

# GEBZE TECHNICAL UNIVERSITY SUSTAINABILITY REPORT | 2023





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## MISSION

Our mission is to develop an approach focused on sustainability in the fields of education, science, technology, and arts to make the world a better place.

## VISION

The primary goal of Gebze Technical University's sustainability approach is to cultivate individuals who embrace sustainability principles in all areas of life. These individuals will create a cycle that builds sustainable societies by prioritizing sustainability in education, science, technology, and arts.

# MESSAGE FROM THE RECTOR



Our carbon footprint, which shows the impact of human activities on the environment, has increased by 173% over the last 60 years. The climate crisis, exacerbated by the continuous growth of the world population and the prevailing understanding of production and consumption, has reached threatening levels for natural life and our future. GTU, which has a mission to cultivate qualified individuals through a management approach that is respectful to nature and protects the ecosystem—characterized by equality, inclusivity, justice, rationality, and quality—focuses on being a university with a strong infrastructure. In this context, parallel to technological developments around the world, we prioritize good strategic planning for the establishment of new departments each year and the construction of new facilities for better education. Throughout all these developments, great care is taken to respect nature and protect the ecosystem. The GTU campus, one of the greenest campuses in our country with its vast forest areas, orchards, and unique ecosystem, fully deserves this care. Additionally, increasing the number of scientific and technological research projects that involve innovative solutions based on shared wisdom and efforts, and ensuring that these studies are conducted with a high awareness of sustainability, are among our primary priorities.

As GTU, our priority is to act in harmony with all the requirements of sustainable living in every field. GTU is one of the universities set to take to lead in sustainability, thanks to its established institutional culture, infrastructure, and green nature. It is our responsibility to preserve and improve this culture for every individual who has passed and will pass through our campus. With this sense of responsibility, we emphasize nurturing individuals with a high awareness of sustainability and environmental sensitivity in education to make our world a better place. We are aware that the future scientists, engineers, and architects will provide a more livable world for future generations by acting with this awareness in all their projects to come. We adopt and implement the same principle in the projects conducted at our university, in industry-university collaborations, and in bilateral agreements, to improve not only the future, but also the present.

As the Rector of Gebze Technical University, I would like to thank all our staff and students for their sensitivity in contributing to sustainable development.

Prof. Dr. Hacı Ali Mantar

# MESSAGE FROM THE GTU SUSTAINABILITY OFFICE COORDINATORSHIP

We are moving forward with a focus on creating value at our institution, guided by a perspective that brings us closer to sustainability. With our value-oriented sustainability mission, we prioritize protecting our institution, our employees, society, and the world as a whole while creating new sources of value. Therefore, we believe that taking action for a sustainable future is everyone's responsibility.

In this environment of increasing competition in all areas, institutions and organizations must report not only their financial performance, but also their non-financial performance to survive and grow. Ignoring the environmental, health, safety, and climate change risks, which are among the main issues of sustainability, is no longer an option. Therefore, universities play a significant and are expected to take a more active role in ensuring sustainability.

The GTU Sustainability Office Coordinatorship has taken on the responsibility here to meet the aforementioned expectations that will have a broader impact in terms of sustainability, which includes managing the analysis processes of ongoing studies to evaluate the effects and outcomes of their applications, identifying opportunities, reporting non-financial performance risks to stakeholders, and providing assistance and support for all those volunteers wishing to contribute.

Achieving sustainable development goals will be possible through fostering future generations with this awareness. Collaborating on all sustainability goals—ranging from combating climate change to ensuring gender equality, from ecosystem protection to waste treatment, and from fighting hunger and poverty to producing clean energy—is vital for protecting our future. Unity in goals is also the most important sustainability target that will contribute to world peace. With this aim, conducting research and generating knowledge necessary for building a livable, sustainable society, and sharing that knowledge is the primary objective of our university. Sustainability can only be achieved in a world where peace prevails.

We thank you for every step you take in respect of humanity and nature.



Sustainability Office Coordinatorship

# ABOUT THE REPORT

Thanks to its strong academic structure and its location in a highly-industrialized region, Gebze Technical University is an institution with significant potential for creating university-industry collaboration-based projects, as many scientific projects are conducted here. These projects prioritize work that is harmonious with nature and has high environmental sensitivity. In an increasingly digitalizing world, technology and innovation have become inevitable.

In this context, adopting a sustainability perspective in the execution of innovative activities is of great importance for our future. Gebze Technical University plans for the future with this sense of responsibility.

The GTU Sustainability Report includes all sustainability activities across various fields that align with the United Nations Sustainable Development Goals and are aimed at minimizing the effects of the climate crisis, based on its fundamental objectives.



## SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



# ABOUT GEBZE TECHNICAL UNIVERSITY

Gebze Technical University (GTU) was established upon the foundations and experience of Gebze Institute of Technology (GIT) with the decree dated 4 November 2014 of the Grand National Assembly of Türkiye, inheriting and embracing GIT's 22-year heritage. With its infrastructure, capacity, and academic staff, GTU is one of the young but experienced universities of Türkiye, set to become the most prominent scientific hub of the country.

