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Report on CONSUMER behaviour on campuses

Partner Responsible
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E2.5.1 –Report on consumer behaviour on campuses

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The A2.5 "Users energy behaviour" consists in:

- Development of applications to communicate with users
- Implementation of participatory protocols
- Definition of user cohorts
- Data collection (does not require any activity from participants)
- Analysis of results and recommendations

1. Introduction

The objective is to study how users' behaviour can change in relation to their consumption and, consequently, to involve users in the co-design of solutions. On the one hand, we conducted a study to collect the views of campus users on the basis of innovative equipment and, *on the other hand, the implementation of a system to predict user behaviour for better energy efficiency in intelligent b*uildings.

This activity was carried out at ULR and UT3. It is divided into several sequential tasks:

- Task 1: from T0 to T10 Development of applications to communicate with users, Implementation of participatory protocols.
- Task 2: from T11 to T14 Configuration of user cohorts
- Task 3: from Q15 to Q22 Data collection
- Task 4: from Q23 to Q29 Analysis of results and recommendations.

Stakeholders and how they are involved in this activity:
Campus end-users, such as students and staff working on campus, will participate in this experiment with the support of specific equipment dedicated to this activity. Researchers are involved in the analysis of the results. Campus managers will be involved in sharing the results.

2. Task 1: Development of applications to communicate with users

To facilitate communication with campus users, we have set up an innovative citizen participation system with the service provider *Comm1 possible*, by installing a space for dialogue in order to be as close as possible to users' concerns. To do this, we deployed an innovative piece of street furniture: the Nacelle, which allows us to create spaces for meetings and exchanges, and to gather feedback, increase exchanges and participation.
The Nacelle is a circular and mobile piece of furniture that can accommodate 8 to 10 people. Each Nacelle is equipped with 2 removable stools and a central table of 60cm

diameter. It is a versatile piece of furniture that offers multiple possibilities of appropriation thanks to its capacity to accommodate, for example, 6 temporary workstations, and allows the creation of small agoras bringing together a total of 26 people (10 people inside and 16 people around).

The different objectives were:

- Experimenting with innovative furniture for a social and dynamic life on campus to imagine and co-construct the campus of tomorrow with all users in a LL way.
- To train the University of Toulouse staff involved in the project in innovative consultation practices
- Put into practice, prototype, test and evaluate new ways of working together

Implementation of participatory protocols

By using this innovative and user-friendly communication medium as a support/place for discussion and in order to facilitate exchanges, we collected testimonies on how users saw energy savings on campus with a view to saving/reducing energy consumption. We developed a survey to collect this feeling and the needs of the users. The text presenting the consOCampus project and the framework of the survey is the following one.

“We are teacher-researchers and staff of the university. We are developing the consOCampus project which aims to optimize energy consumption on campus. We

decided to carry out this project in a collaborative way with the students and staff of the campus. In this phase, we are conducting a survey to collect users' opinion on this subject. Could you spare 5 minutes to participate in this project by answering this questionnaire? We will then invite you to a feedback meeting and to prototyping workshops to imagine collective solutions. "

Survey on Energy consumption on campus

- Q1: If I tell you "Energy consumption on campus", what does that mean to you? Why do you think this is so?
- Q2: What is good and should be kept in the campus regarding energy consumption? Why or why not?
- Q3: What do you think should be changed or improved to optimize energy consumption on campus? Why or why not?
- Q4: What conditions would encourage your individual commitment to participate in the optimisation of energy consumption on campus? Why or why not?
- Q5: How can you encourage collective engagement to optimize energy consumption on campus? Why or why not?
- Q6: In your opinion, what is the key to the success of this project to optimize energy consumption on campus?

3. Task 2: Definition of user cohorts

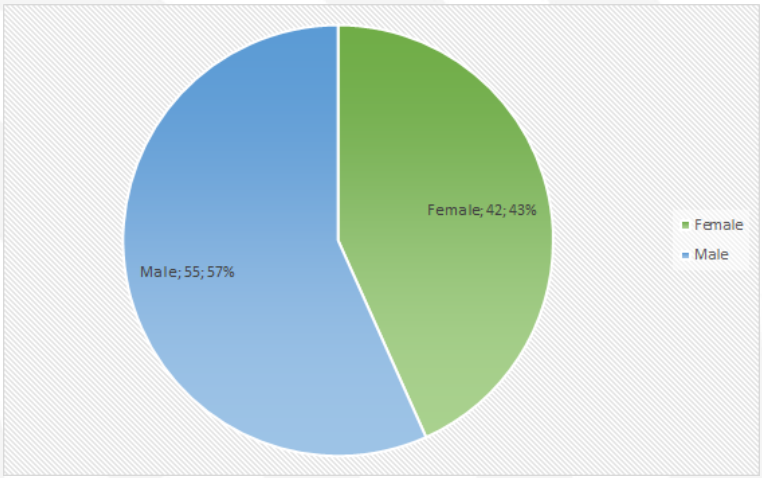
We chose to collect information from students, mainly undergraduates, because our intervention took place in the undergraduate success building where we installed the gondola. We interviewed 97 people.

