IZMIR INSTITUTE OF TECHNOLOGY

Sustainability Report 2025

# Content
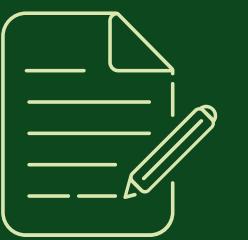
Our Commitment

Our campus location is truly one of a kind, distinguished by its diverse natural, environmental, and historical richness. We take great pride in being part of a campus that embodies such a strong combination of natural beauty, cultural heritage, and vibrant social life. As members of IYTE, we are deeply committed to preserving these values and continuously working to make our campus more sustainable, livable, and inspiring for everyone. Our mission goes beyond protecting what we already have — we aim to create an active culture of sustainability that involves our students, colleagues, and all stakeholders in meaningful collaboration. Through education, research, and community engagement, we seek to generate lasting change and contribute to environmental and social well-being both locally and globally. Our dedication to protecting, enhancing, and celebrating the unique assets of our campus is an ongoing and evolving journey that we pursue with enthusiasm and responsibility.
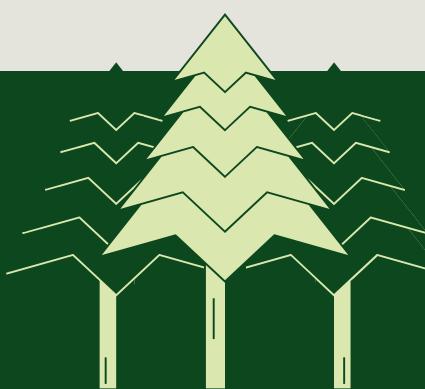
Our Campus

Our university is located in the Urla Region of İzmir, in western Turkey. The campus, one of the largest in the country, covers 35,000,000 m² of gently sloping terrain with Mediterranean pine forests, maquis vegetation, wetlands, and fertile plains. The region has a typical Mediterranean climate—hot, dry summers and mild, rainy winters. The campus enjoys a microclimate with sunshine and light breezes throughout the year, offering beautiful sea views and direct access to the coast. It also includes a small waterfall, a winter stream, and an alluvial plain.

About 28,000,000 m² of the area is used for campus facilities, which include 52 sustainable buildings, large open areas for social interaction, sports fields, permeable roads and parking areas, and climate-adapted landscaping that helps preserve natural vegetation.

Our University
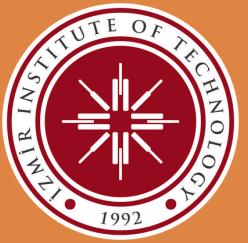
Sustainable Green Campus Coordination

IZTECH is an English-medium public university composed of three faculties—Science, Architecture, and Engineering—offering undergraduate, master's, and doctoral programs. In 2025, the university provides education to 7,247 students, including 5,972 undergraduate and 1,275 graduate students, supported by 1,228 academic and administrative staff. Recognized as one of Türkiye's research universities, IZTECH stands out for its strong emphasis on scientific excellence, innovation, and sustainability. The university fosters a dynamic ecosystem that bridges academia, technology, and industry through its Technology Development Zone, Technopark İzmir, Innovation Center, Technology Transfer Office, and multiple Research and Application Centers. Together, these structures form an integrated platform that supports interdisciplinary collaboration and contributes to regional and national progress in science and technology.

The IZTECH Sustainable Green Campus Coordinatorship was established in 2014, laying the foundation for a comprehensive institutional approach to sustainability. The first step toward this vision was the Search Conference for a Sustainable Living Campus, themed "Happy Campus," which brought together diverse campus stakeholders to co-create ideas for a livable, resilient, and inclusive campus environment. Although a formal Framework on Sustainable Campus was defined later in December 2019, these early efforts shaped the participatory culture that continues to guide IZTECH's sustainability actions today.

Since 2020, IZTECH has adopted the UI GreenMetric World University Ranking as a self-assessment and benchmarking tool to measure progress and identify opportunities for improvement. Guided by the motto "Happy Campus, Happy Peninsula, Happy İzmir," the Sustainable Green Campus Coordination Team—comprising 12 members, including the rector, field experts, and dedicated young researchers—has continued to advance the university's sustainability vision. Strengthened by the active involvement of Eco Motion and numerous student-led initiatives, the Coordinatorship remains a driving force for environmental and social transformation at IZTECH, maintaining its bottom-up, community-centered approach to campus sustainability.
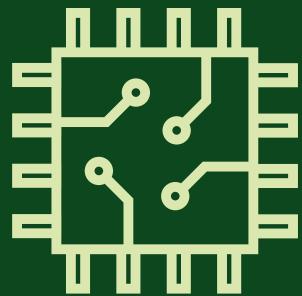
1. Setting & Infrastructure

IZTECH aims to strive for improvement in the first category, "Setting and Infrastructure". In recent years, efforts in this aspect have been considerably enhanced, particularly in certain areas such as the conservation of biodiversity on the campus, amount of planted vegetation, supplying new healthcare facilities and equipment (i.e. a fully equipped and operated ambulance and an ambulance center building) through various projects and investments. Our institute owns 35.000.000 m2 of land and approximately 28.140.000 m2 of which is currently dedicated to education and research for 7236 regular students and 1178 academic and administrative staff (Fig. 1a). According to the data provided by the directorate of construction and technical works of IZTECH, IZTECH owns a total campus ground floor area of buildings of 97.861 m2, where a total campus building area of 245.579 m2 (Fig. 1b). Amongst total area, total forest area corresponds to 22.185.819 m2, whereas total planted vegetation area is 5.868.320 m2 with a percentage of 20.9% with respect to the total campus area. With the recent dense efforts, which have been continuously spent for the last three years, IZTECH significantly increased planted vegetation area and approximately multiplied twice due to the activities particularly held in the last three years.

a)   b)
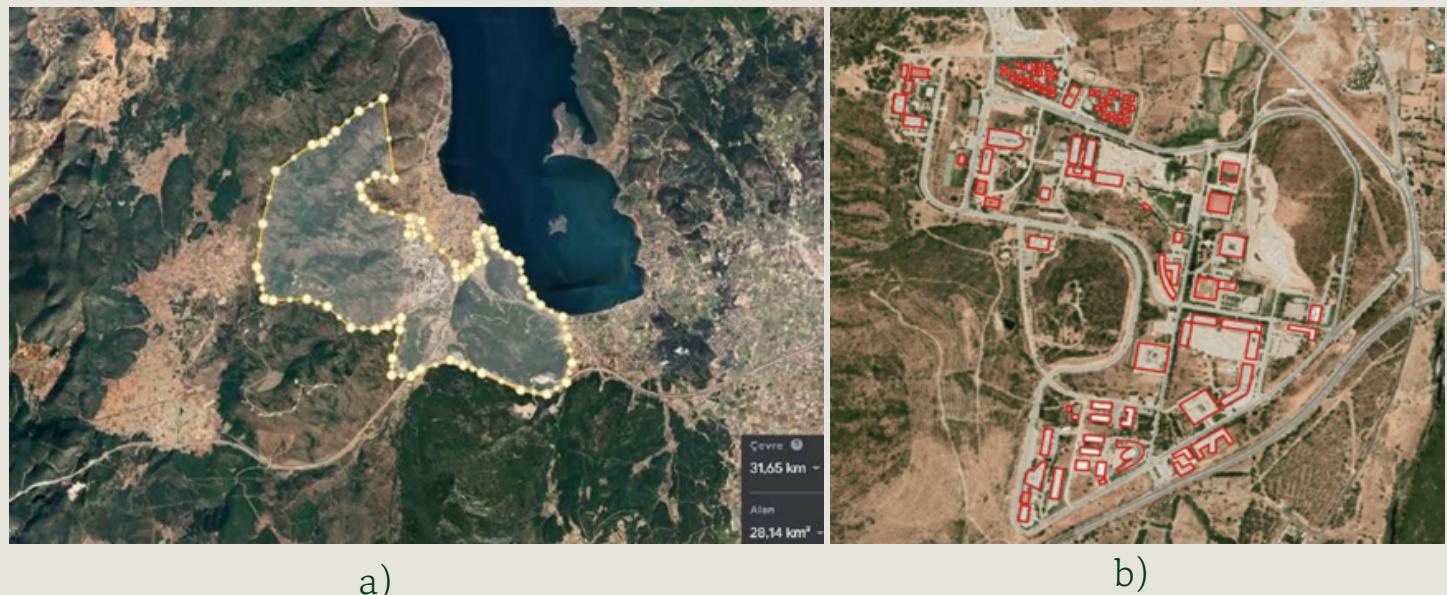
Figure 1. a) Campus area, b) campus buildings distribution

On the other hand, IZTECH gives extra attention to water absorption. It is usual in IZTECH to see green roofs, parks, sidewalks, etc. with water absorption ability. Moreover, IZTECH separates considerable amount of its budget to the activities related to sustainability including: staff services for mass transportation to reduce the CO_2 emission and to reduce private vehicles in the campus, the fuel and maintenance of these service buses, daily meal expenses of the students and the staff, better accessibility for disabled people, continuous dormitory construction because of which there is no undergraduate student in IZTECH who has demanded a dormitory

accommodation and we couldn't provide, extension of significant number of study rooms which are mostly open till midnight, where most of the labs are also modified in terms of involving study rooms for the students. IZTECH buildings are continuously improved for a better heat isolation and, significant amount of budget is reserved for the assessment of seismic behavior of the existing campus buildings, and if necessary to retrofit them, as well as routine building maintenance activities. There is no campus building which has not taken any of these services. IZTECH has an aim to fully implement all facilities within the campus for disable and maternity care (Fig. 2). We carefully identified the deficiencies we observed in previous years in this context and allocated a significant budget to address them within this year. We can proudly say that there is no building within our campus that poses challenges in terms of disabled, special needs, and/or maternity care. In 2025, we have reserved 3 additional lactation rooms fully equipped with required furniture for each faculty building to improve our insights. Tactile warning surfaces and non-slip tape installations were carried out inside and outside of all buildings in the campus. All buildings in the campus have accessible ramps. Protective curbs were added to the edges of the ramps. Directional signage was installed inside and outside, and Braille was added to door nameplates, positioned at the height compliant with TS 9111, for all buildings. An audible floor information system was installed for the existing accessible elevators, providing audible information inside and outside. Directions were provided to accessible toilets and the elevators. The interior stair handrails were revised to comply with the standards. The undersides of the stairs were closed to provide a minimum height of 220 cm. Accessible toilets were arranged to comply with the standards. Braille alphabet information and warning signs were applied to the elevators. An induction loop system was installed in the elevators. Pull cord and presence sensor systems were added to the accessible toilets. Installation of voice evacuation system devices for emergency exits was carried out.

Figure 2. Facilites for disable and maternity care
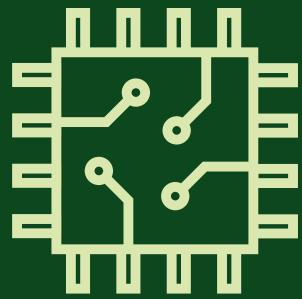
1. Setting & Infrastructure

Security infrastructure is fully available and operational on our campus. Our campus has 3 entrances and each of them is controlled by security and camera systems. In IZTECH, we have a clinic on the campus with capability of providing first aid, emergency room, and certified health personnel including nurses and medical doctors. The clinic has capability to perform dental examination and treatment, vaccination, emergency service and laboratory (Fig. 3a). We have our own Fire Engine, which is fully equipped, always ready for intervention (Fig. 3b). Every building has a smart fire alarm system, several fire extinguishers on every floor, an integrated fire hose through the walls as well as a large fire hydrant outside the buildings. A fully equipped ambulance and an ambulance station building have been supplied in early 2024. In an emergency, 7 places are marked on the relevant map for gathering people. With well-educated security staff and fully operational modern security systems, its own fire engine and its own ambulance station 7/24 located on the campus, the security responding time for accident, crime, fire, and natural disaster is considerably less than 5 minutes in IZTECH campus.

a)

b)

Figure 3. Facilites and equipment in IZTECH, a) healthcare, b) fire engine, c) ambulance

c)

Figure 4. Baby Care Room

We also care about conservation of plants, animals, and wildlife, genetic resources for food and agriculture and we secure them in conservation facilities (Fig. 5). In 2025, we have fully implemented "IZTECH Biodiversity Conservation Strategy Plan (2025-2050)", which we reflect our short, medium and long-term goals and vision. In line with this effort, we have prepared a comprehensive flora catalogue to document our diverse plants. All these documents can be found on our sustainability portal. We have two greenhouses on campus, which are used for plant science research activities and ornamental plant propagation for campus landscape gardening. The research activities are conducted by the Izmir Institute of Technology Plant Science Application and Research Center (PSTAR). The main scope of interest for that center is conducting research related to plant genetics and biotechnology. The PSTAR currently conducts several research projects in relation to the conservation of local agriculturally significant plants in Türkiye, including fig and salep orchids. In addition, biodiversity in the forests of our campus is being investigated for academic purposes. We benefit from mobile apps (Fig. 5) and nature photography contests (Fig. 6) within this context.