In order to achieve its aforementioned goal, GTU, with its academic and administrative staff that embrace its mission and vision as a research university and its internationally-competitive undergraduate and graduate students and researchers, sets its sight on using its strong capacity and resources and enhancing this capacity and resources by following the latest emerging technologies; supporting regional and national industry through university-industry collaboration and establishing sustainable collaborations; using and transforming its existing knowledge to the benefit of the society and environment.

GTU, which achieved the status of "research university" in 2017 and is listed among Türkiye's public research universities, whose number has reached 23 as of 2024, is a young and dynamic university intertwined with organized industrial zones and technoparks thanks to its location. GTU, which also contributes to science on an international level by being listed in the leading positions of the university rankings by various ranking institutions, aims to keep its position accelerating its research and university-industry collaboration growth.





# STRONG INFRASTRUCTURE AND SUSTAINABLE CAMPUS

Gebze Technical University (GTU), as one of Türkiye's leading research universities, plays a significant role in the field of science with its highly-qualified academic staff and strong infrastructure. GTU is an institution committed to scientific, ethical, and social values. It is a university that provides quality education and teaching for society, conducts scientific research, and produces practical solutions towards social and industrial issues through its research. In addition to maintaining high quality in higher education and research, it is equipped with advanced laboratories and research centers. Designated as one of Türkiye's first 10 research universities in the 2017-2018 Academic Year, GTU continues preserve this status while increasing its R&D capacity in collaboration with institutions such as TÜBİTAK-MAM and TSE.

GTU has a rich academic structure consisting of 23 departments, 1 vocational school, 5 faculties, and 8 institutes. The university conducts projects in critical areas such as nanotechnology, defense industry, biotechnology, and cancer research. While focusing on research, education, and teaching activities, GTU also aims to enhance collaboration and entrepreneurship efforts. The university carries out studies in fields such as chemistry (organic and inorganic chemistry, process chemistry and technologies), electronics (MEMS, NEMS, and MOEMS), automotive and rail systems (including electric and hybrid vehicle technologies, battery technologies), biotechnology, nanotechnology, information technologies, and defense technologies. It serves as an R&D hub in the areas of defense, aerospace, energy, automotive, information technologies, biotechnology and health, nanotechnology, finance, and software technologies.





Additionally, GTU continues its research and development activities in areas such as smart materials and biomimetics, energy storage and energy materials, hydrogen and fuel cells, molecular oncology, sensor technologies, and sustainable and smart cities.

Moreover, as a university strategically located at the intersection of Asia and Europe, GTU stands out for being at the center of industry.

Its proximity to major cities like Istanbul, Kocaeli, and Bursa, as well as its location just 15 minutes from Sabiha Gökçen International Airport, makes it favorable for strong collaborations with industry.