4. Task 3 : Data collection

- The data collection yielded the following results concerning:
- Respondents genders
- Respondents status
- Respondents flow

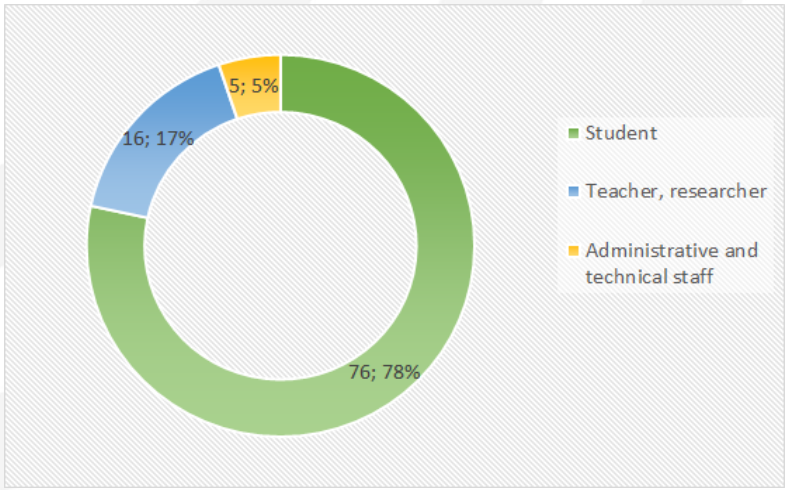
- Answer to the question: “If I said to you: Energy consumption on campus, what does it mean to you?”
- What is good and what to keep on campus
- What needs to be changed or to be improved?
- What conditions would support your individual commitment?
- How to promote collective commitment?
- In your opinion, what is the fundamental issue for the success of this optimization project?

Genders of respondents



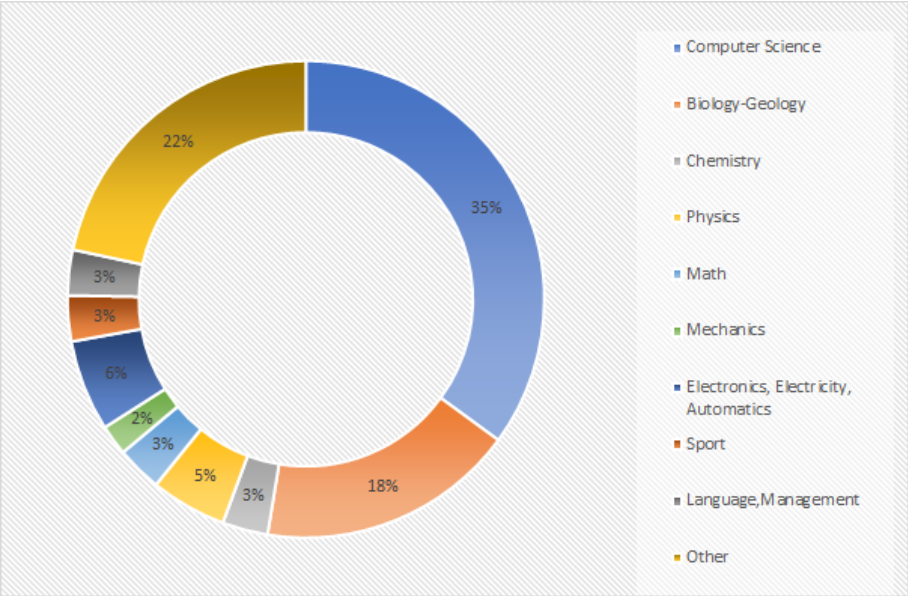
We obtain a balanced number of responses from men and women.

