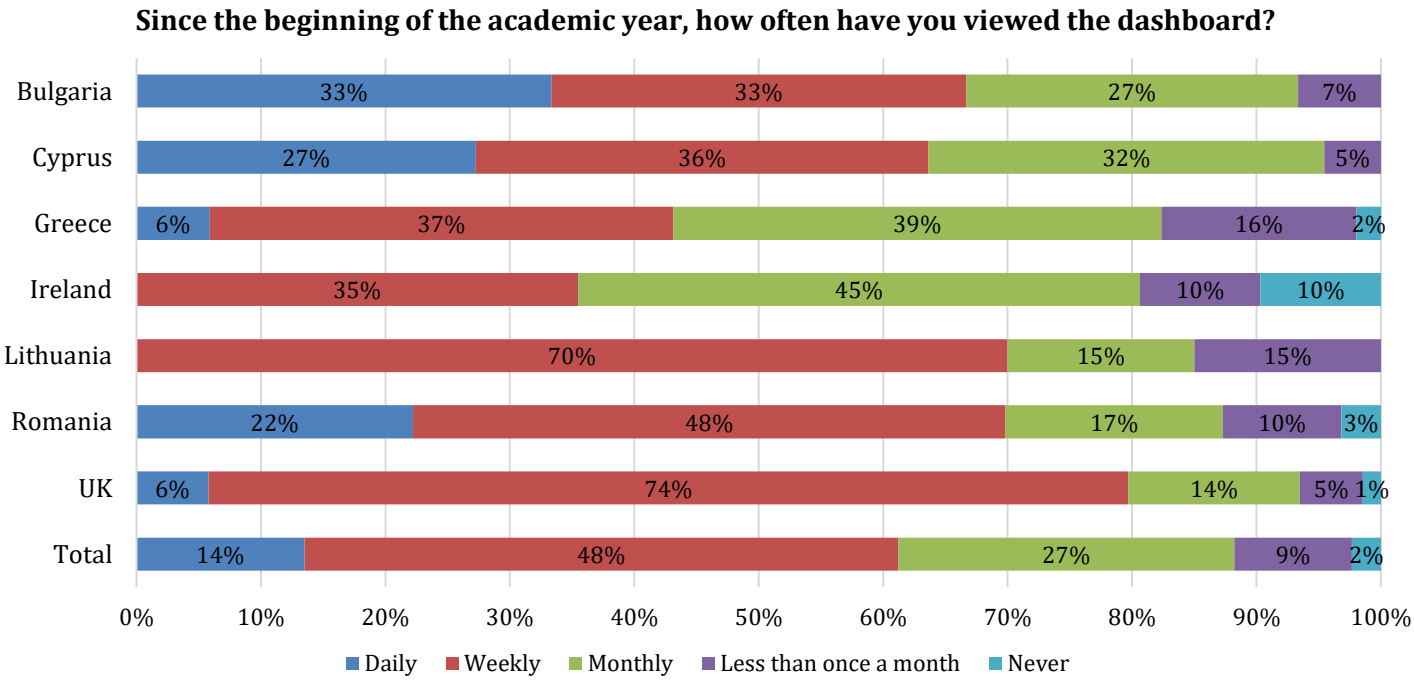

Figure 13 Frequency of visits to the SSO energy dashboard

In **Bulgaria**, 33% of the respondents stated that they used to view the dashboard daily, another 33% of those surveyed used to view the energy dashboard weekly whereas 27% of the participants used to visit dashboard's platform monthly.

In **Cyprus**, 36% and 32% of the respondents replied that they used to view the energy dashboard in a weekly and monthly basis, respectively, while 27% of those surveyed stated that they visited the dashboard every day.

In **Greece**, 39% of the respondents visited the SSO energy dashboard every month, with those that enter the dashboard every week being 37%. Sixteen percent (16%) of those questioned stated they viewed the dashboard less than once a month.

In **Ireland**, 45% of the respondents stated that they visited the energy dashboard's platform monthly whereas 35% of those surveyed viewed the dashboard every week. Ten percent (10%) of the respondents reported that they visited the dashboard less than once a month.

In **Lithuania**, a 70% majority of the respondents visited the dashboard every week while the remaining 30% was equally split between those that visited the platform monthly (15%) and those that visited the dashboard less than once a month (15%).

In **Romania**, 48% of the participants replied that they used to view the SSO dashboard on a weekly basis and 22% stated that they used to view the dashboard every day. In addition, 17% visited the energy dashboard monthly.

In the **UK**, a 74% majority of those surveyed made weekly visits to the energy dashboard followed by a 14% of the respondents that made monthly visits.

4.2.4 Visiting the SSO energy dashboard throughout the academic year

Respondents who have visited their university's SSO energy dashboard were also asked whether their visits to the dashboard decreased, increased or stayed about the same since the beginning of the academic year. The results are presented in Figure 14.

Overall, 54% of the respondents reported that their visits to the SSO energy dashboard stayed about the same since the beginning of the academic year. Thirty-one percent (31%) of those surveyed stated that their visits had increased since the beginning of the academic year whereas 15% of those questioned reported a decrease. In all countries, except for Ireland and Romania, the most frequent response was "Stayed about the same" whilst in Ireland (45%) and Romania (51%) the most popular answer was "Increased". The highest percentage of those that stated "Decreased" was recorded in the UK (25%) and the lowest in Romania (8%). On the contrary, the highest share of those that replied "Increased" was observed in Romania (51%) and the lowest in Greece (7%). With regard to the "Stayed about the same" statement, the highest share was observed in Greece (80%) and the lowest in Ireland (38%).

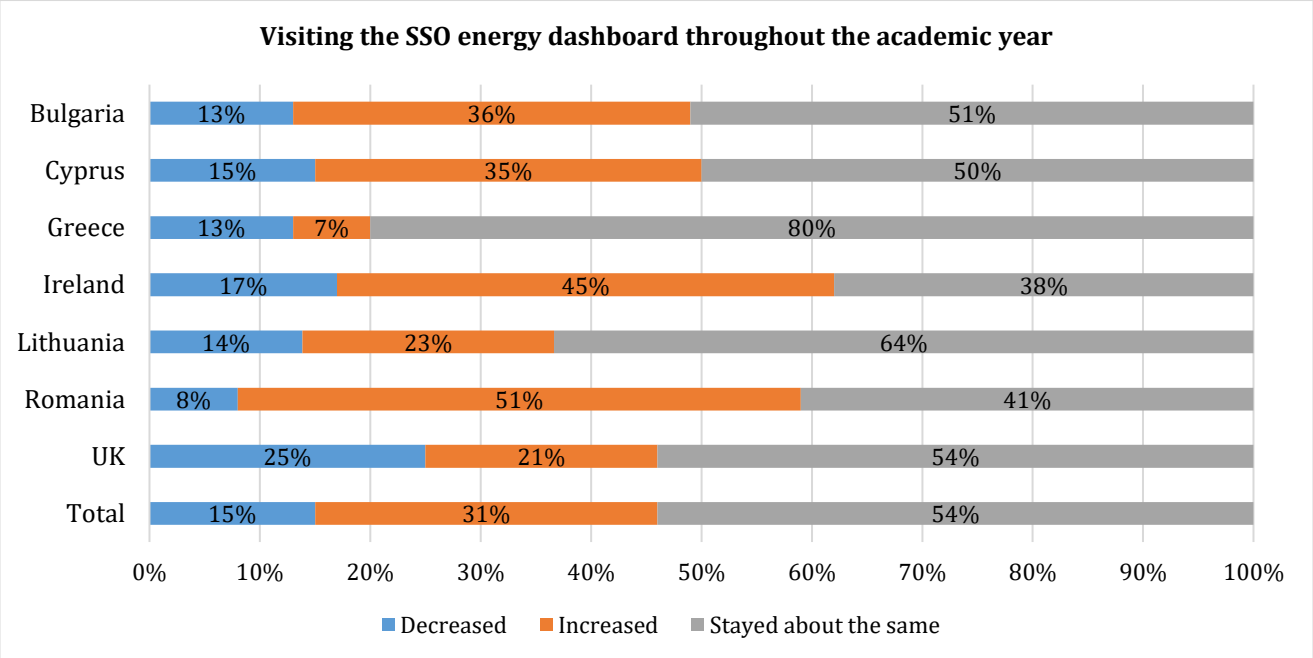

Figure 14 Visiting the SSO energy dashboard throughout the academic year

In **Bulgaria**, 51% of the respondents stated that their visits to the energy dashboard had stayed about the same since the beginning of the academic year whereas a 36% of the respondents reported that their visits to the dashboard had increased. Thirteen percent (13%) of those questioned stated that their visits to the dashboard had decreased since the beginning of the academic year.

In **Cyprus**, 50% of the participants stated that their visits to the dashboard had stayed about the same since the beginning of the academic year, 36% replied that their visits had increased while 15% reported a decrease in their visits to the dashboard since the beginning of the academic year.

In **Greece**, an 80% majority of the respondents stated that their visits to the energy dashboard stayed about the same since the beginning of the academic year. Thirteen percent (13%) of those surveyed reported a decrease and 8% stated that they increased their visit frequency to the dashboard since the beginning of the academic year.

Forty-five percent (45%) of the respondents in **Ireland**, stated that they had increased their visits to the dashboard's platform, whilst 38% stated that their visit frequency stayed about the same since the beginning of the academic year. Seventeen percent (17%) of the participants reported a decrease in their visits to the dashboard since the beginning of the academic year.

In **Lithuania**, 64% of those surveyed responded that their visits to the dashboard stayed about the same and 23% said that they had increased their visits since the beginning of the academic year. Fourteen (14%) of the participants reported a decrease in their visits to the dashboard since the beginning of the academic year.

In **Romania**, above half of the respondents (51%) replied that their visit frequency had increased since the beginning of the academic year, while 41% of the respondents stated that their visits to the dashboard stayed about the same during the academic year. Eight percent (8%) of those surveyed stated that their visits decreased.

In the **UK**, a 54% majority of those questioned reported that their visits stayed about the same since the beginning of the academic year while a 25% of the respondents reported that their visits to the dashboard had decreased. Twenty-one percent (21%) of those questioned stated that their visits to the dashboard had increased since the beginning of the academic year.

4.2.5 Reasons for viewing the SSO energy dashboard

Respondents who had visited their university's SSO energy dashboard during the academic year were also asked to rank in order of importance the top-three reasons for viewing it. They were able to choose three out of four predefined options along with a fifth open ended option:

1. To see how my own halls of residence/college is performing
2. To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university
3. To learn new ways of saving energy
4. To use the information to encourage students in my halls of residence/college to do better
5. Other

The results are presented in Figure 15.

In total, 91% of the participants reported "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard and league tables. "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" were also important reasons, placed in the first three ranking positions by 82% and 77% of the respondents, respectively.
In general, respondents from all countries visited the energy dashboard for all four aforementioned reasons however the ranking differs across the seven countries.

In **Bulgaria**, 95% of those surveyed mentioned "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard and league tables. "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" and "To learn new

ways of saving energy" were also placed in the top-three positions by 89% and 70% of respondents, respectively.

In **Cyprus**, 98% of the respondents pointed out "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard. Ninety-three percent (93%) and 79% placed "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" and "To learn new ways of saving energy", respectively among the three main reasons for viewing the dashboard and league tables.

In **Greece**, 94% of those questioned reported "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard and league tables. "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" were also important reasons, placed in the first three ranking positions by 87% and 68% of the respondents, respectively.

In **Ireland**, 94% of the respondents pointed out "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard and league tables. "To learn new ways of saving energy" and "To use the information to encourage students in my halls of residence/college to do better" were also placed in the top-three positions by 77% and 76% of respondents, respectively.

In **Lithuania**, 90% of those surveyed mentioned "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" as one of their top-three reasons for viewing the dashboard and league tables. "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing" were also placed in the top-three positions by 85% and 80% of respondents, respectively.

In **Romania**, 79% of the participants reported "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" among the top three reasons for visiting the dashboard. "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing" were also important reasons, placed in the first three ranking positions by 74% and 73% of the respondents, respectively.

In the **UK**, 91% of the respondents pointed out "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard. Eighty-two percent (82%) and 77% placed "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university", respectively, among the three main reasons for viewing the dashboard and league tables.

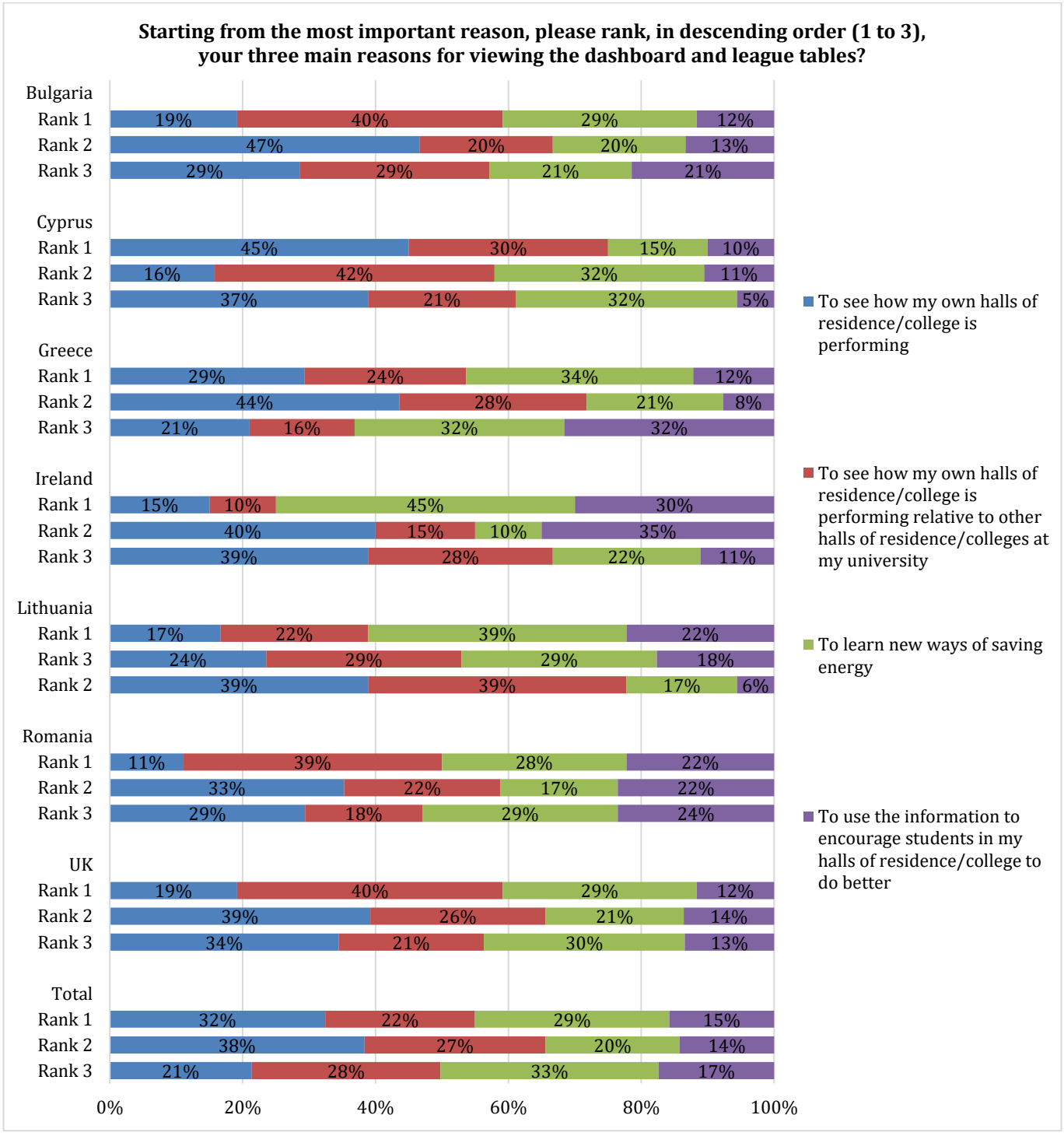

Figure 15 Reasons for viewing the SSO dashboard

4.2.6 Energy saving efforts in future lifestyle

Respondents were asked to select the statement that best describes the way they will be living when they move out of their halls of residence/college in relation to energy saving. The results are presented in Figure 16.