Figure 5. Efforts on Conservation of biodiversity in IZTECH
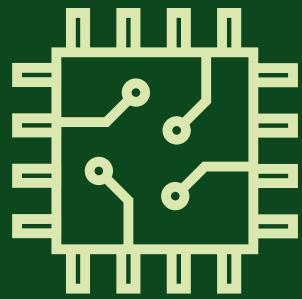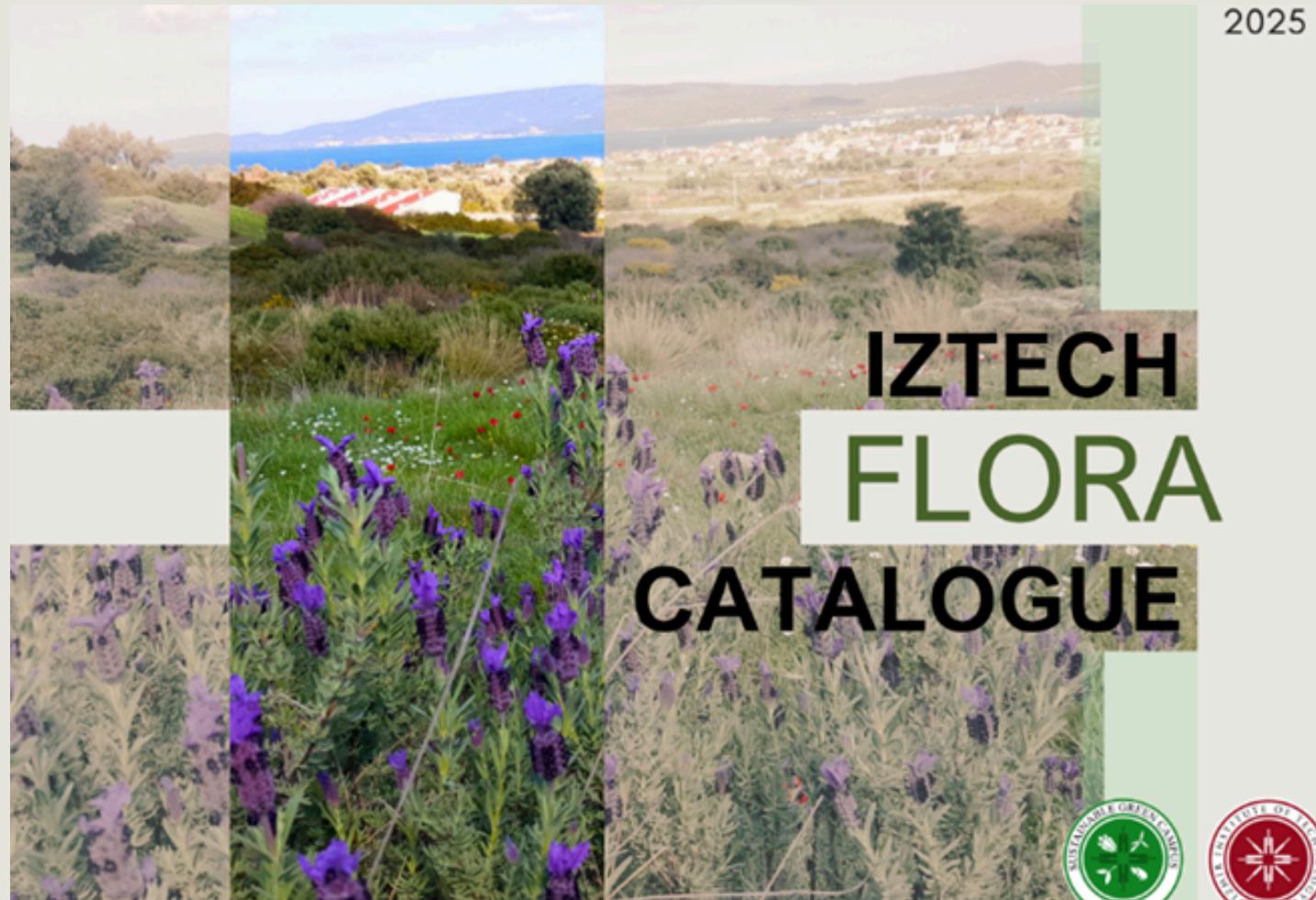
Figure 6. IZTECH flora catalogue and winner photograph of IZTECH Nature Photography Contest 2025

2. Energy & Climate

IZTECH focuses on energy efficiency improvement, monitoring efficiency on in daily basis, production of renewable energy and energy consumption reduction thus decreasing greenhouse gas emissions. To improve it further, ISO 50001 energy management certification has received, and an external energy management unit has been established. As though the IZTECH is an energy positive campus, energy efficient appliances are still used in most of the buildings with increasing amount. LED light bulbs, light bulbs with motion sensors, energy efficient air conditioner systems are some of the approaches to reduce consumption. Roof isolation of the buildings has been repaired due to the strong winds and rainy season every year. Most of the buildings have natural lighting and natural ventilation.

Solar panels and wind turbines are actively working on campus. Electricity is being generated by solar panels on roofs of some buildings as well as the swimming pool being heated by solar power. Wind turbines with 13.5 MW capacity located on our campus generate about 4.72times more electricity than used at the campus. The electricity generated is given to the city hub. IZTECH has achieved positive value on the impact with the last improvements in renewable energy approaches.

Figure 1. Examples of natural lighting in our buildings.

Figure 2. Renewable energy sources at our campus.

2. Energy & Climate

The Gulbahce region experiences a significant amount of sunshine throughout the year and is also rich in geothermal resources. Efforts to reduce greenhouse gas emissions are being considered across various areas, including electric vehicles operated by the university, bicycles on campus, waste sorting bins for metals, plastics, paper, glass, batteries, and general waste, as well as wastewater treatment and reuse. Additionally, renewable energy sources such as wind and solar power are being utilized, along with lab-scale setup for producing hydrogen energy using electricity generated from wind turbines.
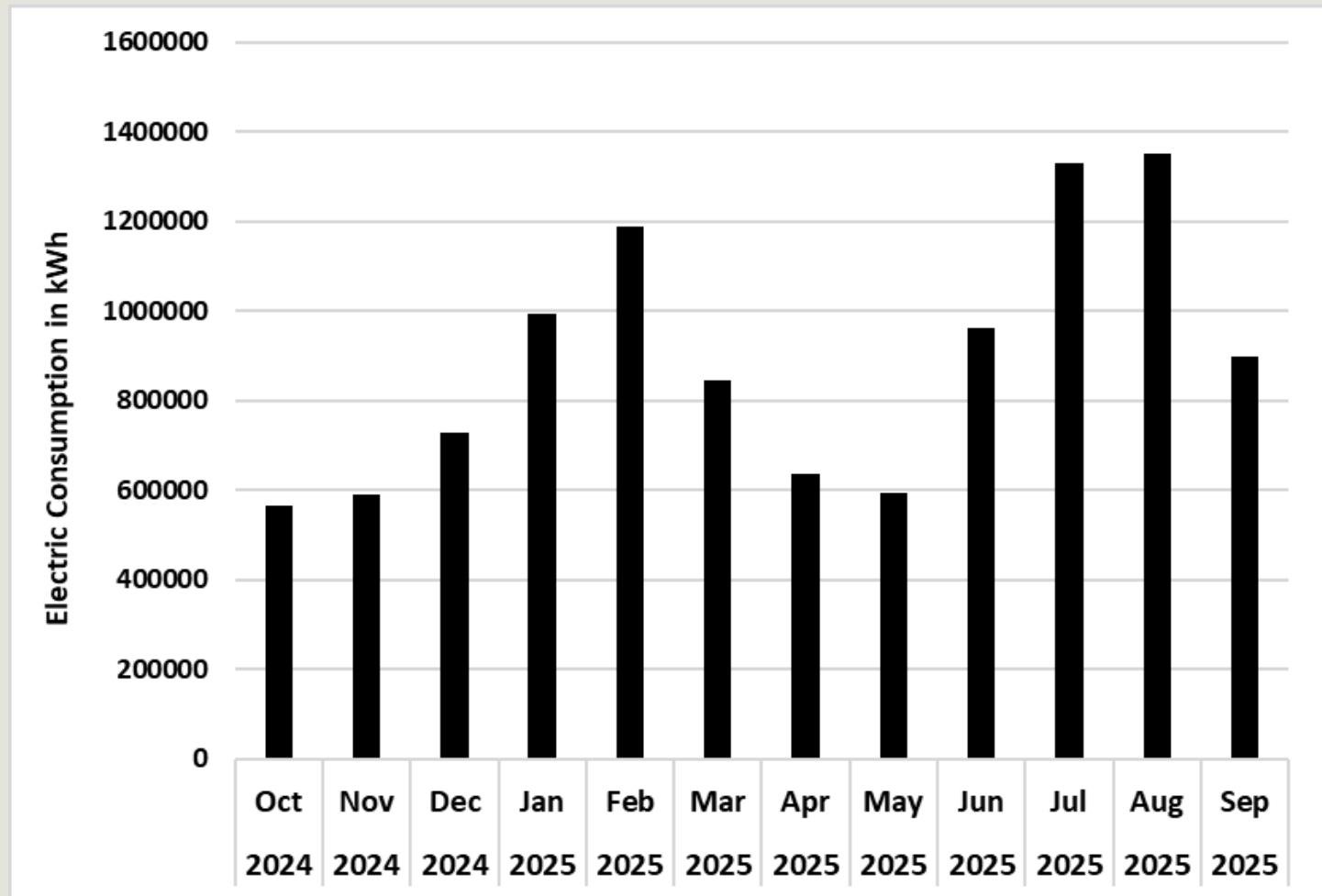

Figure 3. Electricity consumption of IZTECH campus in last 12 months

IZTECH conducts several activities to contribute the technology and innovation. Some of the activities are as follows:

Under an IZTECH-led research initiative, international studies have focused on recovering strategic metals from the ash produced by household waste incineration processes. The research strongly shows that this ash should be viewed as a valuable resource, not simply a disposal burden.

Incineration itself is highlighted as Türkiye's most rapid and feasible short-term waste management solution, offering the dual benefits of reducing waste volume by up to 90% and generating energy. A crucial finding from the analysis of municipal waste ash reveals a significant economic opportunity. Based on a 1.8% aluminum content, the data indicates Turkey generates over 500000 tons of recoverable aluminum annually. This massive figure is approximately seven times higher than Turkey's current primary aluminum production of 82000 tons. This vast difference represents a major economic loss for the nation. Furthermore, the practice makes strong environmental sense, as recycling aluminum saves 20 times the energy required for new production, presenting a critical opportunity for sustainable resource management and waste minimization. The research team has published their findings in high-impact international journals and is actively continuing their efforts to scale the process for industrial application.

IZTECH is a part of project called Development of Advanced Composite Pressure Vessels for Hydrogen Storage including on-site testing of new hydrogen storage unit. Efficient storage of hydrogen is crucial for the success of emerging hydrogen energy markets & is strongly connected to the performance & safety of the components of the supply chain. Currently, hydrogen is stored & transported in a compressed form to satisfy the safety & weight regulations for high pressure gases. Alternatively, composite storage vessels offering high strength & low weight addresses this largely unmet problem with a multi-disciplinary team that aims at developing cost-competitive lightweight composite cylinders with improved mechanical & barrier properties for hydrogen storage using additive manufacturing technology. Such 3D printed liners with barrier coatings make them impermeable to gases. Further, novel chemo-chromic material-based sensors will be developed & integrated into these structures for real-time monitoring of the diffusion of gas. The 3D printed hydrogen storage vessels will be integrated to the wind hybrid system (wind turbine, PV unit, battery system) and will be tested on the site to evaluate their performance.