Respondent status



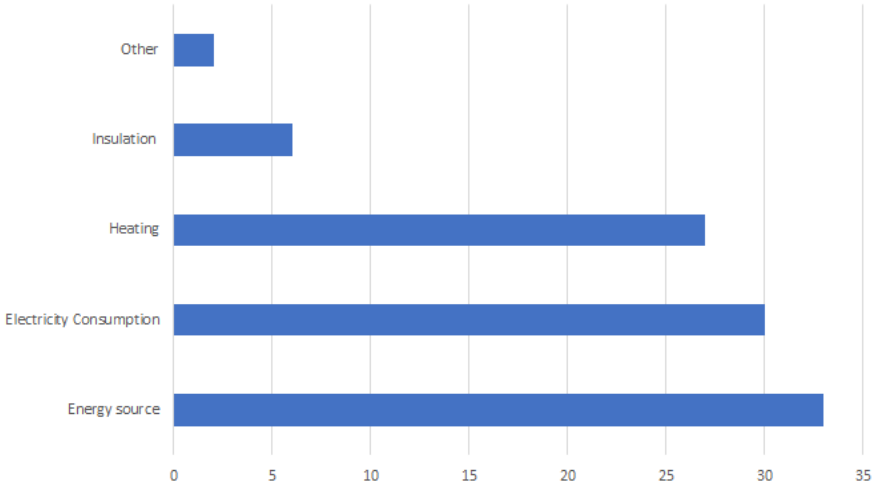
Because the questionnaire was distributed in a building dedicated to teaching, the number of students is higher than the other categories of users (teacher-researchers, administrative and technical staff).

Respondent Flow



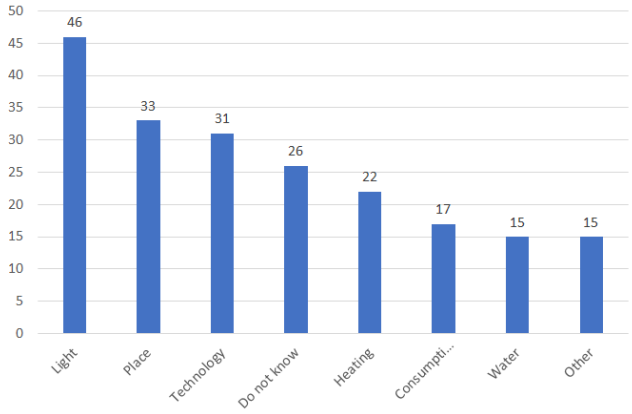
The main disciplines of the respondents are computer science and biology, which is consistent with the number of students enrolled in these fields.

Q1: If I tell you "Energy consumption on campus", what does that mean to you? Why do you think this is so?



The vast majority of energy consumption corresponds to traditional energy sources in tertiary activities: electricity, heating and insulation. It should be noted that mobility is not mentioned in the energy expenditure. They focused on expenditure within a building. This is highlighted in the word cloud below.

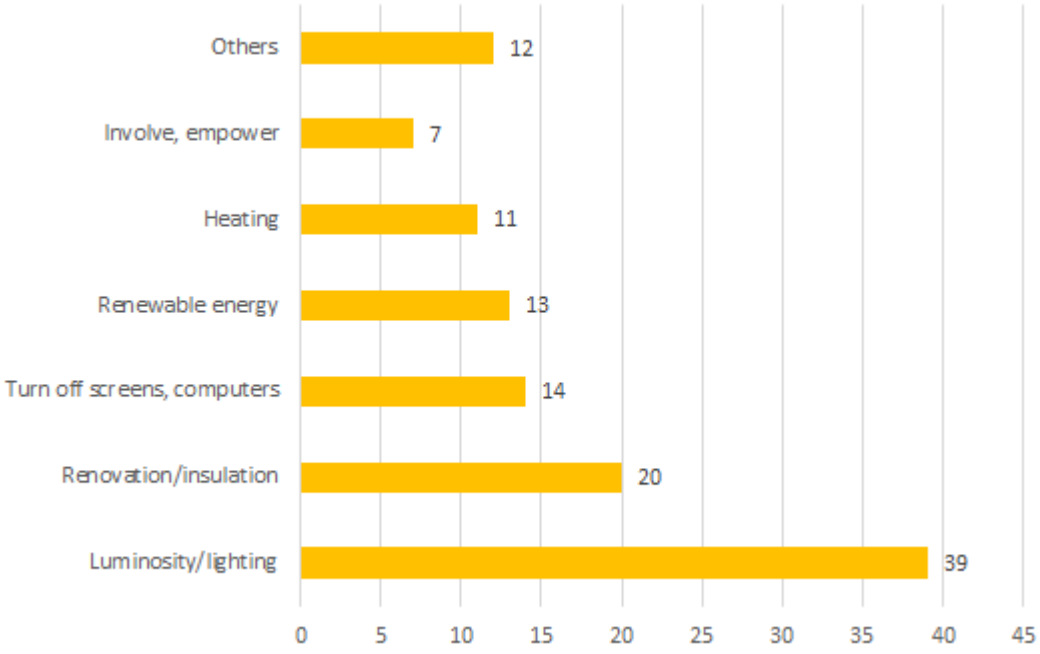
Q2: What is good and should be kept in the campus regarding energy consumption? Why or why not?