Overall, 39% of those surveyed stated that "I think I'll be doing a lot more to save energy". A proportion of 32% and 25% reported that "I think I'll be doing a bit more to save energy" and "I think I'll probably be doing about the same to save energy", respectively. Just 1% of those questioned reported that "I think I will be doing a bit less to save energy" and another 1% "I think I will be doing a lot less to save energy". Two percent (2%) said that they "don't know" how they will be living when they move out of their hall of residence in relation to energy saving.

In all countries the three most popular responses are "I think I'll be doing a lot more to save energy", "I think I'll be doing a bit more to save energy" and "I think I'll probably be doing about the same to save energy". Interestingly, most of those surveyed in each country stated that they would be doing more to save energy. In all countries except for the UK, most of the participants thought they would be doing a lot more to save energy whilst in the UK respondents thought they would be doing a bit more to save energy.

The highest percentage of those stated "I think I'll be doing a lot more to save energy" was recorded in Romania (56%) and the lowest in the UK (30%). With regard to the "I think I'll be doing a bit more to save energy" the highest share was observed in the UK (42%) and the lowest in Romania (15%). Concerning the "I think I'll probably be doing about the same to save energy" statement, the highest percent was recorded in Cyprus (38%) and the lowest in Lithuania (18%). A description with the most popular responses per country is found below.

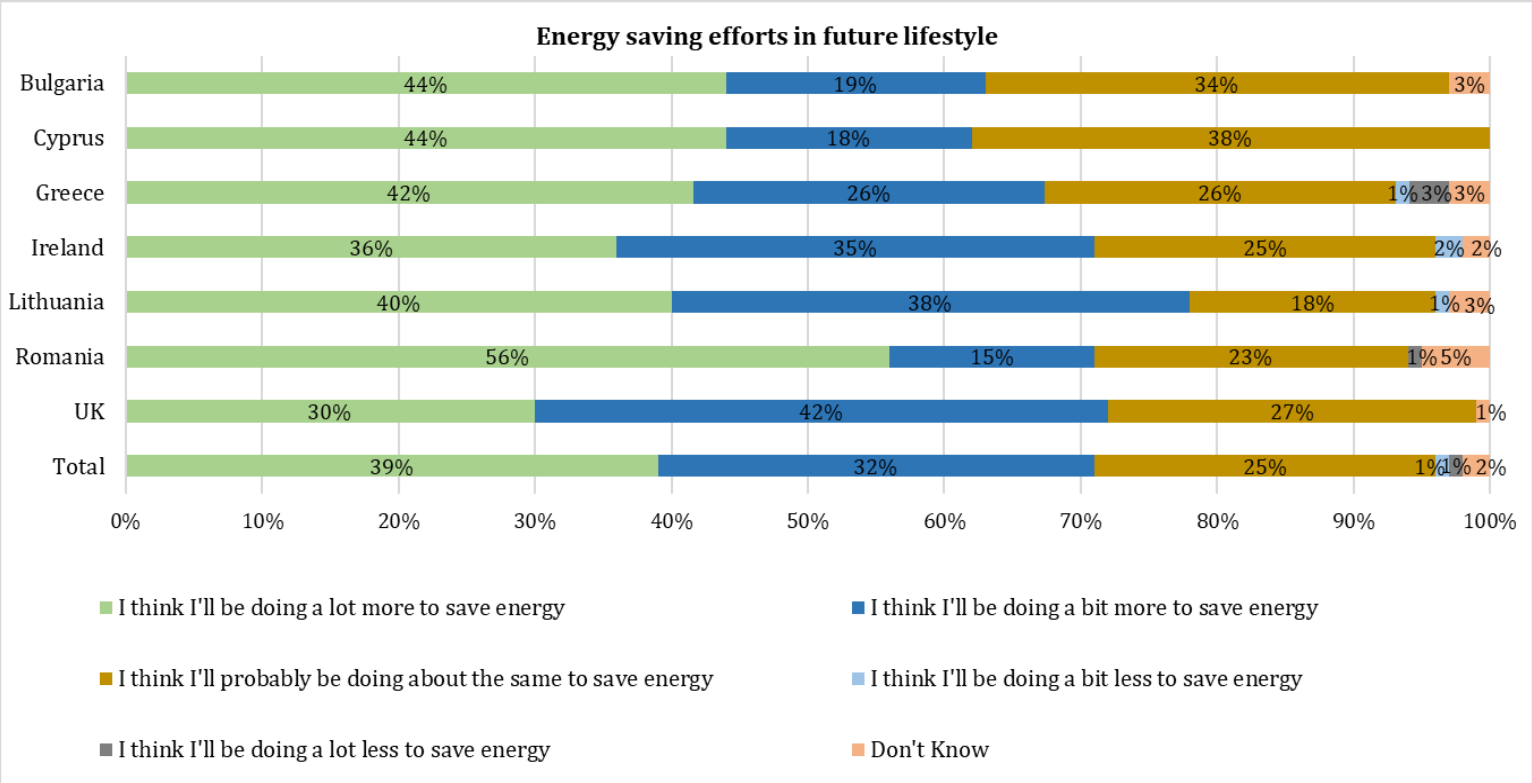

Figure 16 Energy saving efforts in future lifestyle

In **Bulgaria** 44% of the respondents reported "I think I'll be doing a lot more to save to energy" while a proportion of 34% and 19% stated that "I think I'll probably be doing about the same to save energy" and "I think I'll be doing a bit more to save energy", respectively.

In **Cyprus** whilst 44% of the respondents said that they think they will be doing a lot more in order to save energy, a share of 38% reported that they think they will probably be doing about the same. A share of 18% said that they think they will be doing a bit more to save energy.

In **Greece** the biggest share of respondents (42%) said that they will be doing a lot more to save energy while 26% of them that they think they will be doing a bit more. Another 26% said that they think they will probably be doing about the same to save energy.

In **Ireland** 36% of the respondents stated that they think they will be doing a lot more in order to save energy. Thirty-five percent (35%) of them said that they think they will be doing a bit more and a proportion of 25% said they will probably be doing about the same to save energy.

Responses from **Lithuania** follow a similar pattern; 40% of respondents said that they will be doing a lot more to save energy, 38% of them that they think they will be doing a bit more and 18% of respondents said that they will probably be doing about the same to save energy.

In **Romania**, over half of the respondents (56%) said that they think they will be doing a lot more to save energy, while a proportion of 23% stated that they think they will probably be doing about the same to save energy. In addition, 15% of those surveyed reported that they think they will be doing a bit more to save energy.

In the **UK** 42% of the participants stated "I think I'll be doing a bit more to save energy" while a proportion of 30% and 27% reported that "I think I'll be doing a lot more to save to energy" and "I think I'll probably be doing about the same to save energy", respectively.

5 Comparison of findings with Year #1

The SSO campaign runs in fourteen universities in seven European countries – Bulgaria, Cyprus, Greece, Ireland, Lithuania, Romania and the United Kingdom. This is the second academic year that SSO has been rolled out in Bulgaria, Ireland and Romania. In Cyprus, Greece and Lithuania the SSO campaign was first rolled out in 2014 as part of the IEE/13/719/SI2.675836 SAVES project, while in the UK the campaign has been running since 2006.

At the end of each academic year, behavioural changes and energy savings of students over the academic year that could be attributed to the SSO campaign are evaluated and the results are used to further tailor the SSO campaign at country and at project level.

The findings of the first year's assessment are reported in the report "Quantifying the behavioural and energy savings attributable to the Student Switch Off campaign in academic year #1". It is publicly available on the SAVES 2 webpage (https://saves.nus.org.uk/about/documents-and-resources).

5.1 Differences in the methodology between Year 1 and Year 2 of the SSO campaign

In Year 1 respondents to the follow-up survey were matched with their entry to the baseline survey through their email or name (paired samples). For each participant the change in the responses that they gave to each question in the baseline and follow-up survey was calculated in order to quantitatively determine the level of change over the academic year for each individual rather than the entire sample. In effect, the follow-up survey could only sent to the students that provided their email in the baseline survey.

In Year 1, the total number of students that participated in the baseline survey was 2,185 and came from Bulgaria, Cyprus, Greece, Ireland, Lithuania, Romania and the UK. Out of those respondents, 1,747 provided their email and could therefore be contacted for the follow-up survey. Eventually only 287 respondents of the follow-up survey could be matched to their baseline entry. Obviously, this low participation posed an issue with the robustness of the results. In order to overcome this issue it was decided to follow a different approach in Year 2 that is based on independent baseline and follow-up samples rather than matched samples.

As a result, in Year 2 the sample size considered for the analysis is much higher, thus offering more robustness to the findings and extra validity to wider generalization. On the other hand, in Year 1 there was no risk of individual differences affecting the results as participants were effectively compared against themselves which is not the case in Year 2.

5.2 Analysis of the end of year results (follow-up surveys) – Annual comparison

In Year 2, in order to make the questionnaire more respondent friendly and to deepen our research about students' energy lifestyles and behaviours, some changes were made to some of the questions. Changes included the introduction of some new questions, the revision of some existing questions or the removal of full questions.

In the following chapters the end of year results as depicted in the follow-up surveys of Year 1 and Year 2 will be compared. For consistency, the comparison between Year 1 and Year 2 will be performed only to the questions that were identical between the two years. The comparison is made only for the follow-up responses of the two academic years.

As previously noted, the approach followed in Year 1 in which the same study participants were measured before and after an intervention (in this case their exposure to the SSO campaign) is different from the approach followed in Year 2 which deals with groups that are not necessarily related. Therefore, due to methodology and sample differences between Year 1 and Year 2, the differences in the findings for the two academic years are not strictly quantitative. An indicative comparison is performed nonetheless.

5.2.1 Feelings about saving energy – Annual comparison

Respondents were asked to describe from a targeted list of words their feelings about saving energy:

1. Frustrated
2. Anxious
3. Guilty
4. Optimistic
5. Proud
6. Content

Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results for the total sample are illustrated in Figure 17 and presented in Table 45.

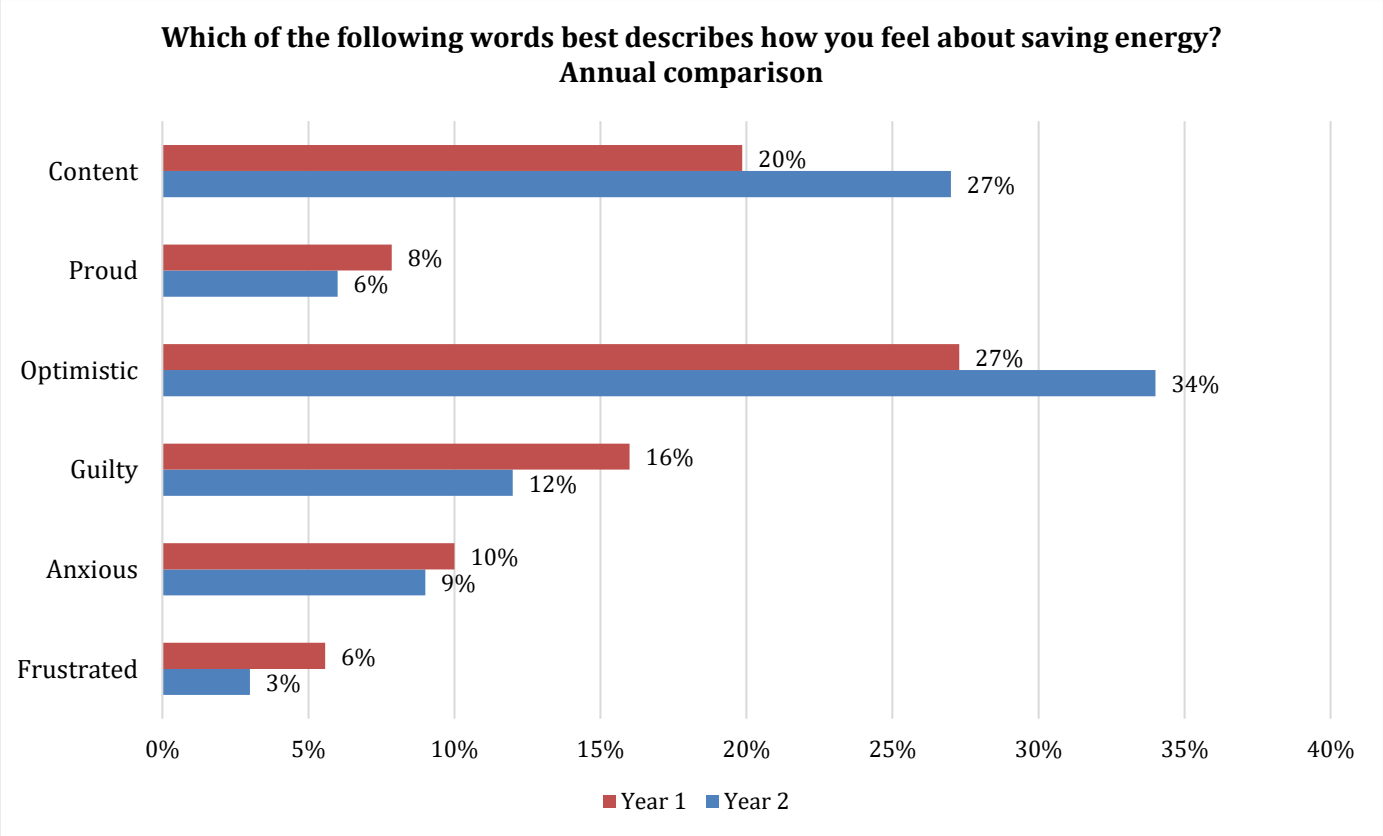

Figure 17 Feelings about saving energy by the end of Year 1 and Year 2 (follow-up surveys) - Total samples