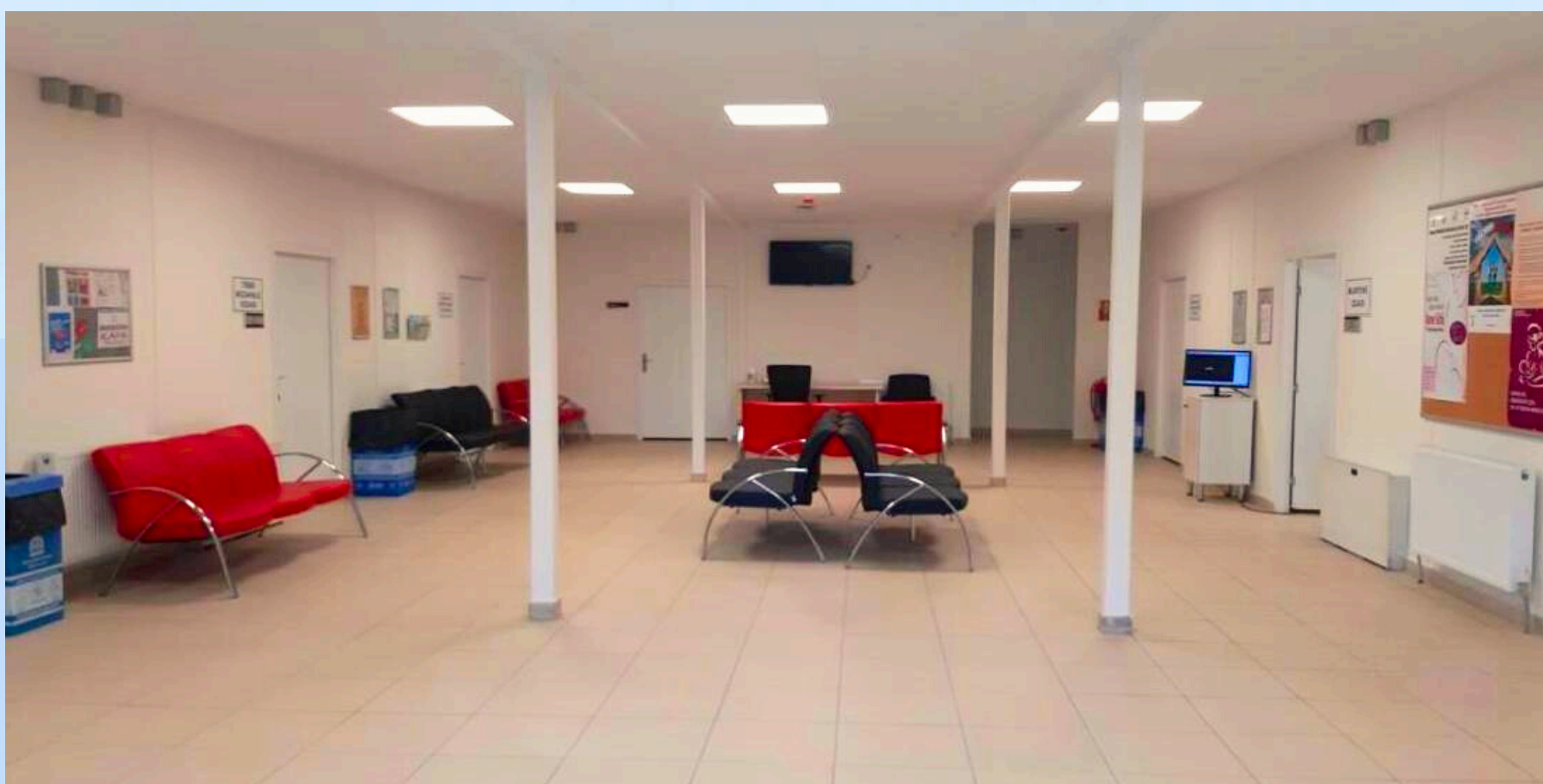
The presence of a station for the Marmaray, which connects Istanbul and Kocaeli, within the university campus also provides ease of transportation.

The university's industry collaboration is managed by the GTU Technology Transfer Office (TTO). The TTO aims to commercialize knowledge and technology produced at GTU, announce project ideas and funding opportunities, file patent applications, and promote entrepreneurship. The TTO's units, which are Training, Promotion and Awareness, National and International Funds, University-Industry Collaboration, Intellectual Property Rights, Entrepreneurship and Incubation, continue their activities to establish sustainable partnerships.

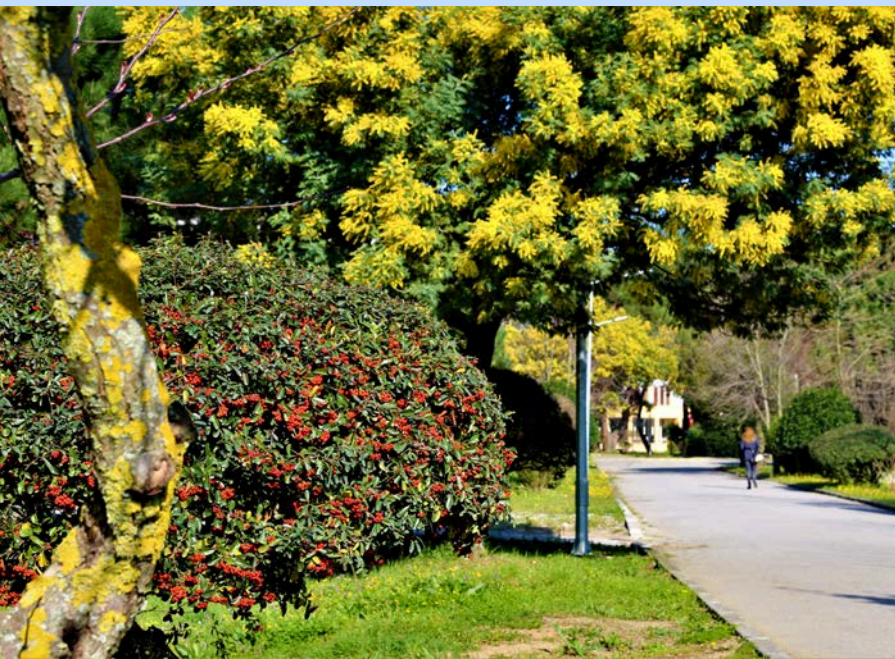


GTU is built as a single campus covering a total area of 1,394,762.31 m<sup>2</sup>, which includes 85 buildings. The area the buildings cover is 148,394.21 m<sup>2</sup>, and the ground area is 60,903.76 m<sup>2</sup>.