IZTECH is a part of project titled Green Hydrogen Generation Energized with Innovative Small Scale Wind Turbine which is a part of the Green and Blue Transformation Program, with assistance from the İzmir development agency.

This project aims to produce the electrolysis unit, one of the most important components of green hydrogen production, which has an increasing demand both domestically and abroad. Within the scope of this project, a 2 kW level module will be created, which has not yet been produced locally in our country. Design parameters that will maximize operating efficiency will be tested in both single-cell and multi-cell structures. These parameters include many components such as precious metal loading rate for the anode and cathode separately, catalyst material type, array design, dimensions, operating voltage, squeezing pressure, feed water purity and temperature, cooling load.

2. Energy & Climate

On the other hand, the production of hydrogen produced with an electrolysis unit powered by renewable energy sources, based on domestic and national technologies, is also very important in terms of the green hydrogen concept. This project will allow the production of hydrogen, one of the strategic energy carriers of the future, through an electrolysis unit developed with national engineering, energized by a vertical axis wind turbine developed with national technologies.

Figure 4: The vertical axis wind turbine used in the project

IZTECH has committed significant effort to adopting sustainable transportation practices. This isn't solely due to its status as an energy-positive campus. A large number of electric vehicles (EVs) are already in use across the campus, including e-buses, e-scooters, and e-bikes available for use. By leveraging this surplus, renewably-generated electricity, EV chargers always have a positive, sustainable power source.

Furthermore, some research groups require electricity even in remote and rural locations, such as on mountaintops. To address these challenging circumstances, they utilize a mobile charger equipped with solar panels. Thanks to these solar panels, this mobile unit is usable in virtually any environment where electricity is needed for research activities.

Figure 5. EV battery chargers and mobile chargers from left to right

IZTECH completed campus mapping studies that detail important energy and climate elements. This comprehensive map pinpoints the locations of various sustainable resources, including EV charger locations, a mobile charger location, solar energy zones, and a wind turbine zone, alongside historical features like the Ancient Roman bath and a geothermal zone, all made available for public information. Furthermore, to support eco-friendly travel within the campus, the map integrates with an e-scooter application to show the real-time availability and locations of scooters.

2. Energy & Climate
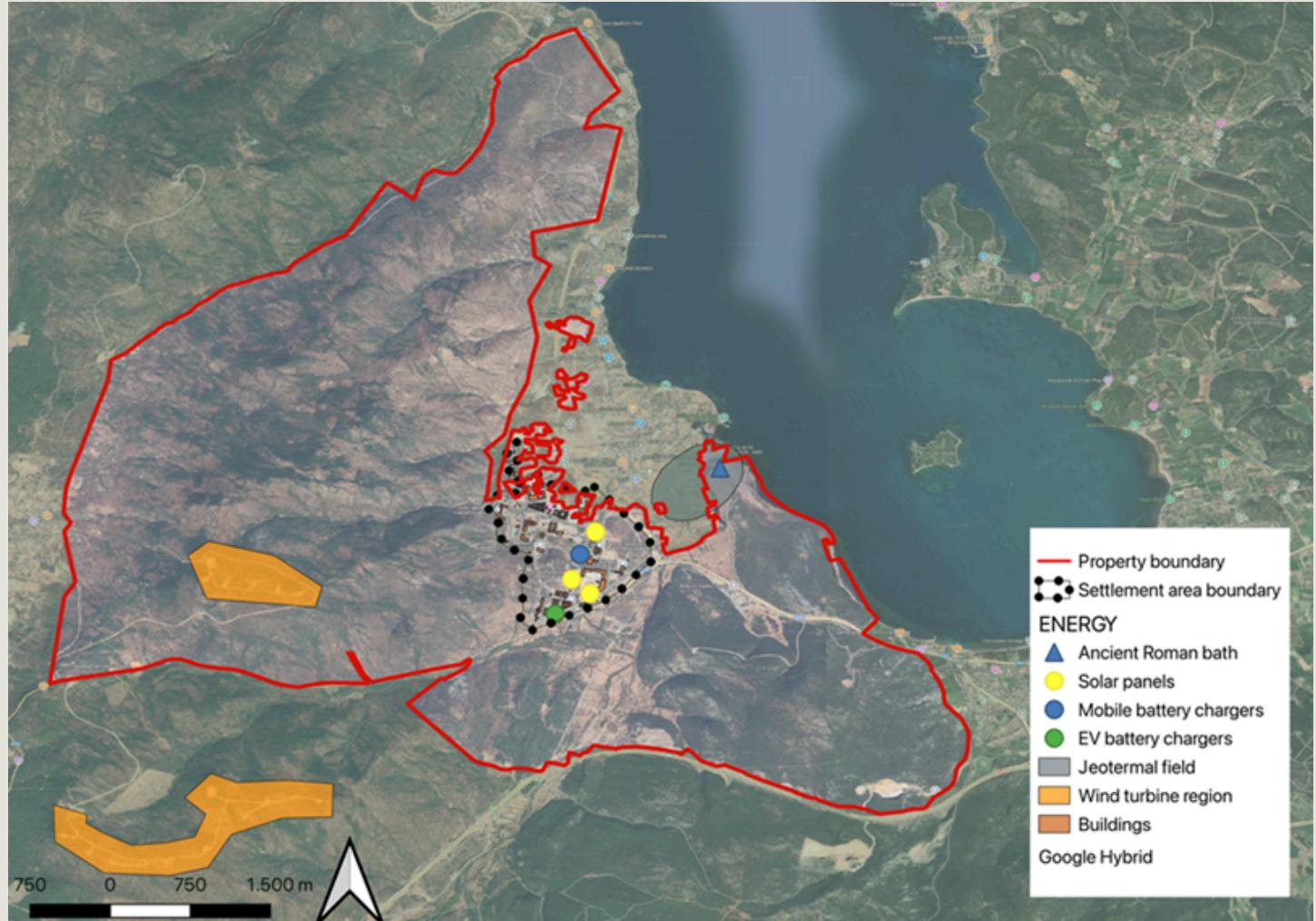
Figure 6. Map of energy and climate related elements in the campus

Legend (ENERGY):
- Property boundary
- Settlement area boundary
- ▲ Ancient Roman bath
- ● Solar panels
- ● Mobile battery chargers
- ● EV battery chargers
- Jeotermal field
- Wind turbine region
- Buildings
- Google Hybrid
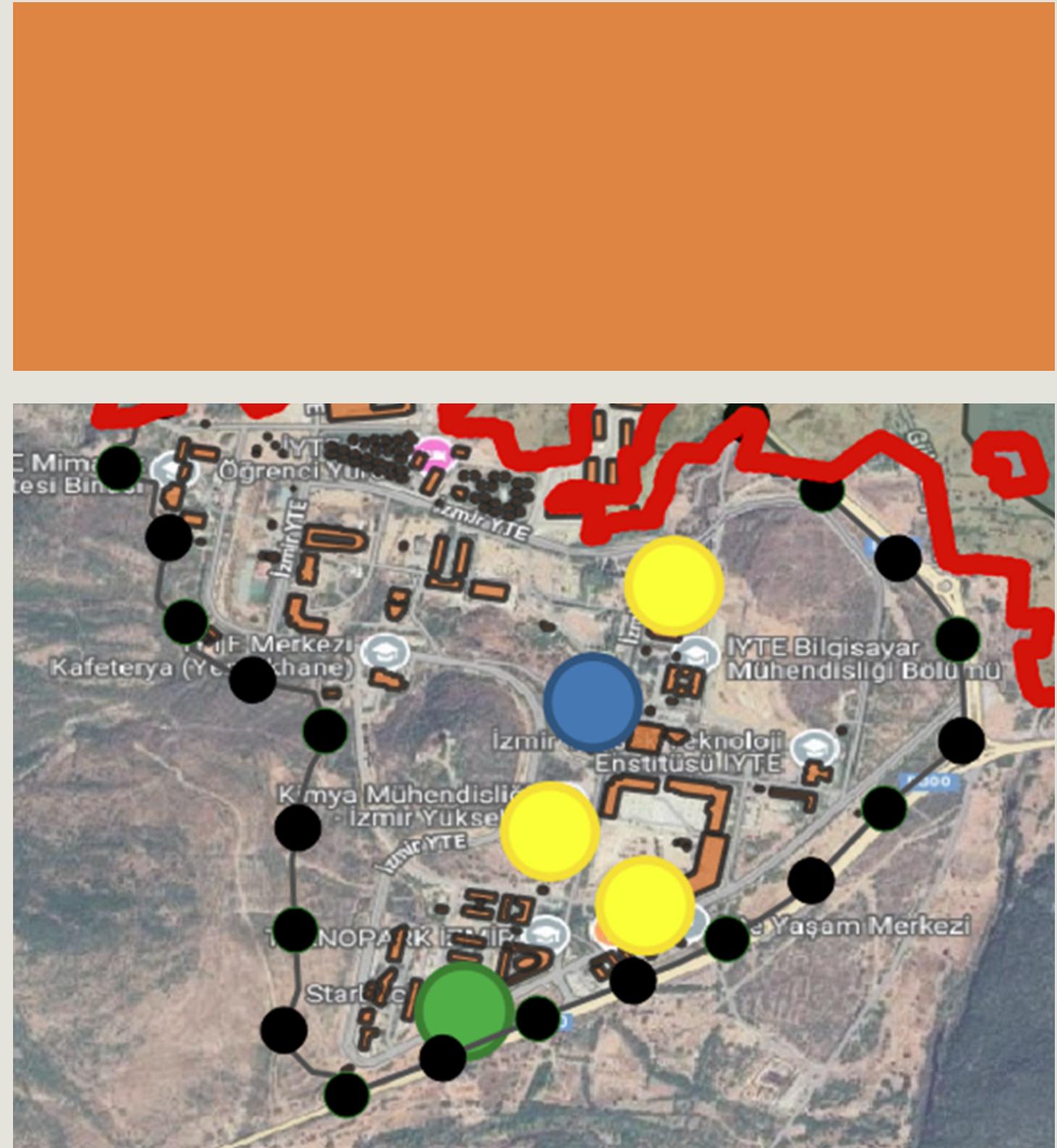
3. Waste

Izmir Institute of Technology (IZTECH) continues to strengthen its position as one of Türkiye's leading sustainable universities, ranking #140 worldwide and #11 nationally in the 2024 UI GreenMetric World University Rankings with an overall performance score of 83%. Its sustainability vision integrates environmental responsibility with academic excellence, guided by a comprehensive Zero Waste Campus strategy aligned with SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action).

Strategic Framework:

IZTECH's sustainability governance is anchored in the Waste Management Directive (2024), which consolidates campus-wide responsibilities under the Zero Waste Certificate granted by the Ministry of Environment, Urbanization and Climate Change. This directive operationalizes the 3R principles—Reduce, Reuse, and Recycle—and establishes standardized practices for collection, segregation, documentation, and recovery across all campus units.