In **Year 2**, the respondents that felt optimistic were representing 34% of the participants, presenting a statistically significant increase of +7% from Year 1, *(z= -2.495, p=0.02)*. "Content" was a feeling for 27% of respondents, which was 7% higher than the respondents in Year 1 survey. In fact, the observed increase was statistically significant *(z= -2.883, p<0.01)*. In Year 2, the share of respondents having positive feelings about saving energy (content, proud, optimistic) has increased by +12% compared to Year 1, while the share of those having negative feelings (anxious and frustrated) has decreased by -8%.
Statistically significant differences were observed also in the following feelings:

- "Frustrated", -3% decrease, *(z=2.607, p<0.01)*
- "Guilty", -4% decrease, *(z=2.180, p=0.03)*

Table 45 Respondents feelings about saving energy by the end of Year 1 and Year 2 (follow-up surveys) – Total samples

Feelings about saving energy	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Frustrated	6%	3%	**-3%***
Anxious	10%	9%	-1%
Guilty	16%	12%	**-4%***
Optimistic	27%	34%	**7%***
Proud	8%	6%	-2%
Content	20%	27%	**7%***

*statistical significant difference

5.2.2 Perceived level of information about saving energy in the hall - Annual comparison

Respondents were asked to rate how well informed they felt about saving energy in the hall. Results are on a scale of 1 to 5 (1= Very badly informed, 2 = Fairly badly informed, 3 = Neither well or badly informed, 4 = Fairly well informed, 5 = Very well informed). The higher the mean value (M) the better the respondents are informed. A low standard deviation (SD) indicates that the given answers tend to be close to the mean value, while a high standard deviation indicates that the given answers are spread out over a wider range of values.

Independent samples t-test was used to determine whether the differences in mean values between Year 1 and Year 2 end of year surveys are statistically significant for each of the two groups. P-values smaller than 0.05 indicate statistically significant results. In Table 46 mean values and standard deviation are presented for Year 1 and Year 2 respectively for the total sample of respondents.

Table 46 Perceived level of information about saving energy in the hall - Annual comparison

Perceived level of information about saving energy in the hall	Year 1 Follow-up		Year 2 Follow-up		% change in mean value	p value
	M	SD	M	SD		
How informed do you feel about what you personally can do to save energy in your hall of residence / college?	3.10	1.20	2.94	1.08	**-5%***	0.016

*Statistically significant difference

In **Year 1** respondents felt neither well nor badly informed (M=3.10, SD=1,20) while in **Year 2** respondents felt slightly less informed (M=2.94, SD=1.079) presenting a statistically significant decrease of -5% *(t(2464)= 2.399, p<0.01)*. Nonetheless, in both years, respondents felt neither well nor badly informed about what they personally can do to save energy in their halls of residence.

5.2.3 Behavioural antecedents on energy related topics – Annual comparison

Respondents were asked to consider and indicate the extent to which they agree or disagree with given statements regarding the following topics:

- Energy use
- Saving energy
- Climate Change

Results are presented in Table 47 and illustrated in Figure 18 on a 1 to 5 scale (1 = Strongly disagree, 3=Neither agree nor disagree, 5 = Strongly agree). The higher the mean value (M) the greater the agreement

with the statement. Mean values (M) over 3.5 indicate agreement with the statement. A low standard deviation (SD) indicates that the given answers tend to be close to the mean value, while a high standard deviation indicates that the given answers are spread out over a wider range of values. Independent samples t-test was used to determine whether the differences in the mean values recorded between the Year 1 and Year 2 survey are statistically significant for each of the two groups.

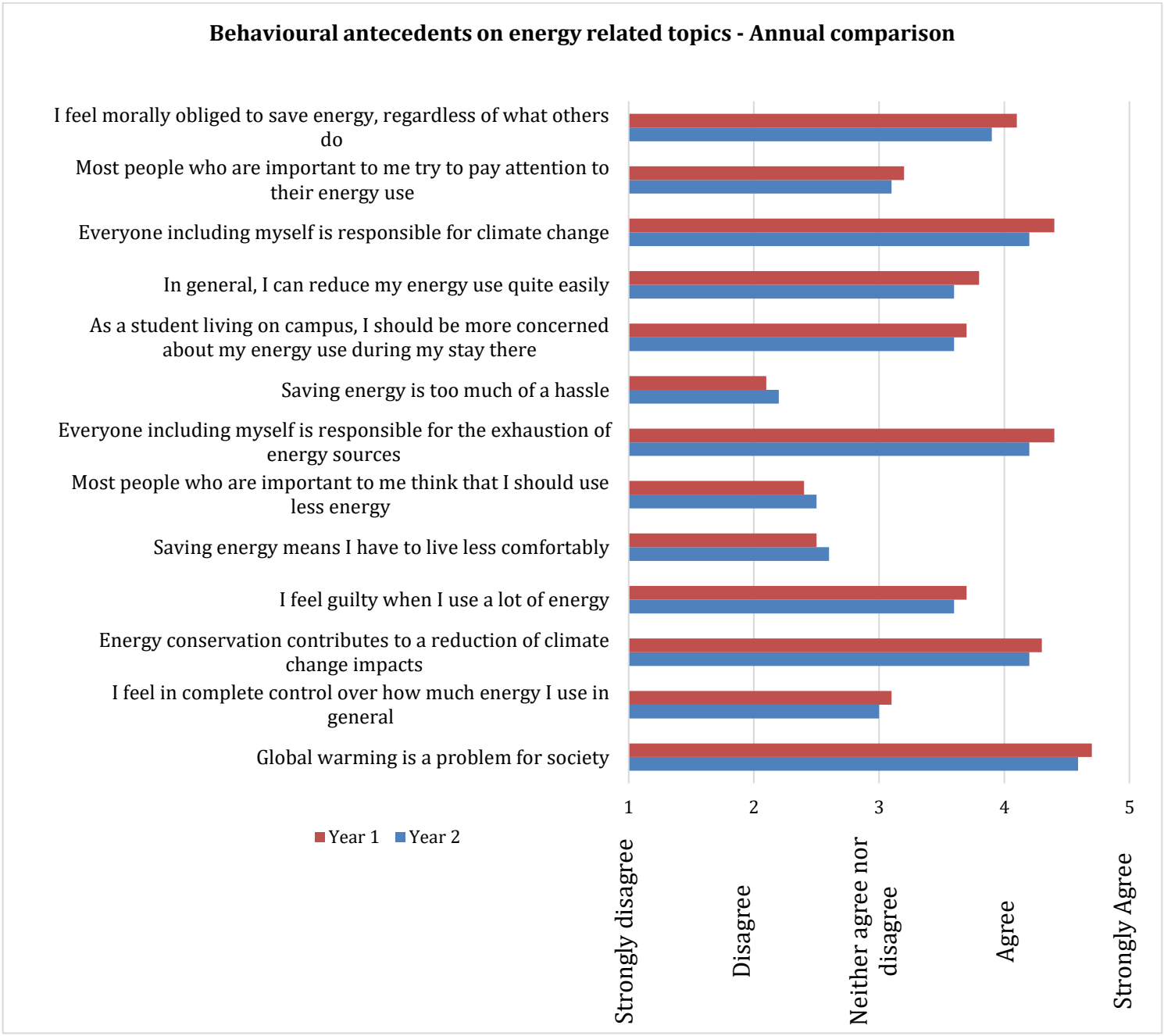

Figure 18 Behavioural antecedents on energy related topics in Year 1 and Year 2 (follow-up surveys) - Total samples

In **Year 2**, respondents' behaviors were similar to the responses in Year 1. As in Year 1, in Year 2 respondents agreed with the following statements: "Global warming is a problem for society" (M=4.59, SD=0.79), "Energy conservation contributes to a reduction of climate change impacts" (M=4.2, SD=0.78), "Everyone including myself is responsible for climate change" (M=4.2, SD=0.9), "Everyone including myself is responsible for the exhaustion of energy sources" (M=4.2, SD=0.84).

Statistically significant differences were observed, between Year 1 and Year 2 in the following statements:

- "Global warming is a problem for society", -2% decrease in mean value, *(t(2282)=2.164, p=0.03)*
- "Energy conservation contributes to a reduction of climate change impacts", -2% decrease in mean value, *(t(2282)= 2.024, p=0.04)*
- "Everyone including myself is responsible for the exhaustion of energy sources", -5% decrease in mean value, *(t(2282)= 3.785, t<0.01)*
- "In general, I can reduce my energy use quite easily", -5% decrease in mean value, *(t(2282)=3.547, p<0.01)*
- "Everyone including myself is responsible for climate change", -5% decrease in mean value, *(t(2282)=3.511, t<0.01)*
- "I feel morally obliged to save energy, regardless of what others do", -5% decrease in mean value, *(t(2282)=3.409, p<0.01)*

Table 47 Behavioural antecedents on energy related topics in Year 1 and Year 2 (follow - up surveys) - Total samples

Behavioural antecedents on energy related topics	Year 1 Follow-Up		Year 2 Follow-Up		Change in mean value	% Change in mean value	P value
	M	SD	M	SD			
Global warming is a problem for society	4.7	0.8	4.6	0.8	-0.11	**-2%***	0.03
I feel in complete control over how much energy I use in general	3.1	1	3	1	-0.1	-3%	0.11
Energy conservation contributes to a reduction of climate change impacts	4.3	0.7	4.2	0.8	-0.1	**-2%***	0.04
I feel guilty when I use a lot of energy	3.7	0.9	3.6	1	-0.1	-3%	0.13
Saving energy means I have to live less comfortably	2.5	1	2.6	1	0.1	4%	0.10
Most people who are important to me think that I should use less energy	2.4	1	2.5	1	0.1	4%	0.12
Everyone including myself is responsible for the exhaustion of energy sources	4.4	0.7	4.2	0.8	-0.2	**-5%***	0.00
Saving energy is too much of a hassle	2.1	0.9	2.2	0.9	0.1	5%	0.09
As a student living on campus, I should be more concerned about my energy use during my stay there	3.7	0.9	3.6	0.9	-0.1	-3%	0.09
In general, I can reduce my energy use quite easily	3.8	0.8	3.6	0.9	-0.2	**-5%***	0.00
Everyone including myself is responsible for climate change	4.4	0.8	4.2	0.9	-0.2	**-5%***	0.00
Most people who are important to me try to pay attention to their energy use	3.2	1	3.1	1	-0.1	-3%	0.11
I feel morally obliged to save energy, regardless of what others do	4.1	0.8	3.9	0.9	-0.2	**-5%***	0.00

*statistically significant difference

5.2.4 Frequency of energy saving actions – Annual comparison

Respondents were asked to rate the frequency in which they perform a number of energy saving actions on a 1 to 5 scale (1= Never. 2 = Rarely. 3 = Sometimes. 4 = Often. 5= Always). Mean values (M) over 3.5 indicate agreement with the statement. A low standard deviation (SD) indicates that the given answers tend to be close

to the mean value, while a high standard deviation indicates that the given answers are spread out over a wider range of values. Independent samples t-test was used to determine whether the differences in the mean values recorded between the Year 1 and Year 2 survey are statistically significant for each of the two group. The results are presented in Table 48 and illustrated in Figure 19.