The proportion of open spaces exceeds 95%. The campus contains three main forest areas totaling to 492,139 m<sup>2</sup>, which constitutes 35.28% of the total campus area. The area covered with flora is 562,892.00 m<sup>2</sup>, accounting for approximately 40.36% of the total campus area. Areas with cultivated flora and capable of water absorption amount to 20.67% of the campus. With a total of 10,375 students and 1,157 academic and administrative staff, the campus offers more than 70 m<sup>2</sup> of open space per person.



The campus provides various facilities for individuals with disabilities and special needs, including nursing rooms, a nursery, accessible classrooms, restrooms, and library facilities. GTU has a health infrastructure that offers comprehensive health services for students, academic, and administrative staff. The health center provides free health services for students and their families, including first aid, emergency services, and clinical services. Those wishing to use the services can easily make appointments through an online appointment system. Campus security is monitored 24/7 with security cameras, and the response time in emergencies is less than 10 minutes.



The university emphasizes the diversity of animals and plants on campus and conducts various institutional efforts to improve the living conditions of these organisms. Regulations for the protection of flora, fauna, and wildlife have been developed, and mid to long-term conservation programs are implemented at a rate of 50-75% to create a sustainable campus environment (for detailed information, you can refer to the GTU Animal and Plant Protection Program Regulation). In 2023, the university allocated 24.85% of its budget to sustainability efforts, an increase from the average of 23.76% over the last three years. This indicates that GTU has been dedicating more resources to sustainability efforts.



# EDUCATION, RESEARCH, AND SOCIAL IMPACT



In today's world, the phenomenon of sustainability and the transfer of its values to future generations are crucial for building an environmentally-conscious society. In this context, prioritizing sustainability education is of great importance. Sustainable education is based on two fundamental elements: first, teaching individuals sustainable values, and second, ensuring that educational institutions operate sustainably. One of the most effective ways to instill sustainability awareness is to include sustainability topics in the curriculum at all levels, from early childhood education to higher education. In this process, it is essential to establish a healthy learning environment and ensure sustainability. An inclusive and accessible education system is a core condition for spreading sustainability awareness throughout society. Students must be provided with opportunities to gain sustainability awareness through experiential learning outside the classroom and community service. Additionally, it is necessary to take the required steps in education with an awareness of the responsibility to preserve our resources. Therefore, redesigning the education system according to sustainability principles is the most effective way to create a society that respects other people and the environment while thinking about the future.

In a digitalizing world, easy and quick access to accurate information is a topic that must be carefully addressed in terms of sustainability. GTU offers a strong library database service that facilitates access to information. Students and academics can access publications in numerous databases, such as Web of Science and ScienceDirect, free of charge and with open access. Additionally, to increase education and research on an international level, the GTU International Relations Coordination Office provides support for international students and employment opportunities for foreign academics. There are currently 14 university programs under international collaborations. These collaboration activities, including Erasmus, NATO, EU, and other international projects, are organized by the International Relations Coordination Office at GTU.



GTU includes sustainability topics in various compulsory and elective courses. At GTU, a total of 305 courses related to sustainability are offered at the undergraduate and graduate levels. Of these courses, 274 focus on the environmental, 11 on the social, and 20 on the economic dimensions of sustainability. 13.10% of the courses offered at the university cover sustainability topics (for the GTU course catalog, see <https://sustainable.gtu.edu.tr/sustainable/allCourses>). Students can gain experiential education in sustainability through various projects at the undergraduate and graduate levels.

In the last three years, 161 of the 345 research projects supported at the university are sustainability-focused. Therefore, 46.37% of the projects conducted at GTU target sustainability goals. Research funding allocated to sustainability-themed projects constitutes 55.45% of total research funding. Sustainability-themed projects primarily focus on energy, waste management, prevention of air pollution, agricultural fertilizers, and soilless agriculture. In addition to these projects, there are 19 start-up projects themed around sustainability. During this period, the number of academic publications related to sustainability at GTU is 684.





In the last three years, GTU has organized an annual average of approximately 32 events (conferences, workshops, awareness-raising activities, applied training, and so on.) related to sustainability goals. These events primarily focus on environmental protection, earthquakes, and clean energy. This year, student clubs have organized more than 25 events related to sustainability. In 2023, fourteen cultural activities were organized at the university. The most significant of these activities is the "From Cocoon to Butterfly: An Accessible Youth Festival," which is a traditional festival where especially children with disabilities can enjoy themselves freely.



This year, our university has conducted twelve community contribution projects with the participation of students. These activities are carried out in various ways. The conducted activities include contributions to village schools, a fundraising campaign to support Palestine, raising awareness for Down syndrome, and providing stationery and books for the earthquake-affected regions following the Kahramanmaraş earthquakes.

