

Eszterházy Károly Catholic University - Sustainability at the Highest Level?



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Abstract

For the University, a new Sustainable Development Strategy had to be prepared in 2021. I also conducted my own surveys for several the classification of bicycle racks, the calculation of the heat transfer (U) values of the walls, or in relation to the species composition of vegetation and extent of green surface. From the Library of Hungarian Scientific Works we counted by topic, published by university colleagues from 2015, sustainability-related communications. Generally a definable goal is to join the Global Green University Network (UI Green Metric). Fitting to the general CO₂ emission reduction commitments of the EU and Hungary, a priority task energy modernization of all buildings, rock wool insulation, doors and windows replacement. Some of the buildings have a small green surface; their general condition, their species composition is not the most appropriate. Since 2015, a total of 97 publications have been published with the authorship of our colleagues, sustainability, conservation, environmental education and forestry school topic. In most buildings can be found modern for selective waste collection of paper, plastic, and mixed municipal waste. This is supplemented by selective collection of fluorescent lamps, bulbs and batteries. The location and orientation of the buildings are ideal in most cases to use solar energy. The University from 2021 onwards it also has an electric car fleet and three charging points. We hope that in the future, university students can also do and fight against environmental problems at the level of the individual and society.

Keywords: Renewable Energy; Electric Car; Environmental Education; Selective Collection; Thermal Insulation

Introduction

One of the great challenges of today's man is to solve the Earth's global environmental problems and find the optimal responses to them. Educational institutions have a key role to play in educating enlightened and far-sighted young generations who are aware of environmental concerns and can do and combat them at both the individual and society levels. In 1987, the Brundtland Commission published its report, Our Common Future, in an effort to link the issues of environmental stability and economic development [1]. The definition of this expression as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [2]. Sustainable development emerged as one of the most urgent subjects for international policy, at the 1992 United Nations Earth Summit in the city of Rio de Janeiro [3]. The idea of sustainable development that the future should be a better, healthier, place than the present. This is a process that requires us to view our lives as elements of a larger entity [4]. The three pillars of sustainable development: social, economic and environmental; all three must be considered together, taking into account their interactions, during the elaboration of different development strategies and programs, as well as in specific measures and actions. Among the Hungarian legislation, act number LIII. of 1995 on the General Rules of En

vironmental Protection [5] focuses on the concept of sustainable development, according to the 4. paragraph, w) point "the sustainable development: a system of socio-economic conditions and activities that preserves natural values for present and future generations, conserves natural resources sparingly and expediently ecologically long-term improvement of the quality of life and the preservation of species diversity."

In Hungary, the first National Sustainable Development Strategy adopted by the government in 2007, which was followed in 2013 by the National Framework Strategy on Sustainable Development (NFSSD) with many important principles [6]. The Strategy on Sustainable Development by our Institution [7] must be based on the sustainability principles, and the key objectives and tasks defined by us must be in line with the main priorities and areas of action of the National Strategy. The interpretation of the concept of sustainable development is valid on several levels: on the one hand, in terms of regulations, the legal environment, the support system as a whole, and the day-to-day operation of institutions, from planning to implementation. As one of the basic principles of sustainability, the horizontal principle can be interpreted in such a way that it affects all areas of the institution's operation: its economy, society, organization, natural and technical-tech-

nological environment. The strategy was completed in the spring of 2021 and adopted by the Institution’s Senate in the summer.

Material and Methods

All members of the “Working Committee on Sustainable Development” took part in compiling the material, formulating proposals and finalizing it. The vast majority of the data related to the buildings, together with the information related to the renovations and building modernizations, were provided to me by the director of the Directorate-General for Economic and Operations. The collection of university publications and conference participations published in recent years is due to the Director General of the Pál Tittel Library, who filtered the works on the basis of the Hungarian Library of Scientific Works [8]. The specific data and findings related to bicycle storage, waste management and green spaces were the result of our own surveys and building visits, which were carried out in the spring of 2021. The analysis of the situation and development concerning waste management taken place so far originated from the research work entitled “Construction and cost-effective operation of selective waste collection infrastructure in the buildings of Eszterházy Károly College” completed in 2015 [9].

Results and Discussion

Eszterházy Károly Catholic University (before august 2021 the former name was Eszterházy Károly University) is not yet a member of any domestic or international green university networks or

organizations. However, based on the situation of sustainability areas outlined in detail later, University still has a realistic chance to be included in the national or international lists based on sustainability indicators. The buildings on Almagyardomb have a significant green area at the University. The location of the downtown buildings, the Lyceum, or just the “B” and “ÉK” educational buildings is much less favorable in terms of green area; they were set up on a relatively small plot of land, and there is no possibility to significantly increase the proportion of vegetated areas in order to maintain parking spaces. Most of the university buildings have a brick or brick-ferro-concrete wall structure and are mainly between 25 and 40 cm thick. Many educational buildings and college is equipped with a 6 - 10 cm thermal insulation system (EPS). The detailed data from the real estates with thermal insulation shows in Table 1. Thermal transmittance, also known as U-value see in the Table 1. is the rate of transfer of heat through a structure. The units of measurement are W/m²K. The lower wing of the renovated “C” building is Hungary’s first, renovated and active green house with a solar power plant and a heat recovery ventilation system. Among the renewable energy sources, there are well-functioning examples of the use of solar energy in some colleges, educational and research buildings of university. Among the buildings, the most energy-efficient are those with insulation, which have been renovated or rebuilt in recent years with significant (up to 100% contribution, without deductible) European Union support. In the case of our modernized or new buildings, energy-saving lighting has also been built with LED lamps.

