



SEMMELWEIS EGYETEM

Directorate General of Technical Affairs

Directorate of Security Technology

Director

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Semmelweis University - Sustainability report 2022

2023 október

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Summary

Semmelweis University is the leading medical and healthcare institution of Hungary and Central Europe. With a history of over 250 years, the university's activities are built on three main pillars: education, research-innovation, and healthcare. This triad establishes it as an internationally recognized center of knowledge, offering education across six faculties and in three languages. Of the university's 14,000 students, one-third come from five continents and 110 countries.

With over 10,000 employees, making it the largest healthcare institution in the country, the university plays a significant role not only in healthcare but also in research, development and innovation.

Given its size, it naturally has a substantial impact on the environmental performance of Budapest and the surrounding region. Moreover, as the student population continues to grow, the university is shaping the mindset of an increasing number of young individuals regarding sustainability.

The foundation of this lies in the commitment of every member of Semmelweis University to environmental protection. Through leading by example, they contribute to the execution of high-quality and environmentally conscious educational, research, innovation and healing activities. Compliance with environmental regulations and policies is of paramount importance to the University's leadership, and as such, they support the necessary developments to improve environmental performance, ensuring the availability of resources for their implementation.

Strategic goals were recently defined in the Green University Program and the University's Climate Action Plan. The University's Environmental Policy has also been updated and is now accessible to the public.

In summary, the environmental performances presented in this document serve as a starting point for shaping the University's medium- and long-term sustainability strategy. The year 2021 is considered the baseline year, against which future environmental performance will be measured in the coming years, determining specific sustainability-promoting developments and



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investments based on these indicators. Therefore, the 2022 report compares values to the data specified in the first report issued for the year 2021.

To aid in this process, we have referred to the Sustainable Development Goals (SDGs), adopted by the United Nations in 2015 within the framework of sustainable development. These goals outline directions for responsible action to address the most urgent problems threatening humanity and the Earth. The framework consists of 17 main goals, 169 more specific tasks, and sub-goals that 193 countries, which ratified the Sustainable Development Goals, must consider in order to achieve them by 2030.

We have incorporated these 17 main goals into seven major thematic areas, providing an account of the University's environmental performance.

SUSTAINABLE DEVELOPMENT GOALS





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The 7 major pillars

The 17 main goals defined in the sustainable development framework have been categorized into 7 major topics, and in some cases, a goal may appear in multiple categories. These categories form the framework of the Report and guide the presentation of the University's environmental performance.

The 7 highlighted categories are the following:

- Location and infrastructure
- Energy consumption and climate change
- Waste management
- Water management
- Transportation
- Education and research
- Well-being

Information related to location and infrastructure provides a general overview of the University's green environment. It includes details about the safety and fire protection infrastructure of buildings, accessibility status, plant coverage, open spaces, and green areas.

Arguably, one of the most crucial categories presents the University's energy consumption and its focus on issues related to climate change. It covers the use of energy-efficient equipment, the ratio of automated-intelligent buildings, the utilization of renewable energy sources, programs addressing greenhouse gas emissions and reduction, and energy-saving initiatives.

Efforts towards waste management, particularly in terms of recycling, are a key factor in creating a sustainable environment. The activities of university members and the operation of the University result in a significant amount of waste generation, and the goal is to apply the highest possible treatment method in the waste hierarchy. The emphasis is on material reuse, composting of green waste, reduction in paper usage, and seeking alternative solutions for hazardous substances, all contributing to the improvement of environmental performance.



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The presentation of the University's water management is a shorter and less prominent section, thanks to the favorable conditions and significant water resources in the country. However, on a global scale, it is a crucial aspect of sustainable resource utilization.

Transportation plays a significant role in reducing the carbon footprint. It is essential for the University to support public transportation and the use of zero-emission vehicles, minimizing reliance on personal vehicles.

Education and research can contribute in various ways to improving environmental performance and making the University more sustainable.

Numerous measures contribute to the well-being of employees and students. As a healthcare provider, special attention is given to the health preservation of university members, with preventive screenings and medical consultation options available. Various free or discounted cultural and sports programs complement well-being measures.



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Location and infrastructure



Most of the University's buildings and campuses are situated in the downtown area of Budapest, in an urban, densely built environment, which significantly shapes the infrastructure. A substantial portion of the green areas associated with the buildings consists of parks, specifically, there is no forest vegetation on the university grounds. Approximately 24% of the total area can be considered actual green space, including parks, flower beds, grassy open areas between buildings, green roofs, all of which are accessible and enjoyable for both university citizens and those who come for medical attendance or visits.