# HEALTHY CAMPUS AND REDUCTION OF INEQUALITIES AND POVERTY

Eradicating all forms of poverty everywhere is the first of the Sustainable Development Goals. To achieve this goal, seven key targets have been established. These include the eradication of extreme poverty, reducing national poverty levels by half, strengthening social protection systems, and providing necessary support for vulnerable individuals. Additionally, ensuring access to economic resources, services, and property rights for the poor and vulnerable groups is also among these targets. For more detailed information, you can refer to the following links: <https://sdgs.un.org/topics/poverty-eradication>; <https://turkiye.un.org/tr/sdgs/>.

GTU addresses poverty from a broader perspective through university-industry collaboration and academic efforts. In this context, master's level courses are offered, and scientific publications and projects focused on poverty are produced.

GTU is currently collaborating with the Kocaeli (Gebze) Municipality on a project that involves placing clothing collection boxes in specific areas of the campus. This initiative, based on the principle of reuse, collects old clothes to deliver to those in need. This effort contributes to sustainability and social responsibility goals.







Inequalities can undermine individuals' self-worth and negatively affect their development. Therefore, educational equity is crucial for changing existing conditions. Educational equity aims to address economic inequalities by offering individuals "equal" opportunities. However, misguided socio-economic policies play a significant role in the emergence of these inequalities. GTU adopts policies that center on the individual while rejecting inequality and aims to instill a sense of equality in all its students. The university has developed conscious policies to eliminate inequalities based on lifestyle, gender, race, ethnicity, and religion. Additionally, GTU aims to contribute to world peace, such as organizing events to draw attention to issues in Palestine.





GTU has established the Accessible GTU Commission to create an equal campus for everyone. The university also hosts a Women and Family Studies Research and Application Center to raise awareness about gender equality. GTU employs a significant number of women in senior positions, with one of the vice-rectors being a woman and approximately 31% of senior administrators being women. Moreover, around 51% of academic staff, 38% of administrative staff, and 41% of students are women, demonstrating GTU's commitment to gender equality and its supportive approach towards women's participation in various fields.

To achieve the sustainability goal of "healthy individuals," it is essential to meet people's basic needs. In this regard, GTU takes various steps. The university has a health center where students, staff, and their relatives can access free healthcare services provided by two practicing physicians, two psychologists, two dentists, and a nurse. Additionally, the health center features a maternity care room. In creating healthy individuals, it is also important to create areas that strengthen individuals in social, cultural, and sportive aspects. Accordingly, the Directorate of Health, Culture and Sports organizes various events for the students and staff. Furthermore, the university has 60 active student societies where students can improve themselves (for a list of the societies and their details, see <https://www.gtu.edu.tr/en/kategori/3490/0/display.aspx>).



GTU is state-funded and provides free education for its students. However, free education does not imply that it is entirely accessible to everyone. Rights to education, housing, and nutrition must be equal. In this context, GTU facilitates access to food and transportation for students. Additionally, to eliminate educational inequality and balance financial disparities, the university offers scholarships for its students in need. These scholarships are divided under three main headings (YÖK Scholarships, Gebze Teknik Education and Research Foundation Scholarships, GTU Youth Association Scholarships). The types of scholarships include YÖK 100/2000 Doctoral Scholarship, YÖK Undergraduate Support Scholarship, YUDAB (Overseas Research Scholarships), need-based scholarships, earthquake scholarships, meal scholarships, and cybersecurity scholarships. A total of 383 students benefit from these scholarships.



To provide equal housing opportunities for its students, GTU temporarily took delivery of the Gebze Student Dormitory, built on 160,000 m<sup>2</sup> of land under the YURTKUR Bolu Regional Directorate, on February 16, 2011. After the completion of furnishing processes by the then Prime Minister (now the President) on May 22, 2011, it opened its doors with a total capacity of 676, consisting of 284 women and 392 men. Student enrollments began in September 2011, and in 2014, the capacity was increased to accommodate a total of 760 students, including 320 women and 440 men. Additionally, to address students' transportation issues, new dormitories set to open in 2024 are being constructed on GTU campus.

GTU values the protection of human rights and the dignity of individuals working on campus. In this context, it takes protective measures for the individual and personal rights of its staff and students. An Anti-Mobbing Division has been established for this purpose (see the relevant Directive here:

<https://www.gtu.edu.tr/kategori/3075/0/display.aspx>).

# CLIMATE ACTION PLAN AND CLEAN ENERGY

The Paris Agreement aims to prevent irreversible climate change by limiting the global temperature increase to 1.5 degrees Celsius above pre-industrial levels by 2050. To achieve this, countries have set targets for reducing greenhouse gas emissions. Türkiye has committed to a 41% reduction in emissions by 2030 and aims to reach net-zero carbon emissions by 2053.

**7** AFFORDABLE AND CLEAN ENERGY



**13** CLIMATE ACTION



In line with the climate action goal, understanding the complex nature of climate change and humanity's contribution to it is crucial. Therefore, significant support is provided for research and educational efforts on this topic. Gebze Technical University (GTU) is actively involved in projects to reduce its carbon footprint, develop technologies for effective recycling to prevent greenhouse gases from accumulating in landfills, and raise awareness through elective courses on this issue.