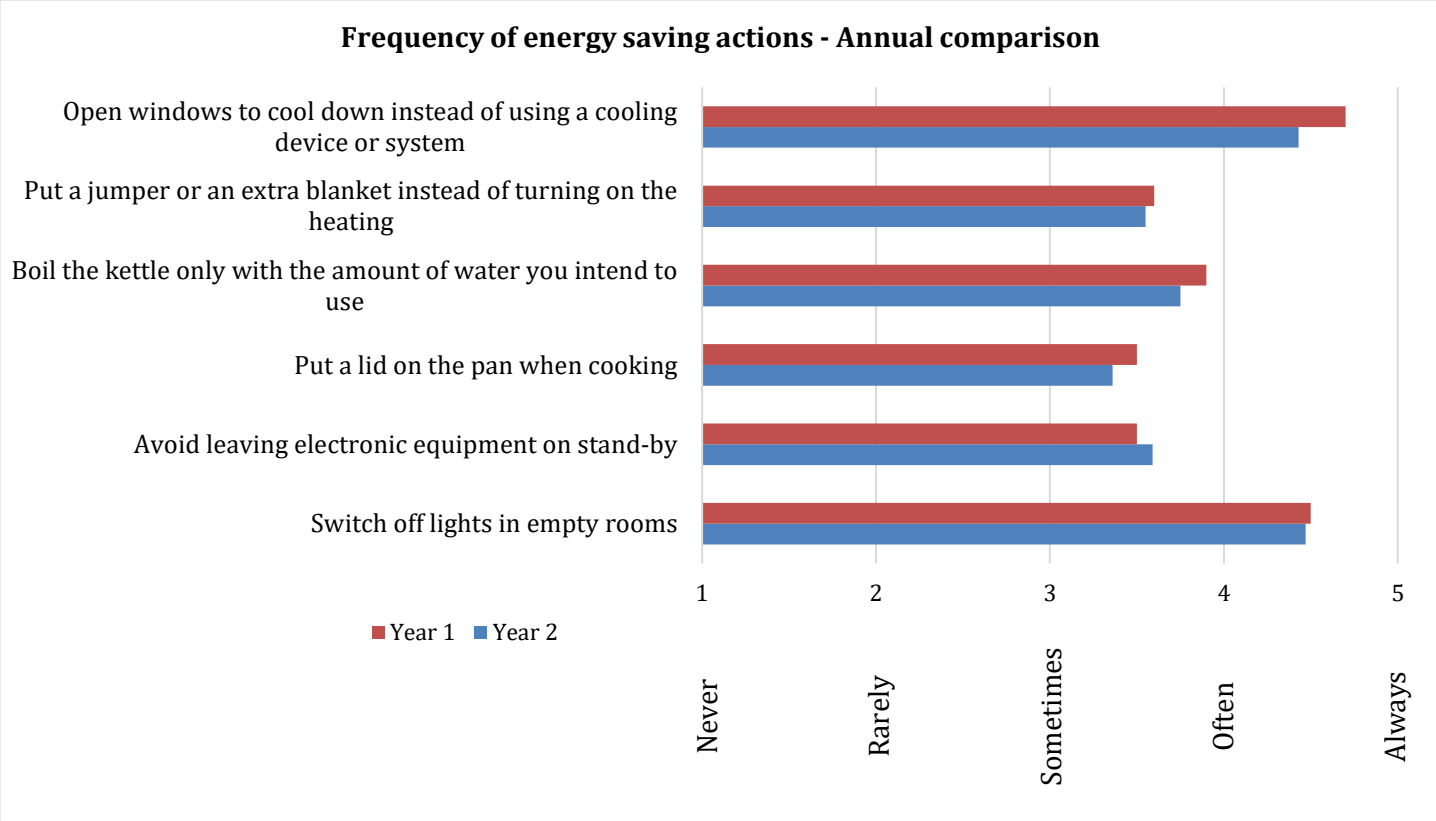

Figure 19 Frequency of undertaken energy saving actions in Year 1 and Year 2 (follow - up surveys) - Total samples

In **Year 2** survey, respondents acted similarly with those in Year 1. "Switch off lights in empty rooms" (M=4.47, SD=0.7) and "Open windows to cool down instead of using a cooling device or system" (M=4.43, SD=0.7) were also the dominant actions, while the action "Boil the kettle only with the amount of water you intend to use" (M=3.75, SD=1.1) was observed to be less often undertaken by the respondents, compared to Year 1.

Statistically significant differences were observed, between Year 1 and Year 2 in the following actions:

- "Boil the kettle only with the amount of water you intend to use", -4% decrease, *(t(2303)= 2.088, p=0.04)*
- "Open windows to cool down instead of using a cooling device or system", -6% decrease, *(t(2303)= 4.985, p<0.01)*

Table 48 Frequency of undertaken energy saving actions in Year 1 and Year 2 (follow-up surveys) - Total samples

Frequency of energy saving actions	Year 1 Follow-Up		Year 2 Follow-Up		Change in mean value	% Change in mean value	P value
	M	SD	M	SD			
Switch off lights in empty rooms	4.5	0.7	4.47	0.8	-0.03	-1%	0.52
Avoid leaving electronic equipment on stand-by	3.5	1	3.59	1.1	0.09	3%	0.18
Put a lid on the pan when cooking	3.5	1.2	3.36	1.2	-0.14	-4%	0.07

Frequency of energy saving actions	Year 1 Follow-Up		Year 2 Follow-Up		Change in mean value	% Change in mean value	P value
	M	SD	M	SD			
Boil the kettle only with the amount of water you intend to use	3.9	1.1	3.75	1.2	-0.15	**-4%***	0.04
Put on a jumper or an extra blanket instead of turning on the heating	3.6	1.1	3.55	1.2	-0.05	-1%	0.51
Open windows to cool down instead of using a cooling device or system	4.7	0.7	4.43	0.9	-0.27	**-6%***	0.00

*statistically significant difference

5.2.5 Energy saving in everyday life – Annual comparison

Respondents were asked to choose which of the following six-targeted energy saving behaviors can help save energy.

Switch off lights in empty rooms
Avoid leaving electronic equipment on standby
Put a lid on pans when cooking
Boil the kettle only with the amount of water you intend to use
Put on a jumper or an extra blanket instead of turning on the heating
Open windows to cool down instead of a using a cooling device or system

Two proportion z-test was used to determine whether the differences between Year 1 and Year 2 survey proportions are statistically significant for each of the two groups. The results are presented in Table 49 and illustrated in Figure 20.

In **Year 2,** responses were similar to those in Year 1 regarding their impact, however statistically significant lower shares were recorded for all actions. This might be attributed to the fact that in Year 2 not all follow-up respondents may have participated in the campaign as actively as follow-up respondents in Year 1. The three most frequently selected actions were: "Switch off lights in empty rooms" (88%), "Open windows to cool down instead of a using a cooling device or system" (76%) and "Avoid leaving electronic equipment on stand-by" (76%). The other three actions, although not that popular, were selected by least 50% of the respondents. "Boil the kettle only with the amount of water you intend to use" received 66% of the responses, "Put on a jumper or an extra blanket instead of turning on the heating" received 62% and "Put a lid on pans when cooking" received 50%.
Statistically significant differences were observed, between Year 1 and Year 2 in the following actions:

- "Switch off lights in empty rooms", -9% decrease, *(z=3.140, p<0.01)*
- "Avoid leaving electronic equipment on standby", -10% decrease, *(z=3.300, p<0.01)*
- "Put a lid on pans when cooking", -13% decrease, *(z=4.297, p<0.01)*
- "Boil the kettle only with the amount of water you intend to use", -11% decrease, *(z= 3.565, p<0.01)*
- "Put on a jumper or an extra blanket instead of turning on the heating", -7% decrease, *(z=2.267, p=0.01)*
- "Open windows to cool down instead of a using a cooling device or system", -11% decrease, *(z=3.632, p<0.01)*

Table 49 Energy saving in everyday life in Year 1 and Year 2 (follow-up surveys) - Total samples

Which of the following actions do you think can help save energy?	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Switch off lights in empty rooms	97%	88%	**-9%***
Avoid leaving electronic equipment on standby	86%	76%	**-10%***
Put a lid on pans when cooking	63%	50%	**-13%***

Which of the following actions do you think can help save energy?	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Boil the kettle only with the amount of water you intend to use	77%	66%	-11%*
Put on a jumper or an extra blanket instead of turning on the heating	69%	62%	-7%*
Open windows to cool down instead of a using a cooling device or system	87%	76%	-11%*
None of the above	1%	1%	0%

*statistically significant difference

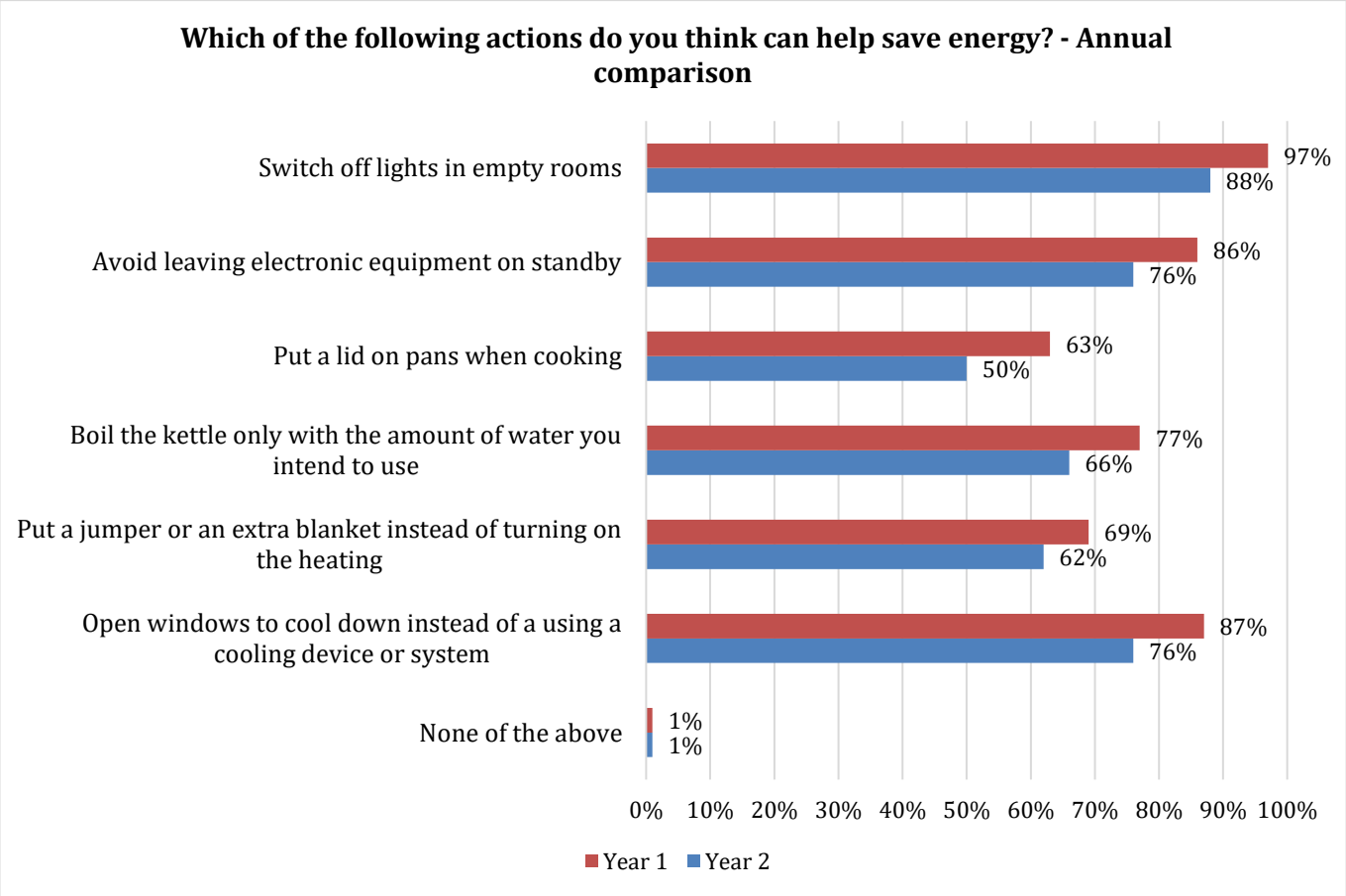

Figure 20 Energy saving actions in everyday life in Year 1 and Year 2 (follow-up surveys) - Total samples

5.2.6 Reasons for being more energy conscious – Annual comparison

Respondents were asked to select the three most important reasons for being energy conscious about their energy use from a list provided to them. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are presented in Table 50 and illustrated in Figure 21.

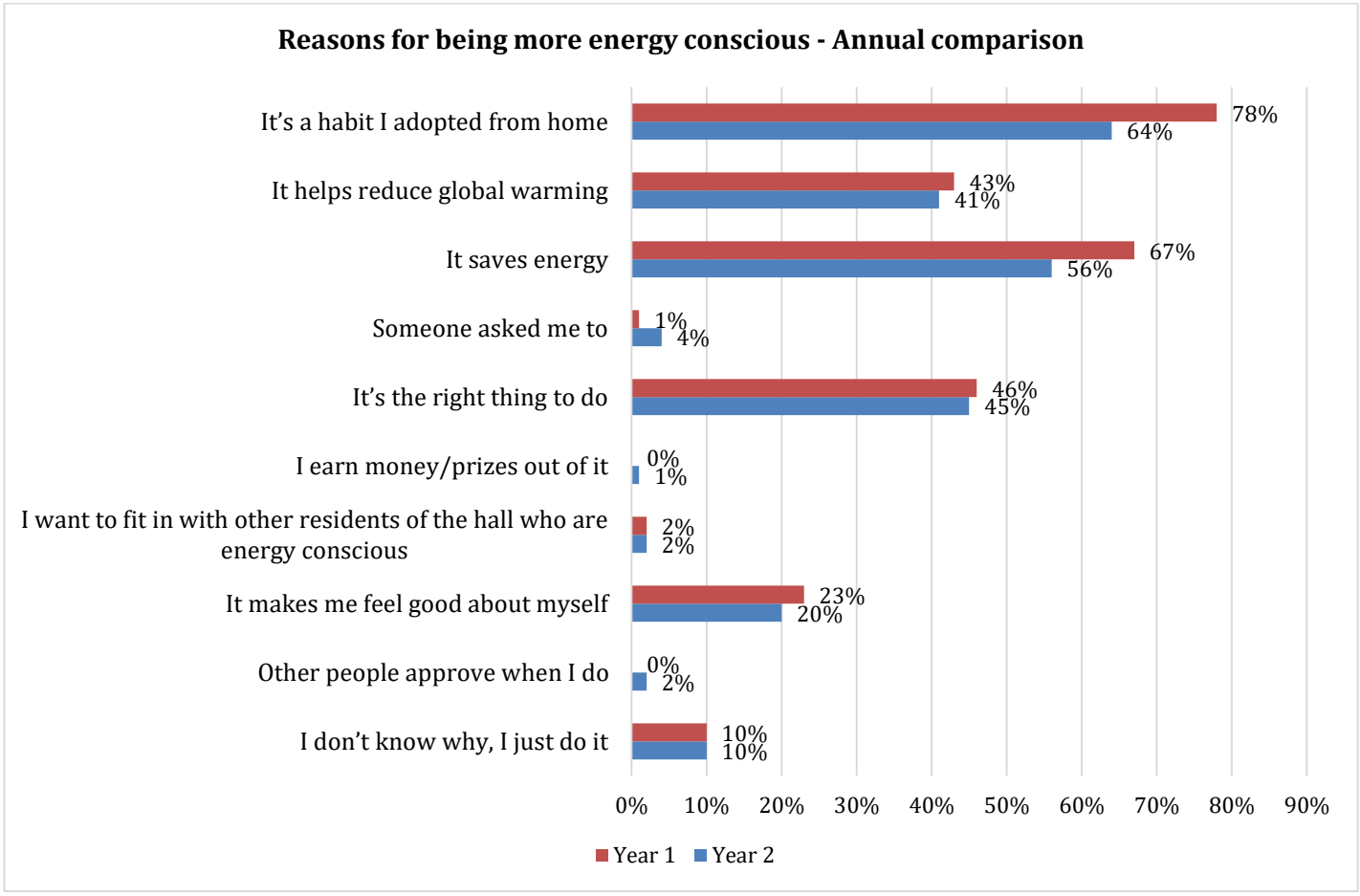

Figure 21 Reasons for being more energy conscious in Year 1 and Year 2 (follow - up surveys) - Total samples

In **Year 2,** the three most popular responses are identical as in Year 1 and rank in the same order. In Year 2, 64% of the respondents chose "It's a habit I adopted from home", 56% selected "It saves energy" and 45% "It's the right thing to do" as their most important reasons for being less energy conscious. All Proportions in Year 2 were lower than Year 1 except for the following three: "Someone asked me to" +3% higher, "I earn money/prizes out of it" +1% and "Other people approve when I do" +2%.
Statistically significant differences between Year 1 and Year 2 were observed in the following reasons:

- "It's a habit I adopted from home", -14% decrease, *(z=4.489, p<0.05)*
- "It saves energy", -11% decrease, *(z=3.632, p<0.01)*

Table 50 Reasons for being more energy conscious in Year 1 and Year 2 (follow-up surveys) - Total samples

Reasons for being more energy conscious	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
It's a habit I adopted from home	78%	64%	**-14%***
It helps reduce global warming	43%	41%	-2%
It saves energy	67%	56%	**-11%***
Someone asked me to	1%	4%	3%
It's the right thing to do	46%	45%	-1%
I earn money/prizes out of it	0%	1%	1%
I want to fit in with other residents of the hall who are energy conscious	2%	2%	0%

Reasons for being more energy conscious	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
It makes me feel good about myself	23%	20%	-3%
Other people approve when I do	0%	2%	2%
I don't know why, I just do it	10%	10%	0%

*statistically significant difference

5.2.7 Reasons for being less energy conscious– Annual comparison

Respondents were asked to select the three most important reasons for being less conscious about their energy use from a list provided to them. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are illustrated in Figure 22 and presented in Table 51.