In several locations, so-called student spaces have been created, not only within buildings but also outdoors, where students can relax and exchange ideas during breaks between classes and practical sessions.





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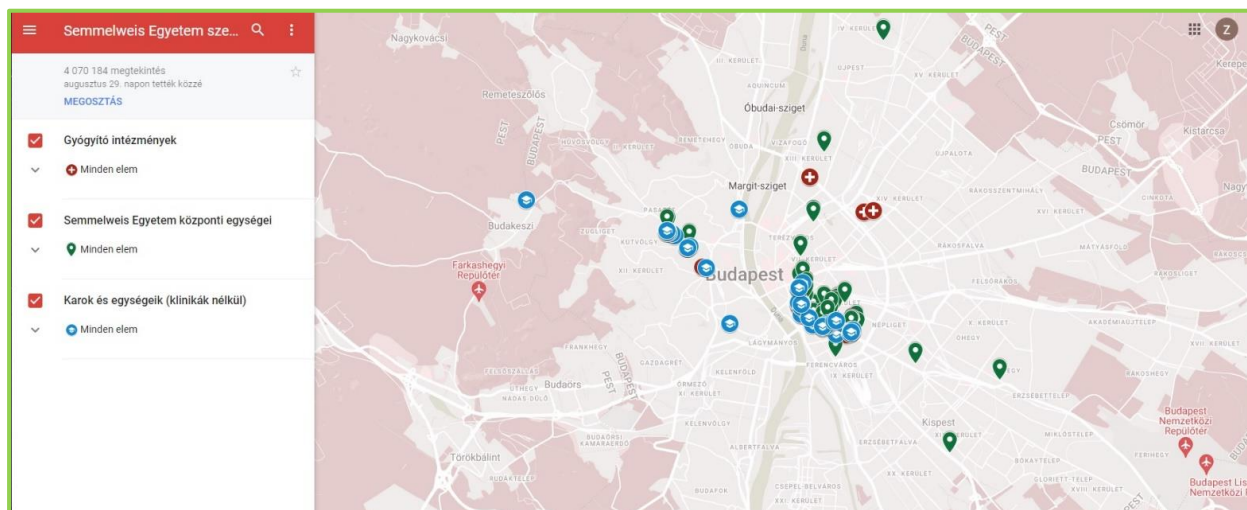
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Green areas on the campus

The **total area of the University**, based on the latest data, is **712,240 m²**. The built-up area is 126,892 m². The total area of the buildings is 514,370 m². In 2022, additional areas and buildings were added to the maintenance of Semmelweis University. Compared to the previous year, the database has been refined, so the numbers show a more significant increase than the proportion in which the area increased compared to 2021.



Location of University Buildings



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Map facilitating the approach to larger building blocks



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Energy consumption and climate change



The heating and hot water demand of the university buildings are partially met through gas-fired boilers, partially through renewable energy and partially through purchased services (district heating).

Solar energy is utilized with solar panels installed on the roofs of 5 buildings. The selection of buildings and the planning of these power plants took into account factors such as roof orientation, structural load capacity, consideration of shading effects, the electrical energy demand of the building, and thereby maximizing the expected solar energy yield. The power plants were commissioned in May and July 2018, with a realized capacity of 408 kW.

In 2022, the total output of the panels was **427,464 kWh**.

The total **electric power** consumption was **31,240,471 kWh**.

The share of renewable energy from direct sources is **1.37%**.

In 2022, the gas-fired boilers consumed **208,224 GJ** heating value of **natural gas** to meet the heating and hot water needs of the buildings,, resulting in an annual consumption of **57,839,877 kWh**. This was supplemented by **17,055 GJ of district heating**.

The **total energy consumption was 94,155,087 kWh** in 2022. Compared to the total energy consumption in 2021, which amounted to **104,594,132 kWh**, there was a **-10% reduction**. This can be attributed to energy-efficient renovations affecting several university properties, increased energy awareness among staff and students, and general temperature control measures introduced for the heating season.

The university also supported the energy awareness of its staff and students with a short film, which may have contributed to reducing energy consumption during the heating season. The tips and practices shared in the video can be applied not only during their university stay but



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can also be easily incorporated into their daily lives at home, allowing for more efficient operation of heating and cooling systems there as well.



A snapshot from the energy awareness tips video for Semmelweis citizens

The extent of greenhouse gas emissions, known as carbon footprint in short, is one objectively measurable indicator of the environmental impacts of human activities. The quantity obtained in carbon-dioxide equivalent (CO₂e) is directly proportional to the impact of an individual, community or society on the climate.

