

HIGHER EDUCATION INSTITUTIONS AS PIVOTAL CHANGE AGENTS FOR ENVIRONMENTAL SUSTAINABILITY: A CASE STUDY OF FAZON

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Universities serve as hubs for the creation and dissemination of knowledge – through educating future leaders, fostering scientific research and encouraging development – they pose perfect vessels for sustainable change. These institutions frequently participate in outreach activities, environmental projects, and partnerships to actively interact with their local communities, all the while arranging events, workshops, and campaigns with the aim of increasing awareness about environmental concerns and advocating for sustainable lifestyles. Universities can set an example by adopting sustainable practices on their premises. A “perfect” sustainable university is an educational institution that trains students to become global citizens equipped to address pressing societal concerns and contribute to sustainable development. Precisely for these reasons, the aim of this paper was to investigate implementation of sustainable practices at the University of Belgrade–Faculty of Organizational Sciences. For the purpose of the paper, the authors conducted a survey among faculty and staff members during the academic 2022/2023 year. The results of the survey were analysed using SPSS 24 software package.

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1 Introduction and context

*"There is no power for change greater than
a community discovering what it cares about."*

– Margaret J. Wheatley

The pursuit of sustainability is directly connected to having the capacity to overcome intricate and multidimensional challenges that lack evident and straightforward resolutions. Professors focusing on sustainability studies and other transdisciplinary fields are responding to a crucial demand of our era: to create and provide high-quality educational courses that effectively help with tackling the most significant, comprehensive, and interconnected group of challenges the human race has ever faced. Environmental issues have reached a critical point in the 21st century and are rapidly escalating (Bonnett, 2007; Mert, 2006). Given the growing environmental challenges, adopting sustainable practices has never been more crucial. As the world contends with issues like climate change, loss of biodiversity, and pollution, the role of institutions in fostering a sustainable future grows increasingly significant (Radaković et al., 2017). Among these, Higher Education Institutions (HEIs) stand out. Sustainability has become a subject of debate in society, demanding higher education to foster innovation, critical thinking, and sustainability-focused skills (Scharmer, 2018; Yanez et al., 2019). HEIs are not only recognized for their innovation, research, and educational offerings, but they are also increasingly recognized as key contributors to environmental sustainability. This study positions HEIs at the vanguard of the sustainability movement, investigating their capacity to act as catalysts for sustainable development (SD) and guardians of the environment, having in mind that HEIs are drivers of social change (Purcell et al., 2019); incubators of talent and innovation (Adams, 2018; Hassan, 2020); creators of “future leaders, decision-makers, and intellectuals across numerous social, political, economic, and academic sectors and areas” (Bai et al., 2017; Radaković et al., 2023); participants in the progress of society (Tomasella et al., 2022).

This paper explores the role of HEIs in fostering environmental sustainability, with a focus on the University of Belgrade–Faculty of Organizational Sciences (FON) and the internally conducted project “FAZON” aimed at increasing and promoting sustainability and sustainable practices at the faculty.

The University of Belgrade is a state university. Over the course of two centuries, the University of Belgrade has played a vital role in serving its community. The past students and faculty of the university have made significant contributions to the advancement of the Republic of Serbia's cultural, scientific, educational, political, and economic spheres. The FON is a HEI that is a part of the University of Belgrade. Its primary focus is on education, scientific research, and consultancy in the fields of management, information systems, and technology. The aim of the faculty is to equip future professionals with the necessary knowledge and skills to unlock the potential of commerce and society. The FON has adopted a "Development strategy 2030" in which it clearly highlights its new politic of an institution that cares about the environment and strives to achieve as many sustainable development goals as possible. In this context, the faculty has supported an internally project of the Centre for environmental management and sustainable development – "FAZON".