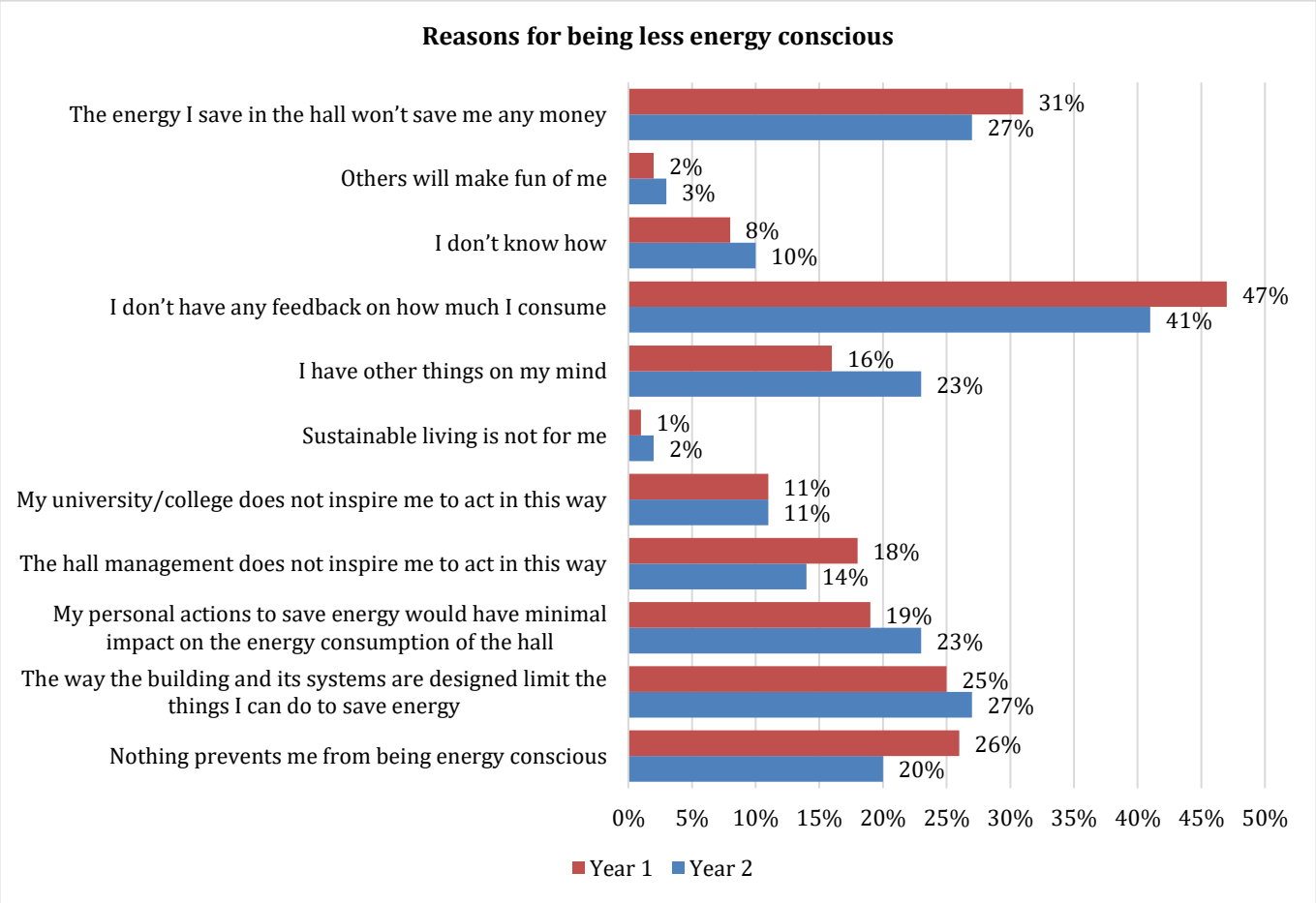

Figure 22 Reasons for being less energy conscious in Year 1 and in Year 2 (follow-up surveys) - Total samples

In **Year 2,** as in Year 1 respondents were prevented from being more energy conscious mainly because they hadn't any feedback on the amount of energy they consumed (41%), the energy they saved in the hall wouldn't save them any money (27%) and due to limitations posed by the building and its systems' design (27%). However, it should be noted that -6% less respondents in Year 2 stated that they didn't have any feedback on how much energy they consumed.
Statistically significant differences were observed, between Year 1 and Year 2 in the following reasons:

- "I don't have any feedback on how much I consume", -6% decrease, *(z=2.022, p=0.04)*
- "I have other things on my mind", +7% increase, *(z=-2.884, p<0.01)*
- "The hall management does not inspire me to act in this way", -4% decrease, *(z=1.960, p=0.0497)*
- "Nothing prevents me from being energy conscious", -6% decrease, *(z=2.536, p<0.01)*

Table 51 Reasons for being less energy conscious in Year 1 and in Year 2 (follow-up surveys) - Total samples

Reasons for being less energy conscious	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
The energy I save in the hall won't save me any money	31%	27%	-4%
Others will make fun of me	2%	3%	1%
I don't know how	8%	10%	2%
I don't have any feedback on how much I consume	47%	41%	**-6%***
I have other things on my mind	16%	23%	**7%***
Sustainable living is not for me	1%	2%	1%
My university/college does not inspire me to act in this way	11%	11%	0%
The hall management does not inspire me to act in this way	18%	14%	**-4%***
My personal actions to save energy would have minimal impact on the energy consumption of the hall	19%	23%	4%
The way the building and its systems are designed limit the things I can do to save energy	25%	27%	2%
Nothing prevents me from being energy conscious	26%	20%	**-6%***

*statistically significant difference

5.2.8 Familiarization with the SSO campaign – Annual comparison

Respondents were asked whether they had heard of the Student Switch Off (SSO) campaign. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are illustrated in Figure 23 and presented in Table 52.

Respondents in **Year 1** were slightly less familiar with the SSO than those in **Year 2.** Specifically, 56% respondents in the Year 1 survey were familiar with the SSO campaign while in Year 2 survey this share was 57%. The difference from Year 1 was statistically insignificant.

Table 52 Familiarization with the SSO campaign in Year 1 and in Year 2 (follow-up surveys) - Total samples

Have you heard of the Student Switch Off (SSO) campaign?	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Yes	56%	57%	1%
No	44%	43%	-1%

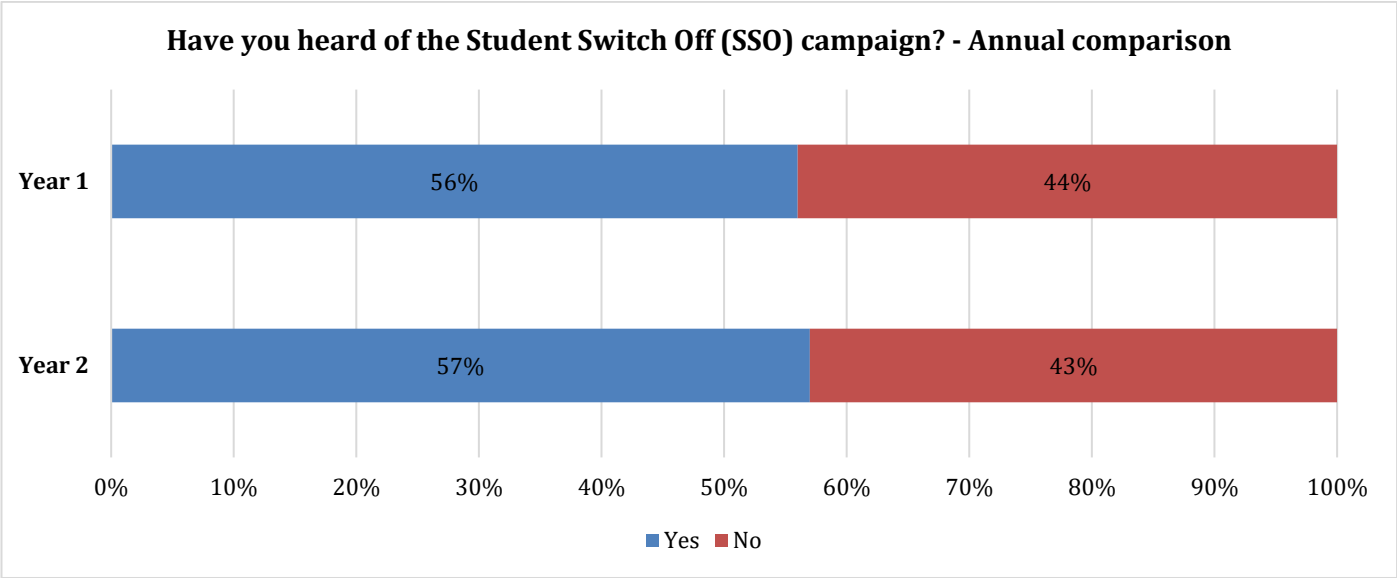

Figure 23 Familiarization with the SSO campaign in Year 1 and in Year 2(follow-up surveys) - Total samples

5.2.9 Familiarization with the SSO energy dashboard – Annual comparison

Respondents were asked whether they have visited their university's SSO energy dashboard. Only respondents that had heard of SSO were directed to this question. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are presented in Figure 24 and tabulated in Table 53.

In **Year 1,** the vast majority of the respondents (80%) replied negatively that they had visited the SSO energy dashboard. However, in **Year 2,** a statistically significant increase *(z= -12.528, p<0.01)* of 52% was reported with those replying positive being the 72% of the sample.

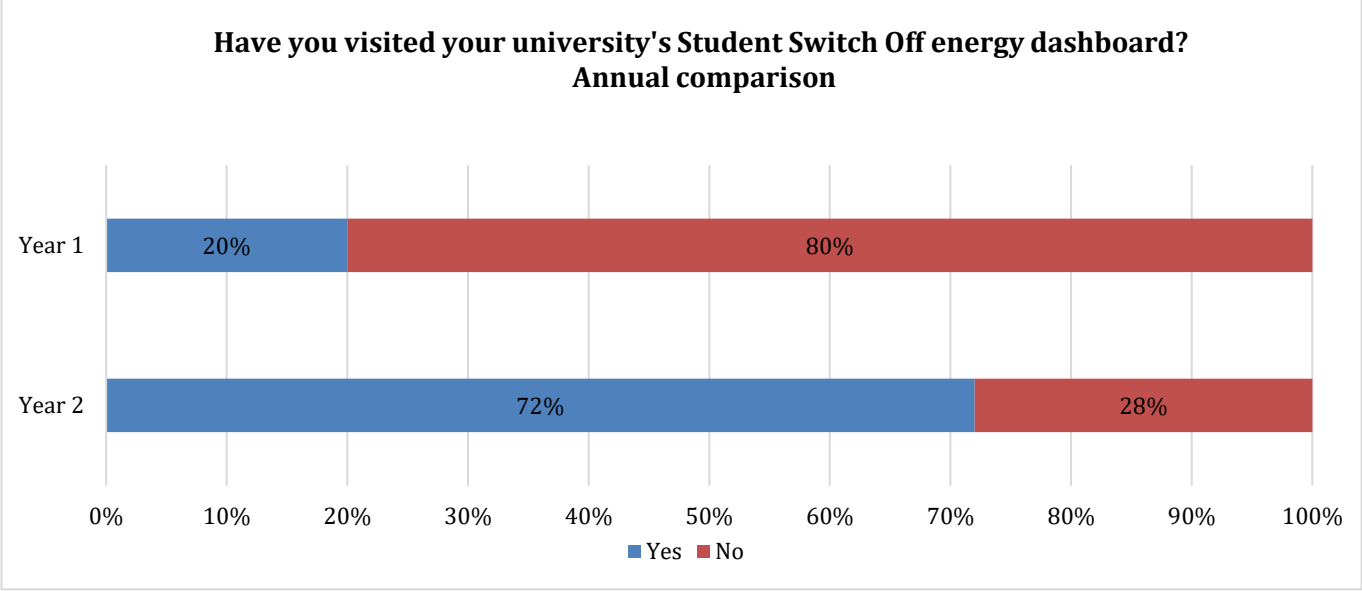

Figure 24 Familiarization with the SSO energy campaign in Year 1 and in Year 2 (follow-up surveys) - Total samples

Table 53 Familiarization with the SSO energy campaign in Year 1 and in Year 2 (follow - up surveys) - Total samples

Have you visited your university's Student Switch Off energy dashboard?	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Yes	20%	72%	**52%***
No	80%	28%	**-52%***

*statistically significant difference

5.2.10 Frequency of visits to the SSO energy dashboard – Annual comparison

Respondents who had visited their university's SSO energy dashboard were also asked how often they used to do it during the academic year. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are presented in Table 54 and illustrated in Figure 25.

