University: University of Pécs (UP)
Country: Hungary

13.4 Commitment to carbon neutral university

13.4.1. Commitment to carbon neutral university
Scope 1, Scope 1 and 2, Scope 1, 2 and 3 (partial)

- **The City's commitment**

At the urban level, the city of Pécs has adopted a Sustainable Energy and Climate Action Plan (SECAP) that **commits to an 80% reduction in emissions by 2030,** compared to a 2011 baseline year. The greatest potential lies in the electrification of transport, the modernization of building energy systems, and the optimization of residential energy consumption. The SECAP also emphasizes the circular economy, the development of green infrastructure, and climate adaptation. Within this framework, the University of Pécs plays a proactive role, aligning itself strategically with both the national and municipal climate goals.

- **The University's commitment**

The university's own **commitment, as detailed in the SECAP of Pécs, involves reducing its scope1 and scope2 emissions by 9,122 tonnes of CO2 annually between 2014 and 2030**. To meet this commitment, the university is allocating approximately EUR 84 million towards energy infrastructure modernization and related sustainability initiatives. Currently, progress is on track with the interim targets.

Climate protection and carbon neutrality: cooperation between the University of Pécs and the city of Pécs

In 2023, the city of Pécs has been selected by the European Commission as one of 100 European cities that will be able **to achieve their climate neutrality goals by 2030** within the framework of the Horizon Europe Urban Mission, with the professional support of the **NetZeroCities platform**. As part of this mission, the Municipality of **Pécs and the University of Pécs (UP) signed a cooperation agreement on climate protection and carbon neutrality**.

All 27 EU member states have committed to achieving climate neutrality across the continent by 2050, the first in the world to do so. To this end, member states have committed to reducing emissions by at least 55% by 2030 compared to 1990 levels. Last January, the municipality of Pécs submitted its application to participate in the European Union's "100 Climate Neutral Cities Mission" program, part of the European Green Deal and to be implemented under Horizon Europe.

The European Commission selected the city of Pécs, along with Budapest and Miskolc, for the program, under which the city of Pécs commits to becoming net zero carbon by 2030. The goal is ambitious and can only be achieved through extensive, systematic work involving all stakeholders in a spirit of partnership and cooperation.

From now on, the University of Pécs will also be such a cooperative partner, which is not surprising, given that the above endeavour fits in perfectly with the UP Green University Program's aims**.** in 2024the UP ranked 25th out of 1,477 universities in the world's "green university" rankings, earning the title of "greenest domestic university" in the country for the fifth time in a row.

In recent years, the University of Pécs has designated research, innovation, and training programs and activities related to both clean technologies (cleantech) and the use of renewable energies as its priority areas of research, training, and third mission**.** These scientific and thematic areas are currently of key importance in several successful project developments and form one of the potential foundations of the University's long-term development strategy.

→ "*The Greenest University for the Greenest City!"* As a university town, the identity of Pécs and the University of Pécs has somewhat merged over the decades, and in some cases the two can't really be examined separately.

The University of Pécs – Green University Program

Ten years ago, the University of Pécs formulated the mission of its Green University Program encouraging all good practices, innovations, and management aimed at sustainability and sustainable management in the environment, and shaping and strengthening ecological awareness through science and education.

The mission of the program office is the encouragement of all innovations, good practices, initiatives and local policies regarding environmental sustainability; and furthermore, to shape and strengthen ecological awareness by the means of science and education. The university aspires to mitigate its carbon footprint and supports technologies, services and consumer habits that reduce the use of natural resources, realizing decarbonisation goals. In the spirit of this mission, serious efforts have been made in the area of sustainability, such as the implementation of the PET-free University concept and efforts to reduce paper use, the formulation of the UP Climate Concept, the expansion and regulation of selective waste collection to the university level, the creation of networked water islands, and increasing the proportion of renewable energy sources with solar panels, while making transportation better with handing out bicycles to employees, and using electric cars in the UP transportation fleet. The number of courses and research projects dealing with sustainability has increased, and greater emphasis than ever before has been placed on shaping individual and community attitudes.

UP has consciously formulated its mitigation efforts, which are in line with the decarbonisation goals of the 'Second National Climate Change Strategy'. The first main step of the University's decarbonisation strategy is to exchange fossil fuels with renewable energy resources. The ratio of renewable energy resources used by the UP has been constantly increasing since 2016. **More than 50% of the entire energy usage of the University is covered by low carbon, renewable sources,** of which biomass has the largest proportion, followed by geothermal and solar energy.