The directive also defines departmental waste coordinators, designates interim storage areas for hazardous and recyclable waste, and ensures compliance with both the Zero Waste Regulation (Official Gazette No. 30829, 12.07.2019) and the EU Waste Framework Directive (2008/98/EC). Through this integrated policy approach, IZTECH aims to achieve:

- Carbon neutrality by 2030;
- 75% campus-wide recycling and recovery rate by 2028;
- 20% per-capita reduction in mixed waste generation by 2030
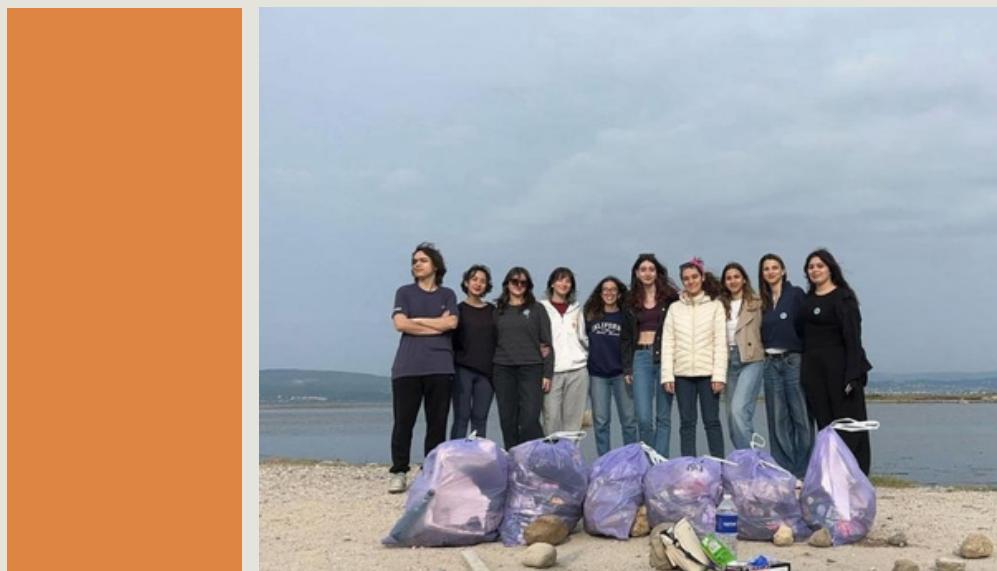
Figure 1. IZTECH Students Participating in a Waste Collection Event

Figure 2. IZTECH Composting Box

Integrated Waste Segregation and Digital Monitoring:

To ensure full participation and traceability, IZTECH has established a comprehensive waste segregation infrastructure supported by a web-based digital waste map. This map provides real-time information on all collection points—covering paper, plastic, glass, metal, organic, electronic, and hazardous waste bins—and allows users to identify the nearest container via the university's sustainability portal.

A color-coded system enhances clarity and prevents contamination:
- Blue: Paper and cardboard
- Yellow: Plastics
- Green: Glass
- Gray: Metals
- Brown: Organic waste (food, garden, biodegradable materials)
- Black: General non-recyclable waste

Figure 3. Clear Labeling and Visual Guidance

3. Waste

Complementary collection points exist for batteries, electronic waste, and used cooking oil, all of which are mapped and regularly maintained by the Waste Management Commission.

Waste Performance Overview (2024):

The campus waste performance demonstrates significant improvements in recovery efficiency and circularity compared to previous years:

- Organic Waste: Approximately 50% of all organic waste is recovered through biogas production, composting or reuse as animal feed, significantly reducing landfill dependency.
- Inorganic Waste: Represents around 40% of the total waste generated on campus, with 100% of separately collected inorganic waste successfully sent to licensed facilities for recycling.
- Toxic Waste: Accounts for less than 2% of total campus waste, all managed under strict safety and legal procedures, including digital tracking via the MoTAT system.
- Sewage and Wastewater: 100% of campus wastewater is treated at IZTECH's dedicated treatment plant, and a significant portion is reused for landscape irrigation following disinfection improvements.

Reduction and Reuse Programs:

IZTECH has reduced single-use plastic consumption by 40% since the introduction of the Electronic Document Management System, reusable glass bottle distribution, and a plastic bag fee system that encourages behavioral change. The installation of free drinking water fountains across the campus has further minimized bottled water usage.

Compliance and Tracking:

IZTECH ensures full legal and environmental compliance through the MoTAT system, where all hazardous waste transfers—including laboratory acids, solvents, chemical residues, and contaminated materials—are digitally recorded under their European Waste Codes (EWC) such as 06 01 01, 15 01 10, 16 05 07, and 18 02 05. Collaborations with licensed recycling and treatment facilities ensure that all collected waste streams are processed responsibly.

Moreover, data-driven monitoring of waste quantities, recovery ratios, and treatment performance allows continuous improvement and annual reporting within the IZTECH Sustainability Dashboard
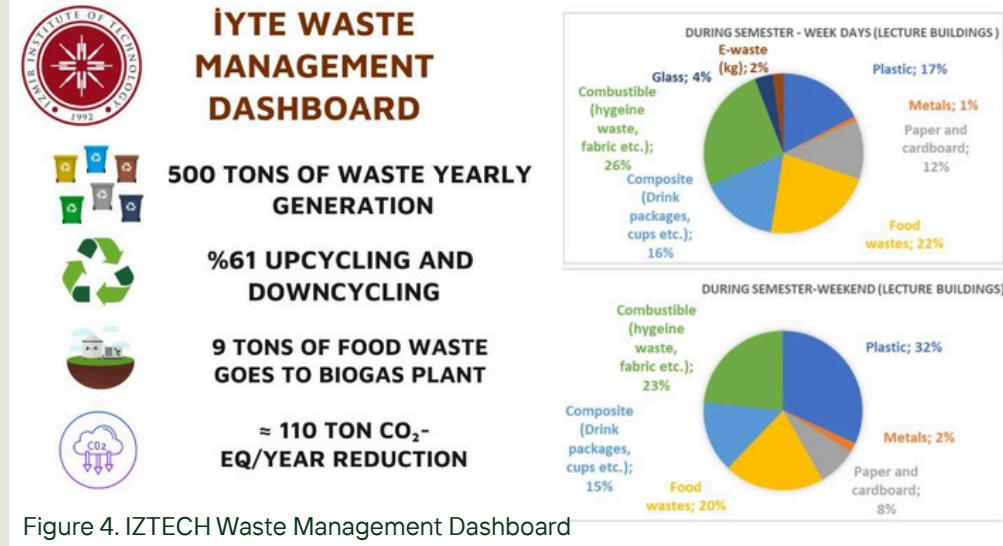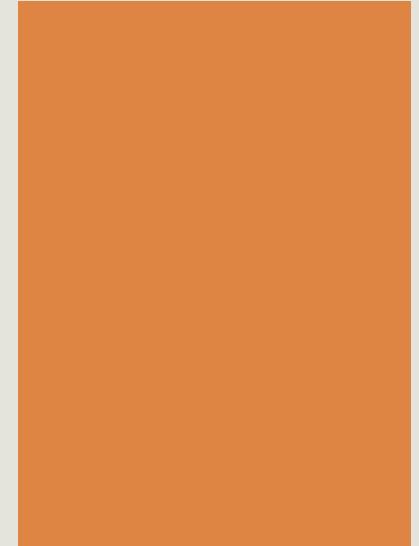
Figure 4. IZTECH Waste Management Dashboard

Results and Forward Outlook:

Through consistent implementation of its sustainability strategy:
- Over 70% of total campus waste is now diverted from landfills through recycling, composting, and recovery practices.
- The contamination rate in recyclables has decreased steadily due to improved source segregation and awareness campaigns.
- Energy and water reuse programs have strengthened resource efficiency across all operations.

Moving forward, IZTECH aims to enhance its digital waste monitoring, expand laboratory solvent recovery initiatives, and integrate campus-level Life Cycle Assessment (LCA) indicators into annual sustainability reporting.

Sustainability at IZTECH is not limited to systems or infrastructure—it is actively reinforced through continuous engagement, awareness, and education. The university organizes diverse activities each year to strengthen environmental consciousness and community participation.

Recent efforts have included creative reuse projects, where students and staff collaboratively transformed recyclable materials into functional or artistic products, showcasing the value of waste as a resource. Faculty-based awareness programs have also been implemented to encourage friendly competition in waste reduction and recycling performance, helping to build a sense of shared responsibility across departments.

In addition, the university has carried out environmental campaigns focusing on resource recovery, such as converting used materials into renewable energy sources, supported by information sessions that emphasize the environmental and economic benefits of sustainable practices.

3. Waste

Looking ahead, IZTECH plans to expand these efforts through campus-wide sustainability weeks featuring hands-on workshops, seminars, and demonstrations on composting, circular economy practices, and digital waste tracking. The university is also preparing to launch student-led sustainability ambassador initiatives, where trained volunteers will collect data, promote zero-waste behavior, and support innovation projects focused on green transformation.

Through these ongoing and future activities, IZTECH continues to foster a participatory sustainability culture that empowers its community to actively contribute to environmental improvement and the achievement of the university's long-term zero-waste goals.

LEGEND

Settlement area boundary

WASTE

Wastewater treatment plant
Organic waste container
Waste oil container
E-waste conainer
Waste collection station
Glass recycling bin
General waste collection areas
Chemical waste storage areas
Blue waste container
Triple recycling set
Roads
Buildings
Google Hybrid
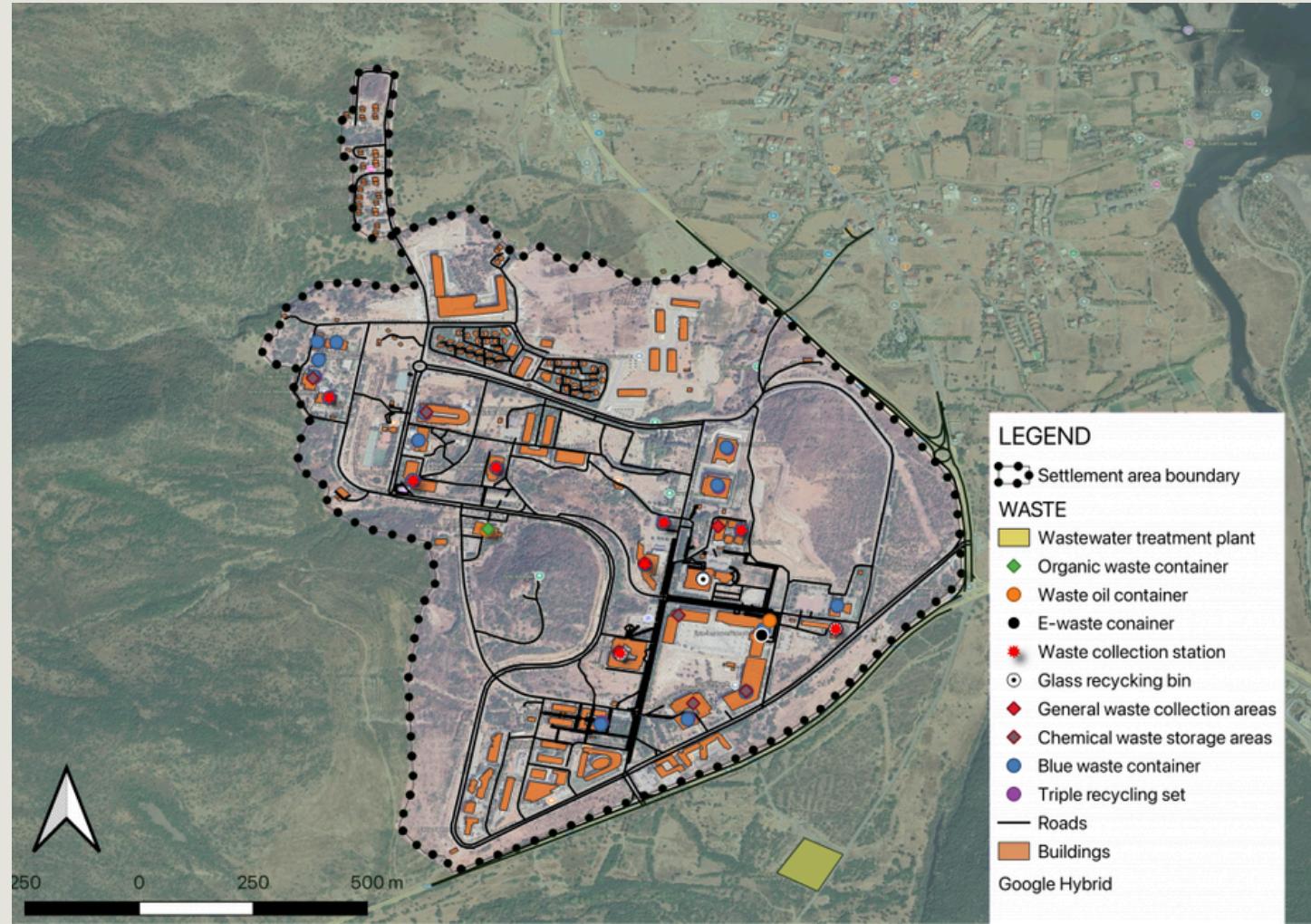
Figure 5. IZTECH Waste Map

Figure 6. Oil Waste Collection

4. Water

IZTECH demonstrates strong commitment to sustainable water management through conservation, reuse, and efficient irrigation practices. IZTECH has launched several projects in the water conservation field in recent years. The aim of conserving 70% of water on the campus grounds was achieved with a collective effort by different stakeholders in the campus with the leadership of the IZTECH Rectorate.