Table 1: Thermal insulation buildings of the Eszterházy Károly University in 2020.

Serial number	Name of building	Insulation thickness of boundary wall (cm)	U-value (W/m ² K)	Insulation thickness of roof structure (cm)
1	College in Leányka str.	6-10	0.24	10-15
2	College of Almagyardomb	6-10	0.42	10-15
3	College in Sas str.	>15	0.19	>15
4	Indoor Sports Hall	6-10	0.3	6-10
5	New Sports Hall	6-10	0.24	10-15
6	"B"	not	0.72	6-10
7	"C"	6-10	0.24	10-15
8	"C*"	30-45	0.08	10-15
9	"D"	6-10	0.24	10-15
10	DELTA	15	0.17	15
11	"E"	6-10	0.44	6-10
12	"G"	not	0.31	>15
13	College in Jászberény	6-10	0.42	6-10
mean		10.1	0.31	11.7

Higher education related to sustainability appears in both Eger and Jászberény cities; mostly in the Faculty of Science and Pedagogy we find subjects that deal with this field. Over the past 5 years, the University’s staff and doctoral students have published a total of 98 research papers on forest school, nature conservation, sustainability or environmental education. Sustainability educa-

tion and research in the field of agriculture will also play a key role at the University. The University has participated in many notable “green” days in recent years together with other local institutions and green organizations. In the most university buildings, we can place in modern waste collection bins the used light sources and fluorescent tubes, as well as waste household batteries and ac-

cumulators. Within the framework of the TÁMOP-4.2.1.D-15/1 / KONV-2015-0013 / 450/2015 project, a total of 40 selective waste collectors were procured in 2015 [8]. Of these, 10 are gray, with a 100 litre capacity, for the collection of mixed municipal waste; 10 pieces of 100-litre yellow-colored for plastics with a variety of material compositions, while 10 pieces of blue-colored collection

bins with a 100 litre capacity also accept paper waste. In addition, 6 pieces 45-liter yellow bins are used to place plastic cups, bottles and plastic spoons and placed directly next to the beverage and coffee machines. Distribution of deployed and planned selective waste collection bins can be found in Table 2.

Table 2: Deployed and planned selective waste collection bins in the Eszterházy Károly University in 2021.

Building of University		Deployed bins (pieces)	Planned bins (pieces)
1	Líceum	4	2
2	B	10	3
3	C	7	3
4	C*	3	0
5	D	7	3
6	DELTA	0	3
7	E	4	6
8	ÉK	4	3
9	G	1	3
10	Campus in Jászberény	0	12
sum		40	39

The possibility of passive or active utilization of the Sun’s energy was given to the Institution. The location of the buildings on Almagyardomb is particularly favorable for the utilization of solar energy. Examples of both solutions can be found in the university buildings. Table 3 shows the solar power plant capacities already built and planned for the future in detail. In addition to energy utilization, we can find solar collectors to assist the hot water supply on the roof of the 1.200 m2 laboratory building of the Experimental Vineyards and Winery located on Kőlyuktető. Significant improvements are needed for bicycle storage; a uniform

image should be created; convenient U bike rack should be preferred. Where possible, all storage should have a lightweight roof. In 2020, the institution purchased five new Volkswagen e-Golfs from the Directorate-General for Public Procurement and Supply (KEF) with the support of the Ministry of Innovation and Technology (ITM). Four environmentally friendly cars are used by the University and one by the Primary School. In order to fast charge of the cars, 3 charging poles were also designed at the University buildings.

Table 3: Deployed and planned solar power plant’s capacity in the buildings of Eszterházy Károly University in 2020.

Buildings of University		Number of solar panels (pieces)	Total Power of solar panels (kWh/year)
1	C*	215	60.886
2	C	160	43.029
3	College in Leányka str.	270	72.612
4	College in Sas str.	118	32.521
5	College of Almagyardomb	110	29.582
planned			
6	B	95	60.886
7	Delta	116	43.029
8	E	86	72.612
9	Primary school	117	51.596
sum		1287	466.753

Conclusion

First of all, the institution should join the global green university network (UI Green Metric) as soon as possible. With the

successful implementation of the sustainability goals set for 2030, our institution can be developed that can set an example to be followed as a green university in higher education and can also carry

positive messages for an increasingly environmentally younger generation. Winning the widest possible range of university staff and students is essential for the effective implementation of our sustainability efforts. The university community wants to be professed and feel the priorities of sustainability and wants to be part of the green university, even in deeds.

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