Scope 1, Scope 2

The University of Pécs (UP) is preparing to publish its first greenhouse gas emissions report for the 2024 reporting year in accordance with the GHG Protocol. We are currently developing methodologies and processes for measuring and estimating Scope 1 and Scope 2 emissions. Our goal is to lay the foundation for our climate strategy scenarios to set targets for reducing greenhouse gas emissions. Later, as more information becomes available from our external partners in Hungary, we plan to extend the inventory to Scope 3. In the meantime, we continue to invest in energy efficiency and have implemented a number of energy-saving measures across the campus. In addition, we promote sustainable behaviour through campus-wide awareness campaigns with measures covering all three categories.

Scope 1

1.1 Stationary combustion: The modernization of buildings, comprising external façade and roof slab insulation, replacement of windows and doors, renovation of mechanical (HVAC) systems, and the replacement of fossil fuels, may result in an estimated reduction of approximately 664 tCO_2 per annum over the past 12 months.

Structural renovation of buildings: -495 tCO_2 per annum
Replacement of fossil fuels: -169 tCO_2 per annum

The University of Pécs continuously invests in the structural renovation of buildings and the replacement of fossil fuels to reduce reliance on stationary combustion equipment operating on natural gas.

1.2. Mobile combustion: Assessment and optimization of fleet utilization, fleet electrification, fleet sharing: The UP is actively reducing fossil fuel dependency – especially in its fleet – by incorporating electric vehicles, resulting in a lowered fossil fuel proportion.

To strengthen UP's green mobility, efforts will focus on the following actions:
- Expand bike infrastructure: Add secure bike parking, showers at key buildings, and e-bike charging stations.
- Introduce bike or e-scooter rental for short campus trips.
- Host regular "Bike to Work/Study" days with incentives and a leaderboard.
- Rewards for carpooling or combining train/bus with walking: e.g., gift cards, catalogue points.
- Discounted transit tickets for peripheral campuses.

Awareness campaigns:
- "Bike to Work/University" Challenges – encouraging cycling over car use.
- Green Mobility Days – offering workshops and demonstrations on sustainable transport options.
- Expansion of bike racks, e-scooter docking stations across the whole campus.

Use of electric car, electric car charging station, Use of bicycles and e-bikes around, and getting to campus, provision of bicycles for professional, work related use (pictures attached as evidence):


Use of electric local buses in Pécs, use of HOPP e-roller system and PÉCSIKE e-bike system in Pécs (pictures attached as evidence):



1.3. Process emissions: No significant process emissions were identified. The use of industrial gases accounted for approximately 30 tCO_2 in 2024.

1.4. Fugitive emissions: For energy and cost savings, air conditioning units are centrally regulated and cannot be operated below 26 °C. In accordance with legal requirements, we have initiated the audit of leakages from refrigeration equipment with a capacity above 70 kW, which are registered by the National Climate Protection Authority of Hungary (NKVH). Leakages of lower-capacity refrigeration equipment are also monitored. Leakages resulted in an estimated 100 tCO_2 emissions in 2024.

Scope 2

2.1. Purchased electricity:

Installation of photovoltaic systems: Following the successful photovoltaic projects of prior years, further systems were installed across multiple University of Pécs sites in 2024. In 2024, the solar panel systems generated 1 989 277 kWh of electricity, which is 3.5 times higher than the previous year's production.

As of 2019, more than half of the university's energy came from renewable sources—primarily biomass district heating, followed by geothermal and solar energy. The PV systems installed in 2024 may contribute to the avoidance of an estimated 52 tCO_2 of emissions per annum.

Energy-saving interventions across campus, including:

- Installation and modernization of building management systems
- Intelligent control and measurement of building energy consumption
- Enhanced control over heating and cooling systems
- Elimination of supplemental heating/cooling
- Curtailing exterior and decorative lighting
- Installation of solar-powered outdoor lighting systems
- Minimizing nighttime and security lighting
- Upgrading to LED lighting and phasing out traditional bulbs
- Rolling out an energy management system
- Encouraging sustainable energy behaviour through campus-wide awareness campaigns and competitions—especially among dormitories

Energy assessment and optimization of buildings: The systematic energy assessment and optimization of the buildings and the implementation of energy efficiency investments directly contribute to the reduction of Scope 2 emissions. Through energy performance certificates, comprehensive energy audits, the University is able to identify inefficiencies, optimize energy use, and reduce the demand for purchased electricity and heating. External experts conduct inspections of our buildings, provide recommendations for refurbishments, and evaluate the potential extent of energy and cost savings. The University of Pécs also participates in the Hungarian energy trading system (EKR) to facilitate and accelerate the implementation of energy investments through the utilization of certified energy savings (HEM). These measures enable data-driven decision-making and support continuous improvements in the energy performance of buildings.