The majority of respondents felt that automatic light management was well implemented in the building where the questionnaire was conducted and that the new building was well managed. They appreciate the new technologies to manage the building (ventilation, heating, lighting).

Surprisingly, many had no idea what to do next. This is highlighted in the word cloud below.

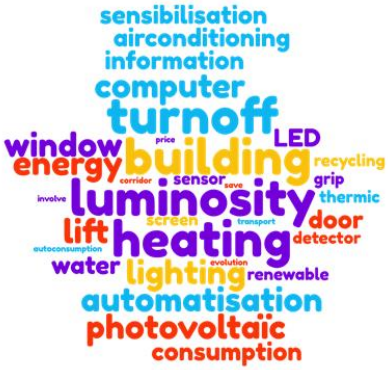
Q3: What do you think should be changed or improved to optimize energy consumption on campus? Why or why not?



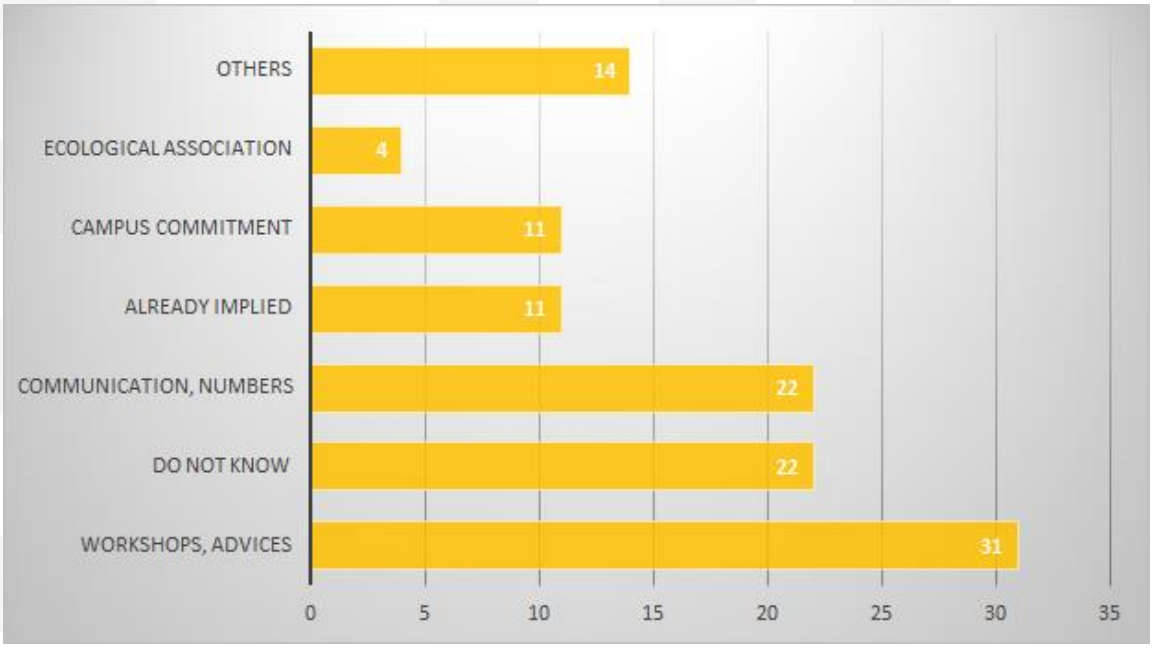
Many ideas have been put forward. First, a lot of suggestions have been done about luminosity and lighting: provide less light, automate lighting with luminosity sensors, use

LEDs. Secondly, comes the renovation and insulation of old buildings. Here after, some other proposals:

- Students also ask to turn off screens, computers, … after class
- Use of renewable energy
- To avoid waste, they ask to turn down the heat, to install heat locks, to automate the closing of the doors
- Raise awareness about what is being done, involve users through projects
- This is highlighted in the word cloud below



Q4: What conditions would encourage your individual commitment to participate in the optimisation of energy consumption on campus? Why or why not?



This is highlighted in the word cloud below.

Q5: How can you encourage collective engagement to optimize energy consumption on campus? Why or why not?

This is highlighted in the word cloud below.

Q6: In your opinion, what is the key to the success of this project to optimize energy consumption on campus?

This is highlighted in the word cloud below.

5. Task 4: Analysis of results and recommendations

The analysis of the results shows us that several types of end-users are in the university. Some of them which are in majority: students are not aware of the university functioning and they don't deal with energy consumption on campus. The other type of users includes students and university staff who are, on the contrary, well aware of the issues related to energy consumption in the university's missions.

They strongly requested more information about the university.