Conducting a survey during the academic year 2022/2023, the authors analysed the attitudes and habits of FON staff on sustainable practices and the implementation of sustainable measures, including renewable energy adoption, waste reduction, recycling promotion, and water management solutions. Moreover, the study underscored the proactive involvement of staff in promoting sustainability through various initiatives. Ultimately, the paper aims to shed light on the pivotal role universities play in shaping future leaders equipped to address global challenges and contribute to sustainable development, while simultaneously reducing their environmental and social footprint.

2 Methodology

During the month of December of the academic year 2022/2023, for the needs of the FAZON project, an online survey was conducted in the organization of the Center for Environmental Management and Sustainable Development. For research purposes, an online questionnaire intended for employees of the FON was used. The questionnaire consisted of a total of 32 questions, the first three of which were of a general nature. Other questions relate to employees' opinions on energy efficiency, water consumption and management, waste management, and the degree of application of recycling practices, but also to the assessment of their individual environmental awareness and environmental activism.

The survey was completed by 48 staff members, making up 16.11% of the total number of employees at the faculty (298). The average age of the participants was 42.12 years, with the youngest being 25 and the oldest 65 years old. The standard deviation for age was 9.443, indicating a relatively moderate variation in age within the sample. Of the respondents, 52.1% were men, and 47.9% were women. As for work experience, the average tenure in the sample was 13.75 years, with the shortest tenure being 1 year and the longest 30 years. The standard deviation for work tenure was 8.4539, also indicating a wide range of work experience among the participants.

Regarding education, most participants, specifically 64.6% had a doctorate. Those with a master's degree constituted 20.8%, while 6.3% had a bachelor's degree. Only one person had completed specialist studies, and 6.3% had completed high school.

To evaluate results of the survey, the statistical software package SPSS 24 was used. The authors used descriptive statistics, and the Kolmogorov-Smirnov test was employed for determining the normal distribution of the variables. The correlation between two variables measured on a scale was assessed using the parametric Pearson correlation, whereas the correlation between two variables measured nominally was examined using the non-parametric Spearman's rho correlation. A p-value has been used to determine the statistical significance of differences between two groups in this study. A p-value less than 0.05 can be considered statistically significant at a 95% confidence level.

3 Research

The survey focused on three separate environmental sustainability fields – energy efficiency, water management and waste management, through the comparison of the “old” building and the “new” building. For reference, the FON “old” building was the former primary school of Bora Stankovic, an endowment of Queen Marija Karadjordjevic from 1932, which was assigned to the FON in the 1980s. The “new” building is a 5,300 square meters modern additional wing built in 2022.

Firstly, for the purpose of the paper, the authors wanted to examine environmental awareness and environmental activism among the staff on Likert scale of 1 to 7, 1 being extremely low and 7 being extremely high. The average rating for environmental awareness is 5.06, with a relatively low standard deviation of 1.156.

This suggests that participants generally demonstrate higher awareness of environmental issues. The average rating for environmental activism is 4.10 with a standard deviation of 1.588. This indicates moderate engagement among participants in environmental activism. The obtained data suggested that the participants are relatively aware of environmental issues and show moderate to high engagement in various aspects of environmental sustainability. It is interesting to note that neither age nor sex of the respondents impacted their environmental awareness nor environmental activism according to Spearman's rho and Pearsons' correlation.

When it comes to energy efficiency, staff members were asked how they would rate the energy efficiency of the "old" Faculty building on a Likert scale from 1 to 7, where 1 was extremely inefficient and 7 was extremely efficient (energy efficiency was defined as the management and economical use of energy in a way that is environmentally acceptable, economically profitable and socially responsible, resulting in a reduction of the carbon footprint), and the results showed that the average rating for the energy efficiency of the "old" Faculty building is 3.46 with a standard deviation of 1.184, indicating moderate efficiency. On the other hand, when it comes to the "new" building of the Faculty, the distribution of answers is somewhat different in favour of greater efficiency - 27.1% gave a grade of 4, 27.2% gave a grade of 5, 16.7% gave a grade of 6, with an average efficiency score of 4.38 with a standard deviation of 1.525, suggesting an improvement in energy efficiency in the "new" building. When examined how the staff that was more environmentally aware answered to the issues of energy efficiency, Spearman's rho and Pearsons' correlation showed no statistical difference. The comparison of grades in terms of energy efficiency for the "old" and the "new" building can be found in Table 1.