According to climate scenarios RCP 4.5 and RCP 8.5 prepared by the Turkish State Meteorological Service, the amount of water and sediment in streams feeding the Yuvacık Dam in Kocaeli is expected to be negatively impacted. These scenarios predict rising temperatures, decreasing rainfall, and the start of arid periods with high evaporation rates. GTU's climate action plans include monitoring the variety and quality of campus water resources and determining the most suitable areas for use considering these potential effects.

GTU frequently organizes seminars emphasizing the importance of the climate crisis. As part of the European Youth Week, the GTU Sustainability Office has organized a Sustainability Information Day for students and academics, with a seminar on green energy, climate action, solar panels, and Sustainable Development Goals.

As highlighted in the seminar, the effects of climate change have become significantly evident in various areas of life, including temperatures above seasonal norms, sudden and intense rains causing floods, more frequent and severe storms, longer drought periods, and difficulties in agricultural production.

To mitigate these impacts, GTU's climate action plan includes expanding green spaces, prioritizing tree species with high CO<sub>2</sub> absorption potential for afforestation activities, maintaining and improving campus bicycle paths, promoting and supporting bicycle use among students, and encouraging the use of public transportation.

Efficient and effective use of energy resources is crucial for passing them on to future generations. In this context, it is essential to shift from fossil fuels to renewable energy sources to protect the ecological balance. Therefore, harnessing solar energy is key.



GTU's Directorate of Construction and Technical Works has conducted feasibility studies on campus, identified suitable areas, and initiated the installation of solar panels. Additionally, there are solar panels that have already been installed by Technopark companies on campus. GTU aims to reduce fossil fuel energy use by implementing more energy-saving measures for heating and lighting. Moreover, all new buildings and renovations will follow a low carbon footprint goal.

To contribute to sustainable energy use, staff members receive notifications from the Sustainability Office encouraging them to reduce their electricity usage. GTU is committed to calculating its carbon footprint annually and implementing a reduction plan that aims for a 50% reduction in greenhouse gas emissions before reaching carbon neutrality by 2050. The university's extensive forested and afforested areas also play a role in reaching the net-zero target.

GTU is taking pioneering steps in energy management to promote energy savings. The institution supports the use of energy-efficient equipment over conventional devices, and more than 75% of devices on campus are energy-saving. In 2023, GTU's total electricity consumption was 7,229,796.26 kWh, with a per capita consumption of 626.93 kWh. In line with its goal of creating a sustainable campus, GTU actively seeks to use renewable energy sources and has applied for ISO 50001 certification to enhance its energy management through training programs.

Solar panels installed by firms operating in GTU's Technology Transfer Office (TTO) have the potential to generate 50,000 kWh of electricity annually. In addition, the university has installed a compost machine to process organic waste, with future plans to generate energy from compost.



Various innovative programs are being implemented on campus to combat climate change. These include a bike-sharing system, the use of electric vehicles, carpooling systems, natural lighting applications, and awareness-raising activities on climate change. GTU has contributed to climate research by sending a research team to Antarctica and offers a master's program focused on training experts in climate change.

The TTO is developing significant projects in green transformation, and the Sustainability Office regularly organizes events such as Sustainability Information Day to inform students and academics about these topics.

In addition, the 1st International Congress on Biotechnology Solutions for Sustainability, hosted by the Biotechnology Institute and held at the GTU Congress and Culture Center in 2024, was held to promote innovation in sustainable biotechnology solutions and create a better future. The global effects of climate change were emphasized at the congress, and various solutions were proposed.



In 2023, GTU's electricity and vehicle-based carbon footprint was calculated at 6,157.95 metric tons, with a per capita carbon footprint of 0.533 metric tons. The introduction of solar panels is expected to significantly reduce greenhouse gas levels on campus. Furthermore, new buildings are being designed with smart building features. The total building area on campus is 148,394.21 m<sup>2</sup>, of which 45,318.63 m<sup>2</sup>, or 30.54%, consists of smart buildings.

Additionally, GTU has begun constructing green buildings as part of its sustainable campus goals. The newly built amphitheater features a green roof. GTU's TTO, selected by TÜBİTAK as a solution partner for the "Industrial Green Transformation Project" (Sanayide Yeşil Dönüşüm Projesi), continues to guide SMEs in complying with green transformation regulations and is working on projects aimed at reducing CO<sub>2</sub> emissions.





# RESPONSIBLE PRODUCTION, CONSUMPTION, AND WASTE

Climate change, along with the loss of biodiversity and environmental pollution, is one of the main causes of unsustainable production and consumption practices. The world has a limited capacity, raising concerns about the ability to sustain the livelihoods of present and future generations. To address this issue, new strategies must be developed. Even small changes in production and consumption habits can have significant impacts. Cooperation between governments and individuals is essential to increase resource efficiency, reduce waste and pollution, and establish a new circular economy.