Water Conservation Program:

In 2025, IZTECH launched the Rainwater Garden Plantation Project to enhance water conservation and sustainable landscaping on its semi-arid campus. Led jointly by the Faculties of Architecture and Engineering, the project focuses on capturing, filtering, and reusing rainwater for campus greenery. A site was strategically chosen to prevent rainwater runoff into the sea, and a system of three interconnected rain gardens was established with natural filtration layers of sand and gravel. Climate-adaptive, water-resistant plants were used to complete the system. Further site studies are planned for 2026 to expand the project with additional rainwater gardens (Fig. 1).

Figure 1. Drought-Tolerant Plant Species Used in the Campus Rain Garden

In 2023, IZTECH constructed a bioswale to manage rainwater runoff from a parking lot and prevent flooding in the Recreational Area. The system efficiently collects and filters stormwater while allowing infiltration into the soil. Over the year, plants irrigated with the harvested rainwater from the bioswale showed improved growth and greener foliage compared to 2024, demonstrating the project's positive impact on campus water management and landscape health (Fig. 2).

Figure 2. Bioswale Vegetation Improvement: 2024–2025 Comparison

In 2025, IZTECH advanced its sustainable landscaping efforts by planting 681 drought-tolerant species across the campus. These plants, including Fire Thorn (Pyracantha coccinea), Spreading Juniper (Juniperus horizontalis), and Daphne (Laurus nobilis), were selected for their low water requirements, suitability to the local climate, and minimal maintenance needs. This initiative supports water conservation by reducing irrigation demand and promoting long-term sustainable resource management.

4. Water

The EKOT Ecological Sustainability Monitoring Sensor Kit, developed by IZTECH's Ecology Conservation Society, is a modular and adaptable system for sustainable water management. It measures water levels via hydrostatic pressure and transmits data wirelessly through GSM networks for analysis. Powered by both conventional electricity and an integrated solar-LiPo system, it can operate in diverse environments. Its modular design allows integration of additional sensors for monitoring various ecological parameters, while calibration with precipitation data and topographic maps ensures accurate measurement of irregular reservoirs. Real-time monitoring supports informed decision-making and effective water management.

On June 27, 2025, IZTECH organized a panel on "Sustainable Water Resources Management" in Barbaros Village to raise awareness about water conservation and climate-resilient practices. The event engaged both the university community and local stakeholders, including students and staff, fostering inclusive dialogue and collaboration between IZTECH and the surrounding region (Fig. 3).

Figure 3. Sustainable Water Resources Management panel

Water Recycling Program:

- The campus recycles 100% of its wastewater, facilitated by an on-site treatment plant that handles 1,500 m³/day.
- From October 2024 to September 2025, 266177 m³ of water was consumed at IZTECH campus, decreasing the water consumption by 10.5% from the previous year (Fig. 4).
- The use of recycled wastewater substitutes for freshwater abstraction, which corresponds to approximately 53.7 % of the water demand for the reporting year (Fig. 5).
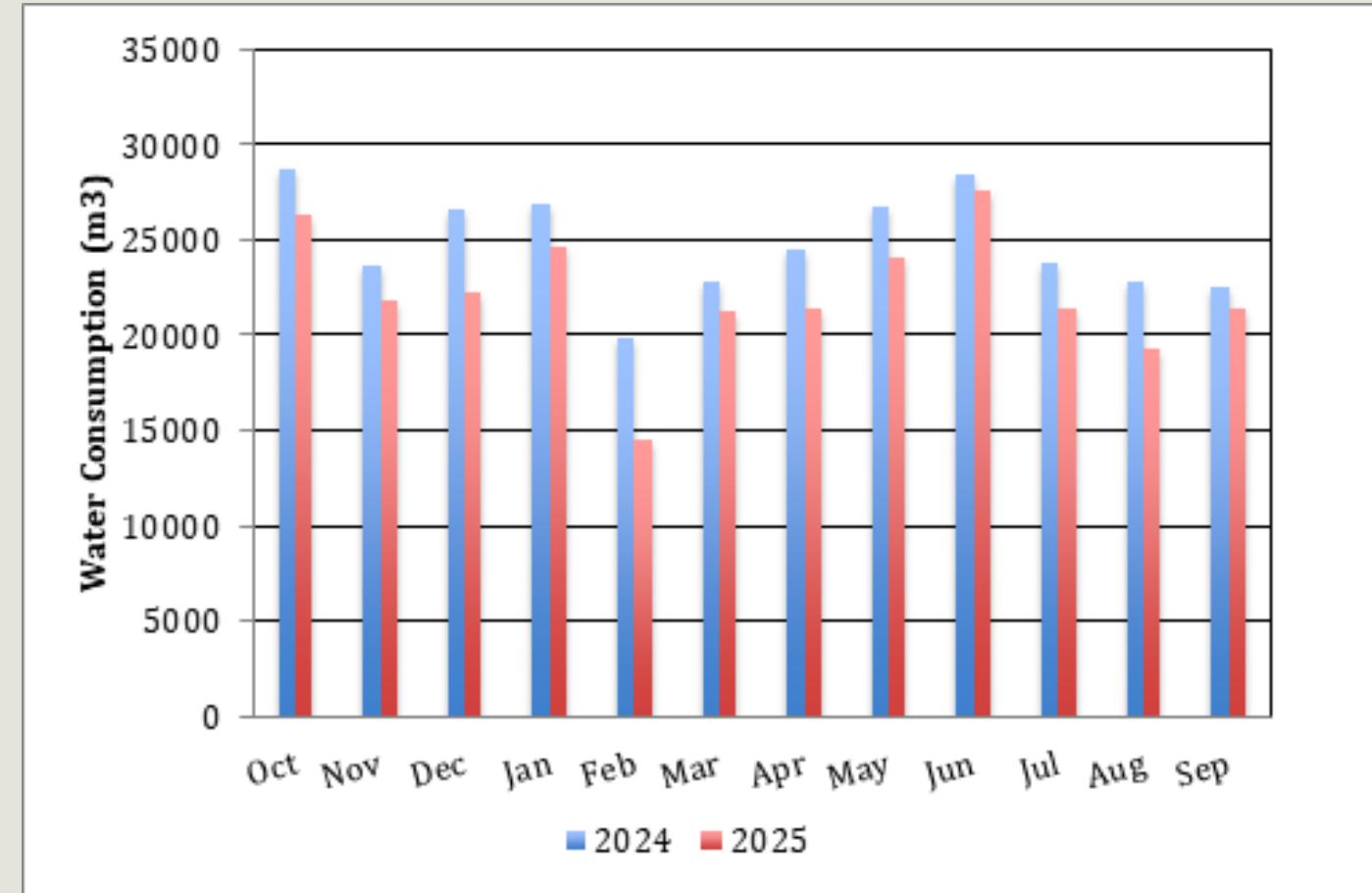

Figure 4. Comparison of Monthly Campus Water Consumption: 2024 vs 2025 (m³)

Water Efficient Appliances:

The initiative aimed to modernize outdated fixtures, reduce unnecessary water usage, and promote sustainable resource management. Water-efficient appliances replaced broken or outdated fixtures in several key academic buildings, including the Molecular Biology and Genetics, Electrical and Electronics Engineering, Physics, Architecture A Block, and Civil Engineering buildings.

As part of this initiative:

- 23 faulty urinal sensors were replaced with new, water-efficient sensor systems.
- 12 broken handwashing (faucet) sensors were also replaced to reduce water waste and improve hygiene efficiency.
- The use of sensor-operated devices in restrooms increased from 64.5% in 2024 to 75% in 2025, showing a rise of approximately 16.3%. In some buildings affiliated with the Faculty of Engineering — such as Physics, Mathematics, Foreign Languages, and Molecular Biology and Genetics — sensor-based systems will be implemented in the coming years as part of future planning.

4. Water

Consumption of Treated Water:
The use of recycled wastewater as a substitute for freshwater abstraction amounted to approximately 152,590 m³ in 2024 and 142,904 m³ in 2025 (Fig. 5).
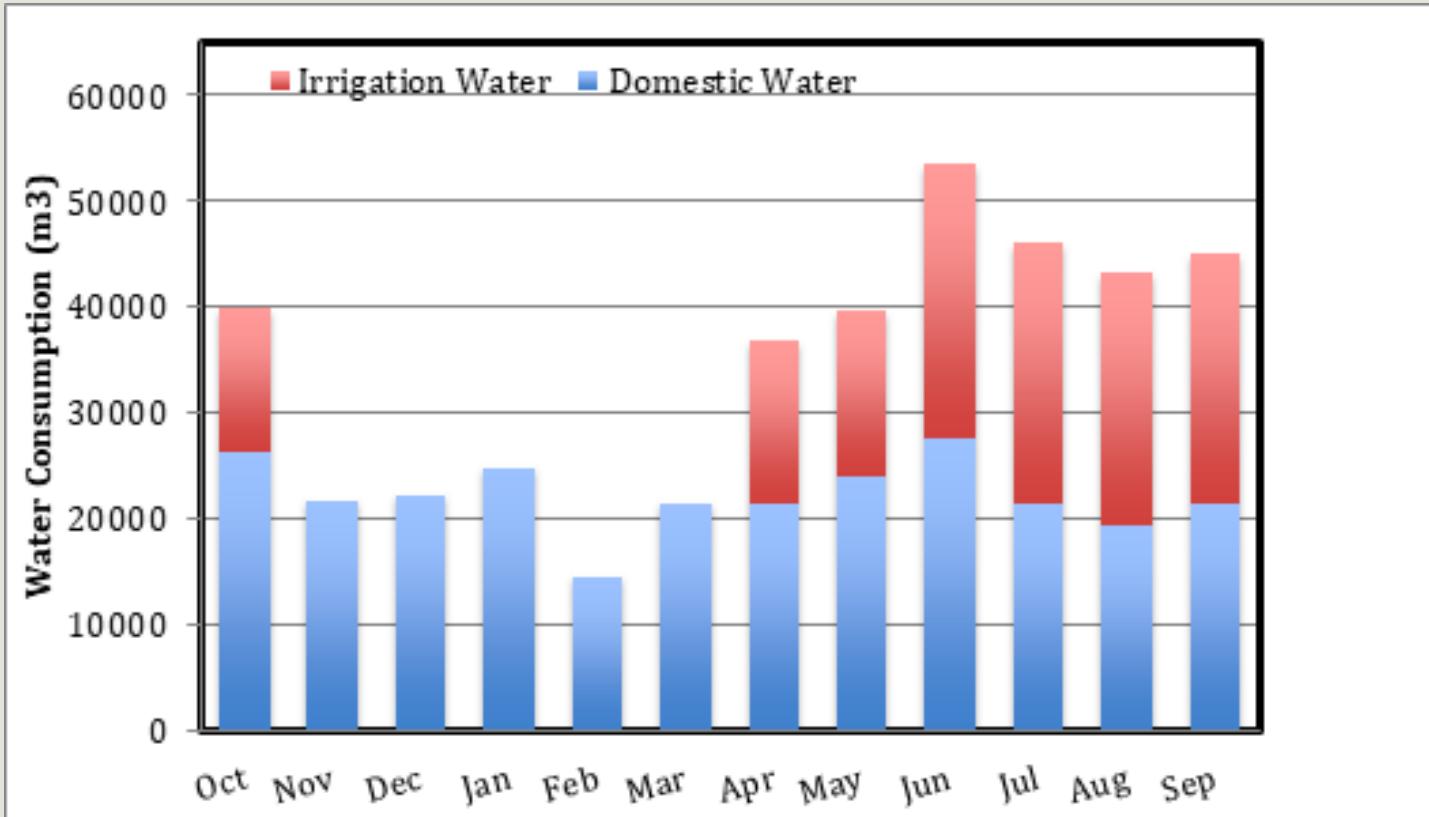

Figure 5. Irrigation and Domestic Water Consumption (m³)

Water Pollution Control in Campus Area:
These initiatives, coupled with IZTECH's compliance with national wastewater discharge policies, underscore the institution's commitment to a sustainable and green campus environment. Policy and programs for water pollution control on IZTECH campus are fully implemented and monitored regularly. IZTECH regularly checks for contamination from wastewater streams to its water sources.