Indicators considered in our calculation: energy consumption, water usage, waste generation.

In 2022, the calculated carbon footprint based on the above indicators was **24,561 tons**. This roughly translates to an average of 1 ton of CO₂e greenhouse gas emissions per university member. The per capita value for one day is approximately **2.75 kg CO₂e/person/day**.

This indicates a reduction compared to the previous year; it is **7% lower carbon-dioxide equivalent** than the value of 2.95 kg CO₂e/person/day recorded in 2021.

The calculation took into account not only the total energy consumption but also the University's water usage and the quantitative and qualitative data of generated waste.

The extent of greenhouse gas emissions	2022	2021
CO ₂ e:	24,561 t	26,904 t
CO ₂ e/person/day:	2.75	2.95



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Waste management



Every employee and student of the University strives to reduce the amount of generated waste. Where this is not feasible, reuse or material recycling take precedence. Selective waste collection is implemented at all of our locations.

The **waste quantities for the year 2022** are as follows:

Municipal: 3,999,809 kg

Selectively collected paper: 458,172 kg

Selectively collected plastic: 73,692 kg

Selectively collected glass: 69,435 kg

Special (infectious) medical hazardous waste: 953,022 kg

Chemical (and other) hazardous wastes: 49,654 kg

Total: 5,603,784 kg of waste

→ **0.63 kg/capita/day**

Waste quantities	2022	2021	2020
Total:	5,603,784 kg	5,572,043 kg	5,252,001 kg
Per capita:	0.63 kg/capita/day	0.61 kg/capita/day	0.57 kg/capita/day

The value for the year 2020, at 0.57 kg per capita per day, and the baseline year of 2021, at 0.61 kg per capita per day, continued to increase; however, this increase is negligible and certainly does not indicate a deterioration in environmental performance. Part of this can be attributed to the pandemic, which significantly increased the quantity of special (infectious) medical waste. In 2022, there were also several relocations and renovations that involved larger-scale material procurement, thus increasing the amount of waste.



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Approximately 60% of the collected municipal waste is utilized for energy recovery, avoiding landfilling which is at the lowest level of the waste hierarchy. The selectively collected fractions are recycled. This is partly carried out through public services, but approximately 13% of the annual quantity is collected by a waste management company, that delivers it directly to paper mills for paper recycling.

Throughout the year, several university units and communities actively participated in national programs promoting waste reduction. One such initiative was the European Week for Waste Reduction campaign, in which Semmelweis University joined for the cause of sustainable future. In 2022, the theme for the week focused on circular and sustainable textiles. Keeping this in mind, the Pető András Pedagogical Institute created Christmas decorations from used textiles, which adorned doors or festive tables. Employees at the Health Management Training Center crafted various utility items, baskets, and wall art from T-shirt yarn and leftover cords. The Pető András School Practice Elementary School, Vocational School, Unified Conductive Pedagogical and Methodological Institution, and Dormitory, within the framework of classroom activities, collaborated with students to create many beautiful handicrafts from used clothing.





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The results of the implemented ideas within the framework of the theme week.



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Water management



Responsible water usage is consistently evident throughout the operation of the university, as far as possible. The annual water consumption in 2022 was **365,087 m³**. In most properties, the water base is situated along the Danube, to the north, known as the Margit Island water base. Noteworthy among the measures to reduce water consumption are the numerous locations where faucets have already been replaced with water-saving models.

The drinking water quality in Budapest is rated as good to excellent everywhere. The university's properties, and accordingly, the connecting drinking water pipes, are quite old, some dating back to the early last century. However, in recent years, independent, accredited laboratory tests conducted at multiple locations confirm that despite their age, the water flowing from the taps is of adequate quality.

The **quality parameters of the discharged wastewater are self-checked** twice a year based on a self-monitoring plan, using an independent, accredited laboratory. The self-monitoring plan is approved by the authorities each year and the results of the tests are made publicly available through data reporting, accessible to everyone in the so-called OKIR system.

Thanks to measures taken in previous years, in 2022, the exceedance of regulatory limits was observed only at one location, and within the acceptable margin of error.



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Transportation



The University's location, scattered but within short distances in an urban environment, is a primary factor in transportation. Therefore, **public transportation** plays a significant role in commuting between the campus buildings.

In 2021, during the state of emergency, Mol Bubi's shared bike service bicycles were made available to everyone at a symbolic fee of 100 HUF, greatly facilitating transportation between the locations.