Agricultural irrigation is one of the biggest reasons for global water consumption. As food issues continue to rise, it has been observed that many food products are lost during or after the production process. GTU is conducting academic research on next-generation agricultural production techniques, particularly in urban farming and soilless vertical farming technologies, aimed at reducing the amount of water required for agricultural production and preventing food losses. As part of this effort, a vertical farming R&D facility called the "Plant Factory" (Bitki Fabrikası) has been established on the GTU campus.

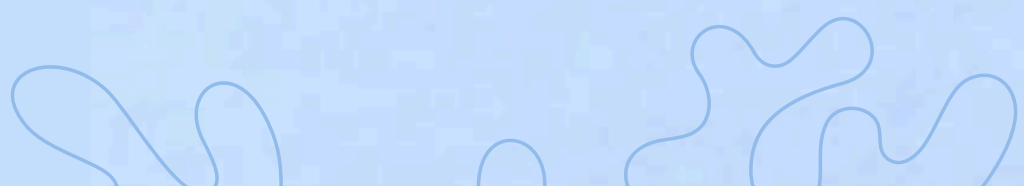


In this facility, plant growth tests are conducted using a vertical farming system within containers. After fertilizer is added, the water is recirculated, saving both water and fertilizer. Compared to traditional irrigation methods, the vertical farming system saves 95% of water. The results obtained from this facility increase the effectiveness of water management strategies on campus. Additionally, GTU conducts various greenhouse and field studies to enhance agricultural sustainability and organizes workshops to raise awareness on this topic.

Responsible production and consumption also encompass good waste management practices. Hazardous chemical wastes are properly disposed of by GTU in accordance with relevant regulations. Each division on campus has containers for collecting recyclable waste such as paper, plastic, and glass. Various events are organized both on campus and in surrounding areas to raise awareness about the collection and recycling of waste. Special days like World Environment Day and World Cleanup Day are celebrated with events held in cooperation with local municipalities.

GTU collaborates with the district municipality to collect recyclable waste (paper, plastic, and glass). Gebze Municipality is responsible for the routine collection of paper, plastic, glass, and metal waste on campus, which is systematically separated and transformed into various industrial products for recycling in four different streams. Non-recyclable waste is disposed of in a manner that does not harm the natural environment.

A Zero Waste Division is present on the GTU campus, and each department has an assigned person responsible for zero waste efforts. The GTU Zero Waste Division is responsible for managing organic, inorganic, and toxic waste generated on campus. Furthermore, the individual responsible for zero waste in the departments with laboratories oversees the labeling, storage, and security of toxic waste until it is sent to the collection area. The university implements the 3R (Reduce, Reuse, Recycle) program with its academic and administrative staff as well as students, regularly publishing notifications from the Sustainability Office to inform staff and students about the importance of waste reduction. To raise awareness, a Zero Waste Day is held annually. This year, a special event was organized for the collection of electronic waste (for more details on the event, see here [wwwwww](#)).



Additionally, various online systems (EBYS, APEC, Student Information System, and so on) are being used for institutional purposes to reduce paper waste. GTU enforces a double-sided printing policy for printer usage, with all printers operating in accordance with this rule. To reduce the use of plastics, water dispensers have been installed on campus as a strategy to decrease the sale of bottled water. Staff and students are encouraged to use their own cups and bottles when accessing water from the dispensers. To raise awareness, warning signs are placed on taps that filter tap water, discouraging the use of plastic cups and large water bottles, and promoting careful use of tap water.



GTU aims to recycle the waste generated on campus. Approximately 50.85% of the organic waste produced at GTU is recycled. A special team has been established on campus to collect and dispose of inorganic waste without harming the environment, and each department has an assigned person responsible for this task. GTU processes inorganic waste in collaboration with Gebze Municipality, with approximately 67.11% of the collected waste being processed. Around 25.52% of the toxic waste produced on campus is treated. In this process, GTU collaborates with Chimirec Avrasya Company and Nuh Cement Factory. Each building has designated containers for waste batteries and biological hazard waste. All toxic waste from the laboratories is collected in sealed containers and delivered to the relevant company. The wastewater generated on campus is treated by the Izmit Water Treatment Plant, located 1 km away from the GTU campus. The facility employs advanced biological wastewater treatment and has a long-activated sludge system capable of advanced nitrogen and phosphorus removal in wastewater treatment.



# CLEAN WATER AND ECOSYSTEMS

GTU meets the campus's water needs with municipal water supplied from the Kocaeli Yuvacık Dam. Since this water meets drinking water standards, it can sufficiently meet the campus's basic water needs. The annual water consumption is 112,173 cubic meters, with an average monthly usage of 9,347 cubic meters. The areas with the highest water use on campus include laboratories, classrooms, offices, general building consumption, sports facility operations, and irrigation activities. The campus has eight underground water wells for irrigation purposes. These wells are fed by rainwater filtering through the soil. Approximately 1,290 m<sup>3</sup> of water is used annually from these wells for irrigation. The underground water wells are considered one of the university's most important assets. All buildings at GTU have separate sewage systems for wastewater and clean water (rainwater).