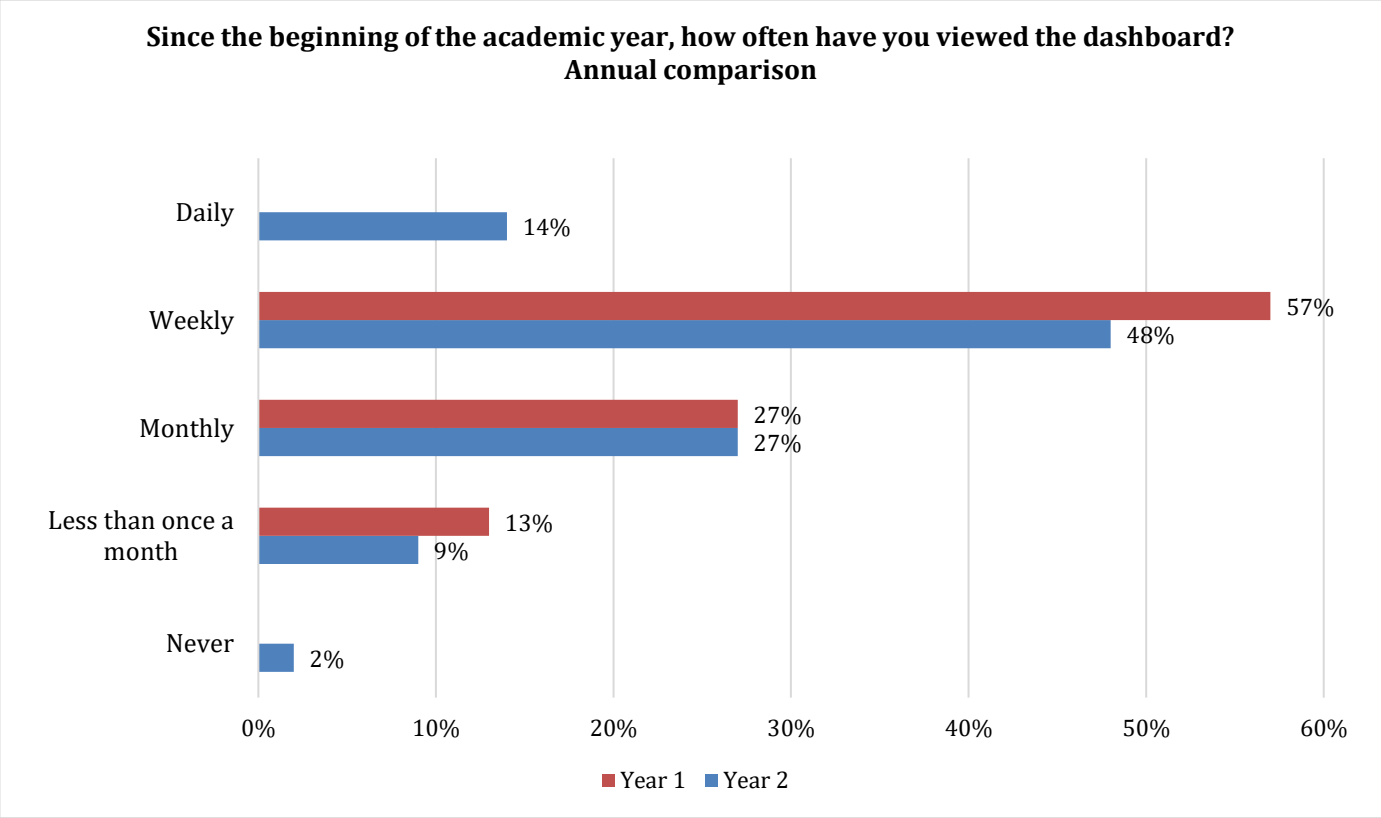

Figure 25 Frequency of visits to the SSO energy dashboard in Year 1 and Year 2 (follow - up surveys) - Total samples

In **Year 2,** those that visit the platform every week were 48% of the respondents, -9% less than in Year 1, while the proportion of those visiting the platform on a monthly basis was the same as in Year 1 (27%). It is worth mentioning that 14% of the respondents visited the platform, daily and 2% had never visited the platform in the Year 2, while in Year 1 both these proportions were 0%

Statistically significant differences between Year 1 and Year 2 were observed in the following frequencies:

- "Daily", +14% increase in Year 2, *(z= -9.072, p<0.01)*
- "Weekly", -9% decrease in Year 2, *(z=2.732, p<0.01)*
- "Less than once a month", -4% decrease in Year 2, *(z=3.05, p<0.01)*
- "Never", +2% increase in Year 2, *(z=-3.404, p<0.01)*

Table 54 Frequency of visits to the SSO energy dashboard in Year 1 and Year 2 (follow-up surveys) - Total samples

Since the beginning of the academic year, how often have you viewed the dashboard?	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Daily	0%	14%	**14%***
Weekly	57%	48%	**-9%***
Monthly	27%	27%	0%
Less than once a month	13%	9%	**-4%***
Never	0%	2%	**2%***

*statistically significant difference

5.2.11 Visiting the SSO energy dashboard throughout the academic year -Annual comparison

Respondents who had visited their university's SSO energy dashboard were also asked whether their visits to the dashboard increased decreased or stayed about the same since the beginning of the academic year. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are tabulated in Table 55 and illustrated in Figure 26.

In **Year 2** survey, the visits on the energy dashboard stayed about the same for 54% of the respondents, 16% higher than in **Year 1**, with the difference being statistically significant *(z= -2.520, p<0.01)*. Those surveyed that had decreased their visits were 15%, -16% less from the Year 1 survey. On the contrary, in both years, 31% stated that they had increased their visits.
The difference in the percentage of those replied that they had decreased their visits was also statistically significant *(z= 4.515, p<0.01).*

Table 55 SSO energy dashboard visiting rate in Year 1 and Year 2 (follow-up surveys) - Total samples

Since the beginning of the academic year, would you say that your visits to dashboard:	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
Decreased	31%	15%	**-16%***
Increased	31%	31%	0%
Stayed about the same	38%	54%	**16%***

*Statistical significant difference

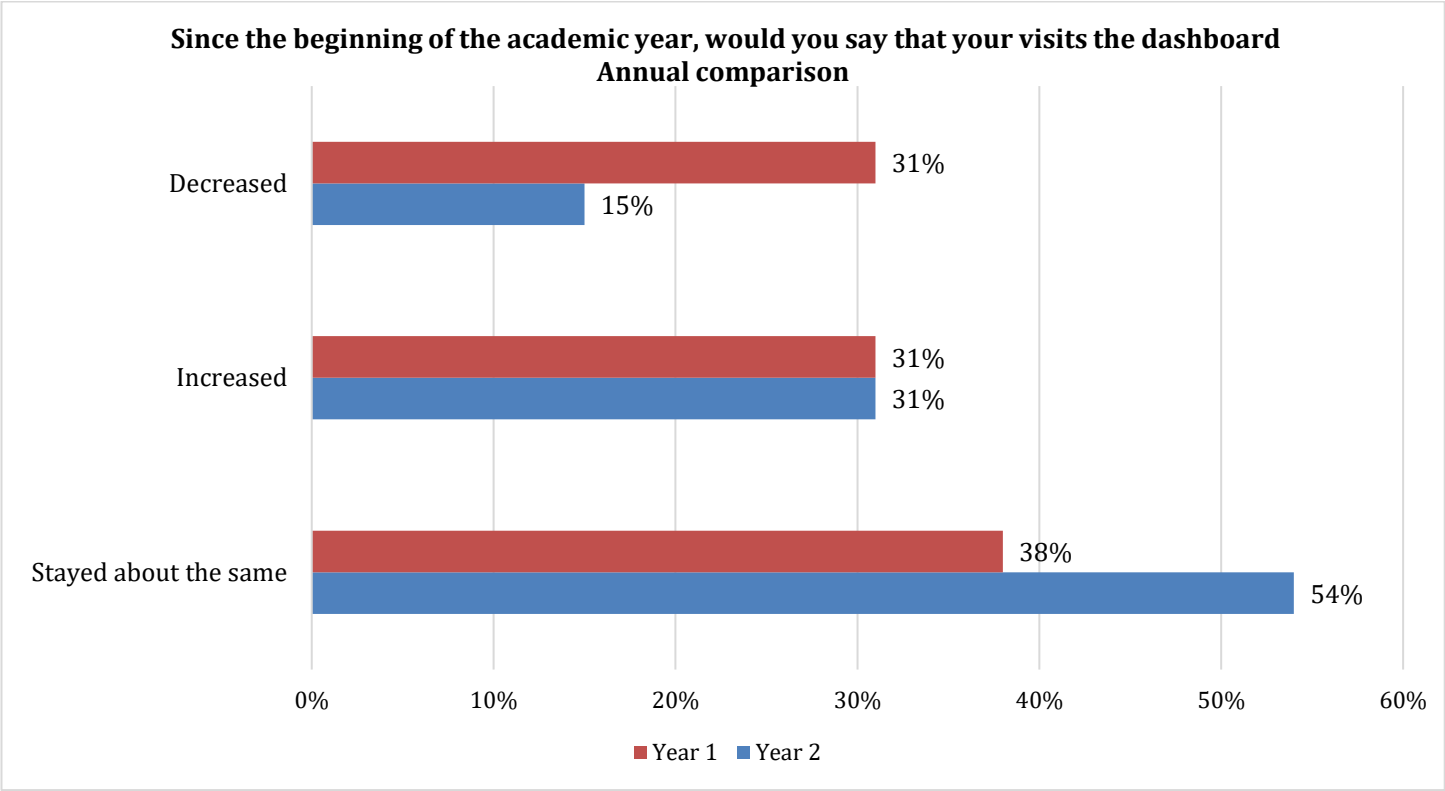

Figure 26 SSO energy dashboard visiting rate in Year 1 and Year 2 (follow-up surveys) - Total samples

5.2.12 Energy saving efforts in future lifestyle – Annual comparison

Respondents were asked to select the statement that best describes the way they will be living when they move out of halls of residence in relation to energy saving. Two proportion z-test was used to determine whether the differences between the Year 1 and Year 2 survey proportions are statistically significant. The results are tabulated in Table 56 and illustrated in Figure 27.

In **Year 2,** 39% of the respondents stated that they would be doing a lot more to save energy, recording a +3% increase from Year 1. Thirty-two percent (32%) replied that they would be doing a bit more save energy while those who were thinking they would probably be doing the same to save energy were 25%. Both statements recorded a -3% decrease from Year 1. In addition, in Year 2, 2% of those surveyed stated that they would be doing less to save energy when they move out of halls of residence. Differences between the two years were of no statistical significance.

Table 56 Energy saving efforts in future lifestyle in Year 1 and Year 2 (follow-up surveys) - Total samples

Which one of these statements best describes how you think you will be living when you move out of your hall of residence/college?	Year 1 Follow-Up	Year 2 Follow-Up	Difference from Year 1
I think I'll be doing a lot more to save energy	36%	39%	3%
I think I'll be doing a bit more to save energy	35%	32%	-3%
I think I'll probably be doing about the same to save energy	28%	25%	-3%
I think I'll be doing a bit less to save energy	0%	1%	1%
I think I'll be doing a lot less to save energy	0%	1%	1%
Don't Know	1%	2%	1%

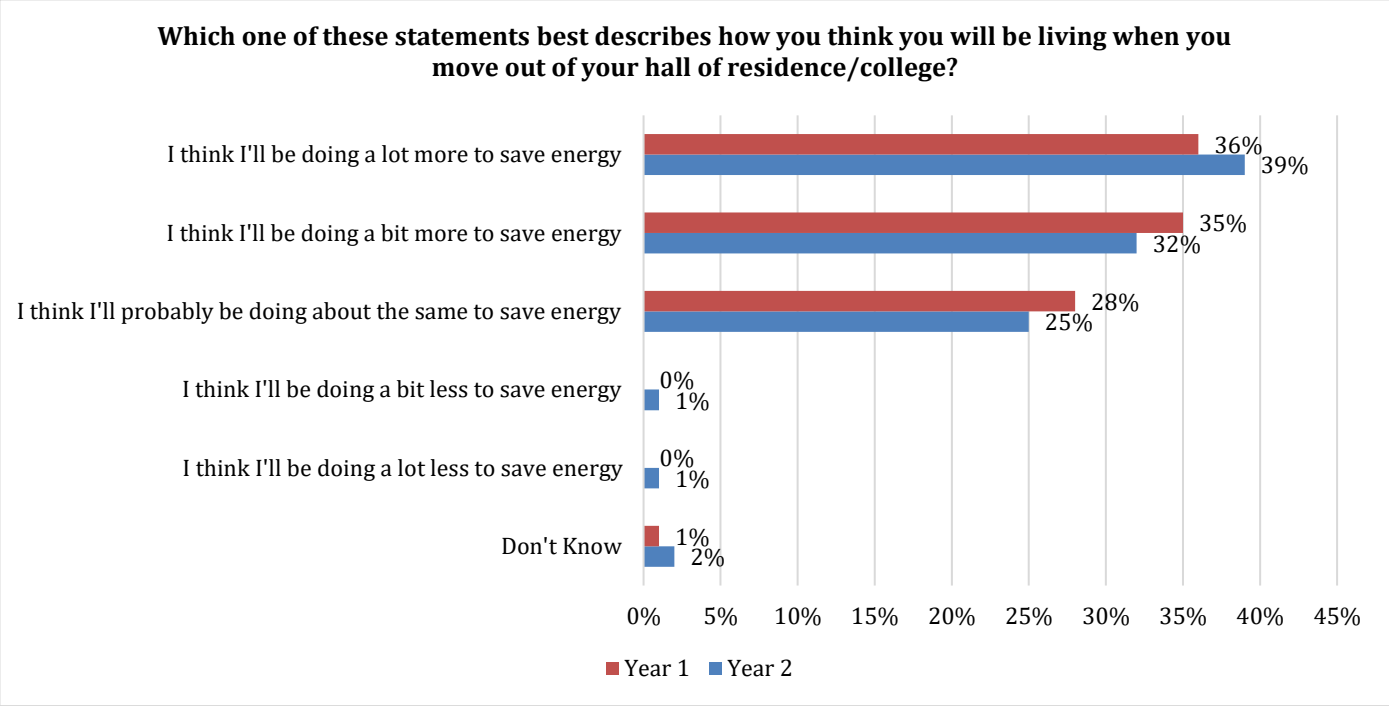

Figure 27 Energy saving efforts in future lifestyle in Year 1 and Year 2 (follow-up surveys) - Total samples

6 Summary of main findings

Energy savings

In 2018-19, 2.704 GWh of electricity were saved across all the participating countries compared to the baseline. This saving equates to over 1,350 tonnes of CO_2 emissions. Extrapolation for data from missing months for Student Switch Off campaigns lasting for less than nine months gives an additional saving of 1.332 GWh.