Planning, implementation, monitoring and/or evaluation of all programs related to Water Management through the utilization of Information and Communication Technology (ICT):
IZTECH has developed a comprehensive water conservation strategy aligned with its Climate Change Action Plan, incorporating systematic data collection on consumption, rainwater harvesting, and leakages, with measurable water-saving targets. The EKOT Ecological Sustainability Monitoring Sensor Kit, a modular smart meter system, has been fully developed and is scheduled for installation in 2026. It monitors key campus water resources—including rainwater tanks, ponds, and treated water tanks—measuring water levels via hydrostatic pressure and transmitting data wirelessly.

Powered by electricity or off-grid solar, the system supports additional sensors and real-time monitoring, calibrated with precipitation data and topography, to ensure accurate water measurements. Also, monthly campus water consumption is monitored and displayed on the Sustainability IZTECH dashboard (Fig. 6).
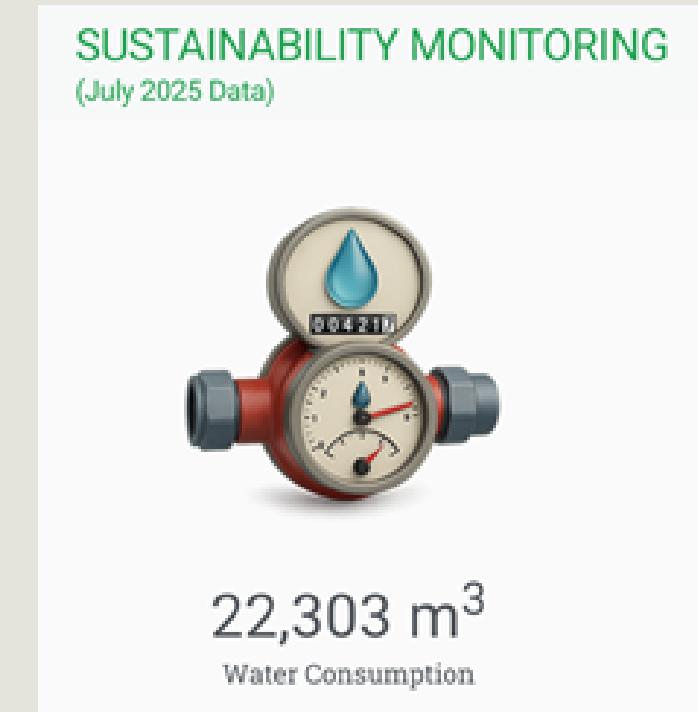

Figure 6. Monthly Campus Water Consumption Monitoring

Impact of Water Management programs in supporting the Sustainable Development Goals (SDGs):
Through a holistic and integrated approach to sustainability, IZTECH demonstrates a strong institutional commitment to water management, climate resilience, and the broader objectives of the 17 Sustainable Development Goals. At IZTECH, we recognize water as a critical resource essential to both human well-being and environmental sustainability. In alignment with Sustainable Development Goal 6 (SDG 6) – "Ensure availability and sustainable management of water and sanitation for all" – our institution has implemented a range of comprehensive programs focused on water conservation, recycling, treatment, and pollution control. IZTECH has implemented a comprehensive set of water management strategies that support multiple Sustainable Development Goals, particularly SDG 6 – Clean Water and Sanitation, along with SDGs 9, 11, 12, 13, and 15.
Detailed information regarding all water-related activities and ongoing projects across the campus can be accessed through the university's website.
Link: https://sustainability.iyte.edu.tr/green-campus/water/
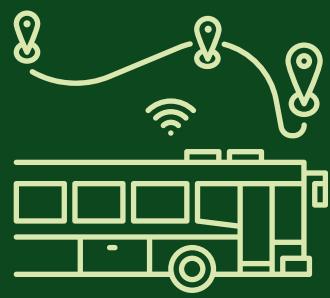
5. Transportation

The Izmir Institute of Technology (Iztech) campus provides a natural, calm, and sustainable environment for both staff and students throughout the year. Sustainability in transportation is a key focus for several reasons. For example, most campus buildings are centrally located, making them easily accessible from various parts of the campus. This centralization ensures that essential facilities, including the library, integrated research center, festival area, sports center, performance center, swimming pool, and technopark, are all situated along the main pathway of the campus. As a result, staff and students can conveniently reach these amenities from various other common buildings, including dormitories, faculties, and the central cafeteria. Additionally, Iztech is actively developing new policies to promote sustainable transportation. This includes offering multiple options for accessing the campus from both nearby and distant areas within the Izmir Metropolitan Area. Available transportation options include public buses, shuttle services, e-scooters, e-vehicles, and bicycles. The current status and strategies related to sustainable transportation are detailed across various topics.

The total number of vehicles (cars and motorcycles) divided by total campus' population:
The Izmir Institute of Technology (Iztech) operates a total of sixteen (16) vehicles, including passenger cars, vans, minibuses, and buses, to facilitate staff mobility as well as education and research activities. In addition to these vehicles, Iztech manages seven (7) vehicles designated for various purposes, such as sewage disposal, fire response, and first aid. However, since these additional vehicles are not used for transporting campus occupants, the total number of vehicles included in the overall count for the university remains sixteen.

The Iztech campus features three (3) gates located at different points on the site to support transportation from various directions. These gates are the East Gate (Main Gate), South Gate (Secondary Gate), and North Gate (Gülbahçe Village Gate). Each gate is equipped with a Licence-Plate Recognition System (LPRS). For students and employees wishing to enter the campus in their private vehicles, an application for the LPRS system is required as part of the campus policy. This process allows for autonomous monitoring of registered vehicles entering the Iztech campus area. For visitors who are not part of the campus community, the security personnel at Iztech assist each visitor with vehicle entry on a one-by-one basis.

Figure 1. Types of Vehicles on Campus

Shuttle Services:
The Izmir Institute of Technology (Iztech) offers a free shuttle service, which covers specific routes (published on the website) with hop-on, hop-off options on campus, as well as from the dormitory and Gülbahçe Village. The shuttle takes up to 50 passengers, whereas 27 can be seated (the average number of hop-on students/staff per run is around 50).

The campus shuttle service is available free of charge to everyone on campus, including staff, students, and visitors. The existing bus stops on the campus are used as hop-on locations. The shuttle service route is also extended to the nearest settlement, Gülbahçe Village, where most undergraduate and graduate students reside. Thanks to the extended schedule, the students can use the shuttle service in the late evening between the central library of Iztech, the dormitories, and the village. Besides, public buses run by the Izmir Metropolitan Municipality also circulate on the campus and around the village.
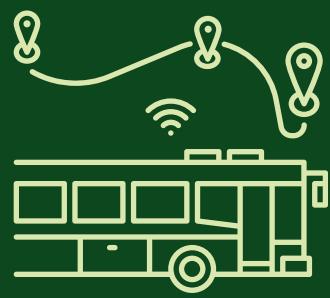
5. Transportation
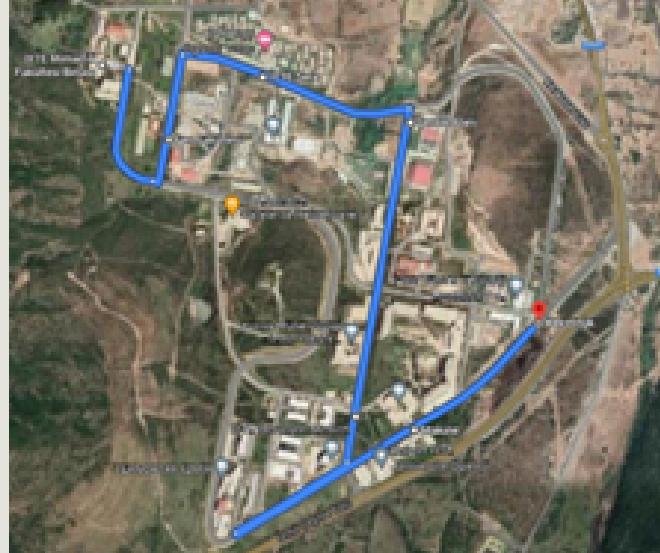
Figure 2. Shuttle Service and Route Through Campus

Zero Emission Vehicles (ZEV) Policy on Campus:

Students and staff of the Izmir Institute of Technology (Iztech) have the ability to access various areas on the campus using bicycles. The entire road network is shared with bicycles, and the shared roads have a strict speed limit of 30 km/h for vehicles. The elevated crosswalks, evenly distributed on roads with mostly heavy vehicle and bicycle traffic, provide safe pedestrian access and serve as speed bumps for motor vehicles on the campus.

Additionally, there are separate bikeways and pedestrian pathways between the main buildings, where human traffic is particularly high. All these individual pathways are lit up for security. Additionally, each faculty settlement on campus offers a secure bicycle parking area near the buildings. Regarding the use of bicycles on the Iztech campus, an occupancy rate study was conducted considering the bicycles requested from the parking lots and the bike trips completed. The results showed that approximately 90-110 private bicycle trips were completed per day.

The Ministry of Health of Türkiye donated 59 bicycles to Iztech. The Cycling Community of Iztech manages these bicycles to allow occupants of the Iztech campus to use them free of charge. Starting with the 2025-2026 academic year, all Unibikes will be maintained and ready for use on the Iztech campus. Additionally, a private company of Izmir Karşıyaka Municipality, known as Kumru Scooter, provides 40 e-scooters that can be rented via a mobile phone application on campus.

Regarding electric vehicles, two minivans are actively used for routine freight transportation on the Iztech campus. These vehicles are donated to Iztech by a private cargo company as part of the sustainable campus policy. Iztech owns two e-bikes, administered by the Faculty of Engineering, for use in agricultural and civil engineering purposes. Additionally, the university administration donated two electric vehicles to two of our students with disabilities to enhance their mobility on campus. Iztech's rectorate plans to purchase an electric minibus in the upcoming years to provide a more sustainable shuttle service on campus, while decreasing the CO2 emissions in the campus area.

Figure 3. Zero Emission Vehicles (ZEV)

Ratio of Parking Area to Total Campus Area:

The campus of the Izmir Institute of Technology (Iztech) is located on the western side of the Izmir metropolitan area. The total campus area is 28,140,000 m^2, while the total parking area measures 27,396 m^2.
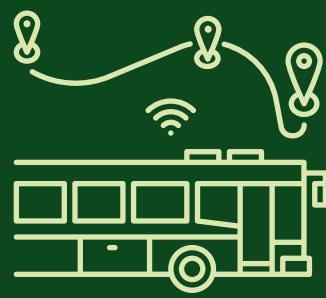
5. Transportation

Program to limit or decrease the parking area on campus for the last 3 years:
The Izmir Institute of Technology (Iztech) provides regular shuttle services to transport its administrative and academic staff from 12 locations within the Izmir Metropolitan Area. Additionally, 24 buses operate on various routes that connect to the Iztech campus for both staff and students, starting with the fall semester of 2025-2026. Each year, a protocol is signed between Iztech and a transportation company to ensure the provision of these transportation services. With these bus services, thousands of individuals are transported to the campus daily, resulting in over a 30% reduction in the use of private cars.

Figure 4. Campus Bus Services

Number of Transportation Initiatives to Decrease Private Vehicles on Campus:
Four key initiatives at İzmir Institute of Technology (Iztech) aim to reduce the number of private vehicles on campus:

1. Campus Bus Services: Iztech offers free campus bus services for staff commuting from various locations in the metropolitan area on weekdays. Besides, Iztech provides a free shuttle service that operates in the campus area every 30 minutes for both staff and students. The shuttle extends its route during the peak hours to Gülbahçe Village, where some students reside. There is also a night bus service operated by the Iztech rectorate, which requires online registration for staff and students who need to leave campus after around 8:00 PM.
2. Bicycle Sharing System: Iztech features a bicycle-sharing system called "Unibike", which offers 50 bicycles on campus for a nominal charge. These bicycles are maintained and ready for use at the beginning of the 2025-2026 academic year. Staffs and students are encouraged to use bicycles for transportation on campus, and several secured bicycle parking areas are conveniently located near faculty buildings. Moreover, 59 bicycles donated by the Ministry of Health of Türkiye can be used free of charge, as they are owned by Iztech and managed by the Iztech Cycling Community.