Implementation of building automation, management and monitoring systems: We are continuously expanding and modernizing our building management systems. Intelligent control and measurement of buildings' energy consumption is among our key priorities. By using an energy management software, energy consumption can be continuously monitored, providing up-to-date information on every point and moment of operations. Currently, 100% of electricity consumption meters and 95% of gas consumption meters are equipped with transmitters, providing real-time, time-series data at 15-minute intervals. We continue to make efforts to integrate data transmitters into the main water and district heating meters, aiming to equip every building with smart meters for each energy type. This data availability enables evidence-based decision-making and supports the implementation of further energy efficiency improvement measures.

Awareness campaigns:

- "Switch It Off!" Campaign – encourages staff and students to save energy by turning off unused devices and lights.
- Sustainable Heating & Cooling Practices – guidelines to reduce unnecessary energy usage.
- Participation in Earth Hour and other global initiatives to highlight climate change.

2.2. District Heating: 91,82% of energy consumed for district heating are generated with clean biomass: Total biomass energy: 44 046 844 kWh (158 569 GJ) in 2024.

Scope 3

3.1 Purchased goods and services:
Green procurement:
- Adopt Green Public Procurement (GPP) criteria for priority categories: energy, buildings, office equipment, catering, cleaning, vehicles, IT, and construction.
- Require life-cycle cost (LCC) evaluation (not only the lowest price) for energy-related tenders and building works.
- Include environmental technical specifications (e.g., energy class, materials content, recyclability), award criteria (e.g., % renewable energy used, carbon footprint), and contract performance clauses (reporting, penalties/incentives).
- Add social & local value clauses for SME/local producers (supporting regional green economy).

3.2 Transportation: By Using the DHL GoGreen Plus service, approximately 30% CO_2 emissions savings can be achieved with every air express shipment.

3.3. Waste: The 3Rs – promoting waste Reduction, product Reuse, and Recycling – form the basis of the waste management initiatives, programs, and campaigns that are put into place. The University of Pécs is pleased to have the PET-free UP distinction and was the first higher education institution in Hungary to cease buying plastic bottled water and drinks in 2019.

Paper and cardboard, iron and steel, plastics, leftover electrical and electronic equipment, glass packaging debris, batteries, wasted cooking oil, and cell phones are examples of selective waste that are ready for recycling.

Green waste is produced at the University of Pécs' Research Institute of Viticulture and Enology. This garbage is recycled and shredded, then spread beneath the plantings. Additionally, the Botanical Garden of the UP generates green waste, part of which is composted on-site by the UP and some of which is handled by the public waste management firm. The waste management organization transports and composts green garbage produced at other UP locations

The UP actively participates each year in the European Waste Reduction Week. Initiatives have included:
- Promoting double-sided printing and the reuse of single-sided paper.
- Encouraging people to bring reusable bottles or mugs, with creative selfie campaigns to boost engagement.
- Collecting electronic and household appliances, used batteries, cooking oil, and expired/unwanted medications, offering convenient campus drop-off points.
- Hosting "Bring back, brother!" campaigns to gather old mobile phones, tablets, and chargers, often in collaboration with schools and local chambers.

The Green University Program organizes local clean-up actions such as "Spring Cleaning 2024", where nearly 50 staff and students cleared litter in Mecsek, in collaboration with the Teacher Training Center, the University Library, Mecsekerdő Ltd., and a local primary school class.

Awareness campaigns:
- Selective Waste Collection Points – set up across faculties and dormitories.
- "Less Plastic, More Future" Initiative – encourages the reduction of single-use plastics on campus.
- Recycling Awareness Weeks – include workshops and student competitions focusing on upcycling, composting, and waste separation.
- Digitalization Drives – promoting paperless administration and sustainable printing practices.

3.4 Water: By equipping the main water meters with data transmitters, internal faults can be detected, and pipe leaks can be addressed in a timely manner. Well and rainwater are collected and reused for irrigation purposes. The installation of infrared taps, flow-controlled pressure regulators, and aerators enables the intelligent regulation of water consumption. In addition, the university has installed more than 500 free water refill stations across the campus.

The UP has launched a "Sponge City" pilot in 2024 to explore urban flood resilience. In the Botanical Garden, the university created a 10×3 m rain garden, featuring five underground tanks with varied soil mixes and native perennials planted above. Sensors monitor soil moisture, feeding data into a weather station system. This pilot informs wider urban water retention strategies.

The UP is a partner in the Horizon 2020 SPRING project, which advances strategic water resources planning and develops novel bioremediation systems (simple-to-operate, cost-effective) for water treatment.

Awareness campaigns:
- Installing water-saving devices in dorms and faculty buildings.
- Raising awareness about water scarcity and its impact on ecosystems.
- Promoting rainwater harvesting and integrating it into campus landscaping projects.