Table 1: Comparison of energy efficiency

Ratings	N	Min	Max	Mean	SD
Energy efficiency of the "old" building	48	1	7	3.46	1.184
Energy efficiency of the "new" building	48	1	7	4.38	1.525

To determine whether the internally conducted project “FAZON” can reduce energy consumption in the buildings, the authors surveyed the staff on their computer use. Of the staff who filled out the survey, only one person declared that they do not use a computer at their workplace. The staff said that while working on the computer on their day-to-day basis, 57.4% of them use additional installed software that is specialized for their workplace, 27.7% of them use basic software tools, and 14.9% use additional installed software that is hardware demanding. This last figure is not negligible in the planning and execution of changes meant to reduce energy consumption.

Regarding teaching in computer labs, most staff members use additionally installed undemanding software 45.9%, 35.1% do not teach in computer labs at all, 13.5% use basic software tools, and 5.4% use demanding additional installed software. The largest number of employees conducts classes in the computer labs in both semesters - 79.2%, 12.5% use it in the summer semester, and 8.3% use it in the winter semester.

When it comes to the waste management at the Faculty, the staff members were asked to rate it in the “old” Faculty building on a Likert scale of 1 to 7, 1 being extremely poor and 7 being extremely good (waste management was defined as a process applied by organizations in order to dispose, reduce, reuse or prevent the generation of waste), and the employees showed dissatisfaction with the environmental aspect of this segment, giving it grades 2 (25%), 3 (22.9%) and 4 (18.8%), the mean average score was 3.44 and standard deviation of 1.610. The situation is similar for the “new” building – where grades were 2 (22.9%), 3 (20.8%) and 4 (16.7%), the mean average score was 3.38 and standard deviation of 1.645. This suggests that there has not been a significant improvement in waste management in the “new” building compared to the “old” one. The dissatisfaction of staff is most prominent with the level of recycling at the faculty, with the largest number of employees giving it a rating of 2 (27.2%). When examined how the staff that was more environmentally aware answered to the issues of waste management and recycling, Spearman’s rho and Pearsons’ correlation showed no statistical difference. The comparison of grades in terms of waste management for the “old” and the “new” building can be found in Table 2.

Table 2: Comparison of water management

Ratings	N	Min	Max	Mean	SD
Waste management of the “old” building	48	1	7	3.44	1.610
Waste management of the “new” building	48	1	7	3.38	1.645

Out of the staff surveyed, most of them (87.5%) have a printer in their office. More than half of the participants (54.2%) subjectively feel like they use negligibly few sheets per month, while 35.4% say they use less than 500 sheets per month. Only 10.4% of participants feel like they use between 500 and 1,000 sheets per month.

When it comes to water consumption and water management and the Faculty, the employees were asked to rate water consumption and management in the “old” Faculty building on a Likert scale of 1 to 7, 1 being extremely poor and 7 being extremely good (water management was defined as various activities such as appropriate planning, efficient distribution and optimal use of water so that the water resources available to us can meet both our current and future needs), the majority of employees gave ratings of 4 and 5 on the Likert scale - 41.6%. While for the “new building”, the grades are more evenly distributed between grades 4, 5 and 6 - 25%, 20.8%, and 22.9% respectively. Water consumption in the “old” building has an average rating of 4.02 with a standard deviation of 1.682, while the new building has a slightly higher average rating of 4.46 with a standard deviation of 1.515. This indicates that participants perceive the “new” building to have a slightly better water consumption management systems, probably since the bathrooms in the new wing have motion activated faucets instead of articulated ones. The comparison of grades in terms of water consumption for the “old” and the “new” building can be found in Table 3.