Percentage-wise, most energy was saved in Bulgaria (26.64%) and in Cyprus (21.45%). The United Kingdom had the highest absolute energy savings (1,337,849 kWh) and carbon dioxide savings (613.4 tCO_2) followed by Bulgaria (634,889 kWh and 387.83 tCO_2). In none of the seven countries were any negative energy savings recorded.

At university-level the biggest energy saving can be noted in University of Cambridge (UK), where 930,485 kWh were saved. The biggest percentage saving has been at Sofia University "St. Kliment Ohridski" (Bulgaria) where a 26.6% saving is noted. The most carbon dioxide was saved in University of Cambridge (UK) (427 tCO_2).

Level of information

Energy saving efforts

In total, 31% of the follow-up survey respondents stated that "I do quite a few things to save energy" followed by those who stated "I do one or two things to save energy" (31%) and those that tried to save energy in most things they did (26%). According to the follow-up survey results, in Bulgaria (56%), Ireland (34%), Lithuania (31%) and the UK (35%), those surveyed stated that "I do one or two things to save energy". In Cyprus (54%) and Greece (33%) most of the respondents stated that "I try to save energy in most things I do". In Romania (34%), more than one third of those surveyed stated that "I do quite a few things to save energy".

In the end of year survey, a higher proportion of respondents tried to save energy in everything they did (+2% increase) and in most things they did (+6% increase) than in the baseline survey while a smaller share of respondents stated "I do quite a few things to save energy" (-2% decrease) and "I do one or two things to save energy" (-7% decrease). On the other hand, +2% more respondents in the follow-up survey stated that they didn't really do anything to save energy. Differences between the baseline and the follow-up survey are not statistically significant.

How to save energy in halls of residence

At the end of the academic year only respondents living in Cyprus felt adequately informed about what they personally can do to save energy in their hall. Respondents in Greece, Ireland and the UK reported a moderate level of information followed by those living in Bulgaria, Lithuania and Romania.
In comparison with the baseline survey an increase in the level of information on how to save energy in halls is observed in Greece, Ireland, Lithuania, and the UK while the opposite is observed in Bulgaria and Cyprus. No change is observed in Romania.

Actions that can help save energy

In total, at the beginning of the year, 89% of the respondents selected "Switch of lights in empty rooms" as the action they think helpful towards energy saving. This share was slightly decreased in the follow-up survey (88%). "Avoid leaving electronic equipment on standby" and "Open windows to cool down instead of using a cooling device or system" were the second most popular selected actions in both surveys, considered by respondents helpful towards saving energy. These actions were selected by 76% of respondents in the end of the academic year survey and 75% of those participated in the baseline survey, respectively.

Between the two surveys the following statistically significant differences, were observed with regard to the total sample:

- "Put a lid on pans when cooking", +10% increase
- "Boil the kettle only with the amount of water you intend to use", +4% increase
- "Put on a jumper or an extra blanket instead of turning on the heating", +4% increase

Overall, in all countries, the vast majority of respondents in both surveys, think that switching off the lights in empty rooms and opening the windows to cool down instead of using a cooling device or system helps saving energy. Country-specific statistically significant differences in the perceived level of knowledge compared to the baseline survey are the following:

In **Greece**
- "Boil the kettle only with the amount of water you intend to use", +13% increase
- "Open windows to cool down instead of using a cooling device or system", -10% decrease

In **Ireland**
- "Boil the kettle only with the amount of water you intend to use", +6% increase
- "Open windows to cool down instead of using a cooling device or system", +6% increase

In **Lithuania**
- "Open windows to cool down instead of using a cooling device or system", +8% increase

In **Romania**
- "Switch off lights in empty rooms" -9% decrease
- "Open windows to cool down instead of using a cooling device or system", -12% decrease

In the **UK**
- "Put a lid on pans when cooking", +12% increase,
- "Boil the kettle only with the amount of water you intend to use", +8% increase,
- "Put on a jumper or an extra blanket instead of turning on the heating", +6% increase,

Feelings about saving energy

In total, in both surveys, the highest share of respondents felt optimistic about energy saving (baseline 39%; follow-up 34%; -5% statistically significant decrease). The second most popular feeling in both surveys was the feeling of contentment (baseline 20%; follow-up 19%; -1% statistically significant decrease) suggesting that overall students have positive feelings towards saving energy. Moreover, in the follow-up survey more respondents (+2%) felt proud about saving energy. On the contrary, a statistically significant increase of +3% was observed in the share of respondents who felt frustrated about saving energy.

At the end of the academic year, 47% of those questioned in Bulgaria (+13% increase from baseline), 86% of those surveyed in Cyprus (-4% decrease), 65% of those questioned in Lithuania (+5% increase), 62% of the Irish respondents (-2% decrease), 50% of the participants from the UK (-13% decrease) as well as 65% and 70% of those questioned in Greece (+12% increase) and in Romania (-8% decrease), respectively, described their feelings about saving energy in a positive manner [Optimistic, Proud, Content].

Furthermore, in Bulgaria (29%), Greece (34%) Ireland (31%), Lithuania (44%) Romania (44%) and the UK (27%) the biggest share of follow-up respondents felt optimistic about saving energy. The most popular response describing respondents' feelings at the end of the academic year, in Cyprus (50%) was contentment. On the other hand, none of the participants in Bulgaria and in Cyprus felt frustrated about saving energy. Moreover, the word "Frustrated" was the least selected in Greece (2%), Ireland (3%) and Lithuania (2%) while in Romania (2%) and the UK (4%) "Anxious" was the least selected option.

Frequency of energy saving actions

In the follow-up survey, an increase is observed in the frequency of the total sample of respondents who put on a jumper or an extra blanket instead of turning on the heating (+1% increase in mean value from baseline). At the end of the academic year the total sample of respondents performing the action of switching off lights in empty rooms and boiling the kettle only with the amount of water they intend to use was as frequent as they did in the beginning of the academic year. Conversely, a decrease is observed in the frequency that they avoid leaving electronic equipment on stand-by (-1% decrease in mean value), put a lid on the pan when cooking (-1% decrease in mean value) and open windows to cool down instead of using a cooling device or system (-1% decrease in mean value).

At country level, statistically significant differences between the baseline and the follow-up survey were observed:

- In **Cyprus** for putting on a jumper or an extra blanket instead of turning on the heating, (-12% decrease in mean value)
- In **Greece** for the action of switching off lights in empty rooms, (-5% decrease in mean value)
- In **Romania** for the actions of opening windows to cool down instead of using a cooling device or system (-3% decrease in mean value), boiling the kettle only with the amount of water respondents intend to use (-7% decrease in the mean value) and switching of lights in empty rooms (-3% decrease in mean value).
- In the **UK** for the actions of boiling the kettle only with the amount respondents intended to use (+5% increase in mean value) and switching off light in empty rooms (+2% increase in mean value)

Finally, an increase in the frequency of the following six targeted energy saving actions, undertaken in various countries, is observed at the end of the academic year: putting a lid on the pan when cooking (Greece, Lithuania and the UK), putting extra layers on instead of the heating (Greece, Romania and the UK), boiling the kettle only with the right amount of water (Bulgaria, Cyprus, Lithuania and the UK), opening windows to cool down instead of a cooling device/system (Bulgaria, Cyprus, Lithuania and the UK), avoiding leaving electronic equipment on stand-by (Bulgaria, Cyprus, Greece and Lithuania) and switching off lights in empty rooms (Cyprus, Lithuania and the UK).

Determinants of energy saving

Drivers

At the end of the academic year, the total sample of respondents recognized "It's a habit I adopted from home" (64%) and "It saves energy" (56%), as the main reasons for being more energy conscious. The reasons "It's the right thing to do" (45%) and "It helps reduce global warming" (41%), were also popular among respondents. The statement "It makes me feel good about myself" (20%) was picked by the one fifth of the respondents while the reasons "I don't know why, I just do it" (10%), "Someone asked me to" (4%), "I want to fit in with other residents of the hall who are energy conscious" (2%), "I earn money/prizes out of it" (1%) were chosen by fewer respondents. Responses in the baseline survey appeared to be similar to those in the follow-up survey. Statistically significant differences between the two surveys were observed for the reasons:

- "It helps reduce global warming", +7% increase,
- "Someone asked me to", +1% increase,
- "I don't know why. I just do it", -2% decrease,

In the follow-up survey, the vast majority of respondents in all countries except for Cyprus reported "It's a habit I adopted from home" as the prevalent reason for being more energy conscious and "It saves energy" as the second most important reason for being more energy conscious in all countries as well. In Cyprus the most important reason was "It saves energy" whereas "It's a habit I adopted from home" was the second most important. The third most important reason varies among countries; in Bulgaria (41%), Ireland (48%), Lithuania (41%), Romania (38%) and the UK (54%) it is "It's the right thing to do"; in Cyprus (40%) and Greece (48%) it is "It helps reduce global warming".

At country level, statistically significant differences between the baseline and the follow-up survey were observed on the following drivers with regard to the share of respondents who selected them

In **Greece,**

- "It's a habit I adopted from home", -1% decrease,
- "It helps reduce global warming", +22% increase,
- "Other people approve when I do", +3% increase

In **Ireland**

- "It helps reduce global warming", +9% increase,

In **Lithuania**

- "It's a habit I adopted from home", -2% decrease

In **Romania**

- "It's a habit I adopted from home", -8% decrease,
- "It saves energy", -13% decrease,
- "Someone asked me to", +2% increase,
- "I earn money/prizes out of it" +2% increase,

In the **UK**

- "It saves energy", +10% increase,

Barriers

In total, 41% of the follow-up respondents replied that the main reason that makes them less energy conscious was "I don't have any feedback on how much I consume" followed by "The way the building and its systems are designed limit the things I can do to save energy" (27%) and "The energy I save in the hall won't save me any money" (27%). "I have other things on my mind" (23%) and "My personal actions to save energy would have minimal impact on the energy consumption of the hall" (23%) were also considered as important reasons for being less energy conscious for more than one fifth of the participants.
Statistically significant differences between the baseline and the follow-up survey were observed for the reasons:

- "I have other things in my mind", +3% increase
- "The way the building and its systems are designed limit the things I can do to save energy", +6% increase
- "Nothing prevents me from being energy conscious", -2% decrease

At the end of the academic year, respondents in all countries except for Bulgaria pointed out the lack of feedback on how much energy they consume as the main reason for being less conscious when it comes to saving energy in their hall. In Bulgaria the biggest share (35%) of respondents said that "The energy I save in the hall won't save me any money" whereas the lack of feedback on energy consumption was mentioned by 32% of those surveyed and was the third most important reason in Bulgaria.

The fact that the energy they save in the hall won't save them any money is also reported in the top three reasons by respondents living in Romania (25%), Ireland (29%) and the UK (31%). The same applies to "The way the building and its systems are designed limit the things they can do to save energy" in Cyprus (20%), Greece (25%), Ireland (23%), Lithuania (32%) and the UK (36%) and for "My personal actions to save energy would have minimal impact on the energy consumption of the hall" in Bulgaria (35%) and Romania (25%). Other reasons placed in the top three reasons for less energy conscious "The hall management does not inspire me to act in this way" in Greece (21%) and Lithuania (32%) and "I have other things in my mind" in Cyprus (14%).

At country level, statistically significant differences between the baseline and the follow-up survey were observed on the following drivers with regard to the share of respondents who selected them

In **Greece**

- "I don't have any feedback on how much I consume", -11% decrease,
- 'I don't know how", =-7% decrease,
- "My university/college does not inspire me to act in this way", +8% increase,

In **Ireland**

- I don't have any feedback on how much I consume", +7% increase,

In **Lithuania**

- "I have other things on my mind", +6% increase

In **Romania**

- "Others will make fun of me", +2% increase,
- "I have other things on my mind", +5% increase

In the **UK**,

- "The energy I save in my halls won't save me any money", -6% decrease,
- "The way the building and its systems are designed limit the things I can do to save energy", +15% increase

Behavioural antecedents

Respondents from all countries, in both surveys, agreed that:
a) Global warming is a problem for society,
b) Energy conservation contributes to a reduction of climate change impacts,
c) Everyone including myself is responsible for the exhaustion of energy sources, and
d) Everyone including myself is responsible for climate change.

Furthermore, in both surveys, a "Disagree" to "Neither agree nor disagree" tendency is reported in all countries with regard to "Most people who are important to me think that I should use less energy" and "Saving energy means I have to live less comfortably". In all countries except for Bulgaria, respondents mostly disagreed that "Saving energy is too much of a hassle".

In both surveys, the total sample of respondents agreed the most with the statement "Global warming is a problem for society" (Baseline: M=4.53, SD=0.82, Follow-Up: M=4.59, SD=0.79) whereas respondents disagreed the most with the statement "Saving energy is too much of a hassle" (Baseline: M=2.2, SD=0.88, Follow-Up: M=2.2, SD=0.92).