3.5. Employee commuting:
Support for public transportation:
- Subsidized public transit passes for students and staff.
- Use the Green AURA model: install interactive AR stations at transit hubs to show the environmental impact of transport choices.

Promotion of cycling: installation of secure bike racks, changing rooms and showers, implementation of a corporate bicycle program or support for e-bike leasing.

Bicycle transport option on buses: public transport buses are equipped to carry bicycles (e.g., front-mounted bike racks or interior storage solutions). This allows employees to combine cycling with bus travel, making longer commutes more sustainable and flexible.

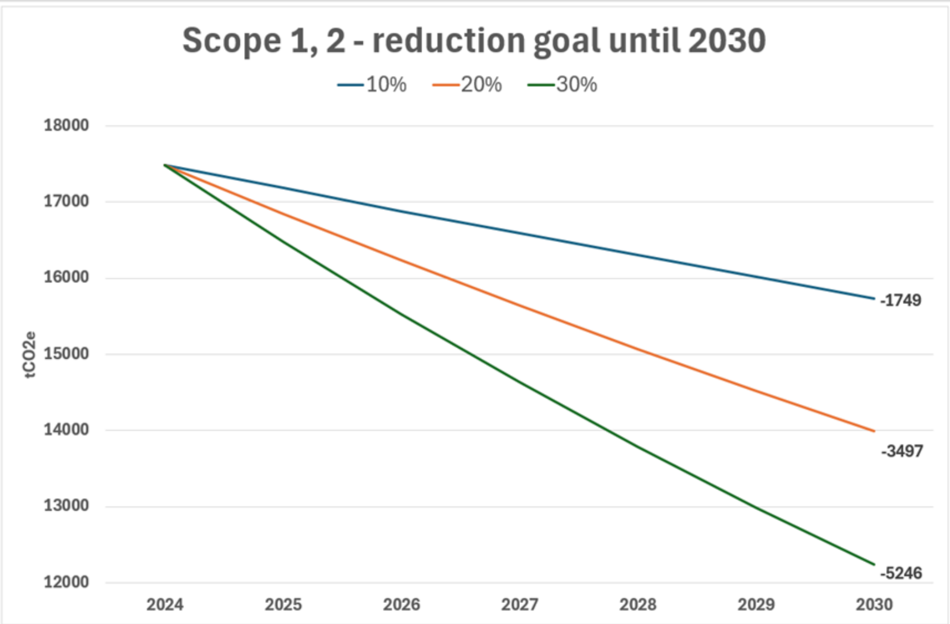
3.6. Business travel: Following the university's decision, aviation was entirely phased out, with communication shifted to virtual platforms. By moving events online, the university has reduced travel-related emissions

Introduction of the 'Green Erasmus' approach: The university encourages low-carbon travel (train, bicycle) through extra funding and by showcasing these options in Erasmus promotion.

Compensation:

Miyawaki Forest Plantation: As a pilot project, the Green University Program Office of the University of Pécs and the '10 Millió Fa' (10 Million Trees) Foundation' initiated the creation of a Miyawaki forest in connection with National Tree Planting Day. As part of the project, the organizers, along with staff and students from the Faculty of Natural Sciences, the Faculty of Humanities and Social Sciences, and the College for Sustainable Development, **created a 30 m² mini forest**.

Tree-Planting Initiatives – involving students and staff to green the university's surroundings.



The University of Pécs - Strategy

The Most Important Strategic Documents Defining the University's Strategy (Sub-area Strategies)

1. **Sustainability (Flagship Goal)**
   - Sustainability Strategy of the University of Pécs
   - **Climate Protection Strategy of the University of Pécs**
2. Excellence in Biotechnology and Fields Related to Medical and Health Sciences (Flagship Goal)
3. Effective Application of Key Achievements in Data Science

(…)

Climate Protection Concept of the University of Pécs, 2023-2030 (extract)

1. Introduction

University of Pécs (in the following: University) is the largest higher education institution and health care provider in the South Transdanubian region. Through its activities, the University promotes global environmental change, the extent and speed of global warming. The local negative effects of surface temperature changes increase the exposure and vulnerability of the University's infrastructure and services.

A highly integrated organic system has developed between the local environment and the University, operating along the interaction of system control circuits. It is important to avoid interruptions to the system in the face of current environmental challenges or to manage interruptions through system feedback. The University is committed to the smooth functioning and sustainable implementation of its relationship with the environment, balancing environmental and corporate interests.

2. Concept goal

The main goal of the University is to reduce the environmental impact of its activities and the exposure and vulnerability of its infrastructure and activities to local environmental impacts. The concept supports and helps the University's short, medium and long-term goals.