3. Public Transportation: İzmir has a well-developed public transportation system operated by the İzmir Metropolitan Municipality. Three regular bus lines (882,883,982) serve the Iztech campus, and the timetables for these lines are accessible through provided links. The schedules of these bus lines, which are also interconnected with other bus lines and transportation modes, can also be followed using smartphone applications.

4. Minibus Services: Minibuses operated by the Chamber of Drivers and Minibus Operators run between İzmir city center and Gülbahçe. These minibuses enter the IZTECH campus and circulate through all departments, providing convenient access to different areas of the campus for students and staff. They operate between 06:30 AM and 11:15 PM, with departures every 20 minutes.

In addition to various public and shared transportation options, a shared electric scooter system called Turla available on the IZTECH campus. The scooters can be used not only within the campus area but also in the regions nearby Urla and Gülbahçe. Users can easily find, unlock, and rent scooters through the Turla mobile application, which is actively operational in these areas.

Planning, implementation, monitoring and/or evaluation of all programs related to Transportation through the utilization of Information and Communication Technology (ICT):
The current utilization of ICT in Iztech transportation is at the implementation stage. The shuttles are relatively new and are regularly maintained throughout the year. However, they lack a GPS or any other relevant tracking system integrated into the ICT. On the other hand, the campus regularly monitors the number of vehicles entering the campus area using cameras integrated with an ICT system that recognizes the license plates of staff and students. These numbers are monthly published and are available online at https://sustainability.iyte.edu.tr/. Further stages of implementation are discussed with the administration, and necessary steps are taken to monitor and evaluate the ICT in transportation at Iztech. Since the shuttle bus service route nearly covers all the main buildings (including the library, sports center, and Central cafeteria), as well as recreational areas, and connects them to the dormitory and the closest residential area, the application of ICTs for the route planning stage is redundant. Moreover, the shuttle utilizes existing bus stops on campus for hop-on and hop-off activities, making the route accessible to nearly all occupants and operating according to predetermined timetables. The Support Service Department is responsible for shuttle operations, and timetable changes are announced via email to occupants (staff/students). The number of shuttle service runs is reduced during the summer due to low demand. Additionally, one can register for late services via the website. The bus used for the campus shuttle is relatively old and lacks GPS, so it cannot be tracked by the occupants. However, it is believed that the tracking of shuttle services provides many benefits to passengers in terms of time planning. The university rectorate plans to purchase a new bus equipped with GPS and powered by an electric engine, enabling the tracking of the shuttle service and reducing emissions on campus. Therefore, if the purchase of a new bus is implemented for the upcoming year, it may be possible to introduce ICTs for efficient shuttle service operation.

5. Transportation

Impact of Transportation programs in supporting the Sustainable Development Goals (SDGs):
The university has implemented a comprehensive range of sustainable transportation initiatives that significantly contribute to achieving the 17 Sustainable Development Goals (SDGs). These initiatives demonstrate a strong institutional commitment to low-carbon mobility, reducing air pollution, and creating safe, inclusive, and accessible transportation systems. Key programs include:

- Development of integrated pedestrian pathways and dedicated bicycle lanes across campus to encourage non-motorized transport.
- Operation of low-emission campus shuttle buses, including electric or hybrid vehicles, to reduce reliance on personal cars.
- Installation of electric vehicle (EV) charging stations to support the transition to cleaner transportation alternatives.
- Designation of car-free zones and limited-access areas to minimize traffic congestion and air pollution within the campus.
- Provision of bicycle-sharing programs and supporting infrastructure (parking racks, lockers, repair stations) to enhance cycling convenience.
- Implementation of a vehicle restriction policy, including license plate control or limited parking permits for students and staff.
- Integration with public transportation systems, including campus bus terminals or last-mile shuttle services, to improve accessibility.
- Awareness campaigns and mobility education initiatives promoting safe, healthy, and sustainable transport behaviour.
- Real-time digital tracking tools to monitor shuttle schedules, optimize routes, and support user convenience.
- Collaboration with government and urban planning stakeholders to align university mobility strategies with broader city transport plans.

These efforts directly support SDGs 3, 4, 7, 9, 11, 12, 13, and 17, and contribute indirectly to others, including:

- SDG 3 – Reducing exposure to air pollution and promoting healthy, active lifestyles
- SDG 4 – Ensuring inclusive access to education through safe and reliable campus transport
- SDG 7 – Promoting the use of clean energy in transportation
- SDG 9 – Supporting innovation in sustainable transport infrastructure
- SDG 11 – Building inclusive, safe, and sustainable urban mobility systems
- SDG 12 – Encouraging responsible use of resources through shared mobility
- SDG 13 – Lowering carbon emissions through low-impact transportation
- SDG 17 – Strengthening partnerships to develop integrated, sustainable transport networks

6. Education and Research

As a leading national research and higher education institution, IZTECH integrates principles of sustainability into its research and education. In IZTECH, in 2024-2025 Fall and Spring Semester, the total number of courses offered, including graduate and undergraduate degrees, is 4434. Among them, 1141 courses are related to sustainability. These courses are offered in Faculty of Engineering, Faculty of Natural Sciences, and Faculty of Architecture. Total number of Sustainability related study programs are 67 including undergradute, masters, doctoral, interdisiplinary masters and doctoral programs. A high percentage of the courses in the Departments of Environmental Engineering, Material Science and Engineering, Energy Systems of Engineering, City and Regional Planning, Architecture and Molecular Biology and Genetics and International Water Resources are sustainaibility related. They cover a variety of aspects in sustainability and aims to satisfiy sustainability development goals with their curriculum and educational program targets.In recent years, there have been efforts to offer sustainability related courses common to whole students in IZTECH.

For example, the course of "Global Sustainable Development" offered by the department of Chemical Engineering for the last three years is open to all students. It covers the topics/issues about sustainable production and development. The aim of the course is to present negative effects of production processes on the environment and society and to inform about what should be done to reduce this. As another example, the courses mostly in the Department of Bioengineering aims to train students and give them the necessary knowledge to produce high value technologies, products and information using innovative bioengineering approaches to solve problems in national and international priority areas such as health and pharmaceutical industry, and environmental and energy industry.

They basically target SDGs of "3-good health and well being", "9-industry, innovation and infrastructure". The course of "Economy and Design of Engineering" at Chemical Engineering Department aims to provide students with an understanding of entrepreneurship, innovation, and sustainable development, and knowledge of professional life, including project management, risk management, and change management. The course of "Introduction of Bioenergy" in Energy Systems Engineering follows sustainability reated topics, such as, biomass energy and types of biomass; heat and power generation from biomass; methods and technologies for biofuels production in solid, liquid and gaseous forms; utilization of organic municipal waste using biomass conversion technologies.

The below table gives examples of sustainability related courses given at IZTECH.

Table 1. Selected Sustainability Related Courses at IZTECH in 2024-2025 Fall and Spring Semesters

| Course Code	Course Name	Programme / Department	Link to / Relationship with Sustainability and Related Themes (Ecology, Environment, Energy, Water Resources, Society, Economy, etc.)
AR281	Introduction to Energy and Heat Transfer	Architecture	In the course, energy and sustainability related issues are covered. Energy and energy efficiency are considered by using "Energy Performance Regulations in Buildings"; and heat and moisture transfer in buildings are investigated based on "Heat Insulation Regulations in Buildings". The course name is later changed into "Introduction to Energy and Heat Transfer".
AR482	Building Performance Simulation for Sustainable Design	Architecture	By using dynamic simulations models (DSMs), a designer has a possibility to compare different design options in terms building performance. Besides, DSMs are pedagogical tools offering to bring easly the subjects of builing physics into architectural design. In this course, the use of building performance simulation tools are taught as a support to architectural design process. It demonstrates how the design can be evolved any using d tested to give optimum performance in terms of energy.
AR595	Rural Transformation and Built Environment	Masters in Architecture	Concepts and definitions in relations to rural, urban and rural relations, rural architecture, new spatial organisations in rural areas as well as sustainability related issues are covered.
CE101	Introduction to Civil Engineering and Sustainability	Civil Engineering	The course aims to introduce the civil engineering profession including ability to design a complex system, process, device or product to meet needs under realistic constraints such as economic, environmental, health, safety, manufacturability and sustainability.
CE471	Water Resources Engineering	Civil Engineering	The course covers technical issues in order to provide students with the ability to design a complex system, process, device or product to meet needs under realistic constraints such as economic, environmental, health, safety, manufacturability and sustainability.
CE480	Design of Coastal Structures	Civil Engineering	The course covers the following themes: Wave Climate, design wave, wave forces on vertical walls, rubble mounds and circular cylinders, design of harbour structures; quays, piers, gravity and floating breakwayers. design of breakwater layout and harbour tranquillity. Design of seawalls, revetments and groins. design of concrete block quaywalls, sheet pile walls and piled quay walls. Seismic design.