Statistically significant differences between the baseline and the follow-up surveys were observed in the following statements:

- "Global warming is a problem for society", +1% increase in mean value
- "Energy conservation contributes to a reduction of climate change impacts", +1% increase in mean value
- "I feel guilty when I use a lot of energy", +2% increase in mean value
- "Saving energy means I have to live less comfortably", +3% increase in mean value
- "As a student living on campus, I should be more concerned about my energy use during my stay there, -2% decrease in mean value
- "In general, I can reduce my energy use quite easily", -2% decrease in mean value
- "Most people who are important to me try to pay attention to their energy use", +4% increase in mean value
- "I feel morally obliged to save energy, regardless of what others do", +2% increase in mean value

An increase (or decrease) in mean values in the follow-up survey compared to the baseline survey, indicates a higher (or lower) level of agreement. Such country specific statistically significant differences are observed in the following statements:

In **Bulgaria**,
- "Energy conservation contributes to a reduction of climate change impacts", +20% increase in mean value
- "I feel guilty when I use a lot of energy", +34% increase in mean value
- "Everyone including myself is responsible for the exhaustion of energy sources", +20% increase in mean value

In **Cyprus**
- "Global warming is a problem for society", +6% increase in mean value

In **Greece,**
- "I feel in complete control over how much energy I use in general", +8% increase in mean value
- "Most people who are important to me try to pay attention to their energy use", +6% increase in mean value
- "I intend to try harder to reduce my energy use this academic year", +7% increase in mean value

In **Lithuania,**
- "Energy conservation contributes to a reduction of climate change impacts", +6% increase in mean value

In **Romania**,
- "Saving energy means I have to live less comfortably", +12% increase in mean value
- "Saving energy is too much of a hassle", +15% increase in mean value

- "Global warming is a problem for society", -3% decrease in mean value
- "Everyone including myself is responsible for climate change", -4% decrease in mean value

In the **UK**,

- "I feel in complete control over how much energy I use in general", -6% decrease in mean value
- "I feel guilty when I use a lot of energy", +3% increase in mean value
- "Saving energy is too much of a hassle", -5% decrease in mean value

Student Switch Off campaign

- **Familiarization with SSO**

At the end of the academic year a statistically significant higher share of respondents (+18%) had heard about the SSO campaign compared to the beginning of the academic year. The share of respondents that had heard of the SSO campaign was 57% in the follow-up survey and 39% in the baseline.

In Cyprus all of those surveyed (100%) had heard of the SSO campaign in both surveys. In the other six countries, more respondents had heard about the SSO campaign at the end of the academic year compared to the beginning. The increase in the number of respondents that had heard of the SSO campaign at the end of the academic year compared to the beginning is statistically significant in Bulgaria (+40%), Greece (23%), Ireland (7%), Lithuania (10%) and the UK (41%).

The highest share of respondents who had heard of the SSO campaign by the end of the academic year is recorded in the UK (85%) and the lowest in Lithuania (32%).

- **SSO influence on saving energy**

In the baseline survey, 74% of the respondents agreed that SSO has made them more aware on what they can do to save energy in their everyday life. At the end of the academic year this share was -2% less (72% of follow-up respondents).

In all countries the vast majority of respondents agreed that SSO made them more aware on what they can do to save energy in their everyday life. In Bulgaria (88%), the highest share of respondents agreed that SSO has made them more aware on what they can do to save energy in their everyday life, whereas the lowest share is recorded in the UK (58%)

SSO Energy Dashboard

- **Familiarization with the dashboard**

In all countries the majority of respondents had visited the dashboard. The biggest share of respondents that had visited the SSO dashboard is found in Bulgaria (88%), followed by Romania, Ireland and Cyprus (78%, 77% and 74%, respectively). In Greece, Lithuania and the UK the share of those who have visited their university's dashboard is 65%, 63% and 58%, respectively.

- **Sources of information**

Thirty-five (35%) of the respondents across the seven countries stated that they first heard about the SSO energy dashboard from social media, probably their SSO Facebook page. "Emails" (34%) was the second most popular response whereas 15% of the respondents first heard about the dashboard from word of mouth/friends.

- The largest proportion of respondents in Cyprus (36%), Ireland (35%), Romania (47%) and the UK (52%) first heard about the dashboard through emails they received.
- In Bulgaria (43%), Greece (39%) and Lithuania (53%) most respondents got informed about the energy dashboard through social media.
- In Cyprus more than one fifth of the respondents (23%) first heard about the dashboard through a display screen in their hall.
- In Greece 35% of those questioned stated that they first heard about the dashboard from a friend or from word of mouth, probably during face-to-face communication with the SSO ambassadors.

- **Frequency of visits**

Overall, 48% of the respondents used to visit the SSO energy dashboard weekly. Twenty-seven percent (27%) used to view the dashboard every month while 14% viewed the energy dashboard on a daily basis. Nine percent (9%) of those surveyed reported that they visited the dashboard less than once a month, whereas a 2% minority never visited the SSO energy dashboard during the academic year.

- In Cyprus (36%) Lithuania (70%), Romania (48%) and the UK (74%) the largest proportion of respondents visited the energy dashboard on a weekly basis.
- In Greece (39%) and Ireland (45%) the largest proportion of those surveyed visited the dashboard on a monthly basis.
- In Bulgaria 33% visited the dashboard on a monthly basis while another 33% visited the dashboard on a weekly basis.

Overall, 54% of the respondents reported that their visits to the SSO energy dashboard stayed about the same since the beginning of the academic year. Thirty-one percent (31%) of those surveyed stated that their visits had increased since the beginning of the academic year whereas 15% of those questioned reported a decrease.

- In Romania (51%) and Ireland (45%) the largest proportion of those questioned increased their visits to the dashboard since the beginning of the academic year.
- In Bulgaria (51%), Cyprus (50%), Greece (80%) Lithuania (64%), and the UK (54%) the biggest share of respondents reported that their visits to the dashboard stayed about the same throughout the academic year.

➢ **Reason for visiting energy dashboard**

In total, 91% of the participants reported "To see how my own halls of residence/college is performing" as one of their top-three reasons for viewing the dashboard and league tables. "To learn new ways of saving energy" and "To see how my own halls of residence/college is performing relative to other halls of residence/colleges at my university" were also important reasons, placed in the first three ranking positions by 82% and 77% of the respondents, respectively.

- Seeing how their own hall is performing was the top reasons for visiting the dashboard in all countries except for Lithuania and Romania.
- In Lithuania and Romania, "To see how my own halls of residence is performing relative to other halls of residence at my university" was the most important reason for visiting the dashboard.
- Learning new ways of saving energy was among the top three reasons for respondents to visit the energy dashboard in all countries.
- In all countries, except for Ireland, "To see how my own hall is performing relative to other halls of residence at my university" was also an important reason for visiting the energy dashboard.
- In Ireland respondents said that the use of the information to encourage students in their hall to do better was also a reason for visiting the dashboard.

Energy saving efforts in future lifestyle

In total, 39% of the respondents stated they will be doing a lot more to save energy when they move out of halls of residence, followed by 32% of those who they will be doing a bit more. One quarter of the respondents (25%) stated that they will probably be doing about the same to save energy.

In all countries, except for the UK, the largest proportion of respondents will be doing a lot more to save energy when they move out of halls of residence. In the UK the biggest proportion of respondents (42%) will be doing a bit more to save energy. In Cyprus and Bulgaria, 38% and 34% of the respondents respectively stated they will probably be doing about the same to save energy. However, no respondent from Bulgaria, Cyprus and the UK reported that they would be doing a bit less or a lot less to save energy.

Year 2 compared to Year 1
In order to overcome the issue with the very low sample a different approach was followed this academic year 2018-19; instead of a matched baseline and follow-up sample of respondents, independent samples were used instead. Although the results are not strictly comparable an indicative comparison is performed, nonetheless.

Respondents in both years' surveys said they had positive feelings rather than negative, with those in Year 2 survey presenting increased percentages mainly for positive feelings and decreased for the negative ones. The difference is statistically significant in the following items:

- "Optimistic" (+7% increase)
- "Content" (+7% increase)
- "Guilty" (-4% decrease)
- "Frustrated" (-3% decrease)

Respondents in the Year 2 survey felt less informed about saving energy in their hall than those in Year 1 with the difference observed, -6% decrease in mean value, having statistical significance.

In Year 1 a higher level of agreement is observed for all listed items of behavioral antecedents (1 to 5 scale; 1 = Strongly disagree - 5 = Strongly agree) except for the statement "Everyone including myself is responsible for climate change". The differences are statistically significant for six of these items:

- "Global warming is a problem for society" (-2% decrease in Year 2 mean value)
- "Energy conservation contributes to a reduction of climate change impacts" (-2% decrease in Year 2 mean value)
- "Everyone including myself is responsible for the exhaustion of energy sources" (-5% decrease in Year 2 mean value)
- "In general, I can reduce my energy use quite easily" (-5% decrease in Year 2 mean value)
- "Everyone including myself is responsible for climate change" (+5% increase in Year 2 mean value)
- "I feel morally obliged to save energy, regardless of what others do" (-5% decrease in Year 2 mean value)

Nevertheless, in most cases the observed decrease did not affect the overall level of agreement.

Respondents in the Year 2 survey undertook energy saving actions slightly less frequently than those in the Year 1 survey, except for "Avoid leaving electronic equipment on stand-by" which was undertaken slightly more frequently. The differences are statistically significant for two of these actions:

- "Boil the kettle only with the amount of water you intend to use" (-4% decrease in Year 2 mean value)
- "Open windows to cool down instead of using a cooling device or system" (-6% decrease in Year 2 mean value)

Despite the differences, the overall frequency each of the six targeted saving energy actions was undertaken stayed about the same.

In the Year 2 survey, a decrease was observed regarding the actions the respondents thought could save energy. However, the same actions appeared to be equally dominant in both years. The differences are statistically significant in the following actions:

- "Switch off lights in empty rooms" (-9% decrease)
- "Avoid leaving electronic equipment on standby" (-10% decrease)
- "Put a lid on pans when cooking" (-13% decrease)
- "Boil the kettle only with the amount of water you intend to use" (-11% decrease)
- "Put on a jumper or an extra blanket instead of turning on the heating" (-7% decrease)
- "Open windows to cool down instead of a using a cooling device or system" (-11% decrease)

A decrease was also observed in Year 2 survey regarding the reasons that made the respondents more energy conscious. The differences observed are statistically significant for the following two reasons:

- "It's a habit I adopted from home" (-14% decrease)
- "It saves energy" (-11% decrease)

Regarding the reasons for being less energy conscious, for most reasons a decrease in their importance was observed in Year 2 except for the reason "I have other things on my mind". The observed differences are statistically significant for the following four reasons:

- "I don't have any feedback on how much I consume" (-6% decrease)
- "I have other things on my mind" (+7% increase)
- "The hall management does not inspire me to act in this way" (-4% decrease)
- "Nothing prevents me from being energy conscious" (-6% decrease)

In both years, respondents were almost equally familiarized with the SSO campaign. In Year 1 survey 56% replied positively while 57% replied accordingly in Year 2 survey.

A significant difference was reported in the Year 2 survey regarding the energy dashboard visits. In Year 2 the positive responses were 72% while for Year 1 they were 20%, with the observed difference of +57% being statistically significant.

Regarding their visit frequency to the energy dashboard, Year's 2 respondents that visited the dashboard on a daily basis were 14% higher than in Year 1. A decrease was observed however for those that visited the platform weekly in Year 2 compared to those in Year 1 as well as for those that visited the dashboard less than once a month.
The following differences in visiting frequency were statistically significant:

- "Daily" (+14% increase)
- "Weekly" (-9% decrease)
- "Less than once a month" (-4% decrease)
- "Never" (+2% increase)

Respondents in Year 2 that decreased their visits to the dashboard were lower than those in Year 1, while an increase was observed for those that visits stayed about the same. Thirty-one percent (31%) of the respondents in both years increased their visits.
The following differences in visiting the dashboard throughout the year were statistically significant:

- "Decreased" (-16% decrease)
- "Stayed about the same" (+16% increase)

Finally, in Year 2 survey respondents appeared more eager to do a lot more to save energy than those in Year 1 (+3% increase), while for the other dominant responses "I think I 'll probably be doing about the same to save energy" and "I think I 'll be doing a bit more to save energy" a -3% decrease was observed, with the overall differences having no statistical significance.

Annex I

Table 57 Number of responses per question in Baseline (B) and Follow-Up (F) surveys.

Questions	Bulgaria		Cyprus		Greece		Ireland		Lithuania		Romania		UK	
	B	F	B	F	B	F	B	F	B	F	B	F	B	F
Which one of these statements would you say best describes your current lifestyle?	31	34	35	35	191	189	563	396	362	190	471	490	547	823
How informed do you feel about what you personally can do to save energy in your hall?	30	34	35	35	190	188	563	396	362	190	470	488	547	823
Which of the following words best describes how you feel about saving energy?	27	34	33	34	182	182	501	371	336	178	427	423	512	779
Please consider each of the statements below. and indicate to what extent you agree or disagree with it	25	34	32	34	182	183	498	372	336	177	429	427	512	780
Which of the following actions do you think can help save energy?	25	32	33	33	183	176	499	368	331	176	422	416	510	777
Please consider each of the actions below. and indicate how often you take them.	25	33	31	34	178	180	464	347	324	171	408	403	488	762
Considering only the energy saving actions from the previous question that you take most frequently. please choose up to three important reasons for taking them.	31	34	35	35	191	189	563	396	362	190	471	490	547	823
Please choose up to three important reasons that prevent you from being more conscious about your energy use in your hall from the list below.	31	34	35	35	191	189	563	396	362	190	471	490	547	823
Have you heard of the Student Switch Off campaign? It is an energy saving campaign taking place in your dormitory.	25	17	31	34	180	85	440	149	324	54	409	143	484	639
Would you say that Student Switch Off has made you more aware on what you can do to save energy in your everyday life?	3	17	31	34	42	85	157	149	70	54	143	143	214	640
Questions relevant to Follow-Up survey														
Have you visited your university's Student Switch Off energy dashboard?	n/a	33	n/a	34	n/a	179	n/a	343	n/a	171	n/a	394	n/a	756
How did you first hear about the dashboard?	n/a	61	n/a	22	n/a	49	n/a	31	n/a	15	n/a	19	n/a	130
Since the beginning of the academic year how often have you viewed the dashboard?	n/a	15	n/a	22	n/a	51	n/a	31	n/a	20	n/a	63	n/a	138
Since the beginning of the academic year would you say that your visits to the dashboard:	n/a	30	n/a	44	n/a	102	n/a	58	n/a	40	n/a	122	n/a	276
Starting from the most important reason please rank in descending order (1 to 3) your three main reasons for viewing the dashboard and league tables?	n/a	15	n/a	20	n/a	41	n/a	20	n/a	18	n/a	18	n/a	127
Which one of these statements best describes how you think you will be living when you move out of halls of residence?	n/a	15	n/a	20	n/a	41	n/a	20	n/a	18	n/a	18	n/a	120
Did you answer a questionnaire like this at the start of the academic year?	n/a	33	n/a	34	n/a	179	n/a	343	n/a	171	n/a	395	n/a	759