The Sustainability Office raises awareness about preserving water resources and sends various warning notifications to encourage people to save water. These efforts include various measures suggested to reduce water consumption and recycle water within the institution. For example, it is recommended to build rainwater storage tanks near buildings. The Saz Creek, a significant water source under pressure from industrial activities in the Gebze region, runs through the campus. The rehabilitation of the creek was completed eight years ago, and natural landscaping techniques were used along the banks to prevent flooding. Additionally, samples are taken from the creek's flow to monitor water quality regularly, and necessary measurements are conducted. GTU's campus and social facilities are directly connected to the Marmara Sea due to their location along the Izmit Bay. The university's activities related to the Marmara Sea continue with environmental monitoring studies and research addressing the effects of climate change.

**6** CLEAN WATER AND SANITATION



**14** LIFE BELOW WATER



**15** LIFE ON LAND





One of the most serious environmental issues affecting the Marmara Sea, mucilage formation, has been a focus of research conducted by the GTU Department of Geomatics Engineering and the Institute of Earth and Marine Sciences in recent years. These studies are important for preserving the water ecosystem and aquatic life.

Green areas in cities are increasingly being used to meet the housing, transportation, health, and education needs of the growing population. This situation leads to the conversion of forests into agricultural land to increase food production, resulting in serious soil degradation. These degradations negatively affect the ecosystem services provided by soil and forests, such as providing clean water and air, controlling floods, and preserving biodiversity.

The relationship between soil degradation and biodiversity emphasizes the importance of ecosystem conservation and restoration. Preserving this diversity provides not only ecological benefits, but also contributes to education, culture, and health.





GTU aims to promote sustainable food sources to prevent soil loss on its campus. The campus area is designed sustainably for education, landscaping, and health purposes, with efforts made to preserve biodiversity. These efforts will contribute to the creation of sustainable ecosystems, with the active involvement of the community as a stakeholder. GTU takes on a significant responsibility in protecting forest ecosystems and combating desertification, aiming to raise public awareness by organizing educational programs on the functioning and sustainable use of ecosystems. Each year, approximately one hundred saplings are planted on the GTU campus.

GTU is home to a campus with a wide range of biodiversity, hosting various plant and animal species. The campus is particularly rich in bird species, and informational signs have been placed at various points to introduce the different bird species. These signs provide visitors and students with the opportunity to learn more about the natural environment and the bird species found on campus. Living spaces are also created for the other living beings sharing the campus, and GTU protects their right to life. In this regard, a program plan is in place to protect animals and plants, and a directive exists to safeguard stray animals (for the Healthy Campus-Stray Animals Directive YÖ-0101, see <https://www.gtu.edu.tr/en/kategori/3075/0/display.aspx>).



# TRANSPORTATION



At GTU, ensuring efficient and effective access to the campus for staff and students is considered an important step toward sustainability goals. In this regard, various measures are being taken to make transportation more sustainable and convenient. GTU manages a significant portion of on-campus transportation with shuttles and a fleet of 15 vehicles, including one electric vehicle. Free shuttle services are provided to academic and administrative staff as well as students between faculties and departments, following predetermined schedules and routes. The shuttles operate five times a day.

GTU also offers free off-campus shuttle services for academic and administrative staff. To minimize carbon dioxide emissions, electric vehicles and bicycles are made available free of charge for staff and students within the campus. Additionally, there is a bicycle club that encourages cycling, and blue-colored bike lanes, parking areas, and repair stations are available throughout the campus. On average, 260 zero-emission vehicles (ZEV) operate on the campus daily, with a ratio of 0.022 ZEVs per total campus population.



The total parking area at GTU covers 36,994 square meters, accounting for 0.265% of the total campus area. Parking is only allowed in designated areas, ensuring a smooth traffic flow. There are also many pedestrian walkways, which are equipped with lighting for safe nighttime walking. Vehicle entry is restricted to certain areas, and warning signs are posted to enforce speed limits, ensuring pedestrian safety. Various adjustments have been made for individuals with disabilities, including the construction of ramps, walkways, and accessible entry and exit points, providing a safe and convenient travel option for them. A traffic management system and numerous traffic signs are in place to regulate vehicle movement. These measures are designed to discourage vehicle use and prioritize pedestrians. In addition, steps have been taken to promote public transportation over individual travel.

The Marmaray train line, which connects Istanbul and Kocaeli, has a station on the campus, with trains to Istanbul running every 15 minutes. Bus stops located at the campus exit provide commuting to and from various districts of Kocaeli. Moreover, through a carpooling system, staff and students can share rides if they wish. These services have led to a reduction of approximately 10% to 30% in parking area usage at GTU.







*Take green steps to  
the future!*