Within the campuses, the available area for parking is limited. Approximately 6.1% of the non-built university area serves as parking space, with a **total parking area of 14,486 square meters**.

The University manages a fleet of 39 vehicles, including **8 fully electric** ones.

In addition to the security personnel present in every building, there is also a Central Dispatcher and Patrol Service responsible for the safety of university members. They use electric vehicles for patrolling and handling smaller transportation tasks between organizational units. The charging of these vehicles is partly done with grid electricity and partly through self-installed, solar-powered small power plants. One such power plant can be found in the parking lot of the Theoretical Block at Nagyváradi Square.



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Electric vehicle charger, NET

The development of bicycle infrastructure continued at the University. Several covered, lockable bicycle storage facilities were built, allowing employees and students who choose cycling as their mode of transportation to store their bicycles in an organized and secure environment during their university stay.



Newly built covered, enclosed bicycle storage at one of the university clinics.



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Education and research



All university members receive environmental education and within their own areas, we expect them to adhere to the environmental requirements. We strive to promote an environmentally conscious mindset and behavior through the dissemination of good examples, participation in training and involvement in sustainability campaigns.

In addition, sustainability aspects are prominently featured in some of the courses offered at the University. Some selected examples include Environmental Economics, Dental Ethics, Nature Studies and Methodology 1-2, Public Health - Epidemiology, Origin of Medical Professionalism, Bioethics - Medical Ethics, Health and Society, and Food Safety and Food Fraud.

Furthermore, a basic course titled '**Green University - Together for Our Environment**' has been developed, specifically focusing on environmental protection and sustainability. At the beginning of the enrollment period, all 500 available spots for the course were quickly filled. The course consists of several elements, all of which are necessary for successful completion. Students independently work through educational materials compiled by the environmental department, and at the end of the year, they take a short test related to the content. Additionally, they are required to participate in supplementary programs held throughout the semester, such as creating reusable gift wraps, making cosmetics from readily available natural ingredients, sewing bags from outgrown or unused T-shirts, and organizing clothing exchanges.

Several university projects and programs continued to focus on sustainability in 2022. The **EUniWell project**, emphasizing best practices and student well-being, was established in collaboration with Semmelweis University and six other European universities. In 2022, the EUniWell project's event, called FestiWell, took place online, specifically highlighting the impact of the pandemic on well-being. The event occurred from January 6 to 11. Lecturers from all seven participating universities presented the connection between student well-being and the pandemic from the perspective of their respective fields.



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The environmentally conscious mindset of employees continues to be supported by the **Green University Program**, launched in the fall of 2021. Within the framework of this initiative, we encourage staff participation in various environmental programs and campaigns, and we provide updates on these activities on the dedicated website of the Program (www.semmelweis.hu/zoldegyetem).

An environmental commissioner system is in place at the university, where each clinic and organizational unit designates a dedicated staff member from its own ranks. These individuals assist in coordinating and aligning tasks and activities related to environmental protection. The **environmental commissioners** participated in a **professional day** at the end of 2022, where they gained valuable new insights into environmental protection and sustainability, university tasks, and the developments carried out throughout the year. By disseminating the updated knowledge within their respective units, the environmental knowledge of every university staff member is further strengthened, thereby deepening their commitment to a greener future.



Snapshot from the professional day of environmental commissioners



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Well-being



As part of the **Family-Friendly University Program** launched at the end of 2019, Semmelweis University continued to prioritize the **health and well-being of its university community** in 2022. Within the program, employees have the opportunity to:

- participate in various free screening tests;
- request general medical consultations;
- take advantage of discounted sports opportunities;
- access a variety of cultural and leisure programs with discounted tickets, passes, and participation options;
- benefit from a family support system available to parents of young children (school starting support, preschool placement, summer camps, vacation options at university resorts, etc.).





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The Program has a dedicated website where detailed presentations of available services and discounts, as well as reports on realized programs, can be accessed (<https://semmelweis.hu/csaladbarat/>).

One of the highlighted new initiatives in 2022 was the launch of summer day camps for the children of university community members aged between 6 and 14. Over six weeks, classic day camps and thematic camps were offered to employees' children from morning to late evening, supervised by trained kindergarten teachers, conductors and physical education teachers. One recurring program in the camps was a specially designed **environmental workshop for elementary school children**, where they could playfully learn about the importance and practices of selective waste collection, the role of composting in waste reduction and gardening, nature's services, and the reuse of everyday items.