Table 3: Comparison of water consumption

Ratings	N	Min	Max	Mean	SD
Water consumption of the “old” building	48	1	7	4.02	1.682
Water consumption of the “new” building	48	1	7	4.46	1.515

5 Discussion

The staff members' ratings on various aspects of environmental efficiency, awareness, and activism provide valuable insights into the current state of sustainability and environmental education within the Faculty community. The results showed a moderately high level of environmental awareness, but a slightly lower degree of environmental activism, showing once again that in practice turning words into action is not an easy process. While the average ratings for energy efficiency and water consumption indicate moderate levels of environmental performance, there is a lot of room for improvement, particularly in waste management and recycling which were rated as the poorest out of the three categories.

The findings suggest a positive trajectory towards fostering a culture of environmental responsibility, as evidenced by the relatively high ratings for environmental awareness and activism. This indicates a growing consciousness among participants regarding environmental issues and a willingness to engage in sustainability efforts. When asked to provide the authors with their own input and ideas, the staff members listed a plethora of issues and possible recommendations for increasing the environmental sustainability of the faculty, such as recycling paper, using biodegradable cups instead of plastic, using reusable water bottles, using solar panels, internal educational seminars and workshops, etc...

The survey results shed light on the utilization of technology and resources within the HEIs setting, revealing both opportunities and challenges for advancing sustainability. The prevalence of computer usage among participants, particularly for job-specific software, highlights the potential for leveraging technology to enhance efficiency and productivity while minimizing environmental impact. However, unfortunately, the high reliance on printers and paper consumption underscores the need for targeted interventions to promote digitalization and reduce paper waste. Initiatives such as promoting sustainable printing practices and encouraging the use of digital platforms for document management can help mitigate the environmental footprint associated with traditional paper-based workflows.

The diverse representation of survey participants in terms of educational backgrounds and job positions, as well as the fact that statistical analyses showed no relevant difference between the age and sex of respondents and their environmental awareness within the faculty, underscores the importance of inclusivity and collaboration in promoting sustainable initiatives. The involvement of individuals with varied expertise and perspectives can enrich the development and implementation of sustainability programs, ensuring that they resonate with the entire academic community.

The papers' research findings have several implications for promoting sustainable practices within HEIs. Firstly, there is a need for targeted interventions to enhance resource efficiency and minimize environmental impact, particularly in areas such as waste management and recycling. Implementing more initiatives focused on sustainable procurement, energy conservation, and waste reduction can help achieve sustainability goals while fostering a culture of environmental responsibility among students, staff, and administrators. Additionally, promoting interdisciplinary collaboration and community engagement can further strengthen the HEIs' capacity to drive sustainable change and address complex environmental challenges.

5 Conclusion

By educating future leaders, conducting research and innovation, implementing sustainability initiatives, engaging with communities, and advocating for policy changes at the local, national, and global levels, HEIs serve as key drivers of environmental sustainability. Their concerted efforts contribute to the construction of a world that is more robust and sustainable for both the current generation and the generations to come.

The findings of this research point out several critical aspects of environmental sustainability within the context of HEIs, focusing particularly on the FON and the internally conducted project "FAZON". These aspects are: low level of recycling, irresponsible use of resources, low energy efficiency and high energy consumption, poor water management, as well as a level of environmental awareness and activism that is anything but high enough to provide a sufficient response to emerging environmental issues.

Moving forward, it is essential for HEIs to build on the insights gained from various research and continue investing in sustainable practices. This includes implementing evidence-based interventions, monitoring progress towards sustainability goals, and fostering a culture of innovation and collaboration. Moreover, there is a need for ongoing research and evaluation to assess the effectiveness of sustainability initiatives and identify areas for improvement. By embracing sustainability as a core value and prioritizing environmental stewardship, HEIs can lead by example and inspire future generations to become catalysts for positive change in addressing global environmental challenges.

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