6. Education and Research

| Code	Course	Program	Description
CE511	Coastal Engineering	Masters in Civil Engineering	An introduction to coastal engineering with emphasis on the interaction between oceanic dynamic processes (waves, currents, and tides) and coastal regions (beaches, harbors, structures, and estuaries) and on the engineering approaches necessary to prevent adverse effects caused by this interaction.
CE524	Urban Traffic Management and Control	Masters in Civil Engineering	Nature of urban vehicular traffic congestion. Roadway capacity. Intersection design and traffic signaloperations. Freeway operations and management. Corridor control. Traffic stream models. Trafficdelay models. Traffic forecasting.
CE538	Water Resources System Engineering	Masters in Civil Engineering	Planning, design and management of water resources systems. Application of deterministic and stochastic optimization techniques. Water allocation, capacity expansion, and design and operation of reservoir systems. Surface water and groundwater management.
CE578	Sea Renewable Engineering	Masters in Civil Engineering	The course focuses on the following topics: Marine renewable energy, wave energy, wave energy converters, power take off systems, tidal energy, offshore wind energy, Combined systems.
CHE542	Water and Waste Treatment	Masters in Chemical Engineering	Following topics are covered: Characteristics of water and airborne wastes treatment processes and kinetics; treatment system design: Process interactions, optimal design, treatment needs related to water supply.
CP111	Urbanization and City Planning	City and Regional Planning	The course covers the followng topics that are related to social and environmental sustainability: Urbanization. Types of urban settlements. Urban economy. Urban land. Urban morphology. Urbanization and natural environment. Urban land use, infrastructure and transportation. Urban planning. Planning problems of Turkey. Urban design and planning process. Development plans, renewal and conservation issues. Administrative and legal aspects of city planning.
CP335	Environmental Issues and Planning	City and Regional Planning	The course explores the fundamental concepts of ecology the interactions between natural environment and urbanization and the environmental problems created by the current trends in urban processes. Then it elaborates on the policy options and planning tools for creating sustainable urban environments and solving the environmental problems such as urban and industrial pollution chemical toxins, water scarcity, degradation in ecosystems, etc. The course also covers the methods for analysing and evaluating the adverse impacts of current trends of industrialization and urbanization on the natural environment.
CP492	Regional Economic Development and Planning	City and Regional Planning	This course is designed to provide background knowledge on the concept economic development, theories of regional economic development and the evolution of planning practice with reference to the EU and Turkey, involving sustainibility related topics too.
CP555	Environmental Ethics	Masters in City and Regional Planning	This course provides a comprehensive coverage of issues related with environmental ethics including alternative ethical frameworks for environmental planning (utilitarian biocentric and ecocentric ethics) Responsibilities to future generations duties to the natural world and animals as well as distributive equity and environmental justice. The applications of these to environmental ethics will be discussed.
ENE501	Fundamentals Of Energy Engineering	Masters in Energy Engineering	The content of the course will include Wind, solar, Geothermal, Biomass, Wave Energy, Energy Efficiency, networks/grids and energy policies. Students will choose a subject after the mid-term as a project topic and work in groups to prepare a scientific report and presentation. The course will also be supported with site visits.
ENE510	Fundamentals of Wind Energy Systems	Masters in Energy Engineering	This course includes the history and near future of wind energy, the status of wind energy in turkey and around the globe, basic information about sub-topics of wind energy (i) meteorology (ii) aerodynamics and (iii) control. The content is supported with a site visit. The course gives knowledge and understanding on wind turbine peripherals/sections such as blades, rotor, gearbox, generator, brakes, nacelle, tower, grid connection and wind measurements.
ENV315	Water Supply	Environmental Engineering	This course is one of the compulsory and fundamental courses of the Department of Environmental Engineering, whose aim is to protect health of human beings and the environment by assessing exposures and associated risks to determine mitigation needs, by developing better monitoring and sampling techniques, better treatment processes, and environmental standards. Environmental sustainabiliy is a core issue.
ENV317	Atmospheric Chemistry and Air Pollution	Environmental Engineering	This course is one of the compulsory and fundamental courses of the Department of Environmental Engineering, whose aim is to protect and the environment focusing on air pollution by assessing exposures and associated risks to determine mitigation needs, by developing better monitoring and sampling techniques, better treatment processes, and environmental standards. Environmental sustainabiliy is a core issue.
ENV321	Water Quality	Environmental Engineering	This course is one of the compulsory and fundamental courses of the Department of Environmental Engineering, whose aim is to protect health of human beings and the water resources by assessing exposures and associated risks to determine mitigation needs, by developing better monitoring and sampling techniques, better treatment processes, and environmental standards. Environmental sustainabiliy is a core issue.
ENV413	Solid Waste Engineering	Environmental Engineering	This course provides students with the knowledge to create a design for a solid waste treatment facility, improve how recycling programs function, makearrangements for the proper disposal of trash and garbage containers, and create sanitation plans to ensure healthy working conditions.
ENV440	Industrial WaterTreatment	Environmental Engineering	The course aims to give knwledge on processes like removal of heavy metals, adsorption, ion exchange, membrane process, and advanced oxidation processes.
ENV511	Micropollutants in the Environment	Masters in Environmental Engineering	Once micropollutants, formed as a result of human activities, are released to the environment, they are distributed within environmental compartments via various transport and transformation processes depending on their physico-chemical properties and environmental conditions, and may pose a risk to the environment and human health. Within the scope of this course, various micropollutant groups will be introduced together with their physico-chemical properties, the transformation processes that play an important role in the fate of these pollutants will be examined in detail by using the knowledge on fundamentals of mass transport, and modeling applications will be explained.
ENV519	Hazardous Waste Management	Masters in Environmental Engineering	This course covers management, planning, regulatory, and engineering aspects of hazardous waste handling, treatment, and disposal. The course will evaluate engineering process design and the analysis of important unit operations and processes in different treatment technologies for hazardous wastes. It will also familiarize students with issues, problems, and processes involved in hazardous waste management and treatment systems.
FE541	Food and Environmental Virology	Masters in Food Engineering	Introduction to Food and Environmental Virology, Molecular Virology of Human and Animal Viruses in Food, Viruses with Potential for Food-borne Transmission, Conventional and Molecular Methods of Virus Detection in Foods, Survival and Transport of Enteric Viruses in the Environment, bacteriophages in Food Virology, Epidemiology of Viral Food-borne Outbreaks, Prevention and Control Strategies Against Food-borne Viruses
HUM260	Introduction to Disaster Management	General Culture Courses Department	Following issues are covered: Key issues and debates related to the theory and application of disaster risk reduction; the concepts of risk, hazard and disaster, vulnarability; various types of natural and human induced hazards, principles and processes of disaster risk management. Resilience and vulnerability; multi-hazard risk management.
HUM261	Global Sustainability	GeneralCulture Courses Dep.	This course exploresat global sustainability, planetary and societal resilience, climate change, and solutions for societal transformations at global scale.
ME427	Introduction to Renewable Energy Resources	Mechanical Engineering	Introduction to renewable energies. Principles of renewable energies. Basic laws of heat transfer and fluid mechanics. Uses of renewable energies: solar, wind, geothermal, bio, tidal, wave, etc. Storage of energy and its distribution.
AR447	Rural Built Environment	Architecture	Introduction to Rural Built Environment, Basic Definitions of Rural Settlements, Elements of Built Environment, Dwelling and Settlements Relationship, Spatial Organisation in Dwelling, Spatial Elements of Rural Dwellings, Structural and Construction Systems of Rural Dwellings.
CE532	Groundwater Hydrology and Pollutant Transport	Masters in Civil Engineering	The course covers fundamental concepts in groundwater hydrology and the occurrence of pollution in groundwater sources. Topics include groundwater flow through different types of aquifers, the use of flow nets, and principles of well hydraulics. It also examines the chemical properties of groundwater and the impacts of contamination. Additionally, the course introduces numerical modeling techniques for simulating groundwater flow and chemical pollutant transport.

6. Education and Research
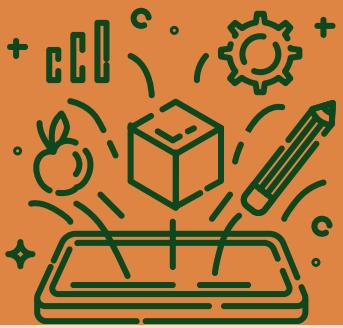
Our university develops interdisciplinary programs, internationally collaborated PhD programs and offers international exchange programs focused on climate change, energy generation and transition, circular economy, sustainable development, innovation and technological developments in sciences, clean water resources in relation to ecosystems and technology, developing biotechnologies for agriculture, food and health. Partnerships with international academic networks elevates research collaborations and results in platforms to share sustainable practices and new developments, innovations in education. Such collaborations involve opportunities for students, such as provisions of sustainability-focused scholarships, thesis grants. Addiditonally, Incubation Center in Technopark provides support for students to establish their own startups or capstone projects related to sustainability themes.

IZTECH has a research ecosystem that is unique for Izmir as the campus area also includes a planned technology development zone, Technopark IZMİR , Innovation Center, Technology Transfer Office, and Research Centers. Establishment of dedicated research centers and labs, in addition to startups addressing key sustainability challenges such as renewable energy, biotechnology, biodiversity, water management, and urban resilience and sustainable building design, materials and recycling science, has complementing role in education and research. Students and researchers co-develop and pilot sustainability innovations on campus, through Technopark opportunities which are not only for profit based companies. Sustainability research in IZTECH gets fund from EU projects, The Scientific and Technological Research Council of Turkey (TUBİTAK) projects and IZTECH's Scientific Research Program. A variety of departments including Civil Engineering, Food Engineering, Architecture, Material Science and Engineering, Bioengineering and City Planning and Environmental Engineering have become partners of EU projects, and have received funding from other institutions. Sustainability research projects follow SDGs precisely.

Breakdown of research funds in IZTECH by Funding Institution and by Amount of Funding

BAP
Total
1 428 940,96 US Dolars
Sustainability
531 304,78 US Dolars

TUBITAK
Total
1 262 334,85 US Dolars
Sustainability
759 170,89 US Dolars

EU
Total
603 123 US Dolars
Sustainability
603 123 US Dolars

TUBITAK INTERNATIONAL
Total
193 899,12 US Dolars
Sustainability
150 527,15 US Dolars

- Total EU Projects
- Total TUBİTAK Projects
- Total TUBİTAK International Projects
- Total BAP Projects
- EU Projects - sustainability
- TUBİTAK Projects- sustainability
- TUBİTAK International Projects - sustainability
- BAP Projects - sustainability

Percentages shown: 26%, 41%, 36%, 37%, 30%, 7%, 6%, 17%

Research implementations

Our university's outstanding power remains in academic outputs, mainly annual publication of sustainability-related research outputs, including peer-reviewed journals, books, policy briefs, and innovation patents, as presented in GCRIS Database by IZTECH Library. Similar to research centers, research projects and courses each research output contributes to all SDGs. IZTECH Library provides open access publishing to make several research outputs available for every person through the 2025 Open Access Agreements.

6. Education and Research

Publication Metrics at IZTECH

Collaboration with local governments, industries, and NGOs in community-based learning and participatory action research is a key strength in our education and research system. Through partnerships with municipal authorities, industry players, and international organizations, IZTECH plays a vital role in creating sustainable solutions that improve urban living standards while also safeguarding the environment and fostering social inclusivity.

Community Engagement Directorate is another administrative unit collaborating institutions, organizations, associations and volunteer citizens nearby environment of IYTE. Students, researchers and citizens have come together to carry out community responsibility projects. Child University, Wisdom Academy are good examples of life-long learning with additional sustainable activities.

A variety of activities raise awareness about SDGs at various levels. With the inclusion of student communities implementation of environmental literacy campaigns bring students, staff, and the broader community together in this sense. Department of Health, Culture and Sports student organizations faculties and individuals (academic people and students) take part in organizing a variety of activities in IZTECH Campus and in the city of IZMİR as well. All these cultural, academic and social related activities existing in the campus explain social dimension of sustainability in IZTECH. Supporting students' physical and mental wellness and health, improving their personal abilities and personalities, make this department a key link for achieving SDGs.

With regards to sustainability related events, Department of Health, Culture and Sports, student organizations, faculties and individuals (academic people and students) take part in organizing a variety of activities in IZTECH Campus and in the city of IZMİR as well. All these cultural, academic and social related activities existing in the campus explain social dimension of sustainability in IZTECH. The aim of the Department of health, culture and sports is to provide support for students' physical and mental wellness and health, to improve their personal abilities and personalities. So that makes this department a key link for achieving sustainable development goals. The total number of events related to environment and sustainability issues which were hosted or organized by different departments, units, and members of the University in the 2022-2025 period is more than 160. This increase is partly related to increased attention towards sustainability issues. Additionally, student initiatives focusing on sustainability and environmental issues also exist within the campus. The number of student organizations at IZTECH campus dealing with sustainability in different areas are around 40. Some examples are Permaculture and Ecological Living Community, Environment and Young TEMA Community, ECO-Motion Community, Natural Research Community, Women in Business, etc.

6. Education and Research

A collection of cultural activities and students' organization events in IZTECH.

The Sustainable Green Campus Coordinatorship was established in 2014 with the following objectives:
-To raise awareness and understanding of sustainability among our university community and beyond.
-To support and coordinate initiatives that align with sustainability across our university's departments, faculties, institutes, centers, and units.
-To monitor and report on our university's progress towards sustainability using relevant indicators and benchmarks.
-To foster collaboration and partnership with other universities, organizations, institutions, and stakeholders that are working towards sustainability.
-To showcase and celebrate our university's achievements and best practices related to sustainability.

The web site "Sustainable Green Campus" of the Coordinatorship is regularly updated and designed to include announcements of sustainability related events, projects, student organizations and news. Also, the website is connected to collection of publication and these related to sustainability under IZTECH Library Catalogue.

IZTECH gets the 3rd rank among the state universities in Turkiye that was found successful in transition to distant education. Trainings were given to both students and faculty members to ease the transition process to distant and online learning systems. Microsoft Teams that offer classrooms and meeting spaces was adopted. An online classroom was established to be used by faculty members to record their lectures. More than 1000 lectures were recorded by using Microsoft Teams and Adobe Connect. Tablet computers were distributed to support faculty members and students to continue education by online means. Apart from that, sanitation related measures (i.e. signs and mask/disinfection stands) were adopted all around the campus.
s focusing on sustainability and environmental issues also exist within the campus. The number of student organizations at IZTECH campus dealing with sustainability in different areas are around 40. Some examples are Permaculture and Ecological Living Community, Environment and Young TEMA Community, ECO-Motion Community, Natural Research Community, Women in Business, etc.

Izmir Institute of Technology fosters a vibrant entrepreneurial ecosystem through its Technopark, which currently hosts over 200 active startups across diverse fields such as technology, design, biotechnology, and engineering. The Technopark provides incubation, mentoring, and funding support to early-stage companies and organizes regular entrepreneurship events and collaboration programs. Between 2022 and 2025, approximately 100 new startups were founded under its guidance, reflecting the university's strong commitment to innovation and applied research. Some of them work on material technologies, clean energy, renewable energy (solar and wind), and recycling; while some others focus on developing innovative, water treatment solutions or optical systems, LED lighting, and the use of microalgae as a raw material in biodiesel production, from CO_2 disposal to production in domestic waste water.

6. Education and Research
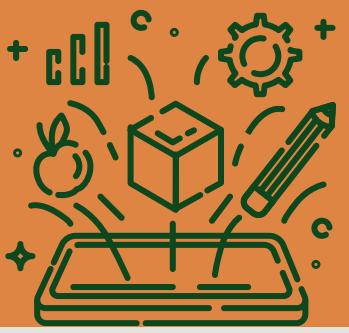
Views from the Teknopark Buildings and Innovation Center in the IZTECH Campus.